

# Defence

## Electronics Powering India's Defence Upcycle

The global defence sector has entered a structurally elevated growth phase, driven by persistent geopolitical conflicts, rapid technological modernization of weapons, and a multi-domain warfare. Global military expenditure surged at ~8.6% CAGR in the past three years as against a long-term average of ~4%. Countries are accelerating modernization across missile defence, UAVs, space systems, and electronic warfare. India, as a fourth largest defence spender in the world, stands at the center of this transformation. The country is transitioning decisively from being a major importer to building an indigenous defence industrial ecosystem. This shift is reinforced by the natural obsolescence of aging military assets and an unequivocal sovereign mandate for self-reliance. In our view, this will result in a sustained, technology-intensive capex super cycle for domestic defence industry, benefitting companies with high electronics content products, in line with the global trend.

### Domestic catalysts powering growth:

- **Government policy support:** Through policies such as DAP-2020, iDEX, SRIJAN, defence corridors (UP/TN), DPEPP-2020, TPCR-25, higher FDI, and import ban, domestic ecosystem building is being supported.
- **Large indigenous programs:** Key defence programs such as LCA Tejas Mk1A, Mk2, AMCA, QRSAM, Project Kusha, and P-75(I) provide long-term visibility of growth for the companies.
- **Expanding MSME ecosystem:** Rapid scaling of private players producing electronics, radars, UAVs, and avionics helps in the development of domestic industrial ecosystem.

### Investment thesis

- **Strategic moats:** Barriers to entry are reinforced by deep tech collaborations with the DRDO and a clear government preference for domestic contract winners, creating a protected competitive landscape.
- **Multidecadal visibility:** Elevated orderbook to sales ratios, led by a large pipeline of complex platforms, ensure long-term revenue predictability.
- **Margin expansion:** The indigenization mandate is no longer just a policy tailwind; it is a margin expansion catalyst. Through localization of subsystems, and spares, integrators are capturing higher value-addition.
- **Export-led scalability:** Beyond domestic replacement, India is emerging as a cost competitive global hub. Exporting complete platforms (e.g., Akash, BrahMos, etc.) to friendly nations is a massive growth opportunity.

We believe that the expected sector growth trajectory offers a multi-year compounding story, combining sustained order inflows and efficient execution. We maintain a positive outlook on the sector and initiate coverage on eight companies (listed in table below). We prefer electronics value chain players and companies with proven technological capabilities to transition to a full solutions provider level from a subsystem manufacturer.

Company	Rating	Target Price	% PAT CAGR (FY25-FY28E)	Current PE (x FY28E)	Book to Bill (x) (FY26E)
Hindustan Aeronautics Ltd.	Reduce	3265	9.3	23.7	7.1
Bharat Electronics Ltd.	Add	490	14.1	41.3	2.6
Bharat Dynamics Ltd.	Reduce	1120	28.8	39.6	6.6
Mazagon Dock Shipbuilders Ltd.	Add	2950	7.2	32.7	1.7
Apollo Micro Systems Ltd.	Buy	280	56.1	30.3	1.4
Data Patterns Ltd.	Buy	3770	20.0	45.6	1.0
Astra Microwave Ltd.	Add	1130	20.5	35.2	1.6
Paras Defence and Space technology Ltd.	Reduce	665	29.5	43.5	2.2

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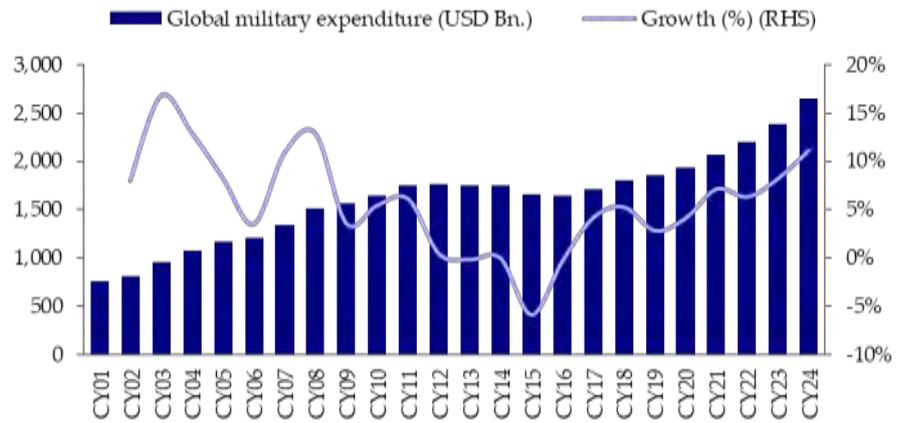
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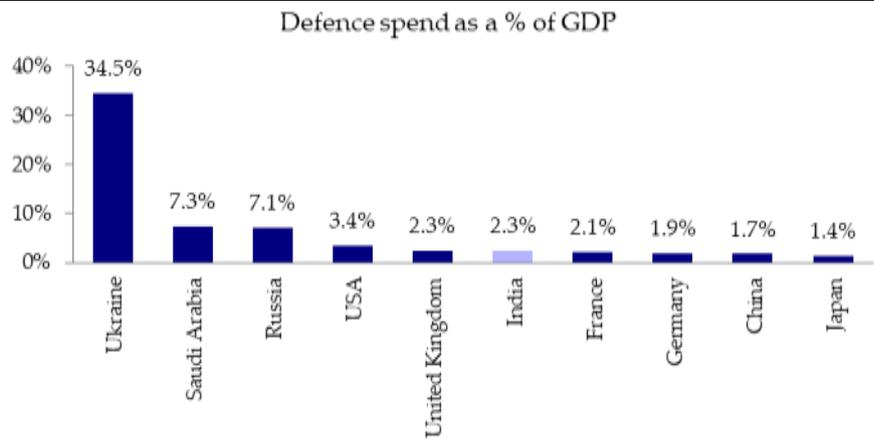
Focus charts

Global military expenditure was the highest in CY24



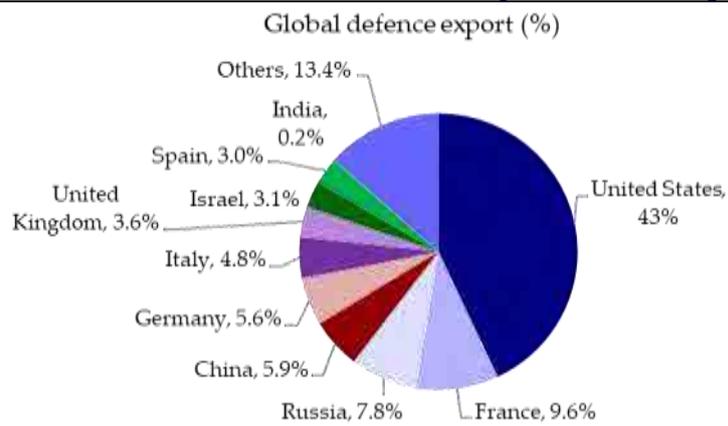
Source: SIPRI, HSIE Research

Ukraine leading in CY24 due to war related expenditure



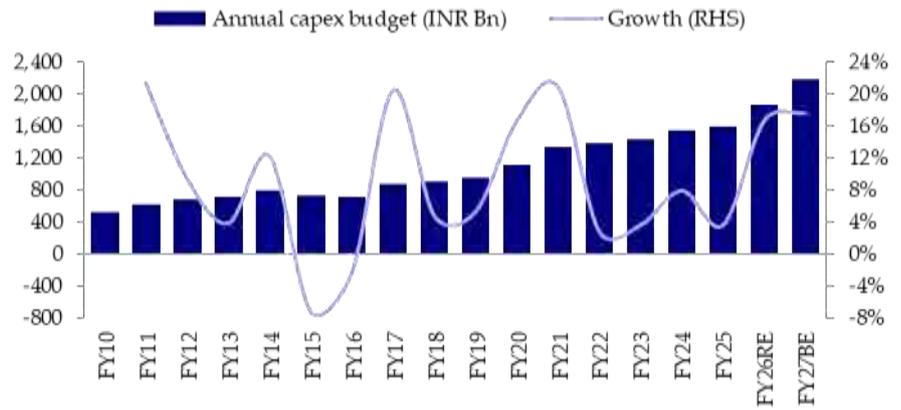
Source: SIPRI, HSIE Research

USA France and Russia accounted for ~60% of global defence exports in CY24



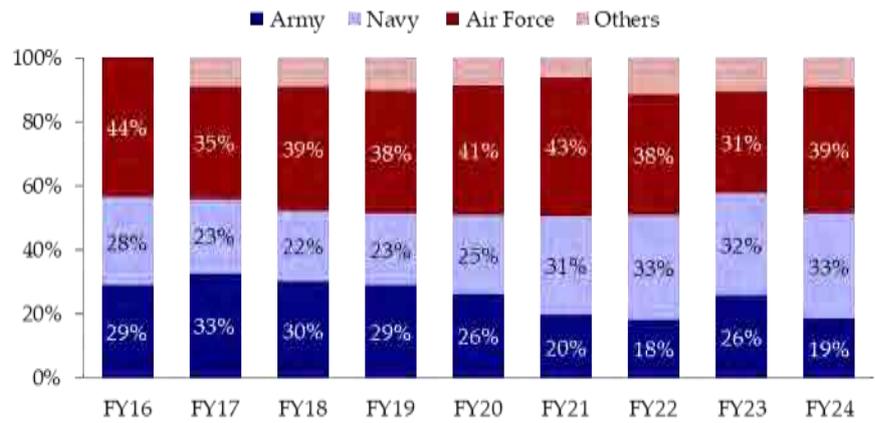
Source: SIPRI, HSIE Research

**Indian annual capex growth rising strongly in FY27BE**



Source: Union Budget, HSIE Research

**Indian Capex Budget Split: Airforce continues to command larger share**



Source: Union Budget, HSIE Research

**India pushing for self-reliance while controlling defence imports**



Source: GoI, HSIE Research

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## Global Defence Industry: Shifting power dynamics

### Geopolitical unrest reshaping defence priorities

- The global defence landscape is undergoing significant structural shifts, driven by intensifying geopolitical frictions, ongoing armed conflicts, and steadily expanding military budgets. Nations across the world are accelerating the modernization of their armed forces, simultaneously prioritizing advanced and emerging technologies. Importantly, this surge in defence spending is not only a reaction to more frequent conflicts but also to the evolving character of the warfare itself.
- In recent years, several armed conflicts ranging from Russia–Ukraine and Israel–Iran to Armenia–Azerbaijan have erupted across regions including Europe, Central Asia, the Middle East, and the Indo-Pacific. A consistent pattern across these battles is the heavy reliance on drones, particularly long-range UAVs capable of striking targets hundreds of kilometers away from the frontline. The combination of drone capabilities with conventional weapons systems is quickly becoming a pivotal feature of modern warfare.
- In the current geopolitical landscape, defence companies across the globe are positioned as clear structural beneficiaries. Current defence expenditure for nations today extends well beyond conventional military promptness. It has become a strategic necessity for maintaining macroeconomic stability, reinforcing deterrence capabilities, and shaping long-term geopolitical alignments.
- Additionally, sustained defence expenditure supports critical non-combat operations as well such as peacekeeping, maritime security, and humanitarian assistance. This adds another lever to the sector's rising demand visibility.
- These dynamics collectively create a multi-year tailwind for defence companies with exposure to aerial defence platforms, electronic warfare, surveillance systems, avionics, naval platforms, unmanned systems, missile defence, and cybersecurity solutions.
- India's shifting strategic priorities are increasingly aligned with its ambition of transitioning from the world's second-largest defence importer (~9% share of global imports during 2020–24) to establishing itself as a net defence exporter. In pursuit of this shift, the government is accelerating the development of a robust domestic defence manufacturing ecosystem capable of fulfilling internal demand as well as expand its presence in the international markets.
- Rising capital expenditure by the Ministry of Defence (MoD), coupled with tighter import embargo are expected to serve as the structural growth drivers for the Indian defence industry. Increased investments in indigenized R&D, technology modernization, along with long term cross-border collaborations will be additional growth catalysts. These strategic initiatives are expected to drive up sector evolution visibility, strengthen indigenization, and reinforce the long-term growth runway for Indian defence OEMs and subsystem suppliers.

## Current armed conflicts in the world

Several armed conflicts are occurring simultaneously across the globe. These ongoing hostilities provide a broader context for the global defence industry and continue to reinforce its growth and long-term sustainability. Highlighted below are some of the key conflicts influencing specific regions.

### Middle East and North Africa: 45-Armed Conflicts

- The Middle East and North Africa (MENA) remain the most conflict-intensive region globally, with more than 45 active armed confrontations across key geographies including Cyprus, Egypt, Iraq, Iran, Israel, Libya, Morocco, Palestine, Syria, Turkey, Yemen, and Western Sahara.
- A large proportion of these are non-international armed conflicts (NIACs), driven by a diverse mix of armed groups and external interventions. Egypt and Turkey are notable exceptions, where NIACs are predominantly domestic in nature with limited foreign involvement.
- Syria continues to represent the deepest center of instability within MENA. The country faces multiple overlapping NIACs as well as three international armed conflicts. Accordingly, this happens to be the most complex geography from the perspective of defence.
- While these dynamics intensify geopolitical risk and disrupt supply chains, they simultaneously reinforce long-term demand visibility for defence and security-related capabilities.

### Africa: 35-Armed Conflicts

- Africa comes second in the number of armed conflicts per region with more than 35 NIACs taking place in Burkina Faso, Cameroon, the Central African Republic (CAR), the Democratic Republic of Congo, Ethiopia, Mali, Mozambique, Nigeria, Senegal, Somalia, and Sudan. Several armed groups fighting against government forces and/or against each other are involved in these conflicts. There are involvements of various western powers and neighboring countries as well, adding to the overall complexity.

### Asia: 21-Armed Conflicts

- Asia is currently the site of 19 NIACs involving various armed groups across Afghanistan, India, Myanmar, Pakistan, and the Philippines. Asian region also faces two ongoing international armed conflicts—between India and Pakistan, and between India and China. These conflicts add to the overall geopolitical unrest.
- Pakistan and the Philippines account for the highest number of NIACs. In Pakistan, government forces are engaged in conflicts with multiple armed groups operating across the country with separatist movements in Baluchistan taking the center stage. In the Philippines, most NIACs are concentrated in the Mindanao region, where government forces conflict with several armed organizations.

### Europe: Seven-Armed Conflicts

- Military occupations constitute most of Europe's active armed conflicts, accounting for four of the region's seven ongoing confrontations. Russia currently occupies or has a military presence in Crimea (Ukraine), (Moldova), as well as South Ossetia and Abkhazia (Georgia). On the similar lines, Armenia continues to occupy parts of Nagorno-Karabakh (Azerbaijan). In addition, Europe remains the site of an international armed conflict between Russia and Ukraine, along with two NIACs in eastern Ukraine, where government forces are engaged with the self-proclaimed local powers in the regions of Donetsk and Luhansk (cities of Ukraine).

### Latin America: Six-Armed Conflicts

- The six NIACs that are taking place in the region are split evenly between Mexico and Colombia. While Colombia has experienced one of the longest NIACs in modern times and is still the site of three NIACs, Mexico is characterized by three NIACs involving gangs' drug cartels.

## Global firepower comparison

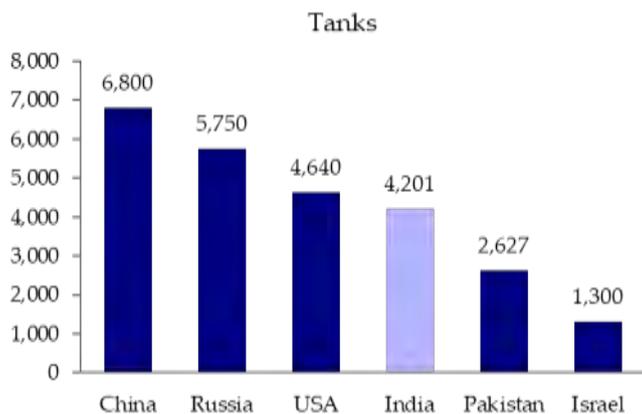
The table below provides a comparison across key countries for their firepower. This can be noticed that there is significant scope to expand in the naval segment for India (especially in submarines domain) which form the backbone for stealth offence and defence. Further, with respect to the air power, India has ambitious plans to indigenize fighter and mission critical airplanes, which needs to be monitored for execution. India has the second largest military force in the world by active personnel.

(Nos)	China	Pakistan	India	Russia	USA	Israel
Active Frontline Personnel	2035000	6, 54, 000	14, 55, 550	13, 20, 000	13, 28, 000	1, 70, 000
<b>Land System</b>						
Tanks	6, 800	2, 627	4, 201	5, 750	4, 640	1, 300
Armored Vehicles	1, 44, 017	17, 516	1, 48, 594	1, 31, 527	3, 91, 963	35, 985
Self-Propelled Artillery	3, 490	662	100	5, 168	671	352
Towed Artillery	1, 000	2, 629	3, 975	8, 505	1, 212	171
Mobile Rocket Projectors	2, 750	600	264	3, 005	641	183
<b>Air Power</b>						
Total Aircraft	3, 309	1, 399	2, 229	4, 292	13, 043	611
Fighter Aircraft	1, 212	328	513	833	1, 790	240
Dedicated Attack	371	90	130	689	889	38
Transport	289	64	270	456	918	13
Trainer Aircraft	402	565	351	611	2, 647	159
Special Mission Aircraft	112	27	74	141	647	19
Helicopters	913	373	899	1, 651	5, 843	147
Attack Helicopters	281	57	80	557	1, 002	48
<b>Naval Power</b>						
Total Naval Fleet Strength	754	121	293	419	440	62
Aircraft carriers	3	-	2	1	11	-
Helicopter Carriers	4	-	0	-	9	-
Submarine	61	8	18	63	70	5
Destroyers	50	-	13	10	81	-
Frigates	47	9	14	12	-	-
Corvettes	72	9	18	83	23	7
Patrol Vessel	150	69	135	123	0	46
Mine Warfare	36	3	0	47	8	-

Source: Global Firepower Index, HSIE Research

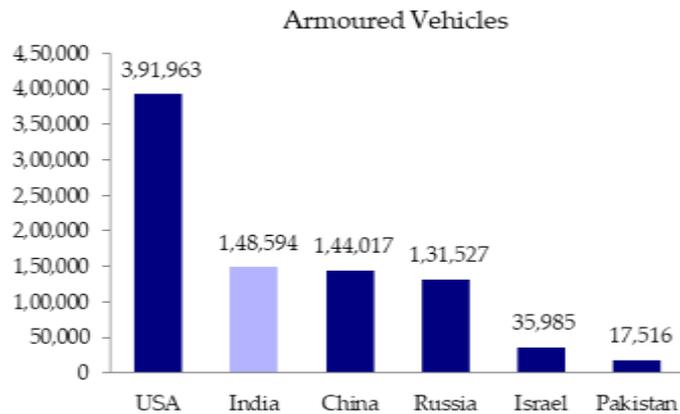
## Sector Thematic: Defence

### India at rank 4 w.r.t tanks



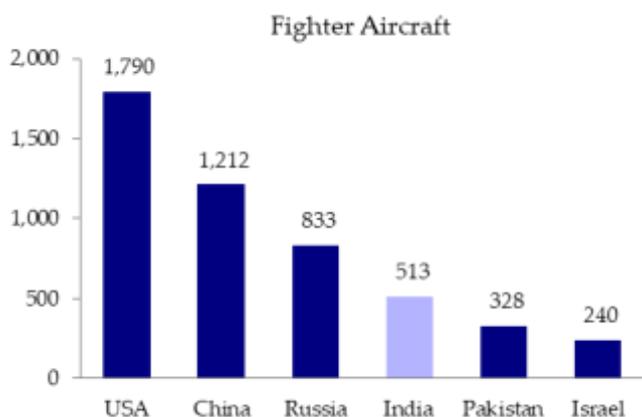
Source: Global Firepower Index, HSIE Research

### USA leading with an undisputed margin in vehicles



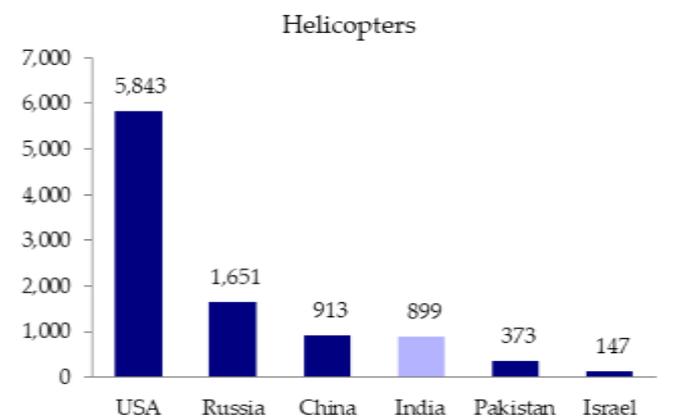
Source: Global Firepower Index, HSIE Research

### USA leading with the most fighter aircrafts



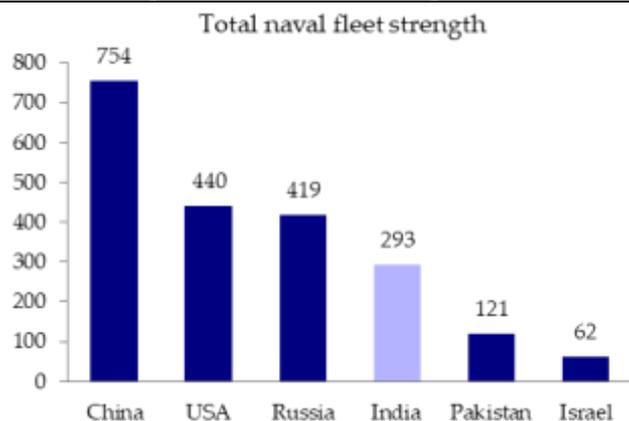
Source: Global Firepower Index, HSIE Research

### India close to China with number of helicopters



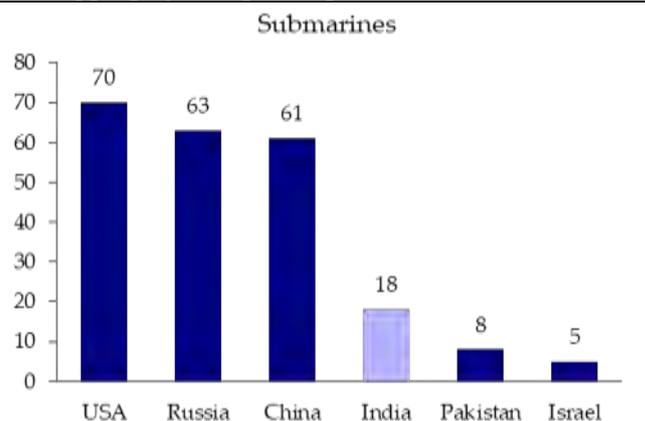
Source: Global Firepower Index, HSIE Research

### China leading with naval fleet strength



Source: Global Firepower Index, HSIE Research

### India lagging by a huge margin in submarines



Source: Global Firepower Index, HSIE Research

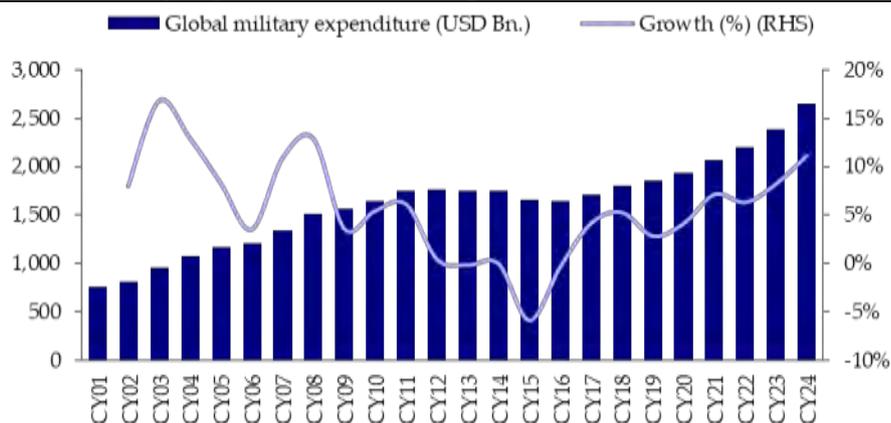
## Global Military Expenditure

Worldwide Military Expenditure have increased drastically over the past 5 years owing to full blown armed conflicts like Ukraine-Russia, Armenia-Azerbaijan etc. The last 15-year CAGR of global military expenditure was 3.6% and the 10-year CAGR was 4.2%. However, the recent 5-year CAGR has risen to 7.4% and the last 3-year CAGR to a whopping 8.6% (calculated at given year exchange rates). The global military expenditure in 2001 was USD 755 Bn, which rose to USD 2653 Bn in 2024.

As per industry estimates, global defence expenditure is projected to grow at a CAGR of 5% over CY24–30. This steady increase reflects ongoing efforts by nations to strengthen military capabilities through large-scale modernization programs. Beyond pure budget expansion, the focus of military spending is evolving. Countries are prioritizing the development of domestic defence ecosystems, with rising allocations toward indigenous manufacturing, adoption of advanced technologies, and enhanced training methodologies. Notably, simulation-based training is gaining traction as a cost-efficient and effective tool for improving combat readiness.

A growing number of nations including the UAE, Indonesia, Saudi Arabia, South Korea, Kuwait, India, and Oman are strategically channeling investments into building local defence industries while simultaneously bolstering the operational strength of their armed forces. This trend underscores a broader global pivot towards self-reliance in defence manufacturing.

### Global military expenditure was the highest in CY24



Source: SIPRI, HSIE Research

### Global defence outlay vs India (USD Bn)

Year	World	India	CAGR (%) World	CAGR (%) India
2017	1716	65		
2024	2653	86	6.4%	4.2%
2030E	3555	125	5.0%	6.4%

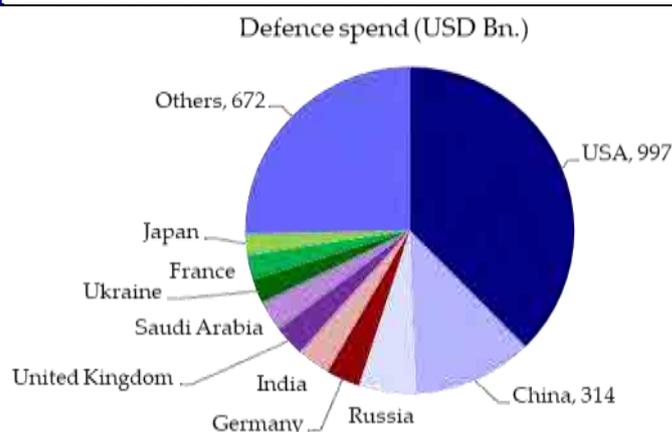
Source: SIPRI, HSIE Research

India is estimated to accelerate its defence expenditure during 2024-2030E at a CAGR of 6.4% as against 4.2% in the 2017-2024 period. In this way, India will grow its military expenditure faster than that of the world.

## Leading countries in military expenditure

- The USA remains by far the largest global defence spender, disbursing USD 997 billion in 2024—equivalent to ~3.4% of its GDP and accounting for roughly 37% of total global military outlay. Pre-war, India ranked third in defence spending but has since slipped to fourth, with its FY25 allocation representing just above 2% of GDP, despite posting a 7–8% CAGR since FY20. Meanwhile, the US–China strategic competition in areas such as naval and aerospace capabilities continue to drive elevated spending levels by both nations.
- Europe has witnessed a sharp acceleration in defence budgets surging ~17% in 2024 to reach USD 693 bn with nearly all countries increasing allocation, propelled by the Russia–Ukraine conflict. Ukraine’s military burden remains extraordinarily high. In 2024, spending soared to 34% of GDP, the highest globally, though slightly down from 37% in the previous year. Notably, Ukraine is also adjusting its 2025 budget to allocate approximately 26% of GDP toward defence amid the extended conflict.
- Saudi Arabia now leads the global ranking in military burden, with defence expenditure at ~7.3% of GDP well above the UK’s 2.3%. Globally, inflation in CY24 significantly diluted real spending increases, as rising costs eroded purchasing power even in cases with nominal budget expansions.
- Complementing these budgetary trends, a growing number of countries are pursuing strategic self-reliance in defence through localization of production, investing in local manufacturing capabilities, technology development, and ecosystem building to reduce dependence on imports.
- This evolving landscape underscores a structural shift: geopolitical friction is fueling elevated and sustained defence outlays, while the push toward indigenization is creating long-term opportunities in domestic defence industries. For Indian manufacturers, this global momentum aligns well with India’s own import-to-export transition suggesting stronger order visibility and margin expansion ahead.

### USA spends close to USD 1 trn on defence in CY24



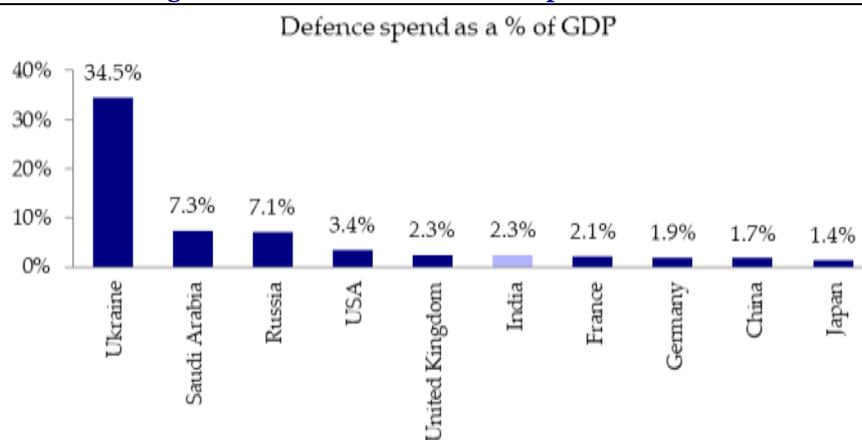
Source: SIPRI, HSIE Research

### India exhibiting moderate defence spend growth over the years vis-à-vis others

Country	Defence spending (USD Bn)				CAGR (%)		
	1994	2004	2014	2024	1994-2004	2004-2014	2014-2024
United States of America	308	493	648	997	4.8%	2.8%	4.4%
China	10	38	182	314	14.4%	17.0%	5.6%
Russia	14	21	85	149	4.5%	15.0%	5.8%
India	9	20	51	86	8.6%	9.7%	5.4%
United Kingdom	39	60	67	82	4.6%	1.1%	2.0%
Saudi Arabia	14	21	81	80	3.9%	14.5%	-0.1%
Ukraine	1	2	4	65	6.3%	8.9%	32.2%
France	37	45	53	65	1.8%	1.8%	2.0%
Israel	8	9	18	47	1.0%	7.5%	10.1%
Pakistan	3	4	9	10	2.2%	7.7%	1.6%

Source: SIPRI, HSIE Research

### Ukraine leading in CY24 due to war related expenditure



Source: SIPRI, HSIE Research

## Top defence contractors' comparison across the world

Companies which have outperformed the sector in terms of revenue and PAT have been adequately rewarded by investors. The same companies are trading at a premium multiple to the industry, with growth levers still intact, this can be observed in the case of Rheinmetall and SAAB AB, whose order books have also expanded significantly. The comparison can be seen in the table below.

Company	Market Cap (USD Bn)	5-year Stock return (%)	Current 1 yr fwd PE (x)	Past 5-year revenue CAGR (%)	Past 5-year PAT CAGR (%)	Revenue CAGR (CY25-CY28E) (%)	PAT CAGR (CY25-CY28E) (%)	Nature of products
RTX (USA)	272	169.5	29.7	9.4	N/A	6.1	8.7	Aircraft and Engine manufacturer
Safran (France)	167	185.5	33.1	1.3	N/A	10	-6.2	Engine, Optronics and Navigation
Lockheed Martin (USA)	152	93.3	22.1	2.8	-6.0	4.9	15.4	Aircraft, Missiles, lead Integrator
Northrop Grumman (USA)	103	140.7	25.9	2.7	5.6	5.4	6.4	Space, Stealth, Autonomous Vehicles
General Dynamics (USA)	97	109.4	22.0	6.7	5.9	4.3	7.9	Heavy metal engineering such as tanks and submarines
Rheinmetall (Germany)	90	1874.3	66.3	8.5	15.6	28.4	54.4	Vehicles, ammunition and lead integrators for armored vehicles and air defence systems
BAE Systems (UK)	83	341.4	25.4	7.5	5.8	8.1	10.9	Warship, fighter jet and combat vehicle integrator
L3Harris Technologies (USA)	68	94.9	30.5	3.7	7.5	7.4	13.6	C5ISR, Comms, electronics for all platforms
Thales (France)	62	220.7	27.1	1.6	4.1	7.5	10.2	Radars, Sensors, Electronics
SAAB AB (Sweden)	39	1063.7	45.2	17.4	42.2	19.5	24.2	Jets, Submarines, Lead integrator

Source: Bloomberg, HSIE Research

## India's Strategic Spend

India stands today as the world's fourth-largest defence spender and one of its fastest-expanding markets. In alignment with the "Viksit Bharat 2047" vision—India's roadmap to becoming a developed nation—defence is emerging as a strategic growth sector. The FY27 Union Budget allocated INR 7.8 tn (USD 85 bn), up ~15% year-on-year, representing ~14.7% of the union budget and ~2% of nominal GDP. Roughly 28% of this allocation, or INR 2.2 tn (USD 25 bn), is dedicated to capital expenditure aimed at capability enhancement with cutting edge, niche technology, lethal weapons, fighter aircraft, ships, platforms, UAVs/Drones, specialist vehicles and more.

India's investment planning under the Long-Term Integrated Perspective Plan (LTIPP) continues to guide the Armed Forces' capability development over a 15-year horizon, with a shift toward a more synchronized Integrated Capability Development Plan (ICDP), framed to foster inter-service synergy and long-term modernization. The government is also institutionalizing reforms through initiatives like the Technology Perspective & Capability Roadmap (TPCR) 2025 and a new Joint Doctrine for Multi-Domain Operations (MDO), unveiled in August 2025, which define future combat architecture and reinforce the indigenous tech ecosystem.

## Strategic Implications

- **Balanced Allocation:** With capital outlay comprising more than one-quarter of the defence budget, India's investment profile remains steady, albeit trailing developed peers (e. g., the US caps around 37%). However, the FY27 allocation provides a solid runway for modernisation projects.
- **Long-Term Visionary Framework:** LTIPP and its evolution into ICDP underpins a structured macro-level roadmap, mitigating previous planning bottlenecks.
- **Technology-driven capabilities:** The dual deployment of TPCR and MDO doctrine reflects a deliberate pivot towards innovation. This developmental alignment ensures the defence industry and R&D institutions are channelled toward strategic, homegrown solutions.

## Indian defence industry to benefit from the European Union's €800bn rearmament plan

The European Union's €800bn rearmament program represents a structural opportunity for Indian defence manufacturers to extend their global reach. Europe remains heavily import-dependent, with ~78% of procurement since 2022 sourced outside the union including ~63% from the USA leaving a sizeable opening for competitive suppliers.

India's defence ecosystem is now positioned to capitalize on this gap. Companies such as HAL, BEL, and BDL have scaled capabilities across a diversified product suite. These offerings range from 155mm artillery systems, Akash surface-to-air missiles, Pinaka rocket launchers, and BrahMos supersonic missiles to Dornier-228 aircraft, surveillance radars, and advanced night-vision equipment. Many of these combat-proven platforms are export-ready and fit effectively into Europe's urgent requirement for cost-efficient, interoperable sub-systems and components.

### India's Defence exports are poised for rapid growth

- India's footprint in the global arms trade remains modest so far, contributing only 0.2% of global exports in 2020–24, while ironically ranking as the world's largest arms importer with a 9.8% share of global imports in 2019–23 and 8.3% in 2020-24. Exports have so far been limited in scale, but been spread across more than fifty recipient states including Myanmar, Vietnam, and Armenia, largely in the form of niche platforms such as radar systems, small arms, or components and some full-scale platforms and missiles like Brahmos, etc.
- By contrast, the global export market remains highly concentrated, with the US commanding 43% of exports and France 9.6%, highlighting the gap between incumbents and the new entrants.
- Yet, this disparity highlights not just India's under-representation, but also the headroom for its growth. With policy frameworks like 'Make in India', embargoes on imports, rising domestic production capacity, and a sharper focus on R&D and joint ventures, India is steadily building the industrial depth to reposition itself as a credible supplier. The government's export push, coupled with increasing demand from regions such as Southeast Asia, Africa, and Eastern Europe, provides a structural runway for India to expand its share in the global exports.
- Since FY14, India's defence exports have surged from INR 7bn to INR 234bn in FY25, marking a 34-fold growth. Key indicators and strategic levers suggest this upward trajectory would accelerate from here.

### Key export growth drivers & strategic enablers

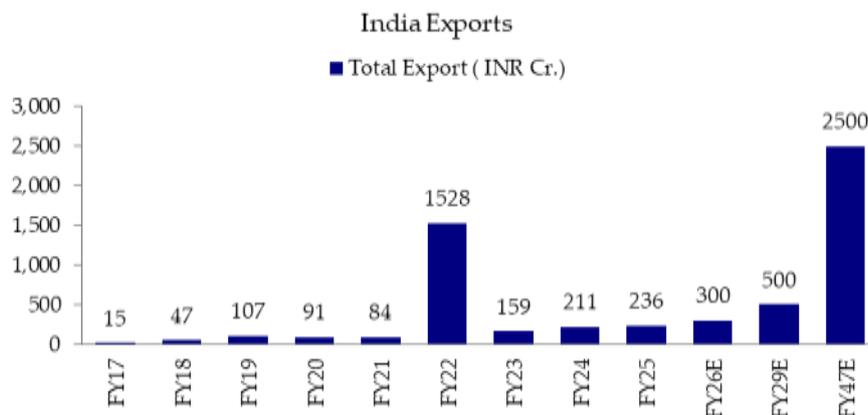
- **Policy Push & Simplification:** The Make in India initiative, along with defence production policy reforms such as indigenization lists, licensing streamlining, and export authorizations have eased entry barriers and sped up approvals. In FY25, a total of 1,762 export authorizations were issued, up from 1,507 in FY24. Further, no. of exporters increased by ~17% in this period.
- **Expanding Product Portfolio:** Indian exports now include a wider array of platforms which includes Dornier-228 aircrafts, light utility helicopters, interceptor boats, lightweight torpedoes, radar systems, bulletproof jackets, and explosives. Diversification reduces dependency on a few product lines which favors Indian defence MSMEs with smaller balance sheets.

## Sector Thematic: Defence

Additionally, export of platforms brings ancillary exports of sub-systems/components, creating multiplier effects

- **Private sector participation to drive exports growth:** Defence production crossed INR 1.27 trn in FY24 with a rising private sector participation. India's new ordnance companies (from OFB corporatization) are hitting export records and demonstrating profit potential. Private firms are expected to be more agile in cost reduction, product innovation and global partnerships. Scaling capacity and skill sets will enable export competitiveness with respect to price and quality.
- **Global Demand Tailwinds:** EU's rearmament push, NATO's procurement needs, supply chain disruptions during conflicts such as Russia-Ukraine create opportunity zones for suppliers outside traditional exporters. Indian exporters can leverage their lower cost structure with growing product credibility to win supply contracts.
- **Export Targets & Strategic Infrastructure:** Govt aims to increase exports to INR 500 bn by 2029. Strategic defence corridors in Uttar Pradesh and Tamil Nadu and encouraging state-level policies are expected to drive exports. Investment in scale of facilities, supply chain localization, skilled workforce creation, quality & certification will be essential.
- Below chart highlights rapid growth of defence exports of India. Government ambition of reaching INR 500bn exports by FY29 is expected to continue the growth.

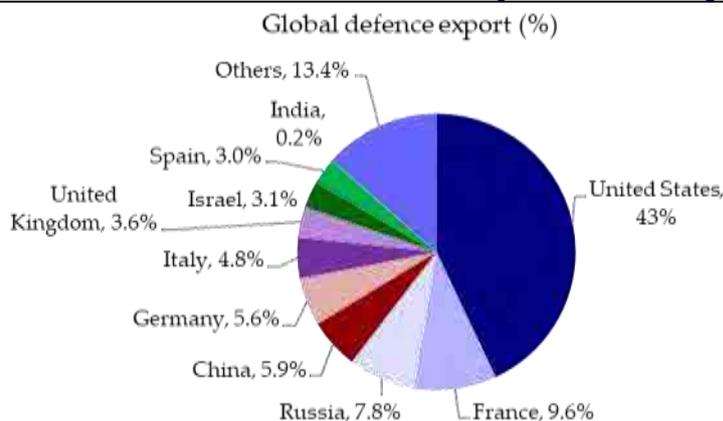
### India on track to achieve its defence export ambitions



Source: GoI, HSIE Research

Despite the growth mentioned above, it can be observed from the below pie-chart that India's contribution to global exports is miniscule at 0.2%. USA, France, Russia, China and Germany account for ~73% of global defence exports.

### USA France and Russia accounted for ~60% of global defence exports in CY24



Source: SIPRI, HSIE Research

The table below highlights the top exporting countries and their main counterparts. It can be noticed that India mainly relies upon Russia, France, and Israel for its defence imports.

Supplier	Share of global arms exports (%) (2020-24)	1st main recipient (%)	2nd Main recipient (%)	3rd Main Recipient (%)
United States	43%	Saudi Arabia (12)	Ukraine (9.3)	Japan (8.8)
France	9.6%	India (28)	Qatar (9.7)	Greece (8.3)
Russia	7.8%	India (38)	China (17)	Kazakhstan (11)
China	5.9%	Pakistan (63)	Serbia (6.8)	Thailand (4.6)
Germany	5.6%	Ukraine (19)	Egypt (19)	Israel (11)
Italy	4.8%	Qatar (28)	Egypt (18)	Kuwait (18)
United Kingdom	3.6%	Qatar (28)	United States (16)	Ukraine (10)
Israel	3.1%	India (34)	United States (13)	Philippines (8.1)
Spain	3.0%	Saudi Arabia (24)	Australia (18)	Turkiye (13)
India	0.2%	Myanmar (56)	Armenia (20)	Viet Nam (11)
Others	13.4%	NA	NA	NA

Source: SIPRI, HSIE Research

### India's defence imports decline as self-reliance increases

India remains the world's second-largest arms importer, trailing only Ukraine, as reflected in the below table. While the import reliance remained elevated, but the salience moderated, as India reported a 9.3% decline in imports during 2020–2024 as compared to 2015–2019. This reflects a decisive strategic shift. Historically, persistent border frictions with China and Pakistan anchored India's reliance on foreign procurement. Today, however, the policy landscape is being redefined by indigenization mandates and supplier diversification, materially reducing external dependency.

Rank	Importer	Share of global arms imports (%)	1st Main Supplier (%)	2nd Main Supplier (%)	3rd Main Supplier (%)
1	Ukraine	8.80%	United States (45)	Germany (12)	Poland (11)
2	India	8.30%	Russia (36)	France (33)	Israel (13)
3	Qatar	6.80%	United States (48)	Italy (20)	United Kingdom (15)
4	Saudi Arabia	6.80%	United States (74)	Spain (10)	France (6.2)
5	Pakistan	4.60%	China (81)	Netherlands (5.5)	Türkiye (3.8)

Source: SIPRI, HSIE Research

The steady decline in India's arms imports reflects a combination of external constraints and internal strategy. Russia as India's dominant supplier saw its share fall to 36% in 2020–24 from 55% in 2015–19, driven by sanctions, supply chain stress, and capacity diversion to the Ukraine conflict.

In the same period, India has deliberately pivoted towards western partners notably France (Rafale, Scorpene-class submarines) and the USA (P-8I aircraft, MH-60R helicopters) to secure advanced technologies and reduce single-vendor dependence. Despite this rebalancing, Russia remains a key supplier, with continued delivery of advanced platforms such as S-400 air defence system and T-90 tanks.

India's procurement trajectory is now being reshaped by policy reforms. The government's multi-pronged framework Defence acquisition procedure (DAP-2020), successive positive indigenization lists (PILs) banning over 500 items from import, and a cap of 75% of FY25–26 capital procurement reserved for domestic sourcing directly constrains future import volumes. Programs such as the Light Combat Aircraft (LCA) Tejas, Akash SAM, Pinaka MBRL, and the upcoming Advanced Medium Combat Aircraft (AMCA) illustrate how system-level platforms are moving from prototype to serial production, replacing foreign analogues.

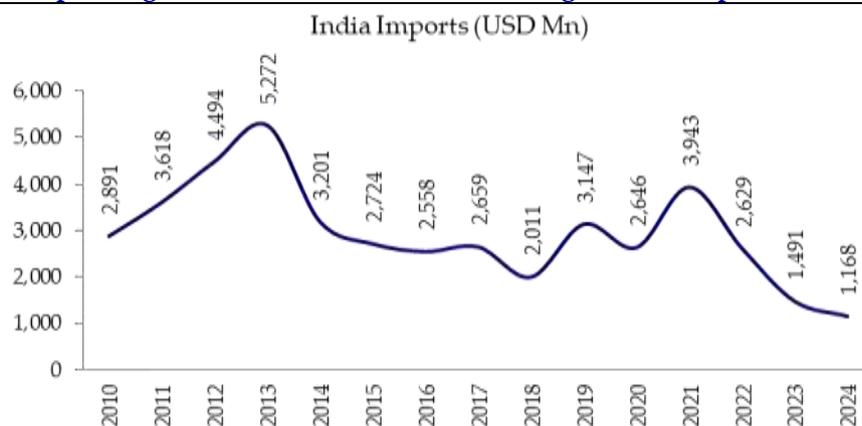
At the same time, India is investing in developing technology depth from engine development to electronics and sensors manufacturing while fostering JV structures to accelerate localization of complex systems such as BrahMos (with Russia and AK-203 rifles with Kalashnikov, Russia). This reduces lifecycle import intensity by substituting recurring MRO (maintenance, repair, overhaul) expenditure with domestic supply.

We believe India's import substitution story is still in its early phase. The structural reforms embedded in procurement policy, coupled with rising budgetary allocations, suggest a multi-year reduction in import dependence. This would benefit domestic ecosystem in two following ways:

1. It would mean volume growth visibility for Indian OEMs and DPSUs, driven by the mandatory redirection of procurement flows into the domestic ecosystem.
2. This would also result in margin stability for companies as domestic firms capture not just platform sales, but also the long tail of spares, upgrades, and MRO revenues which previously used to be awarded to foreign suppliers.

The chart below reflects moderation in imports of defence goods from relatively higher levels in the past. In our view, this transition underpins the long-term earnings trajectory for the listed players, while opening doors for private subsystems manufacturers (such as UAVs, radars, avionics). Overtime, India's declining import dependence should be seen not only as a fiscal efficiency move but as a structural growth driver for the defence sector companies.

### India pushing for self-reliance while controlling defence imports



Source: GoI, HSIE Research

We see India's declining import reliance not as a cyclical dip but as a structural pivot, reinforced by the strategy of diversification abroad and indigenization at home. This translates into sustained visibility for domestic OEM order books, reduced forex risk, and a higher share of lifecycle revenues accruing to listed Indian defence companies.

## Technological innovation driving future of global defence

### Drone Disruption: Reshaping the Defence Industry

The Ukraine war and the most recent Iran Israel conflict have transformed drones from experimental defence accessory into essential battlefield weaponry, leading militaries, and investors to rethink the economics of defence. Cheap, agile, rapidly iterated drones have proven more effective in creating intended damage to enemy infrastructure than slower, heavier, and more expensive traditional platforms. Hence, most large militaries of the world are focusing on developing scalable drones and counter-drone systems for being ahead of enemies in future high-intensity conflicts.

### Global drone market: Scale and acceleration

- As per industry estimates, the global military drone market is estimated to reach USD 40bn by 2030 from current level of USD 26 bn at a healthy CAGR of ~9%.
- Meanwhile, the counter-drone (C-UAV) market—currently in an early stage of development—is expected to grow rapidly at a CAGR of approximately 21%, increasing from a small base of around USD 3.9 bn in 2025 to nearly USD 10 bn by 2030.
- In this context, it can be highlighted that real-world adoption of drones is unprecedented. Ukraine has deployed lakhs of drones since 2022, highlighting its offensive and defensive demand, both.

**Emerging trends:** There are several emerging trends which are key monitorable for the sector.

- The cost parity now favors mass-produced, dispensable drones over legacy systems.
- Drones for intelligence, surveillance, and reconnaissance (ISR) & loitering munitions lead the demand as these categories represent the fastest-growing niches across NATO markets.
- Drone proliferation fuels equally large investments in counter drone (C-UAV) detection, disruption, and directed-energy systems.

### Geopolitical advantages:

- USA leads in capability, fleet size, and venture funding.
- China dominates production volume, especially for commercial UAVs.
- Russia is scaling military drone output but relies heavily on Chinese technology for their production.
- EU adoption remains fragmented across countries and hence is moving slowing with respect to the procurement.

## India's Strategic Opportunity

India is aligning its policies with this global shift.

- The domestic UAV market is estimated to reach USD 1.4bn by 2030 from 0.5 bn in 2025 at a rapid CAGR of 24.4%, driven by PLI schemes, import restrictions, and establishment of state-led defence clusters.
- The MoD is actively supporting indigenous UAV development, ISR drones, loitering munitions, and payloads in built with electro optical sensors.
- Rising demand for counter-drone systems such as radars, RF jammers, and interceptors is evident after recent border and maritime incidents.
- We believe the listed MSMEs, and private OEMs in UAV segment are capability wise equipped but need to build capacities to capture both domestic contracts and exports.

We estimate drones as the single most disruptive force in global defence markets for this decade. It can be observed that the economics of drones have now shifted from precision to adaptability. It has opened the sector to startups and new suppliers, while creating pressing counter-drone demand. Additionally, the convergence of policy push (Make in India, PLI, import bans) and rising global demand provides a dual opportunity namely import substitution for domestic offtake and exports for global markets.

## Space militarization: The Next strategic growth market

The militarization of space has shifted from long-term theoretical concept to a near-term commercial procurement driver. Operational reliance of modern militaries on space assets (such as ISR, SATCOM, PNT, and missile warning) have turned space into a contested domain. Counterspace capabilities including anti-satellite (ASAT) weapons, directed-energy systems, and resilient satellite constellations are now central to defence budgets of various countries.

## Global Investment Landscape

- **United States (64% of global space budgets in 2023):** USA leads in resilient constellations, missile warning, and secure SATCOM. Programs such as proliferated small satellite constellations make US space assets harder to disrupt.
- **Europe (~11% of global space budgets):** France is spearheading military space with a EUR 6bn program in the fields of patrol spacecraft, space monitoring, and laser defence. Airbus, Thales, Leonardo, and BAE are pivoting to dual-use and military space segments, but scale and integration lag their US peers.
- **China & Russia:** They are expanding counterspace cooperation to offset US dominance. Their priorities include missile defence, space based ISR and anti-satellite (ASAT). Both nations are testing kinetic and electronic counterspace systems at scale.
- Since 2019, the US, Russia, China, and India have all conducted anti-satellite (ASAT) demonstrations. Products and solutions such as space-based jamming and laser systems are moving from R&D into live procurements.

## Technology & Architectural Trends

- **Space domain awareness (SDA):** High-priority investments being made in products such as radars and optical tracking apart from data fusion to detect hostile actions.
- **Active counterspace:** Procurement of ASAT interceptors, jammers, and directed-energy systems is accelerating.
- **On-orbit services:** Debris mitigation, refueling of spacecrafts in space and repair are emerging commercial-defence niches.

## India's Positioning in space market

India is building institutional and industrial capacity to join the space-defence race.

- **Institutional capacity building:** Defence space agency was established in 2019 to enhance military space capabilities. Furthermore, India conducted Mission Shakti, a successful anti-satellite (ASAT) missile test that made it the fourth nation in the world with the ability to neutralize enemy satellites. Also, ISRO developed GSAT-7A, an advanced military communication satellite to enhance network-centric warfare capabilities for the Indian Air Force (IAF) and Army. In addition to the above, ISRO launched a spy satellite EMISAT in 2019, designed for electromagnetic spectrum measurement and Electronic Intelligence (ELINT).
- **Policy & industry:** IN-SPACE and NSIL reforms enable private participation. start-ups like Digantara and Bellatrix are scaling SDA and propulsion capabilities. Various collaborations of Indian firms such as Astroscale highlight India's integration into the global on-orbit ecosystem.
- **Market opportunity:** India's competitive edge lies in small satellite manufacturing, secure SATCOM, and cost-efficient launch services. These are suitable for catering both domestic requirements and export demand from cost-sensitive regions.

## Global Defence Trends & India's Strategic Opportunity

- Global defence has entered a structurally elevated spending regime driven by sustained geopolitical friction, shifting warfare modalities and a technology-led modernization cycle. Defence outlays that climbed sharply after 2014 and further accelerated post-2022 now total well over USD 2.65tn. Industry estimates point to a multi-year expansion at a pace of ~5% CAGR, which is much higher than global GDP growth. The immediate drivers for this growth are clear: great-power competition (US–China–Russia), regional wars that accelerate procurement, and a demand pivot to modern technologies that change battlefield economics.
- Two structural forces are re-shaping winners and value capture.
  - First, procurement is moving from monolithic platforms to disaggregated, software-rich systems (small satellites, UAS, sensor suites, and C-UAV layers) that favor firms with modular hardware and software stacks. An example is Data patterns offering modular COTS which make their products cheaper and deliver faster.
  - Second, governments are combining higher defence budgets with favorable industrial policies (localization, PLI, indigenization lists, JV requirements), which redirects a larger share of lifetime revenue (platform + spares + MRO) toward domestic suppliers.

Both these trends expand addressable markets for niche innovators while creating a sustained order book for larger integrators.

India sits at the intersection of demand and supply transformation. Its rising defence budget trajectory, institutional policy framework and developing defence MSME ecosystem provide an actionable program of modernization and indigenization. Concurrently, India's import dependence is easing even as exports accelerate from modest bases to INR 234 bn in FY25. These shifts convert sovereign demand into durable revenue for domestic OEMs and create export windows, primarily led by Europe's rearmament and NATO procurement gaps.

### Key monitorable from India's perspective:

- Annual defence capex allocation and awarding of defence contracts which will reflect in orderbook growth of the defence companies.
- Export authorizations by MoD and major JV/MoU wins
- Positive Indigenization list updates & PLI winners for supply-chain market access
- Developments in high-growth technology segments such as drones (UAS/loitering munitions), C-UAV, SDA / space-defence, and advanced sensors/EW.
- Order backlog growth of large defence companies (such as HAL, BEL, MDL) and private OEMs (Bharat forge, L&T, Tata advanced systems) along with margin expansion in spares & MRO.

Geopolitical conflicts have made defence spending structural from being cyclical for various countries. India's policy push along with rapid development of defence industrial ecosystem enable Indian defence companies well positioned to capitalize on this structural defence expenditure growth. Hence, Indian defence manufacturers and select specialist suppliers are expected to participate in this multi-year growth story which will reflect in their long-term earnings growth and market capitalization.

## Indian Defence Industry

### Evolution of India's Defence Procurement & Production Policies

#### Pre-1947 (Colonial era)

- In this phase of the country, British authorities established India's ordnance industry with factories in Cossipore and Ishapore (both near Kolkata) to supply the colonial army. Major weapons were imported from Britain and local production was limited to small military stores supplying uniforms, small arms, and ammunition to the army. Policy under colonial rule clearly avoided building a heavy arms industry in India.

#### 1947-1960s (State-led Build-up)

- Independent India adopted a socialist industrial policy in 1956 that reserved defence production for the public sector. New defence public sector entities (DPSUs) were established (such as Hindustan aeronautics Ltd, Bharat electronics Ltd, Mazagon dock, etc.). Ordnance factories expanded during this period and DRDO was formed in 1958.
- These new defence entities were established through heavy state investment and licensing of technology from allies. By the late 1960s While India could produce basic equipment domestically, but still imported advanced systems (aircrafts, ships, tanks) due to capability gaps. Challenges of this phase were slow ramp-up and continued foreign dependence.

#### 1962-1971(Wartime Shock)

- The 1962 Sino-Indian war exposed extreme shortages of ammunition and even basic supplies such as winter clothing for the Army. In the 1965 and 1971 wars, India fought largely with the outdated World War 2 era tanks and aircrafts against better-equipped enemy countries.
- In this context, the policy response was emergency procurement. Pursuant to this policy, India accelerated imports and signed license-production deals (such as MiG aircraft assembly) to plug critical gaps. Soviet Union was a major ally for importing weapons, aircrafts, tanks, ships, and other required equipment. These conflicts highlighted the need for indigenization, but the rapid solutions remained import reliant.

#### 1980-2000 (DRDO & OFB Centric Era)

- The government focused on a DRDO-led R&D model and expanded state production of missiles, avionics, naval systems.
- Ordnance Factories under OFB and DPSUs produced ammunition, small arms, and basic hardware. By the end of this phase, no. of DPSUs had grown to nine. This period witnessed beginning of notable indigenous programs such as Integrated guided missile development program (IGMDP) and LCA Tejas aircraft.
- While these efforts marked the formal beginning of self-reliance journey of the country, domestic industry remained largely limited due to lack of technological advancement. As a result, India still was one of the largest arms importers of the world.
- By the year 2000, India still imported 65-70% of defence products requirement as production inefficiency and quality issues of DPSUs and Ordnance factories were yet to be resolved. The 1991 economic liberalisation began to loosen controls, but defence reforms lagged.

### 2001–2014 (Initial Reforms)

- The year 2001 witnessed the sector opening to 100% private participation with FDI allowed up to 26% under the government approval route. Later, FDI limit was increased to 49% in 2014 under government approval route.
- The first formal Defence Procurement Procedure (DPP 2002) was issued, introducing standardized procurement rules. Subsequent updates (DPP 2006, 2008, 2011) added Defence offset and Buy & Make (Indian) categories in the policy for the licensed production.
- Under the defence offset policy, foreign vendors must invest ~30% of contract value in India. Also, Buy & Make (Indian) category refers to an initial procurement of equipment in fully formed state from an Indian vendor engaged in a tie-up with a foreign OEM, followed by indigenous production in a phased manner involving transfer of critical technologies.
- Furthermore, DPP 2013 and 2016 raised the bar for indigenization, introducing the “Buy (Indian – IDDM)” category to favor indigenously designed products. As a result of these government initiatives, the private sector began supplying components and some platforms.
- Additionally, defence offset policy gave birth of several technology partnerships between private defence companies and foreign OEMs. Progressively more procurement was directed to Indian firms, but processes remained slow. Overall, imports remained high, but India built a more structured acquisition system.

### 2015–2025 (self-reliance initiatives)

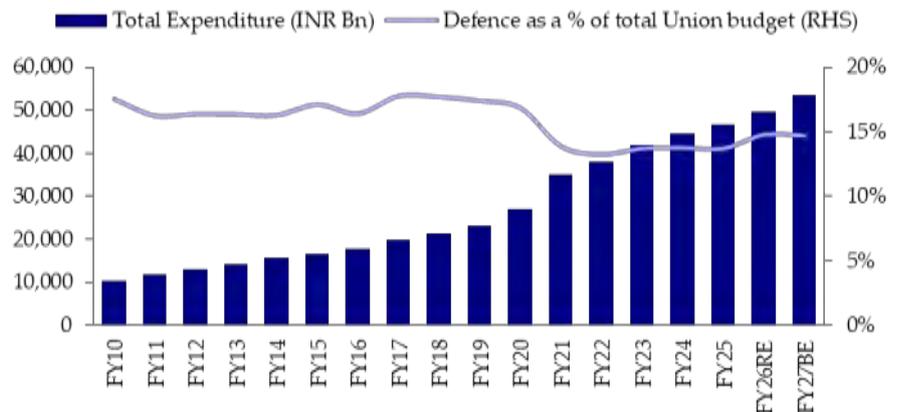
- In this phase, procurement process was streamlined and “AtmaNirbhar” principles were enforced.
- Furthermore, government allowed up to 74% FDI under the automatic route in 2020. FDI above 74% is allowed under the government approval route.
- New category “Buy global manufacture in India” was created to attract foreign OEMs to set up production facility in India.
- In this period, detailed indigenous content targets were raised. For example, domestic value addition required in buy- indigenously designed, developed, and manufactured (IDDM) category in DPP2016 was 40% which was raised to 50% in DAP 2020.
- Phased import embargo was imposed on over 1000 specified defence weapon/platform categories for implementation between 2023 and 2029, to enhance self-reliance and reduce foreign dependency.
- To support local production of defence components, there is a provision of waiver of trials if manufacturers provide Government Quality Assurance Certificates (GQACs) for subsystems.
- Among other reforms, Prime Minister’s Monitoring Unit (PMU) was established for time-bound decision-making. Additionally, Single stage “Acceptance of Necessity” (AoN) was started for proposals valued less than INR 5 bn. Faster contract negotiations, and only one major RFP stage for most deals facilitates faster awarding of orders.
- The easier procurement terms and higher indigenization quotas aim to boost domestic bidding, though full effects are still in the process of emerging.

## Defence Budget of India

Given its strategic nature, defence has been commanding a significant allocation of union budget over the years. The charts shown below reflect the trends over the years. Within defence budgetary allocations, capex share has remained in the range of 24-32%, which we believe is expected to continue in the coming years.

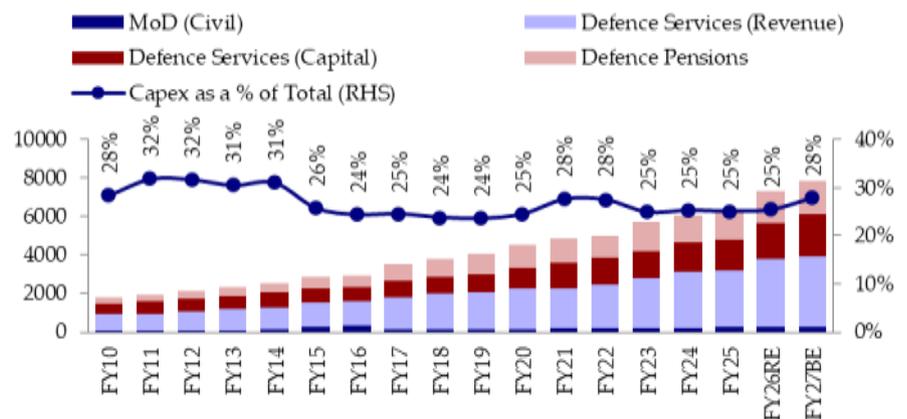
Among divisions of armed forces, Indian Airforce has been the primary area where capex allocation has remained substantial. In our view, this segment is expected to dominate in the forthcoming years too as ageing IAF aircrafts are replaced with LCA Tejas MK1A, Mk2, and AMCA.

### Defence budget (INR Bn): defence forms a major portion of union budget



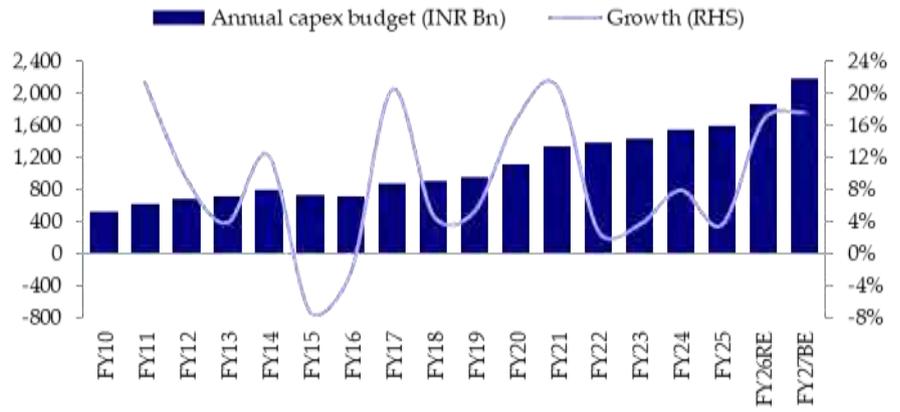
Source: Union Budget, HSIE Research

### Defence expenditure (INR Bn): capex allocation at consistently higher levels



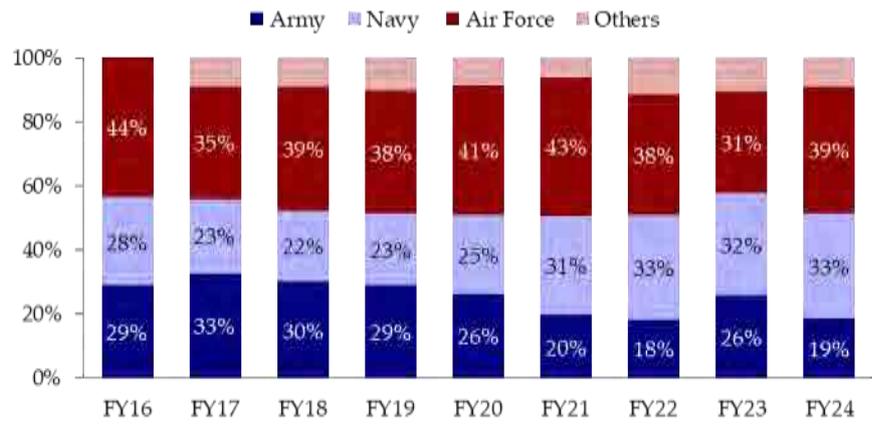
Source: Union Budget, HSIE Research

Annual capex growth rising strongly in FY27BE



Source: Union Budget, HSIE Research

Capex Budget Split: Airforce continues to command larger share than others



Source: Union Budget, HSIE Research

## Government policy initiatives to boost self-reliance and reduce imports.

The Government has taken several policy initiatives in the past few years and brought in reforms to encourage indigenous design, development, and manufacture of defence equipment in the country and to minimize the defence import by the Defence Public Sector Undertakings, thereby ensuring delivery of indigenous modern defence hardware to Indian Armed Forces.

These initiatives include priority to procurement of capital items from domestic sources under Defence Acquisition Procedure (DAP)-2020. Additionally, announcement of 18 major defence platforms for industry led design and developments has been instrumental. Furthermore, these strategic initiatives included notification of 'Positive Indigenisation List' of total 2851 items of DPSUs, for which there would be an embargo on the import beyond the timelines indicated against them. Implementation of public procurement (preference to Make in India) order 2017 and launch of an indigenization portal namely SRIJAN to facilitate indigenisation by Indian industry including MSMEs form backbone of government indigenisation strategy. Also, offset policy reforms with thrust on attracting investment along with Transfer of Technology for defence manufacturing, and establishment of two defence industrial corridors (Uttar Pradesh and Tamil Nadu) are expected to go a long way in implementing the government's vision.

Various government initiatives to enhance indigenisation and reduce imports are explained in the below sections.

## Key Procurement Categories under defence acquisition procedure (DAP) 2020

DAP 2020 has organized capital procurement of defence industry into five different categories: Various categories as defined by DAP 2020 in the order of hierarchy are explained below:

### Buy (Indian–IDDM)

- **Description:** Acquisition of an indigenously designed, developed, and manufactured product from an Indian vendor.
- **Eligibility:** Only Indian-owned entities (as per DAP's "Indian vendor" rules) can bid. Also, products must be of Indian design/development.
- **Minimum indigenous content (IC):** Greater than 50% of base contract cost
- **Participants:** Indian firms only; foreign firms are excluded.
- **Hierarchy:** Top priority.
- **Procedure:** Solicitation of domestic offers with emphasis on local R&D credentials; likely limited (indigenous) trials.
- **Offset:** N/A (no offset applicable since it involves only domestic supply).
- **Rationale:** This category rewards and sustains in-country R&D. By giving IDDM the highest preference, this category solves the problem of indigenous innovation. It incentivizes firms to invest in design because they get priority procurement without foreign competition.

### Buy (Indian)

- **Description:** Acquisition from an Indian vendor even if the product is not Indian designed.
- **Eligibility:** Indian vendors only.
- **Minimum indigenous content (IC):** 60% of cost if the product was *not* designed in India. However, if the product *is* indigenous, only 50% IC is needed.
- **Participants:** Only domestic manufacturers qualify.
- **Hierarchy:** Second priority.
- **Procedure:** Usual procurement steps (RFP, trials) with the condition of domestic assembly.
- **Offset:** N/A.
- **Rationale:** It ensures indigenization of production even for foreign-origin designs. It solves the problem of spares and equipment support by giving Indian firms the business if majority of value is local.

### Buy & Make (Indian)

- **Description:** Initial procurement in fully formed (FF) state from an Indian vendor partnered with a foreign OEM, followed by phased local production with transfer of technology.
- **Eligibility:** Indian vendor supplies initial quantity through a joint venture with foreign OEM, then builds more units locally.
- **Minimum indigenous content (IC):** Minimum IC greater than 50% of the Make portion of the contract (along with mandatory ToT of key technologies).
- **Participants:** Indian-led teams (sometimes with foreign OEM); foreigners cannot win an initial fully formed contract alone.
- **Hierarchy:** Middle priority.

- **Procedure:** A two-stage procedure is followed. Post RFP stage and trials for initial FF lot, a technology transfer (ToT) clause kicks in for the local manufacturing of components.
- **Offset:** N/A, as it involves domestic output.
- **Rationale:** It bridges capability gaps by importing technology. This category solves the twin problems of urgent need and local capacity-building. It forces an initial buy to meet requirements, but locks in domestic manufacturing and tech transfer thereafter.

### Buy (Global–Manufacture in India)

- **Description:** In new DAP-2020 (replacing the old “Buy & Make (Global)” category). equipment is purchased on the outright basis from the foreign vendors, followed by indigenous manufacturing of the equipment/spares in India via joint venture, subsidiary or an Indian production agency with ToT of critical technology.
- **Eligibility:** Foreign OEMs and any Indian partner may bid (even foreign-owned Indian companies can qualify as Indian bidders now).
- **Minimum indigenous content (IC):** greater than 50% of the total contract cost.
- **Participants:** Both foreign and Indian firms (often in partnership).
- **Hierarchy:** Fourth priority.
- **Procedure:** Foreign bid is evaluated as a Buy (global) case, but with mandatory ToT and local production. The contract can be concluded even without any initial FF procurement, if local manufacturing is guaranteed.
- **Offset:** Normally 30% offset is applicable if contract value is greater than INR 20 bn.
- **Rationale:** Provides a compromise for big-ticket foreign systems. India gets technology and builds domestically, while solving the problem of urgent requirements. It addresses import substitution by forcing the product to be made in India (unlike pure imports of Buy Global).

### Buy (Global)

- **Description:** Open tendering to foreign and Indian vendors for ready-made equipment.
- **Eligibility:** Any vendor (foreign or Indian) can bid.
- **Minimum indigenous content (IC):** 30% if the winning bid is from an Indian vendor; 0% if foreign.
- **Participants:** Primarily foreign OEMs supply off-the-shelf; Indian firms may bid their in-house products.
- **Hierarchy:** Lowest priority.
- **Procedure:** Standard request for proposal (RFP) with full Field Evaluation Trials (FET) and quality/environmental/endurance trials.
- **Offset:** Offsets apply for foreign suppliers on any contract with value greater than INR 20 bn, but an Indian bidder with greater than 30% IC automatically avoids offset obligations.
- **Rationale:** This category fills capability gaps not covered by the domestic industry. It solves urgent or high-end needs that cannot wait for Indian production. By preserving a role for global bidding, it prevents procurement delays in critical cases.

Furthermore, as defence acquisition procedure (DAP-2020) has improved upon several aspects of defence procurement procedure (DPP-2016), the below table highlights the incremental enhancements.

### DPP-2016 vs DAP-2020

	DPP 2016	DAP 2020
<b>Make sub-categories</b>	Two: <b>Make-I</b> (Govt-funded) and <b>Make-II</b> (industry-funded).	Three: <b>Make-I</b> , <b>Make-II</b> , and a new <b>Make-III</b> (manufacturing via ToT).
<b>Govt funding (Make-I)</b>	Up to <b>90%</b> of development cost (with 20% advance payment).	Up to <b>70%</b> of cost (capped at INR 2.5 bn).
<b>MSME reservation</b>	Make-I up to INR 100 mn, Make-II up to INR 30mn projects reserved for MSMEs.	Projects up to INR 1 bn procurement/year earmarked for MSMEs; start-ups included.
<b>New Make-III?</b>	No (only I & II existed)	Yes – import substitution manufacturing projects.
<b>Procurement categories</b>	Buy (Indian-IDDM), Buy (Indian), Buy & Make (Indian), Buy & Make (Global), Buy (Global).	Buy (Indian-IDDM), Buy (Indian), Buy & Make (Indian), Buy (Global– Manufacture in India), Buy (Global).
<b>Indigenous content (IC) requirements</b>	Varied. For example: buy-IDDM $\geq 40\%$ ; Buy-Indian $\geq 40\%$ .	Buy-IDDM $\geq 50\%$ ; Buy-Indian 60% Buy&Make $\geq 50\%$ (make portion); Buy global–manufacture in India $\geq 50\%$ ; Buy-global: Indian bidders $\geq 30\%$ .
<b>Foreign participation</b>	Foreign OEMs only in Buy-Global/Buy & make(global) categories (with offset).	Foreign OEMs can compete in all categories except Buy (Indian). 'Indian vendor' rules cap FDI (max 49% in high-priority cases).
<b>Offsets (Global buys)</b>	Offsets apply on most large foreign procurements.	Offsets triggered for foreign buy (global) cases but waived if $\geq 30\%$ IC; inter-government agreement and single-vendor G2G deals exempted.
<b>Procedure &amp; Preferences</b>	Make: complex in DPP; RFPs mandated within 2 years or reimbursement.	DAP emphasizes faster timelines (Acceptance of necessity (AoN) validity 1year/6months); L1 category priority unchanged (IDDM top).

Source: GoI, HSIE Research

## Innovations for Defence Excellence (iDEX)

Innovations for Defence Excellence (iDEX) is a flagship Indian government program launched in 2018 which aims to foster innovation and indigenization in the defence and aerospace sectors.

- **Overview:** It has been launched in 2018 under MoD to foster defence innovation. This is managed by Defence Innovation Organization (DIO, a Section-8 company backed by DPSUs HAL and BEL).
- **Objective:** To create an innovative ecosystem by engaging startups, academia, R&D labs, and channeling their solutions into procurement (DAP 2020 explicitly allows iDEX-sourced projects).
- **Funding & Scope:** The funding of INR 5 bn over FY2021–26 is expected to support ~300 projects. Grants of up to INR 15mn (prototype funding) or INR 100 mn under iDEX “Prime” are provided to startups/MSMEs for priority defence technology through SPARK (Support for prototype and research kickstart) challenges. It includes an ADITI sub-scheme for critical technologies (AI, quantum, UAVs, etc.).
- **Outcomes:** As a result of successful implementation of iDEX program, approximately three hundred startups have been incubated so far. Several prototypes for drones, communication, munitions, etc. have been funded. The scheme bridges the funding gap for eligible entrepreneurs.
- **Challenges:** While prototype build ups have been encouraged, converting prototypes to serial production remains slow. The ecosystem is nascent and still scaling up to meet defence-scale requirements.

## SRIJAN Portal & Import Ban Lists

To boost indigenization led defence procurement, another impactful government initiative is SRIJAN portal. It is a "one-stop-shop" online portal launched by the ministry of defence in Aug'20, to promote indigenization and reduce imports in the defence sector.

- **SRIJAN Portal (2020):** MoD's online "Make in India – Defence" portal where representatives of defence services headquarters and DPSUs publish product lists (from LRUs to components) for indigenization. Industry (including MSMEs/startups) can bid to develop these items.
- **Positive Indigenisation Lists:** The government issued successive lists of items that DPSUs must procure only from domestic sources within set timelines. For example, by July'24 the 5th DPSU list covered 346 major line-replaceable units (LRUs) worth INR 10.5 bn. Cumulatively, ~4, 666 items were listed across 4 prior lists (with INR 34 bn substitute value), of which ~2, 972 items have already been indigenized so far. DPSUs placed orders worth INR 75.7 bn on Indian vendors in 3 years.
- **Import Embargo Lists:** Starting Aug'20, MoD began banning imports of specific weapon systems and sub-systems in phases. The first list (Aug'20) barred 101 items, a second list added 108 more in June'21, bringing the total to 209 banned items. In Dec'21 a further embargo on 351 subsystems was notified to be implemented by 2025. These restrictions force industry to indigenize key technologies.
- **Impact:** The combined import bans and positive lists have significantly cut procurement options abroad. By 2024, ~12,300 items were indigenized via these programs, including few which were already in production by domestic companies.

## Defence Industrial Corridors (Uttar Pradesh & Tamil Nadu)

To initiate the defence capabilities of India and reduce reliance on imports, two defence corridors have been established.

- **Concept:** Announced in budget 2018, defence industrial corridors were created to develop clustered industrial ecosystems. Accordingly, two corridors were formally launched.
  - Uttar Pradesh (6 nodes: Agra, Aligarh, Jhansi, Kanpur, Chitrakoot, Lucknow) and,
  - Tamil Nadu (5 nodes: Chennai, Hosur, Coimbatore, Salem, Tiruchirappalli).
- **Infrastructure:** Both corridors emphasize “plug-and-play” land with connectivity. The UP nodes lie along the Agra–Lucknow and Delhi–Jhansi expressways. Tamil Nadu leverages seaports and airports with 4 international airports in its corridor. UPEIDA (Uttar Pradesh expressways industrial development authority) is dedicated agency for Uttar Pradesh and Tamil Nadu industrial development corporation (TIDCO) is for Tamil Nadu.
- **Investments:** By March’23, UPDIC signed 108 MoUs (potential INR 121 bn investment) with INR 25 bn already invested. TNDIC had signed 53 MoUs (potential INR 118bn) with INR 39 bn invested. While UP projects include UAV hub and test centers, Tamil Nadu projects include aerospace parts and marine equipment.
- **Objectives & Outcomes:** These corridors aim to concentrate industry including MSME suppliers and leverage state incentives. UP projects are spread across 5, 000 hectares under development and target INR 500 bn investment along with 2. 5 lakhs incremental job creation. As a result, several factories for drone manufacturing & UAV assembly plants, R&D parks and logistics hubs have been announced.
- **Challenges:** Land acquisition and incentive structures such as tax breaks and single-window clearances are still being fine-tuned. Concerns remain whether industry momentum will be sustained without continuing public support.

## Strategic Partnership (SP) Model

This strategic partnership model for the defence industry is a strong government initiative which encourages private sector participation alongside DPSUs to build indigenous manufacturing capabilities. The details of this policy initiative are as under:

- **Policy (2017):** This policy introduced via DPP-2016 aimed to involve private/DPSUs in manufacturing high-tech platforms. Under SP, the government invites select Indian firms to partner with foreign OEMs to develop and produce defence systems/subsystems and platforms in India.
- **Sectors Covered:** This model covers four categories, namely fighter aircrafts helicopters, submarines, and armored fighting vehicles (tanks). These were chosen for their strategic importance and high capital cost.
- **Mechanism:** The MoD nominates a strategic partner (via bidding) for each category (such as HAL/Tata/Adani consortium for fighter jets). Foreign OEMs can then participate in bids alongside their SP to jointly meet requirements. SP model examples include the P-75I submarine project.
- **Impact:** The SP route is intended to create deeper tech transfer and reduce reliance on imports for critical platforms. However, the progress so far has been mixed. Few of the tenders such as submarines and IMRH helicopters have faced delays. We anticipate SP criteria to receive refinement for better implementation. It remains a long-term engine for system-level indigenization.

## Defence Production & Export Promotion Policy (DPEPP 2020)

The DPEPP 2020 is envisaged as overarching guiding document of MoD to provide a focused, structured, and significant thrust to defence production capabilities of the country for self-reliance and exports.

- **Announcement:** Draft DPEPP was released in aug'20 by MoD.
- **Targets: An industry level** turnover of INR 1,750 bn by 2025, including INR 350 bn in exports. These figures are in line with MoD targets.
- **Pillars:** Policy pillars include procurement reforms, indigenization/MSME/startup support, FDI promotion, R&D/innovation, DPSU reforms, QA/testing infrastructure, and export facilitation.
- **Initiatives:** As a guiding framework, DPEPP backs schemes like iDEX, SRIJAN, SP model, and offsets modernization. It signals a shift to treat defence production as an economic driver, not just a strategic necessity.
- **Status:** Driven by DPEPP 2020, India has recorded its highest-ever defence production of INR 1540 bn in FY25.
  - Furthermore, Indigenous defence production has hit a record INR 1274 bn in FY 24, a 174% surge from INR 464 bn registered in FY15.
  - 16,000 MSMEs are emerging as the growth contributors, strengthening indigenous defence capabilities.
  - In addition to above, India's defence exports have reached a record high level of INR 236 bn in FY25 from less than INR 10bn in 2014.

## Mission Sudarshan Chakra (MSC)

**Mission Sudarshan Chakra (MSC)** is an umbrella national program announced by the Prime Minister on 15 Aug 2025 to build a multi-layered, integrated air & missile defence shield for India. The vision included manufacturing of radars, satellites, missiles, hard-kill and soft-kill directed energy weapons (DEW), command, control and AI decision support with staged deployment during 2030–2035.

As early demonstrable progress, DRDO successfully conducted maiden integrated-air-defence weapon system (IADWS) tests in August 2025, a meaningful point proving that missiles, VSHORAD and a 5kW laser DEW can operate jointly under a centralized command and control. This program is essentially an aggregator. It folds in existing/ongoing projects such as project Kusha, QRSAM, VSHORAD, DEWs, satellite/ISR expansion and other radars together while creating a national command and control aligned architecture.

### Strategic vision

- **Threat environment:** cross-border use of loitering munitions (UAS), cruise missiles and evolving ballistic missiles and aircraft capabilities in the neighboring countries make the point-defence or single-layer systems insufficient. MSC's layered approach is intended to detect the incoming weapon early in the air, engage at multiple ranges (long-range interceptors to VSHORAD) and provide resilience through redundancy.
- **Policy drivers:** MSC aligns with AtmaNirbhar Bharat vision of the government and its indigenization goals along with national priority to protect civilians, strategic assets and public spaces. The stated objective is a shield that both defends and allows targeted counter-response.
- **Operational benefits:** This program reduces dependence on single foreign platforms for area defence, shortens sustainment tails, creates sovereign testbeds for DEW/AI/satellite ISR and enables layered cost-effective protection. It envisages application of small missiles/lasers for low-cost threats and heavy interceptors for high-value targets.

### Program architecture

- **Sensor layer:** This program includes ~6000 to 7000 cross-linked radars in conjunction with intelligence, surveillance, and reconnaissance (ISR) satellites and over the horizon radars (OTHR) to extend detection horizon.
- **Kinetic intercept layer:** It includes multiple interceptor families like project Kusha (M1–M3 long-range interceptors) for area defence, QRSAM (mobile short-to-medium range), and VSHORAD (very short-range air defence system) for point defence.
- **Non-kinetic layer:** This layer includes DRDO developed directed energy weapons (DEW) to counter drone swarm attacks, missiles, and surveillance aircraft.
- **C2 / data fusion / AI:** Integrated air command and control system (IACCS) along with automated sensor fusion, and AI decision-support to prioritize engagements and enable rapid strikes or retaliation.

## Participants

- **DRDO / ADA / DLRL / RCI:** These organizations are responsible for system design, seekers, DEW R&D, and command & control (C2). DRDO ran the integrated air defence weapon system (IADWS) test and is the nodal technical authority.
- **Bharat Electronics Ltd (BEL):** BEL is the prime system integrator for many radars, C2 and air-defence projects and lead partner for the project Kusha.
- **Bharat Dynamics Ltd (BDL):** BDL is responsible for missile manufacturing & assembly apart from being a partner for QRSAM.
- **ISRO/NSIL and private space firms:** ISRO is expected to play a key role in the implementation of MSC through key features like ISR.

## Timelines

- **2025–2026:** During this period, key milestones such as preparation of blueprint, acceptance of necessity for component projects and IADWS prototype tests are to be carried out. This is worth mentioning that IADWS has successfully been done in Aug'25.
- **2026–2030:** This period will witness phased field tests for constituent interceptor families (such as project Kusha), satellite build-ups, radar deployments and incremental induction for selected critical sites.
- **2030–2035:** Comprehensive national coverage and integration of the program will be executed between 2030 to 2035.

## Technology perspective and capability roadmap (TPCR 2025)

TPCR-2025 is a fifteen-year strategic defence modernization plan released by MoD in sept'25 to guide the technological growth of armed forces through 2030s. Its objective is to outline the future equipment needs for the Indian Army, Airforce, and Navy so that it Industry gets a long-term guidance for R&D and production while keeping indigenization at the center of the vision.

### The core technology themes under TPCR-25 are:

- Autonomy, robotics & human-machine teaming (UGV/UAV + swarms).
- Precision long-range fires & smart munitions (ER 155mm, loitering munitions, TCM).
- Electronic warfare, resilient C4I, sensors & RF photonics (ELINT, jamming, multi-band radars).
- Space & satcom capabilities, including quantum-resistant communication and quantum sensing.
- Cybersecurity, software tools, AI/ML and secure tri-service data/cloud stacks.
- Materials, power & propulsion (composites, hybrid/electric systems, advanced armor).
- Advanced manufacturing & sustainment (additive manufacturing, indigenous supply chains).

### Top strategic high-value projects and capability clusters

The below mentioned specific weapons/systems/subsystems stand out under TPCR-25 vision as strategic with wide operational impact or financially significant due to their requirement in large quantities or expensive nature of the platforms.

- **Land platforms & survivability**
  - Future ready combat vehicle (FRCV)- A next-generation tank replacement with human-machine teaming, BLOS strike, 360-degree sensor fusion, cyber/EW hardening.
  - Active protection systems (APS) & armor upgrades for tanks
- **Artillery, ammunition & long-range fires**
  - Enhanced-range 155 mm projectiles, trajectory-correctible munitions (TCM) & other precision ammunitions.
  - Unmanned & autonomous systems: medium altitude long range remotely piloted aircrafts (MALE RPAs), loitering munitions, smart loitering, vertically take-off and landing (VTOL) shipborne RPAs, high altitude pseudo satellites (HAPS) with endurance, payload modularity and satellite communication links.
- **Naval platforms & weapons**
  - Torpedoes, extended range anti-submarine rockets (ER ASR), close-in weapon systems, ship sensors and platform systems along with subsystems & munitions.

- **Air systems & weapons**
  - Air-to-surface missiles, universal aircraft launchers, advanced avionics, flight test instrumentation, ejection seats and electrification / hybrid propulsion R&D.
- **Electronics, EW, sensors & PNT**
  - Large emphasis on EW suites, multi-band jammers, photonic ELINT sensors, cognitive radios/radars, passive surveillance systems, resilient positioning, navigation and timing (PNT), time-spoofers and anti-swarm jamming.
- **Space, SATCOM & quantum tech**
  - SATCOM payloads (S-band, DAMA), space-ground integrated info networks, quantum sensors for jam-resistant PNT and quantum computing research needs.
- **Cyber, AI/ML/Big-Data & software tools**
  - Indigenous cyber toolchain (forensic, reverse-engineering, code analysis), cyber ranges, AI-as-a-service, data lakes and tri-service secure cloud/data management.
- **Manufacturing & sustainment tech**
  - Additive manufacturing for on-demand spares, domestic production & Make or iDEX categories with emphasis on MSME/startup engagement.

### Impact of TPCR-25 on future Indian defence industry

- TPCR is a clear signal to the industry to build capacities in electronics, software, and systems integration. The biggest shift is away from pure import of subsystems toward domestic R&D along with manufacturing. Make-I/II/III categories defence companies have been encouraged to aim for higher capacities.
- Companies that combine systems integration with software/AI and high-end electronics such as radar, EO/IR and EW will capture the largest value because many projects require multi-domain integration.
- Ammunition and munitions manufacturing represents continuous high-volume work and steady cashflows while precision and ER rounds increase per-unit value.
- Emerging tech led by quantum, photonics, cognitive EW, and on-board data processing will create a longer-term high-margin niche. Indian startups and academia-industry consortia can compete in this domain if they are adequately funded for R&D.
- Overall, India's TPCR-2025 roadmap signals a decisive pivot toward next-generation capabilities built around autonomy, advanced electronics, and strategic deterrence. The core technologies at the heart of this shift include unmanned systems (UAVs, loitering munitions, HAPS) seamlessly integrated with SATCOM payloads and resilient communication systems. It also includes high-end EW/RF suites, cognitive radars, photonic sensors, and counter-swarm jamming systems to ensure electromagnetic dominance. Supporting these are cross-cutting enablers like AI/ML for decision support, sensor fusion, indigenous semiconductor design, quantum communications/sensors and RF front-end modules etc.

- Under this vision, India is aiming not just to assemble platforms but to build sovereign systems. This will involve full-stack integration of software, hardware, and security layers. There is an underlying high impact assumption that future battles will be fought in the invisible domains—of signal, cyber and space. Hence, dominance needs to be embedded in sensors, data, and control loops rather than just conventional fighter platforms or weapons. The roadmap emphasizes indigenization, pushing domestic R&D, public-private partnerships, and MSME-level participation so that India's defence industry evolves from being a weapon or fighter platform buyer to a technology innovator.

## Key defence programs of the country

### LCA Tejas MK1A

LCA Tejas Mk1A is the upgraded production variant of India's indigenous Light Combat Aircraft (LCA) developed by ADA/DRDO and manufactured by HAL. Designed to replace the ageing MiG-21s and form the backbone of the IAF's light fighter fleet, the Mk1A integrates more than 40 upgrades over the Mk1 including AESA radar, an advanced electronic warfare (EW) suite, mid-air refueling, and improved avionics and maintainability. The program represents the largest single push toward indigenous fighter production in India's history and is a cornerstone of the government's "AtmaNirbhar Bharat" and "Make in India" drive.

#### Program Overview

The LCA program began in 1983 as a national effort to indigenously design and manufacture a fourth-generation fighter. The Mk1A variant, approved in 2016, was initiated to bridge operational limitations of the Mk1.

- **Initial Contract (2021):** under this, 83 aircraft (73 single-seat fighters + 10 twin-seat trainers) valued at INR 480 bn was approved.
- **Follow-on Order (2025):** 97 additional aircraft (68 fighters + 29 trainers) worth INR 620 bn was approved by the Defence Acquisition Council.

This brings the total estimated Mk1A fleet to **180 aircrafts**, enabling the IAF to field roughly ten squadrons by the early 2030s, once these orders are successfully delivered.

However, program execution has been materially impacted by engine delays acting as a recurring bottleneck since 2022. GE Aerospace's F404-IN20 engines, which power the Mk1A, faced shipment lags due to supply chain disruptions and global manufacturing backlogs. As a result, HAL's early airframes already completed at its Bengaluru line could not undergo final assembly and flight testing. The issue has since been resolved with the resumption of engine deliveries in 2025, allowing the aircraft to move toward flight readiness.

#### Structure and Key Participants

For this prestigious program, Hindustan aeronautics Ltd (HAL) serves as the prime integrator, while Aeronautical development agency, ADA (under DRDO) leads the design and development.

The industrial ecosystem has been widened to over 100 Indian vendors, reflecting a new decentralized manufacturing model. The few key vendors and the components manufactured by them are listed below.

- **Avionics & EW Systems:** Bharat electronics ltd (BEL) has received INR 24 bn contract for mission computers, electronic warfare, and avionics.
- **Airframe Modules:** Dynamatic technologies (front fuselage), VEM Technologies (center fuselage), Alpha Tocol (rear fuselage), Tata Advanced Systems (empennage and subassemblies), L&T and Lakshmi Machine Works (wings and pylons).
- **Engines:** GE Aerospace has been contracted to supply F404-IN20 turbofans. 99 units have been ordered for initial batches at a contract value of USD 716 mn. Future upgrades could include a locally produced GE-F414 variant under technology transfer.

HAL has added a second production line at Nashik to supplement Bengaluru, aimed at mitigating cumulative delays from the engine shortfall and scaling to 24 aircraft per year post-2027.

### Program Evolution and Timeline

- **1983–2001:** LCA concept, prototypes, and technology demonstrations
- **2016:** LCA Tejas Mk1A variant sanctioned for development.
- **2021:** Contract for 83 aircraft signed and awarded to HAL; production line expansion initiated.
- **2022–24:** Engine delivery delays stall final assembly and flight testing.
- **2025:** Engine supply resumed, and production started; follow-on 97-aircraft order approved and awarded to HAL; Nashik facility commissioned.
- **2026:** First Mk1A delivery targeted to IAF's No. 18 Squadron (Flying Bullets).
- **2027–33:** Full production across both HAL plants and simultaneous delivery; indigenization of radar and avionics components.

### Capabilities and Weapon Suite

The LCA Tejas Mk1A is a 4.5-generation multirole fighter equipped for both air-superiority and precision-strike missions. Key features include:

- **Sensors:** Indigenous Uttam AESA radar, unified EW suite, advanced mission computer, digital radar warning receiver (RWR), and missile approach warning system (MAWS).
- **Armament:** Astra beyond visual range air to air missile (BVRAAM), Derby ER, Python-5, advanced short-range air to air missile (ASRAAM), and a range of guided/unguided bombs and rockets.
- **Performance:** Composite airframe (45% lighter than comparable metal designs) for high agility and low radar signature, apart from aerial refueling for an extended range.

The integration of indigenous Uttam AESA radar and Astra missile systems is progressing in tandem with Mk1A flight trials, marking an important shift from import substitution to indigenous capability maturity.

### Financial and Industrial Impact

The combined order book of ~INR 1.1 Trn makes LCA Tejas Mk1A India's single-largest aerospace manufacturing program.

- **HAL:** Secures multi-year revenue visibility and margin expansion potential through volume scaleup and associated MRO contracts.
- **BEL:** Being a core supplier of avionics and electronic warfare systems, Tejas Mk1A has created a recurring revenue stream for BEL too.
- **Private Vendors:** Private players like Dynamatic, VEM, Tata advanced systems, and L&T gain structural aerospace exposure and long-term credibility. SMEs such as Data patterns supply mission critical electronics, testing equipment, and avionics LRUs across lifecycle in this project, which gives them validation to their products apart from financial growth.

Each Mk1A aircraft embodies an estimated 64–67% domestic value addition, which is expected to cross 75% in later production tranches as indigenous systems (Uttam AESA radar, Astra missile, Indian EW suite) replace imports.

### Challenges and Risks

- **Engine Bottlenecks:** recurring F404 supply issues have proven the single biggest schedule risk. Any future disruptions could again delay annual output.
- **Certification Risks:** Integration of new EW suites and Astra BVRAAM under real combat trials is ongoing and carries certification risks.
- **Private-Sector Readiness:** New suppliers must meet rigorous aerospace standards and certification cycles.
- **Cost Pressures:** Inflation and exchange rate fluctuations could inflate later batch pricing, which could impact operating margin adversely for the companies involved.



Source: Hindustan Aeronautics Ltd., HSIE Research

## LCA Tejas MK2

LCA Tejas Mk2 (also called the Medium-weight fighter or LCA Mk-II) is India's indigenous follow-on to the Tejas family. It is a heavier, longer-range, higher-payload 4.5-generation single-engine multirole fighter designed to replace Jaguar, Mirage-2000 and ageing MiG-29 squadrons. This also aims to bridge capability until AMCA is developed and joins Indian Airforce. The program is a strategic effort to escalate India's fighter-building capability (higher payload, more advanced sensors, and greater domestic content) while leveraging the Tejas' industrial base.

### What the program delivers

The LCA Tejas Mk2 is a medium-weight equipped with close-coupled canards for better maneuverability. It is a delta fighter with a projected take-off weight of 17.5 tons, payload capacity of 6.5 tons, and 11 weapon stations. It has been designed for air-superiority, precision strike and maritime roles with extended range and higher endurance versus Mk1A. The design centers on a single GE F414-INS6 class turbofan engine (~98kN thrust) to provide the required performance from the aircraft. This is an upgraded version as compared to LCA Tejas Mk1A. While the Tejas Mk1A is a light combat aircraft, the Tejas Mk2 represents a substantial upgrade, categorized as a Medium Weight Fighter (MWF). It is designed to carry a payload of roughly 6.5 tons which is nearly double that of its predecessor Tejas Mk1A.

### Why the program was started

The IAF's force structure has a chronic squadron shortfall and is facing an ageing inventory of medium-weight fighters. The Mk2 was conceived to provide a domestically designed and built replacement that can perform multi-role tasks, reduce import dependence. This has potential to scale up India's aerospace industrial capabilities of producing airframe, avionics, and engines. Funding support by cabinet committee on security (CCS) and program structure involving DRDO and HAL driving design and manufacturing respectively reflect this national industrial policy intent.

### Structure of the program and key participants

- **Design authority:** Aeronautical development agency (ADA) under DRDO with Aircraft Research & Design Centre (ARDC) of HAL.
- **Prime manufacturer:** Hindustan aeronautics limited is entrusted with assembly, systems integration, final delivery of aircrafts.
- **Strategic suppliers:** Key suppliers include GE Aerospace for F414-INS6 engine with MoU/ToT discussions for local manufacturing. Additionally, HAL's private partners such as Tata advanced systems, L&T, Dynamatic, VEM and Alpha Tocol will be vital vendors for structures and systems. Apart from this, Bharat electronics Ltd and other DRDO labs will be responsible for supplying avionics and EW subsystems. The CCS-approved funding of INR 100bn for prototype development enables prototype construction and ground test infrastructure.

### Scale of the program

While there is no single firm contract decided yet, but public reporting and HAL statements indicate that Indian Airforce is aiming for ~120–200 Mk2 class aircrafts over the next decade to meet medium-weight requirements. These estimated figures are just approximate guidance for the program rather than any concrete procurement order. Final quantities will follow user trials, and budget approvals.

### Timeline & status (milestones, delays, outlook)

- **Funding & design:** As cabinet committee on security (CCS) cleared prototype funding of INR 100bn in 2022. Detailed design and systems integration advanced thereafter.
- **Prototype build:** As per ADA/HAL statements, prototype airframe manufacturing has progressed to ~50–60% completion by mid-2025 as center fuselage and wings have largely been completed.
- **Engine availability:** ADA reported modifications of several F414 engines for prototypes and ground integration tests. However, engine delivery remains the primary schedule risk. Even though some engines have been procured and ground-tested, wider production-level engine supply and any technology-transfer arrangements are still being negotiated.
- **Projected dates:** prototype-test phase is expected to extend through 2027. Also, final operational clearance is expected by FY29, and limited series or serial production is estimated to start from 2029. Further, ramp up is planned by early-2030s. These dates are indicative and contingent on engine flows and certification outcomes.



Source: ADA, HSIE Research

## Advanced Medium Combat Aircraft (AMCA)

The Advanced Medium Combat Aircraft (AMCA) is India's most ambitious indigenous defence aerospace program. AMCA is a twin-engine, fifth-generation stealth multirole fighter aircraft being developed by DRDO's Aeronautical Development Agency (ADA) in collaboration with HAL and private industry. Designed for air-superiority, deep strike, and electronic warfare roles, AMCA aims to position India among the handful of nations with stealth fighter design and manufacturing capability. The program encapsulates the transition from licensed production to true indigenous design, representing the India government's AtmaNirbhar Bharat strategy in defence aviation.

### Program Overview

The AMCA program originated in 2010 as a logical successor to the Tejas family, drawing upon lessons learned from the LCA and Mk2 development cycles. Conceived as a fifth-generation stealth fighter, AMCA integrates stealth shaping, internal weapon bays, supercruise capability, advanced composite materials, and integrated avionics architecture for sensor fusion.

The aircraft is planned in two phases:

- **AMCA Mk1:** Fifth-generation baseline variant powered by twin GE F414 engines (same class as used in LCA Tejas Mk2).
- **AMCA Mk2:** Enhanced version expected to feature a jointly developed indigenous engine, targeted for production by the late 2030s.

The AMCA design prioritizes a low radar cross-section (RCS), high maneuverability, extended range, and networked warfare capabilities all while maintaining modularity for future technology upgrades.

### Program Structure & Key Stakeholders

- **Design Authority:** Aeronautical Development Agency (ADA), DRDO
- **Prime Manufacturer:** Hindustan Aeronautics Limited (HAL)
- **Private Partners (Proposed):** L&T, Tata Advanced Systems, Adani Defence, Godrej Aerospace, Dynamatic technologies
- **Supporting DRDO Labs:** DARE (EW suite), LRDE (radar), GTRE (engine R&D), and ADE (flight control systems)

The Ministry of Defence has invited industry participation under a special purpose vehicle (SPV) model, in which ADA, HAL, and selected private sector firms will co-own and co-develop the platform. This marks India's first major attempt at a public-private co-development model in aerospace manufacturing.

### Financial Scale & Orders

The AMCA program represents one of India's largest-ever R&D investments in military aviation.

- **Prototype Phase:** Estimated outlay of INR 150bn approved for design, testing, and building five prototypes.
- **Full Program Scale:** Once serial production begins, the total investment including production, infrastructure, and MRO could exceed INR 2 trn for an estimated 125 aircraft fleet (including IAF and Navy variants).

These figures exclude the parallel indigenous engine development program, expected to cost an additional INR ~250 bn over the next decade.

### Technology Architecture & Capabilities

AMCA integrates several advanced technologies that distinguish it from current-generation fighters:

- **Stealth & Structure:** Internal weapon bays, serpentine air intakes, radar-absorbing composites, coatings, and embedded antennas.
- **Engines:** Initially twin GE F414 engines, delivering supercruise capability (Mach 1.4–1.6 without afterburners).
- **Sensors:** AESA radar, distributed aperture system (DAS), electro-optical targeting system (EOTS), and sensor-fusion algorithms for 360° situational awareness.
- **Avionics:** AI-driven pilot-vehicle interface, glass cockpit, helmet-mounted displays, fly-by-light control systems.
- **Weapons:** Beyond-visual-range air-to-air missiles (Astra Mk2/3), precision-guided munitions, and cruise missiles all deployable from internal bays for stealth preservation.

### Estimated timelines

- **2010–2018:** Preliminary design and configuration studies completed. Wind tunnel and radar cross-section validation done.
- **2019–2023:** Full-scale engineering development plan and SPV model finalized. Stealth materials tested by DRDO.
- **2024–2026:** Design freeze achieved. Prototype component manufacturing initiated. Cabinet approval for prototype funding expected to be finalized by end-2026.
- **2027–2030:** First prototype assembly and rollout expected in 2029.
- **2031–2033:** Flight testing and certification phase.
- **2034–2036:** Low-rate initial production (LRIP) for Mk1 variant.
- **Post-2036:** Mk2 variant introduction with indigenous engine integration.



Source: HSIE Research

## QRSAM

QRSAM (Quick Reaction Surface-to-Air Missile), also known as Anant Shastra, is India's indigenous mobile short-to-medium-range air-defence system. It has been developed to protect moving armored formations, airbases, and critical assets from aerial threats such as aircrafts, helicopters, drones, and cruise missiles. This system is designed by DRDO with manufacturing contributions by BEL (for radars and electronics) and BDL (for missiles) along with vehicle integration by industry partners. QRSAM completed developmental trials over 2017–2022 and has now entered the procurement phase, with headline acquisition plans totaling ~INR 300 bn for several regiments under the Army's modernization push.

### Program objectives

QRSAM is a truck-mounted, all-weather, short-range surface-to-air missile system that provides mobile air-defence coverage out to ~25–40 km and engagement altitudes up to ~10 km (varies by source and variant). The full system comprises a multifunction surveillance radar, tracking radars, command & control vehicle, 6-tube transport-erector-launcher (TEL) on 8×8 high-mobility trucks, and solid-propellant missiles with active radio-frequency seekers and proximity fuzes all designed for on-the-move surveillance and engagement. These capabilities specifically address the Army's need to protect fast-moving mechanized columns and forward formations where static air-defence systems are vulnerable.

### Requirement of QRSAM

The Indian Army's legacy mobile air defence systems were increasingly becoming obsolete against modern aerial threats such as precision munitions, rotary-wing attack, and swarming UAS. A domestic QRSAM was prioritized to deliver mobility, quick reaction, and high indigenous content, reducing dependence on imports, and shortening logistics tails for wartime sustainment. The operational requirement emphasized shoot on the move surveillance, multi-target engagement and quick displacement design goals that guided DRDO's architecture.

### Program structure & participants

DRDO led design and systems integration with major production and LRU roles split across PSUs and private vendors. BEL is the principal integrator for radars, mission computers and C2 nodes apart from being listed as a central delivery partner. BDL is expected to manufacture the missiles and warheads at scale. Additionally, vehicle platforms are built by high-mobility truck OEMs (Ashok Leyland/Tata) with integration by BEL and other system integrators. The program follows the Buy (Indian-IDDM) procurement route with progressive indigenization targets and user trials overseen by the Indian Army.

### Program evolution, trials & status

QRSAM's flight and integrated trials began in 2017 and accelerated through 2019–2022. By late-2022 DRDO reported successful interception trials including seeker validation. Thereafter, the system entered user trials with the Army and was progressively matured to address mobility, radar performance and seeker robustness against low-flying threats. By mid-2025/2026 the program moved into acquisition and production planning, and in 2025 the MoD/DAC cleared capital acquisition proposals for new regiments. Post that, the Army issued tenders to BEL for regimental procurement.

# Sector Thematic: Defence



Source: Bharat Electronics Ltd., HSIE Research

## Project Kusha

Project Kusha is India's indigenous long-range air-defence program led by DRDO with Bharat Electronics Ltd (BEL) as the primary system integrator. It aims to produce a layered, mobile, long-range Surface-to-Air Missile (SAM) family to fill the capability gap between MR-SAM/Akash and strategic imported systems like S-400. It aims to deliver a domestic LR-SAM solution in multiple interceptor variants (M1–M3) with ranges from ~150 km up to ~350–400 km (and longer in later phases). The program has moved from concept to prototype fabrication and is now in accelerated test and development phases with induction targeted by 2030.

### Program objective

Project Kusha is an integrated long-range, layered area-defence system comprising ground-based radars, a command-and-control network interoperable with integrated air command and control system (IACCS), and a family of interceptor missiles in phased ranges: M1 (~150 km), M2 (~250 km) and M3 (~350–400+ km). The system is intended to perform area denial, provide air-defence and counter-ISR roles. It aims to complement imported S-400 deployments by providing an indigenous, exportable capability. In the long run, it is expected to replace S-400 defence system for better reliability and self-sufficiency.

### Purpose behind project Kusha

India needs domestic long-range SAMs to reduce strategic dependence on foreign systems, ensure local sustainment and leverage national industrial capacity. Project Kusha also fits into the broader Mission Sudarshan Chakra strategy (national missile-defence strategy) and supports the policy objective of boosting defence indigenization and export potential. Political backing and CCS approvals have kept the program under high priority status since 2022.

### Origins, approvals & funding

The Cabinet Committee on Security (CCS) cleared project Kusha in May 2022, and the program later received formal acceptance of necessity (AoN). Initial funding tranches are aimed at developing five IAF squadrons in early phases. Industry estimates suggest government approvals in 2023 for funding to the tune of INR 217bn for early squadrons and prototyping. While DRDO leads design, BEL is being positioned as the prime industry integrator for radars, C2 and launcher electronics. Additionally, missile hardware is co-developed with DRDO labs and manufactured by indigenous missile production lines.



Source: HSIE Research

## Project P-75(I)

Project P-75(I) is India's long-awaited, high-priority conventional submarine acquisition and technology-transfer program. It aims to build six next-generation diesel-electric submarines with air-independent propulsion (AIP) in India. After a decade of technical rounds and evaluation, the MoD and Indian Navy have moved to sole-source negotiations with Mazagon Dock Shipbuilders Ltd (MDL) partnering Thyssenkrupp Marine Systems (TKMS) in 2025. The program is now entering commercial negotiations with an estimated contract value to the tune of INR 700 bn. The first boat is expected roughly seven years after contract signature. Hence the earliest delivery is estimated only by 2033, even if the contract is signed in 2026.

### Details of the program

P-75(I) will deliver six advanced conventional attack submarines based on a German TKMS design (with air independent propulsion), customized to Indian Navy requirements. These features included low acoustic signature, extended submerged endurance via AIP, modern combat system, heavyweight torpedo, anti-ship, cruise-missile fit, and high indigenous content (IC) over the production run. IC is expected to be around 45% for the first boat rising to ~60% by the sixth. These boats are intended to replace older Sindhughosh and Kilo-class hulls and provide a credible undersea deterrent and sea-denial capability in the Indian Ocean.

### The necessity of the program

India faces an urgent undersea capability gap. Many legacy submarines are reaching end-of-life while maritime threats in the Indo-Pacific require quiet, long-endurance conventional submarines with modern sensors and weapons. AIP (which the Indian fleet lacks at scale) significantly increases submerged endurance and survivability, which is a core operational requirement driving the strict AIP requirement in the request for proposal (RFP) for procurement of submarines. The program also serves industrial policy goals such as in-country construction with progressive indigenization, technology transfer and scale development in shipbuilding, combat systems and torpedo manufacturing.

### Structured of the program & participants

Project governance follows the strategic partnership and offset models. Two Indian shipyards (MDL and L&T) were shortlisted earlier. Furthermore, five foreign OEMs competed (TKMS, Naval Group, Navantia, DSME, Rubin). After an exhaustive technical evaluation and field evaluation trials, MDL-TKMS emerged as the only technically qualified bidder and entered commercial negotiations with the MoD in 2025. MDL will be the Indian prime builder (yard construction, assembly, final outfitting) with TKMS supplying design, critical systems (AIP, combat suite option), and technology transfer for local manufacturing and sustainment. Indigenous suppliers such as VEM Technologies, Apollo microsystems and Bharat dynamics Ltd for torpedoes, Bharat Forge for hull and forgings, and BEL for combat electronics are expected to participate across the supply chain.

### Order size, financials & schedule snapshot

- **Planned quantity:** 6 submarines with Navy proposals for an additional 3 follow-on.
- **Indicative program value:** As per the industry estimates, the program is expected to be valued at ~INR 700 bn.
- **Delivery timeline:** negotiated schedule indicates ~7 years will be required for the first delivery after contract signature. As serial construction is staggered, hence we estimate program will be completed by mid-to-late 2030s for full fleet availability, assuming contract is signed in FY26. Production will begin in the third year after contract signature.

### Changing landscape over time

P-75(I) traces back to the late 1990s and has been repeatedly delayed by RFP complexity, AIP requirements and vendor competition. The critical shift occurred when the Indian Navy insisted on a sea-proven AIP and stricter transfer and indigenization terms. This narrowed the field and ultimately left the MDL-TKMS pairing as the technically compliant option. In FY25 final field evaluation trials and technical checks cleared TKMS's design as compliant, pushing the program into commercial negotiations in 2025.



Source: HSIE Research

## HSIE Defence coverage Snapshot

### HSIE outlook on our defence coverage universe

Company	Rating	Target Price	PAT CAGR % (FY25-FY28E)	Current PE (x FY28E)	Book to Bill (x) (FY26E)
Hindustan Aeronautics Ltd.	Reduce	3265	9.3	23.7	7.1
Bharat Electronics Ltd.	Add	490	14.1	41.3	2.6
Bharat Dynamics Ltd.	Reduce	1120	28.8	39.6	6.6
Mazagon Dock Shipbuilders Ltd.	Add	2950	7.2	32.7	1.7
Apollo Micro Systems Ltd.	Buy	280	56.1	30.3	1.4
Data Patterns Ltd.	Buy	3770	20.0	45.6	1.0
Astra Microwave Ltd.	Add	1130	20.5	35.2	1.6
Paras Defence and Space technology Ltd.	Reduce	665	29.5	43.5	2.2

Source: HSIE Research

### HSIE vs Consensus estimates (FY27E)

Company	HSIE Estimates FY27E			Consensus FY27E			% difference HSIE vs Consensus		
	Revenue	EBITDA	PAT	Revenue	EBITDA	PAT	Revenue	EBITDA	PAT
Hindustan Aeronautics Ltd.	379.0	117.0	95.6	404.6	115.9	98.6	-6.3%	0.9%	-3.0%
Bharat Electronics Ltd.	312.1	85.3	67.5	325.0	92.5	71.8	-4.0%	-7.8%	-5.9%
Bharat Dynamics Ltd.	49.0	9.8	9.2	56.4	10.2	10.6	-13.2%	-3.5%	-13.6%
Mazagon Dock Shipbuilders Ltd.	144.2	24.1	26.1	152.3	28.2	31.7	-5.3%	-14.7%	-17.8%
Apollo Micro Systems Ltd.	11.4	3.2	1.9	12.6	2.9	1.4	-9.4%	10.8%	35.9%
Data Patterns Ltd.	10.6	4.1	3.2	11.6	4.5	3.5	-8.5%	-9.2%	-9.4%
Astra Microwave Ltd.	14.9	4.0	2.2	13.8	3.7	2.2	7.7%	6.9%	-1.3%
Paras Defence and Space technology Ltd.	5.5	1.5	1.1	6.2	1.7	1.1	-11.3%	-9.2%	-4.8%

Source: Bloomberg, HSIE Research

### HSIE vs Consensus estimates (FY28E)

Company	HSIE Estimates FY28E			Consensus FY28E			% difference HSIE vs Consensus		
	Revenue	EBITDA	PAT	Revenue	EBITDA	PAT	Revenue	EBITDA	PAT
Hindustan Aeronautics Ltd.	423.0	131.4	109.2	478.1	134.8	112.7	-11.5%	-2.5%	-3.1%
Bharat Electronics Ltd.	361.7	99.6	79.1	381.4	108.4	84.6	-5.2%	-8.2%	-6.5%
Bharat Dynamics Ltd.	59.9	12.6	11.7	73.7	14.2	14.2	-18.7%	-11.1%	-17.3%
Mazagon Dock Shipbuilders Ltd.	166.0	29.0	29.7	157.3	30.1	33.8	5.5%	-3.6%	-12.1%
Apollo Micro Systems Ltd.	15.4	4.4	2.6	19.0	4.3	2.3	-18.9%	2.9%	13.5%
Data Patterns Ltd.	13.0	5.0	3.8	14.6	5.7	4.4	-11.2%	-12.0%	-12.8%
Astra Microwave Ltd.	17.8	4.8	2.7	16.9	4.6	2.8	5.4%	3.8%	-4.0%
Paras Defence and Space technology Ltd.	6.6	1.9	1.3						

Source: Bloomberg, HSIE Research

# COMPANIES

# Bharat Electronics

## Architect of the nation's defence modernization

India's defence modernization, driven by indigenization and upgrade programs, focuses heavily on electronics integration—a tailwind Bharat Electronics Ltd (BEL) is ideally positioned to capture. As the nation's premier manufacturer and integrator for radars, communication systems, EW suites, and avionics, BEL is essential to all three divisions of the armed forces. The industry's shift toward higher electronic content per platform allows BEL to capture deep opportunity funnels created by domestic production mandates. Its lead system integrator status and infrastructure enable it to manage complex projects at a scale private player currently cannot match. Even after a hefty order backlog, a low book to bill of 3.0 indicates a remarkable execution capability. A robust order backlog, strong balance sheet, granular nature of order inflows, and strengthening pipeline ensure revenue growth and margin stability in the medium term. In addition to that expansion into services, non-defence, and exports de-risk the business from single-customer concentration and order cyclicality. In accordance with our optimistic view, we initiate coverage on the stock with an ADD rating and a target price of INR 490, valuing it at 45x FY28E EPS.

- Leading the defence order pipeline:** BEL's order backlog as of Q3FY26 ended at INR 730bn (FY25-end book to bill at 3.0, providing revenue visibility of ~3 years). FY26 order inflow guidance is of INR 270bn (ex-QRSAM), which we believe is achievable. Key upcoming orders in the pipeline include QRSAM (INR 300 bn) by Q1FY27E and Project Kusha (INR 400bn) by FY29E, supported by mid-value orders such as naval electronics for NGCs (INR 80bn) and avionics for additional 97 LCAs (INR 24bn).
- Modernization through defence electronics:** Modern warfare is shifting toward electronic-centric capabilities; intelligence driven systems like integrated communications and radars now comprise c.40% of a platform's total value. India's defence electronics market is projected to grow at a 7% CAGR through 2032, outperforming the 4% global average, primarily led by naval electronics. This structural migration enables BEL to capture an increasing share of defence contracts.
- Focused R&D increasing indigenization:** By investing ~6% of annual revenue into R&D, BEL has achieved a self-reliant model where indigenous products account for 74% of the total turnover. This innovation is bolstered by specialized business units (SBUs) targeting high-growth frontiers like AI, cyber defence, UAVs, seeker technology for missiles, and AESA radar. Collaborations with defence labs, startups, and global OEMs facilitate expansion into military and civilian domains while providing the scale for an aggressive global export strategy.
- Financials and valuations:** BEL delivered a 15.6% revenue CAGR over FY22-25. We forecast a revenue CAGR of 15% over FY25-FY28E, with EBITDA margin of 27.5% for FY28E and an EBITDA/PAT CAGR of 13.4%/14.1% over FY25-FY28E.

YE March (INR mn)	FY23	FY24	FY25	FY26E	FY27E	FY28E
Net Sales	1,77,344	2,02,682	2,37,688	2,72,270	3,12,119	3,61,666
EBITDA	40,859	50,464	68,337	73,592	85,298	99,563
APAT	29,862	39,852	53,227	58,528	67,549	79,072
Diluted EPS (INR)	4.1	5.5	7.3	8.0	9.2	10.8
P/E (x)	109.3	82.0	61.4	55.8	48.4	41.3
EV/EBITDA (x)	78.0	62.5	46.4	42.5	36.3	30.7
RoCE (%)	21.3	25.5	28.4	26.8	26.6	25.9

Source: Company, HSIE Research

## ADD

CMP (as on 05 Mar 2026)	INR 460
Target Price	INR 490
NIFTY	24,766

### KEY STOCK DATA

Bloomberg code	BHE IN
No. of Shares (mn)	7,310
MCap (INR bn) / (\$ mn)	3,362/36,708
6m avg traded value (INR mn)	7,292
52 Week high / low	468/252

### STOCK PERFORMANCE (%)

	3M	6M	12M
Absolute (%)	13.0	24.1	67.3
Relative (%)	19.7	24.9	58.8

### SHAREHOLDING PATTERN (%)

	Sep-25	Dec-25
Promoters	51.1	51.1
FIs & Local MFs	20.9	20.5
FPIs	18.1	18.5
Public & Others	9.8	9.9
Pledged Shares	0.0	

Source: BSE

Pledged shares as % of total shares

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### Nikunj Khetan

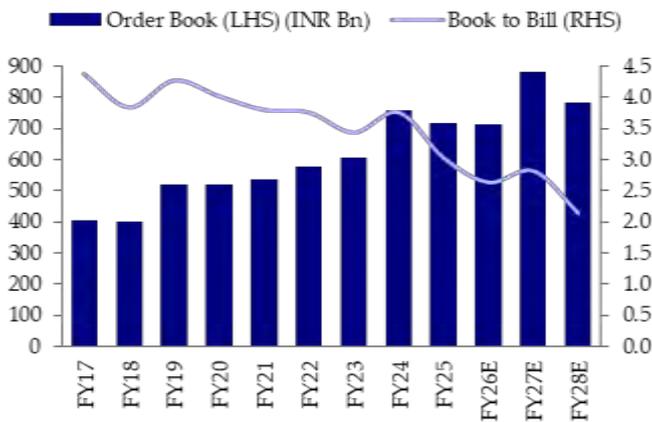
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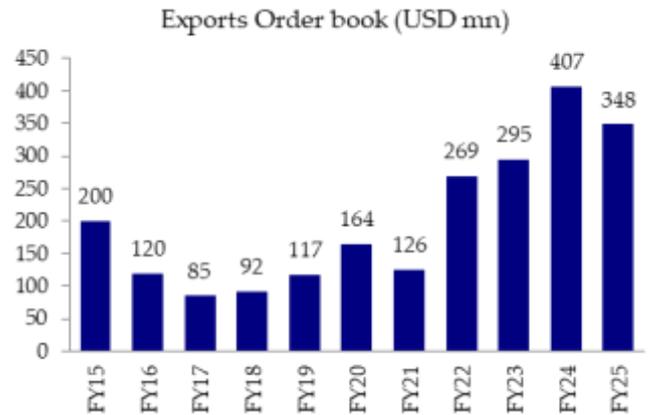
Focus charts

Order backlog to remain strong



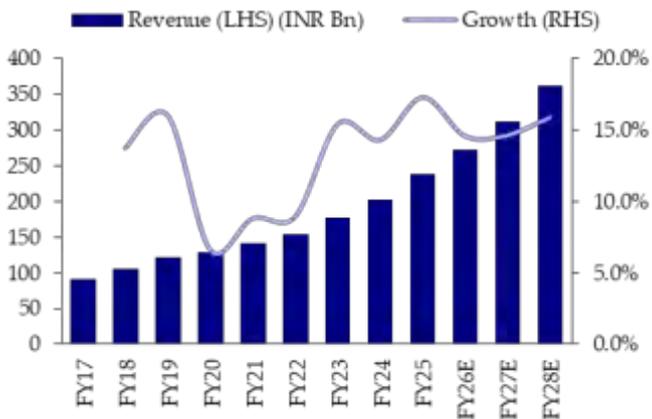
Source: Company, HSIE Research

Increasing export order backlog



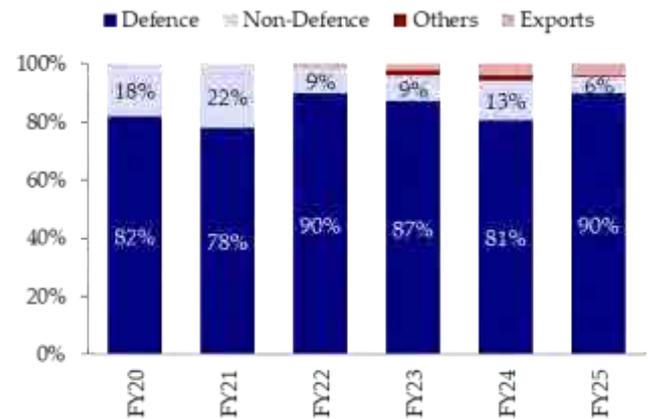
Source: Company, HSIE Research

Revenue growth at 15% CAGR from FY25-FY28E



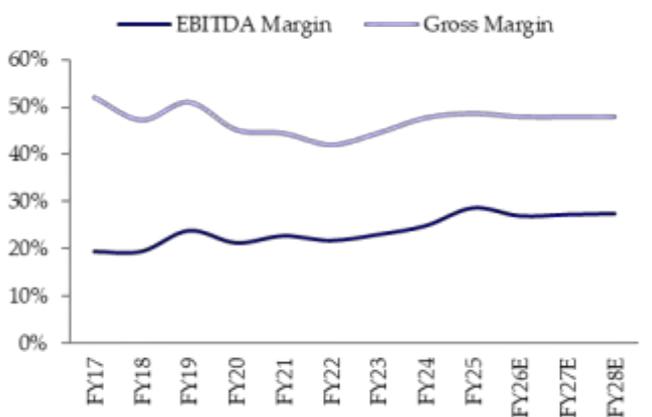
Source: Company, HSIE Research

Defence segment remains a dominant contributor



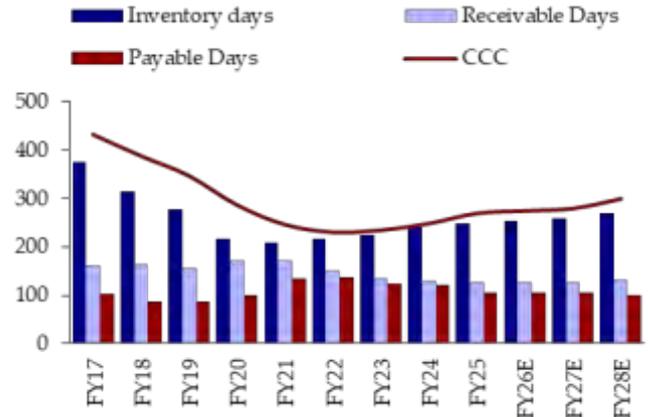
Source: Company, HSIE Research

EBITDA margins to slightly inch up till FY28E



Source: Company, HSIE Research

CCC to move up gradually over FY25-FY28E



Source: Company, HSIE Research

## Order inflows led by large platform, recurring base orders

BEL is at the forefront of the electronics subsegment in the Indian defence industry. It is both a system integrator and a systems/sub systems provider. Its partnership with DRDO for development and production of several major defence platforms of India helps it win multiple orders consistently through the year. At FY25-end, the order backlog of BEL stood at INR 716.5 bn, which grew to INR 730bn by Q3FY26. This strong orderbook is majorly anchored by the following pending defence projects by our estimates.

LRSAM - INR 45bn

Electronic fuses – INR 40bn

BMP-2 upgrade – INR 25 bn

Akash Army – INR 20 bn

Himshakti

Arudhra MPR

The top-7 projects make up INR 250bn of the order backlog. The book to bill at FY25-end was at 3.01, extending revenue booking visibility for the next two years at least.

### Order backlog to remain strong



Source: Company, HSIE Research

BEL booked strong order inflows in FY25, aggregating to INR 187bn, with non-defence contribution at 9.1% and defence making up a dominant share of 90.9%. As per our assessment, order inflow for H1FY26 was INR 125bn with high-value tickets such as ATULYA Radars and EW Suites. This order inflow increased to INR 167bn by Q3FY26. The management expects a total order inflow of INR 270bn in FY26. We believe it is plausible as the balance orders of INR 103bn will be secured in Q4FY26 and are expected to be received on the back of key pipeline orders such as Shatrughat and Samaghat projects, and next gen corvettes (NGC) related electronics (worth INR 25bn). The company also expects to receive orders for the avionics package for the additional 97 LCA Tejas Mk1A, Shakti, ground-based mobile electronic intelligence system (GBMES), and mountain radar. The company expects INR 25bn p.a. of order inflow from non-defence segments like homeland security, medical electronics, and software. Apart from this, estimated orderbooks also include a recurring base order win of INR 150-180bn annually, excluding major platform deals.

- The biggest order set to be received by BEL is QRSAM, which is worth INR 300bn. It is expected to be awarded by Q1FY27. Electronics for next generation corvette also make up a big order pipeline of ~INR 80-100bn, set to be received in FY27.
- The second major platform under development is project Kusha. BEL expects to receive it by the end of FY29; it could be worth INR 400bn.
- The medium-term projects such as MRSAM, Akash NG for the army, electronics, and systems in naval projects like frigates, P-75, and P-75I should make up an order pipeline of over INR 800bn over the next five years.
- The long-term catalysts for BEL's order book are projects that are under development such as Tejas MK-2, AMCA, LUH, Destroyers P15B, and missile systems under mission Sudarshan Chakra.

## Indigenization, product development led by higher R&D spend

R&D is the primary focus area for BEL. The company's innovation practices are contributing to its business growth and self-sufficiency in defence electronics by increasing indigenization and value addition. More than 50% of its employees are qualified engineers or scientists, who help it in driving various research initiatives. The R&D team consists of 2,698 employees operating within a three-tier structure:

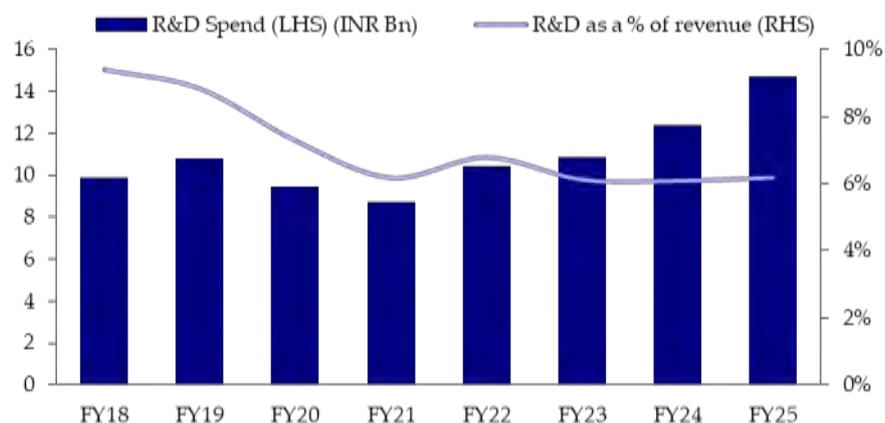
- Two Central Research Laboratories (CRLs),
- One Product Development and Innovation Centre (PDIC),
- Centers of Excellence (CoEs) and Development and Engineering (D&E) groups at all nine factory units.

The above-mentioned three-tier structure ensures that CRLs focus on development of core technologies, while the PDIC and D&E groups convert these initiatives into field-ready systems.

Further, BEL extensively collaborates in the defence ecosystem with other partner companies or MSMEs, which help it in designing, developing, and producing cutting-edge technological products. It has empaneled 24 new partners in FY25, bringing the total to 346 (including 177 MSMEs). This network includes 229 Design Service Providers and 42 R&D Solution Providers.

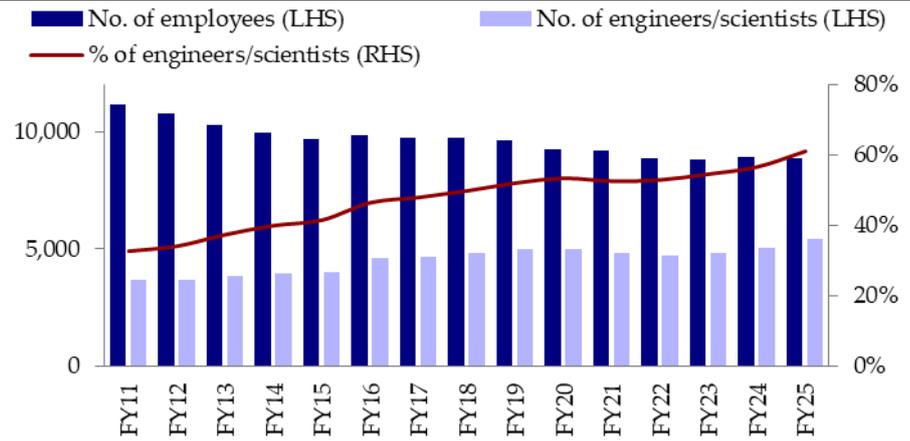
BEL has consistently invested 6-8% of its turnover in R&D over the past seven years, which is among the highest for defence PSUs. In FY25, an investment in R&D amounting to 6.2% of revenue resulted in 74% of the overall topline of the company from indigenous products.

### R&D growing in tandem with sales



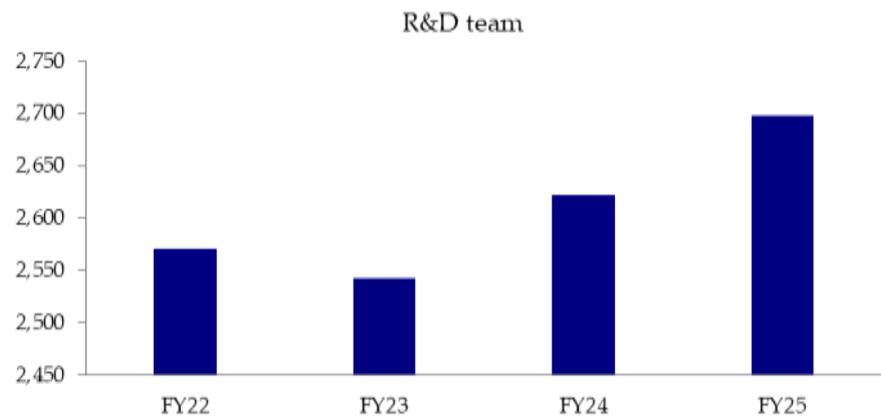
Source: Company, HSIE Research

**Engineer/Scientist Count**



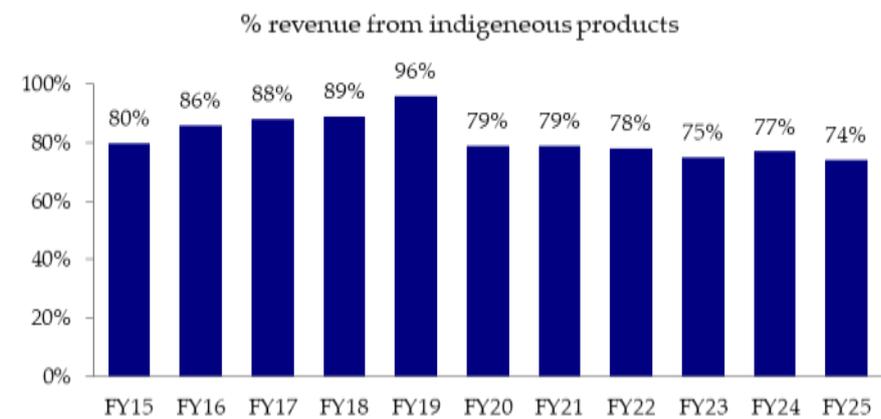
Source: Company, HSIE Research

**Very strong R&D team reflects company's focus on innovation**



Source: Company, HSIE Research

**Revenue from indigenous products is maintained well above 70%**



Source: Company, HSIE Research

## Major defence projects initiated and delivered (FY25)

The company initiated several high priority defence programmes in FY25, primarily in collaboration with the DRDO and through in-house engineering.

Category	Projects Initiated (FY25)	Projects delivered (FY25)
Weapon systems	Kusha weapon system radars, Kavach system	Decoy system for AMS, AD Gun training simulator
Radar & surveillance	ADTCR - Sky Shield, foliage penetration radar, WLR - AESA (X)	X Band DWR (SSPA Based), MSSR Mk-XIIA
Naval & underwater	Autonomous surface vessel (ASV-MCM), Anunaad sonar suite	Torpedo defence System (TDS), Portable diver detection sonar
Communications	Network elements for TCS program, BSS roll-out	Himshakti (COM Segment), Light weight SDR-AR

Source: Company, HSIE Research

The R&D division serves as the lead driver for orderbook execution, backward integration, and margin expansion. By developing indigenous technology modules, BEL reduces reliance on foreign OEMs and captures a higher share of the value chain.

In-house development of sub-systems allows the company to replace expensive imported components by indigenously manufactured products. In FY25, 20 major technology modules were indigenized, including:

- **Photonics and Lasers:** 2 KW Fiber Laser source and Photonic Transmitters for Atulya Radar.
- **Semiconductors:** 3.1–3.5GHz 150W GaN Amplifiers and C-Band GaN RF devices.
- **Computing:** 3U VPX-based baseband processing modules and Missile Check Facility Computers.

## Deep moat constituted by intellectual property (IP) rights

The company has been working consistently over the years for IP creation to develop a strong competitive edge. Accordingly, so far, it has accumulated an impressive portfolio of 810 IPRs, including 288 patents and 489 copyrights. Additionally, it filed for 151 new IPR applications in the current year.

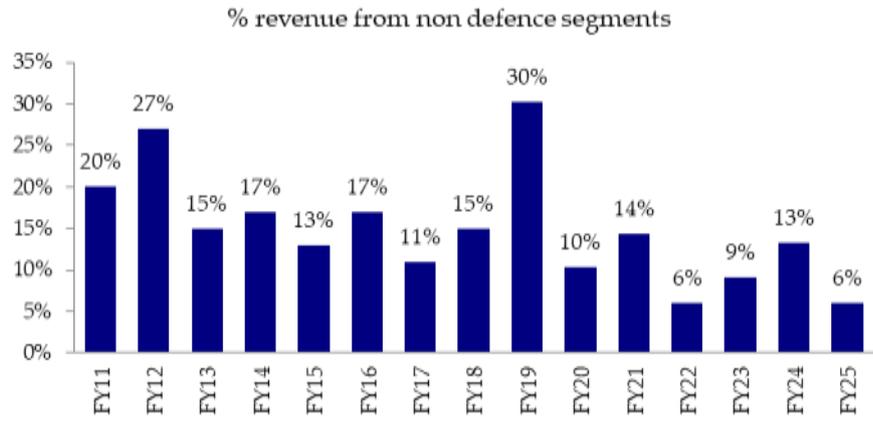
## Diversification into non-defence and allied sectors

BEL is diversifying into the non-defence segment rapidly. The company aims to increase the non-defence revenue contribution from the current 5.7% to ~20% in the medium term. The future R&D roadmap emphasizes dual use technologies that apply to both military and civilian markets. This helps the company develop products for non-defence sectors as well and diversify its revenue streams.

Segment	Future Focus Areas
Civil aviation	Air traffic management systems, Ground control surface Movement radars.
Space electronics	Satellite assembly & integration, Space-grade solar cells, LEO Satellite communication algorithms.
Cyber & software	Software as a Service (SaaS), Network security, AI-based predictive maintenance.
Energy & mobility	EV Charging stations, Fuel cells, and advanced energy storage products.

Source: Company, HSIE Research

Revenue contribution from non-defence segment has fallen over time



Source: Company, HSIE Research

## Fast-growing opportunity space for BEL

BEL has identified specific new-age high-growth areas for the next 3-5 years. These technologies and products are expected to drive the company's future growth. A few of the key technologies/products are listed below:

- **Seeker technology:** BEL is investing in developing radio frequency (RF) and imaging infra-red (IIR) seekers to capture the missile electronics market.
  - The global missile seekers market is projected to grow from USD 3.9bn in 2024 to USD 8bn by 2030 at a 12.5% CAGR, driven by geopolitical tensions and rampant military modernization.
  - In India, demand is sustained by government mandates for domestic procurement of strategic missiles. BEL serves as a primary partner to DRDO, managing technology absorption, engineering, and production of RF and IIR seekers. The current commercial production includes seeker systems for the Akash Prime and QRSAM, with upcoming opportunities involving the MPATGM.
- **Unmanned systems:** Given that significance and applications of UAVs are rising at an unprecedented pace, BEL is also focusing on developing UAVs and comprehensive anti-drone systems to capture this upcoming opportunity.
  - The Unmanned Systems market—comprising aerial (UAV), underwater (UUV), ground (UGV), and surface vehicles (USV) —is a high-growth opportunity, driven by a global shift toward autonomous mobility.
  - As per the industry sources, the global UAV market is projected to reach USD 126bn by 2032, while the Indian UAV and drone segment is estimated to grow to USD 3bn by the same time (from ~USD 1bn now).
  - BEL has operationalized a dedicated business unit in Bengaluru to address these opportunities, partnering with DRDO and academic institutions to develop complete platforms and high-value sub-systems. Current implementation includes the supply of drone guard systems and the development of zero-emission solar-powered USVs, and high endurance autonomous underwater vehicles (HEAUV).
- **Arms and ammunition:** This category includes precision guided munitions, smart weapons, and missile electronics.
  - The global ammunition market is projected to reach USD 36.1bn by 2033, driven by geopolitical conflicts and a critical need for advanced ammunition.
  - Arms and ammunition including smart weapons and precision-guided munitions are critical for the country's strategic needs. Under "Make-in-India" policies, BEL has established a dedicated business unit in Bengaluru to address this demand through partnerships with DRDO and global OEMs for precision-guided munitions and electronic fuzes.
- **Medical Electronics and Healthcare Solutions**
  - The Indian medical electronics market is estimated to reach USD 50bn by 2030, representing a significant shift toward domestic manufacturing aligning with a USD 900bn global MedTech industry.
  - BEL has leveraged its pandemic-era production of 30,000 ICU ventilators and 18,000 oxygen concentrators to establish a permanent presence in this vertical. The company is currently executing a diversification strategy

that utilizes transfer of technology (ToT) from niche Indian designers and in-house R&D to develop affordable, indigenous solutions.

- Key projects in the pipeline include the manufacturing of hemodialysis machines, turbine-based ventilators, and advanced patient monitoring systems for intensive care units.
- **Energy storage products:**
  - The global lithium iron phosphate (LFP) battery market is projected to reach USD 124.bn by 2032, with domestic demand estimated at INR 700bn by 2028.
  - BEL is positioning itself within this segment by developing 10Ah, 25Ah, and 50Ah LFP cells for niche defence applications. The company has developed and tested LFP cells intended for high-endurance autonomous underwater vehicles (HEAUV) and torpedoes, reflecting a technology transition from legacy silver-zinc batteries.
  - Further, BEL is engineering LFP-based energy storage systems for armored fighting vehicles, tanks, and artillery gun systems to replace traditional lead-acid batteries.
- **Space electronics:**
  - The Indian space sector is undergoing structural liberalization, with the ministry of space receiving rising budgetary allocations and new FDI policies allowing up to 100% investment in satellite component manufacturing.
  - BEL is leveraging its status as a qualified ISRO partner for Assembly, Integration, and Testing (AIT) to transition from ground-segment hardware to space-based assets, including small and micro-satellites and LEO constellations.

## Current major programs driving orderbook

Defence electronics form the backbone of manufacturing and key upgrades of weapons and other assets of Indian armed forces. As a leading producer of defence electronics products, BEL is set to benefit from modernization programs of the Indian defence industry. BEL is leading the below described strategic defence programs of India. These include projects from current orderbook as well as future pipeline. These programs will drive BEL’s future orderbook and hence provide medium-term revenue visibility.

Key programmes	Details
<b>Long-range surface to air missiles (LRSAM)</b>	LRSAM system is jointly designed and developed by DRDO and Israel Aerospace Industries (IAI). This is an advanced air defence system, which is also known as Barak-8 for the Indian armed forces. It is designed to intercept various aerial threats such as aircrafts, missiles, UAVs. It has been successfully tried and deployed on Indian warships (P-15A). Its production lines are established in India where Indian and Israeli components are integrated in line with the vision of “Make in India”. This system with a range of 100kms is equipped with multi-function surveillance, track, and guidance radar (MFSTAR), command and control system, advanced radio frequency missiles, seekers, and launchers. This has been deployed on Kolkata class destroyers of Indian Navy and discussions are underway for deployment in various other naval warships. MRSAM (with a range of 70Kms) is a variant of LRSAM, which is built for the Indian army/air force for land-based operations.
<b>Electronic fuses</b>	BEL has received an order of INR 53bn in 2023 for electronic fuses to be produced over 10 years. These fuses are crucial components of artillery guns. They provide continuous artillery firepower to the military operations. This project aims to decrease reliance on imports as these will be manufactured indigenously and ensure timely availability of the supplies.
<b>BMP-2 tanks (Electronic upgrade)</b>	BMP-II tanks have been in service for more than 30 years and, hence, their electronic upgrades are underway to modernize their operations and extend their life. The current version of these tanks enables only direct viewing optics and hence operator fatigue is more, and night vision is not feasible. The upgrade aims to modernize sighting system to enable night vision facility. Also, the present fire control system is analog which results in compromised accuracy, and hence the ongoing upgrades will integrate digital fire control system for better accuracy. Digital communication systems will also be integrated into the tanks.
<b>Quick reaction surface to air missile (QRSAM)</b>	QRSAM is a highly ambitious missile programme of India, which has been developed by DRDO in collaboration with BEL and BDL. It is an indigenous mobile short-range air defence system. It is entrusted with the duty of protecting marching infantry and tanks from aerial threats like fighter jets, UAVs, and missiles. It is well-equipped with advanced systems such as active phased array surveillance and tracking radars, RF-seekers, electronic counter-counter measures (ECCM) for jamming environments, etc. This fills the gap in India’s defence system between “very short range” and “medium range” levels. Its operational range is 30-40kms and aerial altitude is 9-14kms. The current QRSAM order is expected in March’26 and has a potential size of INR 320bn.
<b>Akash missile systems</b>	As explained earlier, Akash missile system is an all-weather, mobile surface to air missile system, which defends against low, medium, and high-altitude aerial threats. Its range is 25-30kms with enhanced range of up to 70kms for Akash-NG. BEL has secured orders for supplying Akash systems with upgrades such as inclusions of RF-seekers and high-altitude operational capabilities. Additionally, it secured orders to supply Akashteer, which acts as advanced automated command and control unit that is like an electronic brain and connects various radars, sensors, and missiles of this Akash system to create a robust defence shield.

Key programmes	Details
<b>Project Kusha</b>	Project Kusha is India's indigenous DRDO's lead air defence program, which intends to develop mobile long-range surface to air missiles. It is expected to fill the gap between LRSAM (100kms range) and Russian S-400 (400km range) and reinforce India's air defence system. The initial budget for procurement of five squadrons is INR 210bn. Its phased induction for the Indian air force/navy is planned to take place around 2028-30. This will be equipped with advanced radar and multiple interceptor variants (150-400kms range) with a capability of single shot kill. The development of a naval version which would work as an anti-ship ballistic missile is also underway.
<b>Shatrughat and Samaghat EW System</b>	Shatrughat and Samaghat are two strategic electronic warfare programs of Indian armed forces, and a part of a larger programme Dharashakti EW, which focusses on surveillance, interception and jamming of enemy signals for ground forces in deserts and plains. The total program cost is INR 65bn. They are expected to incrementally drive orderbook and revenue for BEL in the coming few years.
<b>Submarine projects P75(AS) &amp; P-75(AIP)</b>	BEL is working closely with DRDO and Mazagon dockyard for high indigenous content in submarine programs P-75 (Scorpene class) and P-75I(AIP). BEL is expected to contribute by supplying electronic warfare suites, weapon control systems, software defined radios, sonar systems along with necessary electronic controls and integration support.
<b>Tejas LCA MK1A 97 avionics package</b>	BEL has received orders worth INR 24bn from HAL for the supply of 20 varieties of airborne electronic systems to be fitted in LCA Tejas MK1A. This order spanning five years from 2023 to 2028 comprises supply of critical avionic line replaceable units (LRUs) for digital flight control computers, air data computers, weapon computers, radar warning receivers, and heads-up display. This is the single largest order of Avionics received by BEL so far.

Source: Company, HSIE Research

## Versatile product portfolio leading defence modernization

BEL offers a diverse product portfolio primarily centered on advanced defence electronics, including state-of-the-art radar systems, electronic warfare suites, naval sonars, and secure communication equipment for the Indian Armed Forces. Beyond its core military offerings, the company has successfully diversified into civilian sectors, manufacturing critical technologies such as Electronic Voting Machines (EVMs), solar power systems, and specialized medical electronics. Details of the key products manufactured by BEL are provided in the below table.

Key products	2-D appearance
<p><b>Radars</b></p> <p><b>Advanced multi-function AESA radar (AMAR):</b>            AMAR is state-of-the-art ground-based radar system designed for fire control and surveillance. Its features include advanced AESA antenna, high resolution, accurate threat detection, and electronic counter-counter measure (ECCM) capabilities. It combines surveillance, tracking, and targeting into one system to provide situational awareness. It has multi-mission capabilities such as air defence, ground attack, electronic warfare, and high-resolution imaging. It makes fighter jets and ships versatile.</p>	
<p><b>Anti drone system-soft and hard kill:</b>            This system utilizes multiple sensors simultaneously and provides a comprehensive solution with respect to unmanned aerial vehicles. Its functions include detection, tracking, identification, and neutralization of UAVs. It has the capability to effectively enforce no fly zone by intercepting identified threats. Its applications include military and border protection, protection of critical infrastructure and integrated air defence.</p>	
<p><b>3-D surveillance radar (Rohini):</b>            Rohini radar plays the role of medium-range surveillance radar mounted on a mobile platform which operates in S-band (2-4 Ghz frequencies). It is capable of tracking while scanning airborne targets up to 150kms. The unique feature about Rohini radar is that it can operate in all-weather situations even when signals pass through rain, snow, or fog. Hence, it is ideal for tracking hurricanes, monsoons, air traffic control, marine navigation, and space communication with satellites. Indian air force is its main user, which has deployed it for identifying potential aerial threats such as aircrafts, drones, and helicopters across a 150km range, even in hostile electronic warfare environments. Mobility of the radar allows for rapid redeployment suitable for country's borders. Additionally, a variant of this radar named "Revathi" has been deployed by Indian Navy.</p>	

## Key products

## 2-D appearance

### Air defence fire control radar (ADFCR)-ATULYA:

This is a ground-based air defence fire control radar in conjunction with anti-aircraft guns form a critical air defence system. It can control and command air defence guns for effective point defence. Its main purpose is to provide protection against the aerial threats such as fighter aircrafts, drones, and helicopters at very short ranges as well during day and night in all weather conditions. The crucial advantage of this radar is that it provides defence even in the presence of enemy jamming.



### Weapon locating radar (WLR):

Deployment of electronic surveillance devices such as WLR in the battlefield serves as a force multiplier to enhance the combat potential of armed forces and improve efficacy of the weapon systems. WLR has been designed to locate hostile guns, rockets, and other weapons which are causing interference to the ongoing operation. In its secondary role, it can track and observe the fall of shots from own weapons to provide course correction to own fire. In a combat situation, a large quantum of deployed artillery, movements of aerial objects, weather, and ground clutter results in high density of returned conflicting signals on the radar screen. Processing these conflicting signals and presenting coherent usable insights to gunners on a real time basis becomes crucial. WLR carries out this crucial task and supports the operation.



### All-weather low-level air defence weapon control system:

This system is a combination of radar, computer and display that deals with and counters electronic counter measures (ECM) protected enemy aerial missions. It is a mobile land-based detect and track radar that identifies and counters an increasing number of aerial threats from low flying high-speed aircrafts. It has all weather operational capability with prompt detection, accurate and definite tracking with built-in counter measures.



### Counter drone system:

A counter drone system can perform real-time continuous search, detection, tracking, and soft/hard neutralization of flying drones in the designated area. It comprises a radar system for drone detection and tracking along with an electro-optical system, a laser range finder (LRF), communication intelligence (COMINT) and infrared camera for detection and tracking of drone target. Further, the soft kill is executed by radio frequency (RF) jamming and GPS jamming. Additionally, laser directed energy weapon (DEW) system performs the hard kill. Command and control system with a power source is another key component of the counter drone system.



Source: Company, HSIE Research

# Bharat Electronics: Initiating Coverage

Key products

2-D appearance

## Weapon systems

### Akash missile system:

This air defence missile system is a medium-range surface-to-air-missile system that offers protection from various aerial threats. This system has cutting-edge features such as 18km altitude coverage of missile, cross-country mobility, 80km coverage of multi-function radar and 120Km coverage of central acquisition radar. It also has high jamming immunity even in severe ECM conditions, and simultaneous engagement of multiple targets with several missiles. The real-time multi-sensor data processing and threat evaluation enables simultaneous engagement of multiple targets from various sides. This entire system is flexible and can be upscaled. It can operate in a group mode as well as an autonomous mode.



### Akash new generation (NG):

Akash new generation is a significant upgrade over the original Akash system with longer range (up to 70Kms), better interception of the modern threats such as drones, stealthy targets, faster response, and higher indigenous content (96%). It has advanced technologies involved such as indigenous radio frequency seeker for accuracy of attack, and solid rocket motor for improved readiness. This system can engage with 10 or more targets simultaneously and is equipped with advanced ECCM features. In its upgraded version, this system is a strong and reliable air defence system of India.



### Quick reaction surface to air missile (QRSAM):

QRSAM is all indigenous advanced mobile air defence system of India, which has been developed by DRDO for protecting moving columns of Indian army (tanks, infantry) from modern aerial threats such as missiles, drones, and aircrafts. BEL and Bharat Dynamics Ltd (BDL) have contributed immensely to its development. It is equipped with active phased array radar so that it can provide surveillance up to 120kms and tracking up to 80kms. It has road, rail, and air transportability and possesses advanced ECCM features. It can engage with multiple targets simultaneously and, hence, is suitable to counter drone swarms. Its manufacturing order is expected to be awarded to applicants soon.



Source: Company, HSIE Research

## Key products

## 2-D appearance

### Defence communications

#### Software Defined Radio (SDR):

SDRs are multiband, multirole advanced radios, which can operate between frequencies of 30Mhz to 2GHz. It is a highly flexible reconfigurable military communication system, which has replaced heavy hardware. It is interoperable with legacy radios and is protected against electronic counter measures. It comes in four variants:

1. Handheld SDR: for short range ground to ground, ground to ship and ship to ship communication.
2. Manpack SDR: portable backpack mounted communication system used by military personnel.
3. Naval SDR: SDR for naval communications
4. Tactical SDR: provides ship to coast, ship to air and ship to ship communications and network applications.



#### Ultra-high frequency trans-receiver-combat radio:

It is a next generation tactical radio, primarily designed for tank and armored vehicles providing secure, reliable battlefield communication. It provides long-range, high-power ultra-high frequency communication suitable for infantry, equipped with GPS, modem, and electronic counter-counter measures (ECCM). It is suitable for operation in jammed environments. It supports both voice and high speeds data enabling multimedia communication and data transfers, required in a combat situation.



Source: Company, HSIE Research

## Key products

## 2-D appearance

### Electronic warfare and avionics

**Mini portable jammer:** Hybrid technology-based portable jammer is a VIP protection system. It is a broadband transmitting equipment that can be effectively used for disrupting operations by muting a wide range of receivers of remotely controlled explosive devices used by anti-national elements. This is a portable system that can be easily used in public places where vehicle mounted jammers can't reach. This is specially used for counterterrorism.



Source: Company, HSIE Research

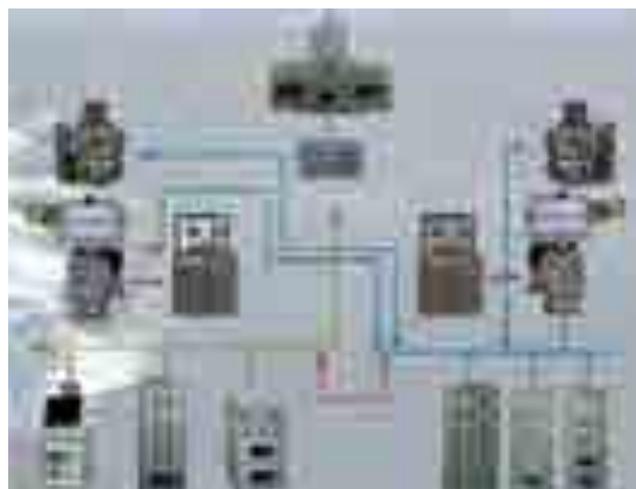
# Bharat Electronics: Initiating Coverage

## Key products

## 2-D appearance

### Electronic warfare (EW) suite for the large warship:

This is a shipborne integrated electronic warfare (IEW) system that combines electronic support measures (ESM) such as passive surveillance and electronic counter measures (ECM) like disruption of enemy radar and sonar. It is the naval version of a typical electronic warfare that has capabilities of interception, measurement, and jamming features. This system has quick reaction for both ESM and ECM functions.



### Mobile ground-based electronic intelligence (ELINT) system:

This system is designed with advanced digital receivers to search, intercept, measure, monitor, analyse, identify, and locate detectable radar emitters within the specified frequency spectrum. This system consists of three receiving stations (RS) and one control station (CS). Its unique features include gathering tactical information, with high probability of intercept, accurate identification and tracking of targets. It has intelligence gathering capabilities that are crucial in combat situations.



Source: Company, HSIE Research

## Key products

## 2-D appearance

### Network centric systems (C4IS)

#### C4IS Trinetra:

C4IS provides a unified picture to the command center by analyzing data received from all the sensors and systems present in the network. This system is extremely customizable. This can be used for standalone command and control center as well as for multi-level, multi-agency, multi sensor, multi-platform and multi command center configuration. Trinetra is a comprehensive solution providing surveillance, attack and defence features protecting air, land, and sea.



#### Border surveillance system:

It provides all weather surveillance for 24 hours monitoring of the border areas. This system is equipped with battlefield surveillance radar (BFSR), and electro-optical sensors, day/night cameras, geo location sensors, and laser range finder. It is mounted on a 2-axis tilt platform. It detects motion automatically. Further, it has remote operation capability (from up to 20kms).



## Bharat Electronics: Initiating Coverage

### Key products

### 2-D appearance

#### Coastal radar system:

This radar system is mainly used for monitoring and protection of coastline, ports, waterways, and critical infrastructure. It also takes care of detection and tracking of vessel traffic, intruders, terrorist threat, illegal fishing, immigration, and smuggling. The command-and-control center is the core of the intelligence of coastal radar system. The data of all connected radar and sensor stations are received, processed, integrated, and displayed in real time. Also, the information is communicated to the concerned authorities for suitable actions.



#### Combat Management System (CMS) for Navy:

CMS automates tactical data handling from the ship's sensors and provides comprehensive situational picture to the command centre for accurate and timely decision-making. It gathers data from ships, helicopters, aircrafts, various sensors, integrates and processes them on a real-time basis. Further, it presents a complete tactical picture to the command centre and provides situational awareness. This can designate various sub-surface, surface, and air targets to the fire control system for execution of weapon firing. Additionally, it can monitor this firing execution and display the status of weapon communication after firing.



Source: Company, HSIE Research

### Key products

### 2-D appearance

#### Naval systems

#### LYNX fire control system:

LYNX is a quick reaction, multi-sensor and compact naval gun fire control system designed for Indian Navy to track and engage air and surface targets amidst sea clutter. It generates data for engaging targets with naval guns like AK-176, AK-630 and SRGM (super rapid gun mount). It is indigenously developed by BEL. Due to its open architecture and flexible design, this can be upgraded for different ship classes. It is installed on various Indian Navy ships such as destroyers, frigates, missile boats, corvettes, and offshore patrol vessels.



#### 3D surveillance radar-Revathi:

Revathi is a ship borne radar with advanced technologies like digital receiver and programmable signal processor providing high resolution, accuracy, response, and information availability. This radar has a range of 210kms and can track up to 150 different targets simultaneously. It forms multiple beams in reception that are used for estimating heights of the targets. It has a key feature of identification friend or foe (IFF) which helps separate noise from signals. This also has excellent electronic counter-counter measures capability, which offers jamming analysis and presentation. It is deployed on various naval warships of India.



## Bharat Electronics: Initiating Coverage

### Key products

### 2-D appearance

#### Hull mounted sonar:

It is the sonar for frigates and destroyers' classes of the Indian Navy ships. It has a range of 30Kms and can simultaneously track four targets. This has a software-based modular architecture; hence various versions of this system can be configured for various classes of warships with the same building blocks without starting from scratch. This has been indigenously developed and manufactured by BEL, in line with Indian Navy's push for self-reliance. Its main applications include detection and tracking of adversary submarines. There are variants like ABHAY (compact hull mounted sonar) that are used for patrolling in coastal areas as they are designed for smaller vessels and shallow waters.



#### Submarine sonar suite:

Submarine sonar suite is a compilation of multiple sensors for passive detection. Various sensors of this suite collate several different characteristics of the same target and provides conclusive data through fusion of information from various sensors. The constituent sonars in this suite are active sonar, passive sonar, intercept sonar, underwater telephony, and obstacle avoidance sonar. It can be used for automatic torpedo detection and is easily scalable to suit various submarines platforms with different displacement capacities.



#### Advanced torpedo defence system (for ships with expendable decoys):

This is a system that combines various sensors and decoys for defence against vintage as well as modern torpedoes. It is a fully integrated system with both torpedo detection and countermeasure capabilities. This system is equipped with hull mounted as well as a towed array sonar for passive detection of torpedoes. Additionally, it has towed as well as expendable decoys that create acoustic decoying of the torpedoes. It has an intelligent decoy system with multi-mode operation capabilities that can soft kill torpedoes.



Source: Company, HSIE Research

### Key products

### 2-D appearance

#### Electro optics

#### Passive night vision goggles:

Advanced passive night vision goggles is a light weight, durable, water-resistant, and compact night vision device. It is a single tube binocular with an adjustable eyepiece. It has a full field viewing capacity, automatic brightness control, and infrared illuminator for map reading. It is suitable for patrolling and surveillance in the night.



## Key products

## 2-D appearance

### Laser range finder (eye safe):

This laser range finder (LRF-312) is a lightweight device designed to measure the exact distance of a target within 20kms range along with its angular distance from viewer and elevation. Its applications include target acquisition and fire control, reconnaissance and surveillance, border patrol, intelligence gathering, and marine exploration. It is also used by unmanned vehicles for altitude measurement, precise takeoff, as well as landing.



### Passive night sight for rocket launcher:

This is a weapon sight system designed to be mounted on various rocket launchers. Its unique design enables users to lower the distance between the sight and weapon for a convenient aiming position. An illuminated red cross reticule with variable brightness allows for a better accuracy and fire control while engaging with the target. Further, it uses image intensifier tubes to amplify ambient lights (star or moon light) to enable the user to see in the dark without emitting any significant detectable light. BEL produces passive night sight devices for rifles, and rocket launchers. It is versatile in nature and, hence, can be used for a variety of shoulder fired weapons. Therefore, it is an essential device for the infantry.



### Uncooled thermal image binocular:

Handheld uncooled thermal image binocular is a night vision device that tracks infrared frequencies emitted by the target and detects its coordinates. It is completely silent and passively captures heat signature emitted by the object. It can work even in the low light or obscure conditions. It is rugged in nature with powder-coated exterior made up of non-breakable composite material. Its applications include crucial operations such as military surveillance, border patrolling, search & rescue (finding people in smoky or dark atmosphere), wildlife observation, and vehicle inspection.



Source: Company, HSIE Research

## Key products

## 2-D appearance

### Tank electronics and gun upgrades

#### Advanced driver night sight (A-DNS):

A-DNS is constituted of an advanced uncooled thermal imager (TI) and a normal day camera having low light level imaging capability. This allows for electronic image fusion of TI and day camera. Driver can select TI or day camera or the fused image on display. It provides the tank driver the capability to drive the tank at night with headlights switched off.



#### Schilka upgrade:

India has upgraded Schilka gun ZSU 23mm, 4 barrels, advanced all weather self-propelled air defence weapon system upgraded by BEL with new digital radar, optics, modern engines, and air conditioners. BEL has replaced its old analog systems with advanced 3D active phased array radar for better multi target tracking and electronic counter-counter measures (ECCM). Newly added electro-optical system helps in precise target acquisition, even against heavy jamming. Optical fire control system ensures day and night capability of detection and racking of targets while new engines have reduced fuel consumption in upgraded Schilka. This is integrated with indigenous jammers that make it a suitable weapon for neutralization of swarm drones. As it is capable of rapid gunfire and it has jamming capability, so it is considered a suitable upgraded hybrid weapon system for the armed forces.



#### Upgraded L-70 gun:

Upgraded L-70 gun is the transformed version of vintage Bofors anti-aircraft gun system. This has been upgraded by BEL and the main upgrades include replacement of old hydraulic drives by new electric drives, thermal imagers for target detection, eye safe laser range finder for superior target detection and integrated fire control systems for accurate ballistic calculations. This upgraded L-70 gun is a modern semi-automated drone killer as it is highly effective against drone swarms by saturating the sky with predictive fire.



#### Corner shot system:

This is an ergonomically designed portable weapon system that allows soldiers to see, aim, and fire the target without getting exposed to counterattacks. It provides a real time image of the target area located around a corner to the user with capability to aim at the target accurately and fire during day and night both. With its in-built infrared capabilities, it can efficiently work even in low light, night, or close quarter battles. This is suitable for applications in situations of counter terrorism and urban combats operations.



Source: Company, HSIE Research

# Bharat Electronics: Initiating Coverage

## Key products

## 2-D appearance

### Non-defence products

#### Electronic voting machines:

BEL supplies the key e-governance product electronic voting machine for various elections taking place in the country. It has two units namely a control unit and a ballot unit. The ballot unit displays symbols of various candidates and a polling button. On the other hand, control units keep a record of polling data such as total votes polled, votes for individual candidates, and declares results at the press of a few buttons in a very simple manner.



#### EV charging stations:

EV charging station built by BEL is an indigenously developed government approved compact charging station. These manned/unmanned charging stations can be used at homes, offices and other residential/ commercial locations including parking lots.



#### Solar power solutions:

BEL is a leading supplier of solar photovoltaic systems in India. Apart from supplying solar cells and modules with advanced features, it also takes care of installing on-grid large-scale utility systems, on grid commercial industrial rooftop and land-based systems.



Source: Company, HSIE Research

## Capitalizing on export opportunities for revenue diversification

BEL registered exports of USD 106.2 mn in FY25, reflecting a 14% YoY growth and a CAGR of ~48% during FY22-25. The current export order book stands at USD 349mn as of FY25-end. BEL exports its products to diverse geographies, including the US, France, Spain, the UK, Israel, Sweden, Armenia, Sri Lanka, and Mauritius. This brings durability to its export revenues.

The company exports high-complexity systems such as radar warning receivers, missile approach warning systems, coastal radar systems, and software defined radios (SDRs). Component exports include transmit/receive modules and mechanical parts, alongside services like sonar upgrades and software development. BEL is also expanding into civilian sectors, targeting AI applications, civil aviation radars, and solar power solutions in developed and emerging markets.

To drive scale, BEL is transitioning from a component supplier to a provider of complete platform solutions in the exports markets. Key initiatives for achieving this objective include:

- Established status as a Tier-I supplier for global OEMs like Thales, Saab, and Elbit Systems.
- Partnering with international defence players for "Build-to-Spec" manufacturing and technology absorption.
- Opening overseas marketing offices in Vietnam, Oman, and the UAE to facilitate G2G opportunities and localized support. Increased collaboration with other countries is expected to drive up export orders.
- Investment towards building dedicated facilities for manufacturing advanced night vision and missile integration support to cater to overseas clients in accordance with "Make in India and sell global" mandates.

Management targets a 20% CAGR for exports, significantly outpacing the 15% revenue growth guidance at the aggregate company level. The stated objective is to increase the export contribution from the current 4-5% to 10% of overall revenue within the next five years.

### Export revenues have steadily increased from FY19 lows



Source: Company, HSIE Research

## Increasing export order backlog



Source: Company, HSIE Research

## Subsidiaries, associated and joint ventures:

BEL collaborates with other technology led defence players for development and production of key innovative new age products. Recently in Dec'25, BEL and SED France (Safran Electronics and Defence) signed a JV for production of HAMMER smart precision guided air-to-ground weapon in India. Further, the below table underscores key associates and subsidiaries of BEL through which it caters to diversified requirements of the defence market.

### Joint ventures

Sr. No.	Name of company	Type	% held by BEL	Purpose
1	BEL Optronic Devices Ltd.	Subsidiary	100	To manufacture Image intensifier tubes and high voltage power supplies for night vision devices
2	BEL-THALES Systems Ltd.	Subsidiary	74	To design, develop, market, supply, and support advanced civilian and defence ground-based radar systems for India and global markets, leveraging the expertise of its parent companies, BEL, and France's Thales.
3	GE BE Private Ltd.	Associate	26	To manufacture advanced medical imaging components, specifically state-of-the-art X-ray tubes and related products. For global export, leveraging its joint venture between BEL and GE HealthCare to serve the healthcare industry with high-quality, regulated medical technology.
4	BEL IAI AeroSystems Pvt. Ltd.	Associate	40	This is a partnership between BEL and Israel Aerospace Industries (IAI) to provide comprehensive lifecycle support, maintenance, and upgrades for India's advanced defence systems particularly MRSAM.

Source: Company, HSIE Research

## Financial analysis

### Diverse segments fueling revenue growth

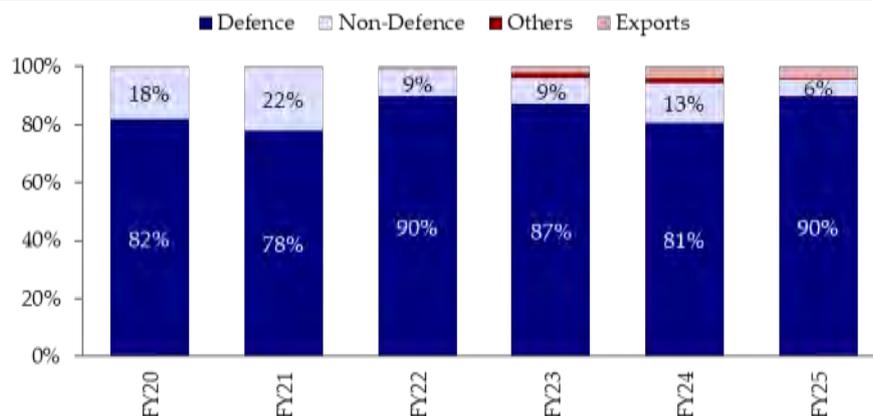
- BEL posted a healthy revenue CAGR of 12.9% over FY20 to FY25. Hereon, we estimate the growth to accelerate with revenue CAGR of 15% over FY25 to FY28E. This growth will be driven by the large existing order backlog (INR 730 bn by Q3FY26-end) of platforms such as the LRSAM (INR 45bn), electronic fuses (INR 40bn), BMP-2 upgrade (INR 25bn), Himshakti, Arudhra radar, and Akash missile systems for Army (INR 20bn), etc. Further, order pipeline growth will be propelled by major platform wins such as QRSAM (INR 300bn), next gen corvettes electronic systems (INR 80bn), etc. apart from the recurring base orders (INR 150 bn).
- The non-defence segment with products such as solar power solutions, electronic voting machines, EV charging stations, and railway platform screen doors provides revenue diversification. This segment contributed 5.8% of revenue in FY25 and is expected to grow with BEL's expanding joint ventures and R&D.
- With rising delivery of defence platforms, BEL is also focusing on providing maintenance services for them as well. Accordingly, revenue from services grew at a CAGR of 14.1% over FY15 to FY25, reaching INR 22bn. We estimate service revenue will grow at a healthy CAGR of 15% over FY25 to FY28E, driven by increasing adoption of newer platforms such as the Akash missile system, QRSAM, and LRSAM that come with built-in AMC.

#### Revenue growth at 15% CAGR from FY25-FY28E



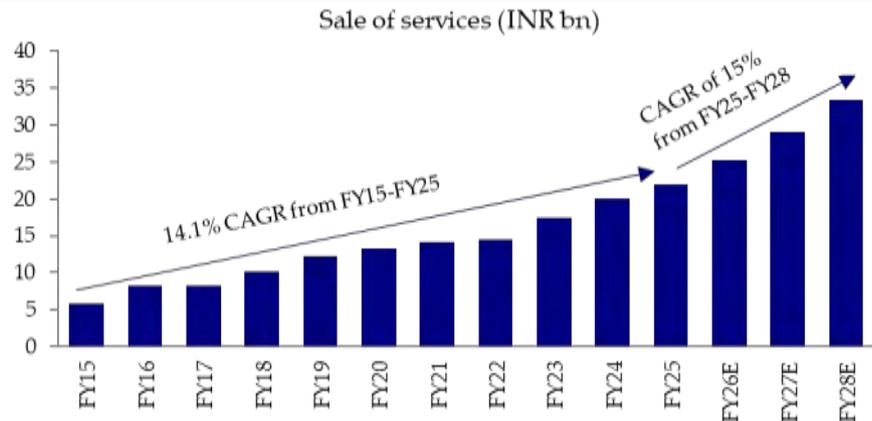
Source: Company, HSIE Research

#### Defence segment remains a dominant contributor



Source: Company, HSIE Research

Sale of services to grow at 15% CAGR over FY25-FY28E

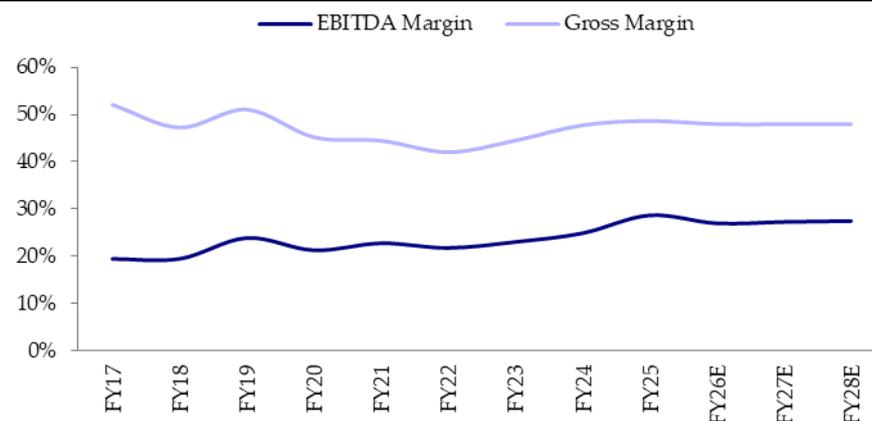


Source: Company, HSIE Research

Profitability dependent on execution of product mix

- BEL's EBITDA margin for FY25 was at 28.8%, which expanded consistently from 21.2% in FY20. This steady increase in EBITDA margin was achieved through higher indigenization and increasing platform margins, led by complexity of projects and operating leverage. The EBITDA margins are largely dependent on the product mix that the company delivers in that particular year. This is worth noting that while non-defence projects have a smaller contribution to the aggregate revenue, they have higher margins than various defence products. The management has guided an EBITDA margin of 27% Y26E onwards. Profitability in FY26E will be lower than the margin of 28.7% achieved in FY25 due to higher ToT costs for LRSAM, which is currently under production. We estimate EBITDA margins of 27.0% for FY26E, with marginal increases along the years reaching 27.5% in FY28E, led by a favorable product mix.

EBITDA margins to slightly inch up till FY28E

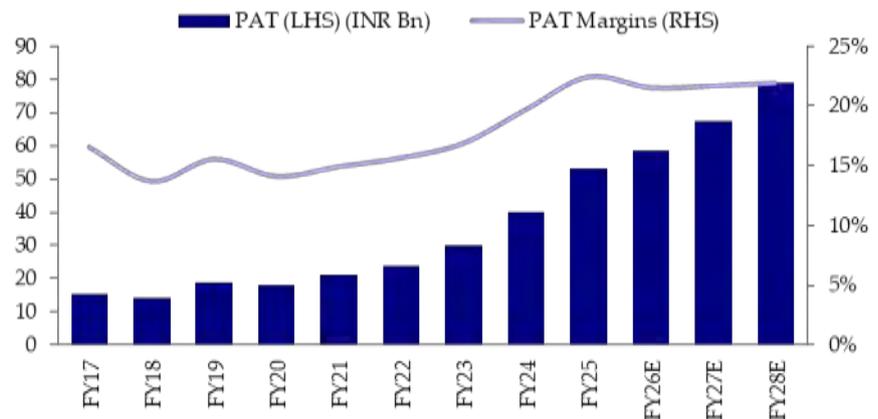


Source: Company, HSIE Research

### PAT margins cushioned by customer advances

- BEL commands high PAT margins compared to peers domestically and globally due to consistent rise in customer advances received by the company against its orders which boosts its other income. Debt free balance sheet and relatively lower depreciation due to higher fixed asset turnover support the PAT margin as well. It is worth highlighting that other income formed 2.8% of PBT in FY19, which grew to 10.5% in FY25. We estimate PAT margin will stabilize at an above-industry level of ~22% over FY25-FY28E.

#### PAT margins expected to remain stable around 22%

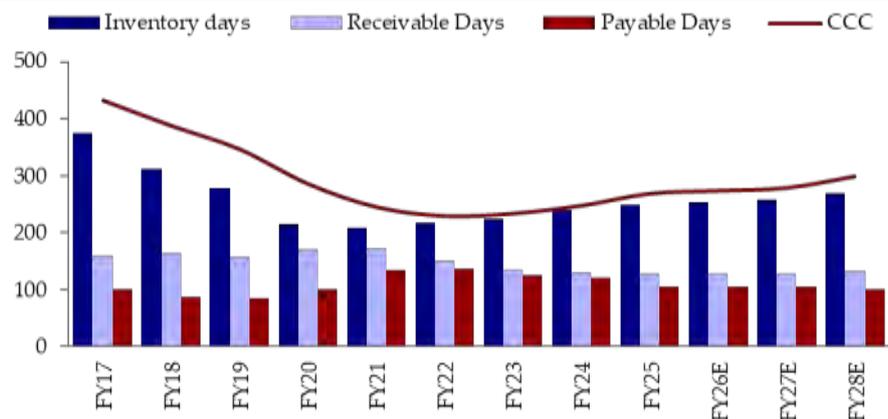


Source: Company, HSIE Research

### Cash conversion cycle to inch up on QRSAM order

- BEL's cash conversion cycle rose to 269 days in FY25 from 230 days in FY22, led by rising inventory days and declining payable days. Working capital for BEL is cushioned by the receipt of customer advances, which help the company manage its working capital efficiently without straining the balance sheet. We estimate CCC will steadily inch up to 299 days in FY28E, led by receipt of large platform orders.

#### CCC to move up gradually over FY25-FY28E

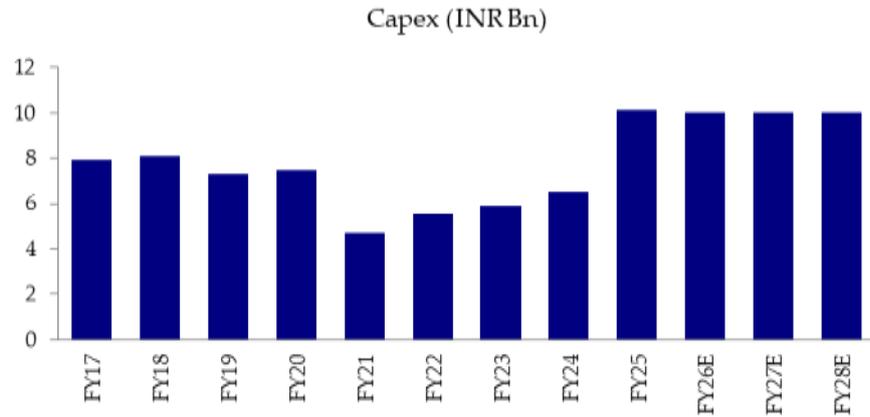


Source: Company, HSIE Research

### Capex required to expand capacity

- The management has planned capex for more than INR 10bn per year for the next three years. This capex is required to expand capacity to cater to both existing and incremental pipeline orders. The ancillary infrastructure required to support expanding operations will also be taken care of in this budgeted capex.

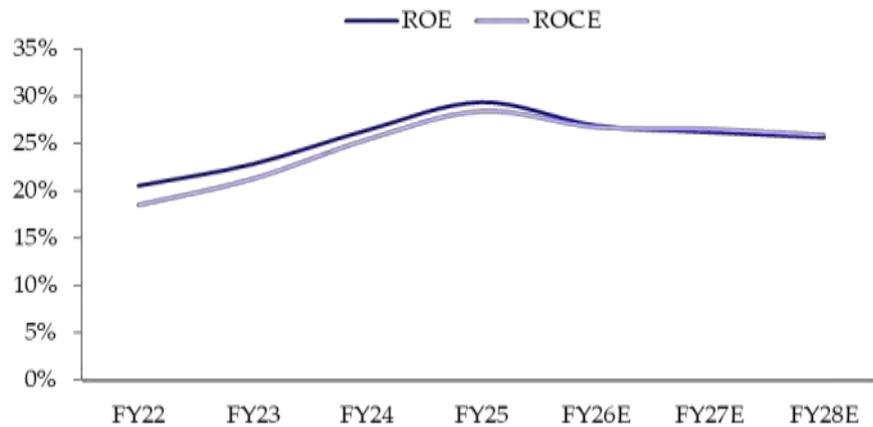
#### Steady Capex planned ahead



Source: Company, HSIE Research

### RoE and RoCE

#### RoE and RoCE to stay range bound at strong levels



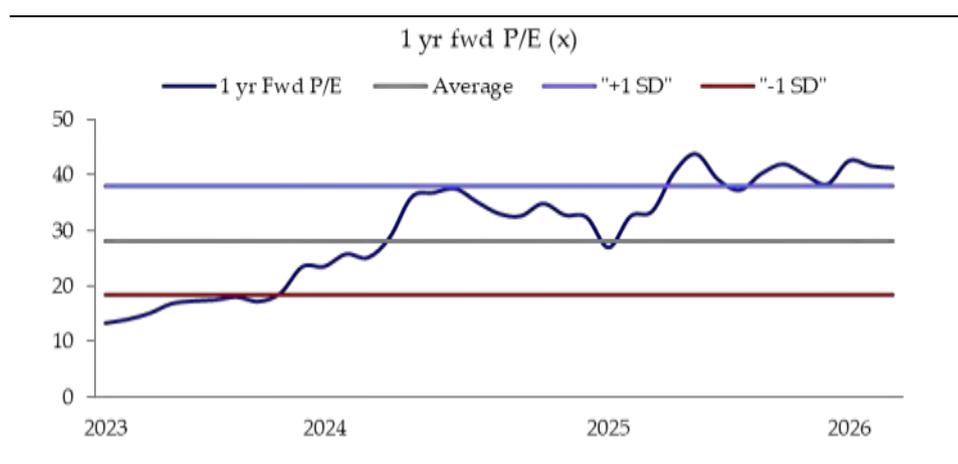
Source: Company, HSIE Research

## View and valuation

As per industry estimates, the defence electronics market size in India is expected to grow to USD 12bn in FY32 from USD 7.5 bn in FY25, growing at a CAGR of 7%. This demand is driven by a shift toward network-centric warfare arising from intensified cyber combat strategies. In this era of modern defence, electronic components account for over 40% of the value in major defence platforms. Modernization mandates and indigenization policies provide a structural tailwind for the sector.

BEL maintains a dominant position in this segment of country with a 60% market share. Its competitive advantage is sustained through an established R&D infrastructure and a proven track record of executing large-scale, complex contracts. Capex and R&D investments carried out in the earlier years have increased the company's internal capabilities, allowing for a greater degree of local value additions across its product portfolio.

BEL acts as a lead integrator for defence electronics systems required in major platforms of national importance. With a strong balance sheet, technological capabilities, and a history of collaboration with DRDO, BEL is slated to win a significant portion of the defence modernization pipeline orders. This is expected to ensure a long trajectory of robust earnings growth for the company. In accordance with our optimistic view, we initiate coverage on the stock with an ADD rating and a target price of Rs. 490, valuing it at 45x FY28E EPS.



Source: Company, HSIE Research

## Key risks and concerns

### ■ Procurement cycles and order book concentration

- The primary risk to BEL's revenue visibility is its high dependency on the capital expenditure budget of ministry of defence. While the order pipeline is robust, extended timelines for order finalization often due to budget reallocations or administrative delays can impact revenue growth of the company.
- Delays in the transition of large-scale projects like **MRSAM**, **QRSAM**, and **LRSAM** from the RFP stage to execution has a potential to create significant earnings volatility.

### ■ Execution Hurdles and Supply Chain Dependencies

- Supply chain challenges such as delay in receipt of required subsystems or not being able to receive sub-systems at par with the needed technology may delay delivery timelines.
- Global geopolitical instability aggravates disruption of the supply of critical imported components. This has a potential to disrupt earnings growth trajectory of the company.

### ■ Margin compression and contractual shifts

- BEL faces potential margin erosion risk due to product mix shift or through policy directives.
- For nominated (non-competitive) contracts, there is a risk of MoD reducing offered profit margins. Additionally, a higher proportion of transfer of technology-led orders or lower-margin services contracts compared to high-margin indigenous manufactured products may adversely impact the EBITDA profile.

### ■ Rising competitive intensity

The government's push to broaden the domestic defence industrial base is increasing competitive intensity. Several subsystem defence electronics manufacturers are potentially targeting to get direct orders from the government. While there is no immediate risk of losing contracts, this rising competitive intensity will ensure that BEL remains on toes to maintain its market share and business growth.

## Company introduction

- Bharat Electronics (BEL) is a Bengaluru-headquartered Navratna public sector defence company, set up under the Ministry of Defence (MoD) in 1954. It is India's leading defence electronics company.
- BEL enjoys a wide diversification across products, technology, and clients. It designs, develops, and manufactures systems for the armed forces in the domains of radars, missiles, military communications, naval systems, electronic warfare, avionics, electro optics, tank electronics and other weapon systems. It also caters to non-defence clients in areas such as homeland security, solar, satellite integration, space electronics, railways, metros, and electronic voting machines.
- It has nine manufacturing units that are spread across the country. BEL has its plants in Bangalore, Ghaziabad, Pune, Machilipatnam, Panchkula, Chennai, Kotdwara (Uttaranchal), Hyderabad, and Navi Mumbai.
- BEL is the key supplier of electronics products and systems to Indian Defence Forces. Over the years, it has built its civilian customer base as well. Key customers of the company include Indian air force, army, navy, ISRO, DRDO, All Indian Radio, DoorDarshan, Election commission of India, Indian police, state governments, and department of telecommunication.
- Further, on the exports front, BEL has a dedicated business development team that maintains close interactions with various foreign aerospace and defence companies to offer offset manufacturing services.
- It has strategic alliances with global OEMs (Elbit, IAI, Thales, SAAB) for joint development or co-production. Its focus is on catering to southeast Asian countries for supplying communication products, sonars, fire control systems, and coastal surveillance systems. Major export clients include Rafael, Siemens, Airbus, SAAB, IAI, Lockheed Martin, Thales, Boeing and Elbit systems.
- BEL has a clear focus on R&D as it spends 6-7% of its revenue on R&D each year. It has 50% of its engineers (~2,000) employed in R&D. Also, it has 30 centers that are involved in research and development works. As a result of concerted efforts on research, it has been granted 624 IPRs (patents, copyrights, trademarks etc.) until FY24-end.

## Manufacturing units

BEL has production facilities spread across the country, and these are dedicated facilities for specific products. The below table highlights key products manufactured at various locations:

Plant location	Major products and services			
Bangalore	➤	Military communications	➤	Military radars
	➤	Network centric systems	➤	Weapon systems
	➤	Homeland security and smart city	➤	Naval systems
	➤	Coastal surveillance systems	➤	Airborne electronic warfare & avionic Systems
	➤	Electronic voting machines	➤	Strategic communication and unmanned systems
	➤	Solar products		
	➤	Traffic signals		
	Ghaziabad	➤	Network centric systems	➤
➤		Radars	➤	Microwave components
➤		Antennae		
Pune	➤	Laser systems	➤	Electronic fuses and ammunition
	➤	Combat systems	➤	Security systems
Machilipatnam	➤	Electro optics (night vision devices)		
Panchkula	➤	Military communication equipment	➤	Encryption products
Chennai	➤	Tank electronics	➤	Optical fire control systems
Kotdwara	➤	Tele-communication system	➤	Military communication systems
Hyderabad	➤	Electronic warfare systems		
Navi Mumbai	➤	Shelter for systems	➤	Homeland security systems

Source: Company, HSIE Research

## Annexure I: board of directors/management team

Name (designation)	Description
<b>Mr. Manoj Jain (Chairman and Managing Director)</b>	<p>Mr. Jain was appointed CMD of BEL in jun'24. He has previously served in high-level roles across the company's various technological verticals.</p> <p>A gold medalist in Electronics Engineering from REC Jaipur (MNIT), Mr. Jain began his tenure at BEL as a Probationary Engineer in 1991.</p> <p>His three-decade career is marked by substantial advancements in research and development, where he steered critical defence electronics projects from concept to deployment.</p>
<b>Mr. Damodar Bhattad S (Director finance and CFO)</b>	<p>Mr. Bhattad joined BEL in 1988, ascending to Director (Finance) in 2023 after a 34-year career. He is a Fellow of the Institute of Chartered Accountants of India (ICAI) and holds B. Com degree from the University of Madras,</p> <p>Beyond financial reporting, he led the transition to integrated annual reports and currently oversees strategic price negotiations, risk control matrices, and initiatives to maximize shareholder returns through higher dividend payouts.</p>
<b>Mr. K V Suresh Kumar (Director Marketing)</b>	<p>Mr. Suresh is a post-graduate in Electronics &amp; Communications Engineering. He became Director (Marketing) in 2023. Over a 34-year career, he served as Chief Indigenisation Officer and GM of the Product Development &amp; Innovation Centre.</p> <p>A Raksha Mantri's Excellence Award recipient, he has driven INR 130bn in business through EW systems, electro-optics, and Airbus's largest export order. His leadership in R&amp;D and "AtmaNirbhar Bharat" initiatives have saved more than INR 13bn in foreign exchange for the company.</p>
<b>Mr. Hari Kumar R (Director R&amp;D)</b>	<p>Mr. Hari is a graduate in Electronics &amp; Communication Engineering from the University of Kerala. He joined BEL in 1988 as a probationary engineer, and from there he continued his journey spanning 35 years to eventually become Director (R&amp;D) of BEL</p> <p>Prior to his elevation to the Board, he served as the Executive Director of BEL's Central Research Laboratory (CRL) in Bangalore and held the position of GM (military communication) at the Bangalore complex.</p>
<b>Mr. Vikraman N (Director HR)</b>	<p>Mr. Vikraman is a graduate in electronics &amp; communication engineering and a post-graduate in human resource management. He assumed the role of director (HR) in 2023, where his responsibilities involve functions like manpower planning and competency development.</p> <p>With a career spanning over 35 years at BEL, he previously served as executive director and head of the Ghaziabad unit. He steered this division to record turnover and profitability. His diverse expertise encompasses technical domains such as radar and missile systems as well.</p>
<b>Mr. Rajnish Sharma (Director Bangalore Complex)</b>	<p>Mr. Sharma is a mechanical engineer from Delhi college of engineering. He was appointed Director of the Bangalore Complex at BEL in 2024.</p> <p>During his 33 years long career that began in 1990, he headed the military radars strategic business unit as GM. Leveraging deep expertise in military-grade hardware, he has been a key driver in scaling BEL's manufacturing capabilities within the Bangalore hub.</p>
<b>Mr. Kamesh Kasana (Director Other Units)</b>	<p>Mr. Kamesh was appointed as the director (other units) in 2024. He oversees the strategic operations of BEL's manufacturing units outside of the Bangalore Complex. He holds a mechanical engineering degree from Gwalior.</p> <p>After joining BEL in 1989, during his successful career of 35 years, he has developed extensive expertise in manufacturing, project management, and life-cycle support for complex defence systems.</p>

# Bharat Electronics: Initiating Coverage

## P&L (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>Net Revenues</b>	<b>1,41,087</b>	<b>1,53,682</b>	<b>1,77,344</b>	<b>2,02,682</b>	<b>2,37,688</b>	<b>2,72,270</b>	<b>3,12,119</b>	<b>3,61,666</b>
Growth (%)		8.9	15.4	14.3	17.3	14.5	14.6	15.9
COGS	78,260	88,972	98,276	1,05,763	1,21,872	1,41,502	1,62,211	1,87,962
Employee Expense	19,559	21,280	23,173	24,895	27,606	31,311	34,957	39,783
Other Expenses	11,163	10,021	15,037	21,560	19,872	25,866	29,651	34,358
<b>EBITDA</b>	<b>32,105</b>	<b>33,409</b>	<b>40,859</b>	<b>50,464</b>	<b>68,337</b>	<b>73,592</b>	<b>85,298</b>	<b>99,563</b>
EBITDA Growth (%)		4.1	22.3	23.5	35.4	7.7	15.9	16.7
<b>EBITDA Margin (%)</b>	<b>22.8</b>	<b>21.7</b>	<b>23.0</b>	<b>24.9</b>	<b>28.8</b>	<b>27.0</b>	<b>27.3</b>	<b>27.5</b>
Depreciation	3,873	4,011	4,288	4,432	4,674	5,236	5,986	6,736
<b>EBIT</b>	<b>28,232</b>	<b>29,398</b>	<b>36,571</b>	<b>46,032</b>	<b>63,663</b>	<b>68,355</b>	<b>79,312</b>	<b>92,826</b>
Other Income (Including EO Items)	1,250	2,315	2,808	6,701	7,424	9,441	10,532	12,405
Interest	64	51	150	71	97	101	101	101
<b>PBT</b>	<b>29,418</b>	<b>31,662</b>	<b>39,229</b>	<b>52,662</b>	<b>70,990</b>	<b>77,695</b>	<b>89,743</b>	<b>1,05,130</b>
Total Tax	8,724	8,118	9,826	13,231	18,119	19,517	22,543	26,409
<b>RPAT</b>	<b>20,693</b>	<b>23,545</b>	<b>29,404</b>	<b>39,431</b>	<b>52,872</b>	<b>58,178</b>	<b>67,199</b>	<b>78,722</b>
Share of Associate	304	458	459	421	355	350	350	350
<b>Adjusted PAT</b>	<b>20,998</b>	<b>24,002</b>	<b>29,862</b>	<b>39,852</b>	<b>53,227</b>	<b>58,528</b>	<b>67,549</b>	<b>79,072</b>
APAT Growth (%)		14.3	24.4	33.5	33.6	10.0	15.4	17.1
<b>Adjusted EPS (Rs)</b>	<b>2.9</b>	<b>3.3</b>	<b>4.1</b>	<b>5.5</b>	<b>7.3</b>	<b>8.0</b>	<b>9.2</b>	<b>10.8</b>
EPS Growth (%)		14.3	24.7	33.3	33.6	10.0	15.4	17.1

## Balance Sheet (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>SOURCES OF FUNDS</b>								
Share Capital - Equity	2,437	2,437	7,310	7,310	7,310	7,310	7,310	7,310
Reserves	1,08,309	1,20,586	1,31,484	1,56,134	1,92,619	2,28,486	2,73,375	3,29,787
<b>Total Shareholders Funds</b>	<b>1,10,746</b>	<b>1,23,023</b>	<b>1,38,794</b>	<b>1,63,444</b>	<b>1,99,928</b>	<b>2,35,796</b>	<b>2,80,685</b>	<b>3,37,096</b>
Long Term Debt	-	-	-	-	-	-	-	-
Short Term Debt	-	-	-	-	-	-	-	-
<b>Total Debt</b>	<b>-</b>							
<b>Net Deferred Taxes</b>	<b>(4,631)</b>	<b>(6,195)</b>	<b>(5,008)</b>	<b>(5,692)</b>	<b>(5,253)</b>	<b>(5,253)</b>	<b>(5,253)</b>	<b>(5,253)</b>
<b>Other Non-current Liabilities &amp; Provns</b>	<b>15,849</b>	<b>20,255</b>	<b>10,428</b>	<b>11,501</b>	<b>10,770</b>	<b>1,602</b>	<b>1,602</b>	<b>1,602</b>
<b>TOTAL SOURCES OF FUNDS</b>	<b>1,21,964</b>	<b>1,37,083</b>	<b>1,44,213</b>	<b>1,69,253</b>	<b>2,05,445</b>	<b>2,32,145</b>	<b>2,77,034</b>	<b>3,33,446</b>
<b>APPLICATION OF FUNDS</b>								
Net Block	24,855	25,094	26,943	27,885	32,045	36,809	40,823	44,087
CWIP	3,975	4,459	3,612	4,564	4,770	4,770	4,770	4,770
Other Non-current Assets	24,299	30,406	18,842	16,441	17,576	15,325	15,325	15,325
<b>Total Non-current Assets</b>	<b>53,129</b>	<b>59,959</b>	<b>49,397</b>	<b>48,890</b>	<b>54,391</b>	<b>56,904</b>	<b>60,918</b>	<b>64,181</b>
Inventories	49,680	55,919	64,480	74,469	91,190	98,109	1,14,690	1,38,046
Debtors	65,620	61,081	70,335	73,924	91,164	94,554	1,08,392	1,30,553
Other Current Assets	71,096	80,300	84,546	81,671	70,774	83,136	94,786	1,09,272
<b>Cash &amp; Equivalents</b>	<b>50,738</b>	<b>75,637</b>	<b>81,116</b>	<b>1,10,566</b>	<b>95,451</b>	<b>1,38,835</b>	<b>1,72,650</b>	<b>2,06,750</b>
<b>Total Current Assets</b>	<b>2,37,133</b>	<b>2,72,937</b>	<b>3,00,477</b>	<b>3,40,630</b>	<b>3,48,579</b>	<b>4,14,633</b>	<b>4,90,518</b>	<b>5,84,621</b>
Creditors	32,992	33,696	33,308	37,063	33,388	40,899	46,885	51,753
Other Current Liabilities & Provns	1,35,307	1,62,117	1,72,354	1,83,204	1,64,138	1,98,493	2,27,516	2,63,604
<b>Total Current Liabilities</b>	<b>1,68,298</b>	<b>1,95,814</b>	<b>2,05,662</b>	<b>2,20,267</b>	<b>1,97,525</b>	<b>2,39,392</b>	<b>2,74,401</b>	<b>3,15,356</b>
Net Current Assets	68,835	77,123	94,816	1,20,363	1,51,053	1,75,241	2,16,117	2,69,264
<b>TOTAL APPLICATION OF FUNDS</b>	<b>1,21,964</b>	<b>1,37,083</b>	<b>1,44,213</b>	<b>1,69,253</b>	<b>2,05,445</b>	<b>2,32,145</b>	<b>2,77,034</b>	<b>3,33,446</b>

# Bharat Electronics: Initiating Coverage

## CASH FLOW (INR Mn)

Year ending March	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Reported PBT	29,722	32,120	39,688	53,083	71,345	78,045	90,093	1,05,480
Non-operating & EO Items	558	(1,375)	3,920	6,279	(6,359)	(9,441)	(10,532)	(12,405)
Interest Expenses	61	20	113	29	55	101	101	101
Depreciation	3,873	4,011	4,288	4,432	4,674	5,236	5,986	6,736
Working Capital Change	22,048	15,339	(25,342)	(3,045)	(47,103)	12,280	(7,060)	(19,047)
Tax Paid	(5,331)	(8,043)	(10,673)	(14,184)	(16,746)	(19,517)	(22,543)	(26,409)
<b>OPERATING CASH FLOW ( a )</b>	<b>50,932</b>	<b>42,072</b>	<b>11,993</b>	<b>46,595</b>	<b>5,866</b>	<b>66,705</b>	<b>56,045</b>	<b>54,457</b>
Capex	(4,693)	(5,546)	(5,905)	(6,525)	(10,113)	(10,000)	(10,000)	(10,000)
Free Cash Flow (FCF)	46,240	36,527	6,088	40,070	(4,247)	56,705	46,045	44,457
Investments	(21,878)	(45,010)	30,164	(57,226)	9,517	-	-	-
Non-operating Income	618	1,839	2,817	4,512	6,766	9,441	10,532	12,405
<b>INVESTING CASH FLOW ( b )</b>	<b>(25,952)</b>	<b>(48,717)</b>	<b>27,077</b>	<b>(59,239)</b>	<b>6,169</b>	<b>(559)</b>	<b>532</b>	<b>2,405</b>
Debt Issuance/(Repaid)	(83)	-	-	-	-	-	-	-
FCFE	46,156	36,527	6,088	40,070	(4,247)	56,705	46,045	44,457
Share Capital Issuance	-	-	-	-	-	-	-	-
Dividend	(10,227)	(10,233)	(12,428)	(14,621)	(16,808)	(22,660)	(22,660)	(22,660)
Others	(447)	(543)	(193)	(129)	(157)	(101)	(101)	(101)
<b>FINANCING CASH FLOW ( c )</b>	<b>(10,757)</b>	<b>(10,776)</b>	<b>(12,621)</b>	<b>(14,750)</b>	<b>(16,964)</b>	<b>(22,761)</b>	<b>(22,761)</b>	<b>(22,761)</b>
<b>NET CASH FLOW (a+b+c)</b>	<b>14,223</b>	<b>(17,420)</b>	<b>26,448</b>	<b>(27,394)</b>	<b>(4,929)</b>	<b>43,384</b>	<b>33,815</b>	<b>34,100</b>
EO Items, Others	-	-	-	-	-	-	-	-
Closing Cash & Equivalents	30,429	13,009	39,457	12,063	7,135	50,519	84,334	1,18,434

## KEY RATIOS

	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>PROFITABILITY (%)</b>								
GPM	44.5	42.1	44.6	47.8	48.7	48.0	48.0	48.0
EBITDA Margin	22.8	21.7	23.0	24.9	28.8	27.0	27.3	27.5
EBIT Margin	20.0	19.1	20.6	22.7	26.8	25.1	25.4	25.7
APAT Margin	14.9	15.6	16.8	19.7	22.4	21.5	21.6	21.9
RoE		20.5	22.8	26.4	29.3	26.9	26.2	25.6
RoIC (or Core RoCE)		33.0	44.0	56.6	56.2	50.4	60.1	60.2
RoCE		18.6	21.3	25.5	28.4	26.8	26.6	25.9
<b>EFFICIENCY</b>								
Tax Rate (%)	29.7	25.6	25.0	25.1	25.5	25.1	25.1	25.1
Fixed Asset Turnover (x)	3.4	3.4	3.5	3.6	3.7	3.6	3.7	3.8
Inventory (days)	208	217	224	240	248	253	258	268
Debtors (days)	172	150	135	130	127	127	127	132
Other Current Assets (days)	184	191	174	147	109	111	111	110
Payables (days)	134	137	124	121	105	105	105	100
Other Current Liab & Provns (days)	350	385	355	330	252	266	266	266
Cash Conversion Cycle (days)	246	230	234	248	269	274	279	299
Working Capital (days)	80	36	54	65	126	120	124	144
Net D/E (x)	(0.5)	(0.6)	(0.6)	(0.7)	(0.5)	(0.6)	(0.6)	(0.6)
Interest Coverage (x)	443.2	582.1	244.6	644.7	657.7	676.6	785.0	918.8
<b>PER SHARE DATA (Rs)</b>								
EPS	2.9	3.3	4.1	5.5	7.3	8.0	9.2	10.8
CEPS	4.5	4.9	4.7	6.1	7.9	8.7	10.1	11.7
Dividend	4.20	4.20	1.70	2.00	2.30	3.10	3.10	3.10
Book Value	45.5	50.5	19.0	22.4	27.4	32.3	38.4	46.1
<b>VALUATION</b>								
P/E (x)	155.7	136.2	109.3	82.0	61.4	55.8	48.4	41.3
P/BV (x)	9.8	8.9	23.5	20.0	16.3	13.9	11.6	9.7
EV/EBITDA (x)	32.3	30.3	78.0	62.5	46.4	42.5	36.3	30.7
EV/Revenues (x)	7.4	6.6	18.0	15.6	13.3	11.5	9.9	8.5
OCF/EV (%)	4.9	4.2	0.4	1.5	0.2	2.1	1.8	1.8
FCF/EV (%)	4.5	3.6	0.2	1.3	(0.1)	1.8	1.5	1.5
FCFE/Mkt Cap (%)	4.2	3.4	0.2	1.2	(0.1)	1.7	1.4	1.4
Dividend Yield (%)	0.9	0.9	0.4	0.4	0.5	0.7	0.7	0.7

Source: Company, HSIE Research

# Hindustan Aeronautics

## Taxiing runway, awaiting altitude

Hindustan Aeronautics (HAL) is the cornerstone of India's aerial defence, especially as the country faces urgent aircraft shortages and a push for self-reliance. As India's only fighter platform integrator, HAL has transitioned from assembling foreign designs to developing sophisticated, homegrown systems. Supporting nearly 80% of the country's active military fleet, the company holds a vital monopoly over the maintenance and lifecycle of India's air sovereignty. Beyond defence, HAL's infrastructure supports critical space missions for ISRO and global aerospace leaders like Boeing. With the demand for domestic solutions like the LCA Tejas and LCH Prachand rising, HAL's extensive R&D and manufacturing prowess make it the primary winner in India's shift toward a self-reliant defence power. While the company's long-term growth visibility is undebatable, the supply chain issues-led subdued execution has been a bottleneck lately. Also, in our view, the current rich valuation of the stock already prices in the anticipated PAT growth. Considering short-term execution as a key monitorable, we remain watchful and initiate coverage on the stock with a REDUCE rating and a target price of INR 3,625, based on 20x FY28E EPS.

- India's squadron strength set to increase:** The primary driver for fighter aircraft demand is India's shrinking squadron strength, currently at 31 (estimated to fall to 28 by the decade's end) against the required 42. As legacy jaguars and MiG variants phase out, the indigenous Tejas Mk1A provides immediate replenishment, followed by Tejas Mk2 and AMCA for long-term modernization. Simultaneously, aging fleets like the Chetak and Cheetah are transitioning to homegrown LUH and LCH platforms, alongside upgrades to ALH. This structural replacement cycle ensures HAL remains central to India's multi-decade aerial strategy.
- Order book and pipeline providing revenue growth:** HAL's order backlog stood at INR 1.8trn as of FY25-end (book-to-bill 6.1x). YTD, the FY26 order inflow was INR 624bn comprising additional 97 LCA MK1A. Execution is a key monitorable and is expected to pick up as supply chain issues ease out. Key upcoming orders include Su-30 upgrades, LUH, and UHM, and Tejas Mk2 and AMCA later.
- MRO to grow at 8% CAGR over FY25-FY28E:** The MRO segment will expand as aerial platform numbers increase and age. Upgrading 250 Su-30s, completing ALH and LCH deliveries will drive sustained revenue growth. Management expects INR 200bn MRO orders annually, with segment growing 8% per annum.
- Focused R&D to drive indigenization:** By reinvesting c.8% of annual revenue into R&D, HAL has achieved 55%+ indigenous content across major platforms. This focus on self-reliance drives development of critical systems, like IMRH & DBMRH and HTSE & HTFE engines, and autonomous technologies. To support these next-gen programs, HAL is planning a capex of INR 150bn over the next five years.
- Financials and valuations:** HAL has delivered an 8% revenue CAGR over FY22-25. We forecast a revenue/EBITDA/PAT CAGR of 11%/11%/9.3% over FY25-FY28E, with EBITDA margin at 31.1% in FY28E.

YE March (INR mn)	FY23	FY24	FY25	FY26E	FY27E	FY28E
Net Sales	2,69,275	3,03,811	3,09,810	3,40,615	3,78,952	4,23,033
EBITDA	43,531	77,725	68,979	78,418	87,675	96,994
APAT	35,017	56,524	56,539	60,538	66,312	74,791
Diluted EPS (INR)	87.1	114.0	125.1	131.1	142.9	163.3
P/E (x)	44.5	34.0	31.0	29.6	27.1	23.7
EV/EBITDA (x)	25.1	30.0	32.1	28.6	25.3	22.0
RoCE (%)	10.4	15.0	11.2	12.1	15.6	15.1

Source: Company, HSIE Research

### REDUCE

CMP (as on 05 Mar 2026)	INR 3,892
Target Price	INR 3,625
NIFTY	24,766

#### KEY STOCK DATA

Bloomberg code	HNAL IN
No. of Shares (mn)	669
MCap (INR bn) / (\$ mn)	2,603/28,414
6m avg traded value (INR mn)	5,933
52 Week high / low	INR 5,166/3,296

#### STOCK PERFORMANCE (%)

	3M	6M	12M
Absolute (%)	(12.4)	(11.6)	13.6
Relative (%)	(5.8)	(10.8)	5.1

#### SHAREHOLDING PATTERN (%)

	Sep-25	Dec-25
Promoters	71.6	71.6
FIs & Local MFs	8.6	9.7
FPIs	12.0	10.9
Public & Others	7.7	7.8
Pledged Shares	-	-

Source: BSE

Pledged shares as % of total shares

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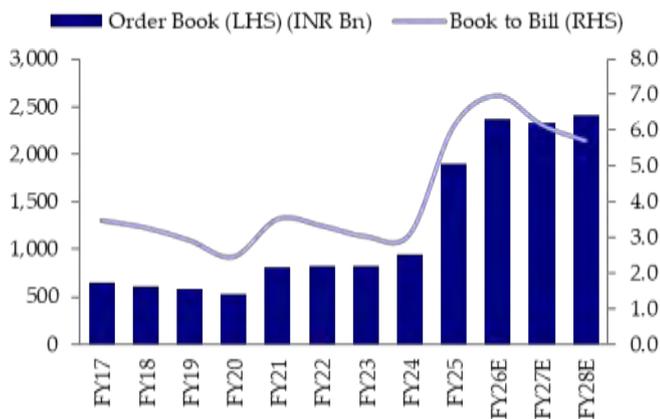
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## Focus charts

### Very strong book to bill to sustain till FY28E



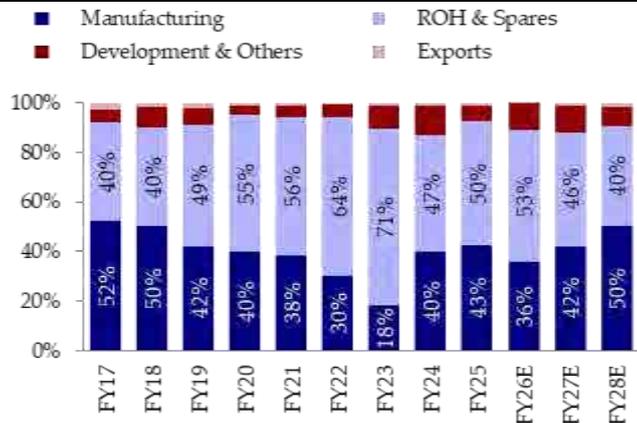
Source: Company, HSIE Research

### Revenue to grow at 11% CAGR till FY28E



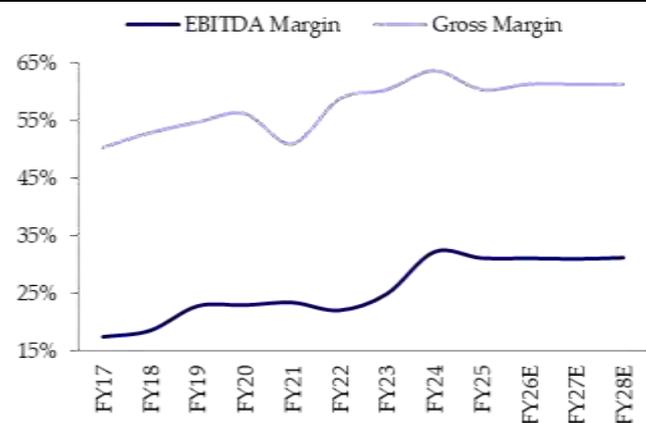
Source: Company, HSIE Research

### Mfg. revenue gaining strength on the back large platform orders



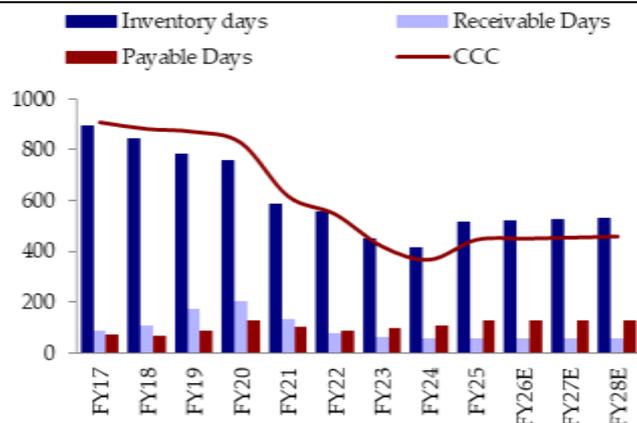
Source: Company, HSIE Research

### Margins to remain stable at strong levels



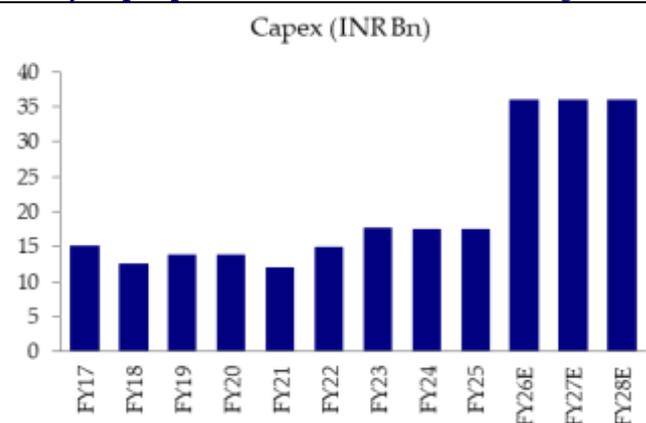
Source: Company, HSIE Research

### CCC to remain stable at comfortable levels till FY28E



Source: Company, HSIE Research

### Heavy Capex planned over FY26-FY28E for large orders



Source: Company, HSIE Research

## Sustained 5-year revenue (order) visibility

- The orderbook for HAL stood at INR 1.89trn at the end of FY25, with projects like 156 units of LCH Prachand Helicopters (INR 628bn), 12 units of Su-30 MKI aircrafts (INR 135 bn), and 240 units of AL-31FP engines (INR 255 bn) anchoring the orderbook. In Sep 2025, HAL received an additional order of 97 LCA MK1A fighter jets for IAF with an order value of INR 623.7bn. We estimate the orderbook to be ~INR 2.4trn currently. This is 6.2x FY28E revenues.
- The primary constraint on HAL's manufacturing vertical remains the supply chain volatility of GE F-404 engines, which directly impacts the Tejas Mk-1A production timeline. So far, only two Tejas Mk-1A aircrafts have been delivered from the first order of 83 aircrafts, while management targeted a delivery of 12 aircrafts for FY26; we expect this plan to be revised downward and a major portion of this planned delivery to be postponed to FY27 due to persistent engine delays.
- After the initial delays due to supply chain issues, deliveries of GE F-404 engines have restarted in CY25. So far, GE has delivered four engines (in Mar, Jul, and Sep 2025) and has committed to supplying two per month from here onward. GE is estimated to deliver 20 engines in FY27. This resumption of supply from GE is expected to bring Tejas aircrafts delivery on track. HAL is estimated to deliver the entire first order of 83 aircrafts by FY29. Further, the delivery of the second set of 97 aircrafts will start from FY29 and go on until FY34.
- Production is anticipated to gain momentum starting FY28, contingent on the stabilization of engine inflows and the commencement of HTT-40 deliveries. This momentum will be further bolstered in FY29 as the LCH Prachand and LUH enter their primary delivery phases. Further, planned delivery of 30 units of AL-31FP aero engines each year for the next eight years will keep the revenues upbeat. These planned deliveries will ensure high single-digit revenue growth for the next few years.

The below table highlights key orders received by HAL in the last five years:

Quarters	Order description	Order Value (INR Bn)
Q2 FY26	Supply of 97 Light Combat Aircraft (LCA) Mk-1A to Indian Air Force	624
Q4 FY25	Supply of 156 Light Combat Helicopters (LCH), Prachand to Indian Army (90 Nos) and Indian Air Force (66 Nos) along with training and other associated equipment	627
Q3 FY25	Procurement of 12 Su-30 MKI aircraft along with associated equipment	135
Q3 FY25	Avionics Upgrade of Dornier-228 Transport Aircraft, for enhancing IAF's operational capability	
Q2 FY25	Supply of 240 aero-engines (AL-31FP) for Su-30 MKI aircraft of the Indian Air Force (IAF)	260
Q4 FY24	➤ Contract with M/s. Cochin Shipyard Limited (CSL), Kochi for supply of 6 sets of LM2500 Gas Turbines (GT) and GT Auxiliaries (GTAE), Spares, Tools for Indian Navy Next Generation Missile Vessel NGMV) Project	12
	➤ Signed a contract with Guyana Defence Force (GDF), Govt. of Guyana for supply of two Hindustan-228 commuter aircraft along with Manufacturer Recommended List of Spares (MRLS), Ground Handling Equipment, Under Ground Support Equipment, Training, Handholding	2
	➤ Mid Life Upgrade (MLU) of 25 Dornier Aircraft along with associated equipment for the Indian Navy	29
	➤ Acquisition of 34 Advanced Light Helicopters (ALH) Dhruv Mk III along with Operational Role Equipment for Indian Army (25 ALHs) and Indian Coast Guard (09 ALHs)	81
	➤ Manufacturing and Supply of RD-33 Aero Engines for MiG-29 aircraft	52
Q2 FY24	Supply of 2 Dornier-228 Aircraft to Indian Coast Guard (ICG) along with associated Engineering Support package	5
Q4 FY23	➤ Procurement of 6 Dornier-228 aircraft from the Company for Rs. 667 Crore has been signed for Indian Air Force.	7
	➤ Procurement of 70 HTT-40 Basic Trainer Aircraft from the Company for Indian Air Force	68
Q2 FY23	5 nos. of PSLV-XL Launch Vehicles	9
Q1 FY23	Procurement of 15 Light Combat Helicopters (LCH) Limited Series Production (for Indian Air Force 10 and for Indian Army 5) from the Company	39
Q4 FY22	73 indigenous LCA Tejas Mk-1A fighter aircraft and 10 LCA Tejas Mk-1 trainer aircraft	480

Source: Company, HSIE Research

### Need for aircrafts and helicopters

With fighter strength of Indian Airforce at 31 squadrons against a sanctioned strength of 42, India is struggling with shortage in its firepower. As legacy jets like the MiG-21, Jaguar, and Mirage 2000 head toward retirement by the end of this decade, the need for modernization of existing aircraft fleets has become critical.

To bridge this gap, the government is betting heavily on the indigenous LCA Tejas. With nearly 180 LCA Tejas Mk1A units ordered, new Sukhoi 30s (order of 12 jets placed in FY25), and the more advanced Mk2 under development, the Tejas is slated to become the backbone of Indian Airforce. These additions of new fighter jets are expected to push the number of squadrons up to 38, bringing it closer to the sanctioned strength; however, due to criticality of the shortfall of the fighter jets, there is no room for any delay in execution.

The helicopter fleet strength is in a similarly difficult spot. The aging Cheetah and Chetak helicopters are decades overdue for replacement, while the recently developed ALH Dhruv has struggled with technical and design setbacks. With an estimated demand for 400 new helicopters as replacement for ageing Cheetah and Chetak, this creates a massive opportunity for HAL. With clearance of purchase of ~156 LCH Prachand Helicopters, this demand would be met to a certain extent; however, timely execution remains the key.

## Benefits of robust order pipeline as fleet expands, modernizes

The book to bill at FY25-end was at 6.1, which is healthy for aerospace and defence sectors. As execution picks up by FY28, the order backlog to revenue ratio should come down to ~3-4 gradually, which has been the average for HAL. The short-term orderbook driving projects comprise HTT- 40 (INR 70 bn), 143 units of ALH, and upgrade of 40 Dorniers. Further, the medium-term growth drivers for the order pipeline include Su-30 upgrades for 84 jets in phase 1 with an estimated value of INR 600bn, ~400 units of LUH (INR 400bn), and ~150 units of Tejas Mk-2 once it is developed and certified. In the long term, AMCA jets and the upgrade of the 272 existing Su-30 aircrafts will ensure that HAL's orderbook remains adequate.

Further, there are products in development phase such as Indian Multi Role Helicopter (IMRH) and Utility Helicopters Marine (UHM). These are multi-role fighter aircrafts and twin-engine deck-based fighters respectively. As these projects are needed by the Indian armed forces, HAL would start receiving orders for the same, once these products get developed and certified. All in all, there are sufficient levers to drive its orderbook. Hence, the key here would be execution of these orders with appropriate supply chain management and adequate support of the ministry vis-à-vis budget allocations. The chart below shows the orderbook trend over the years. Orderbook and book to bill ratios are expected to remain strong in the coming years.

### Very strong book to bill to sustain till FY28E

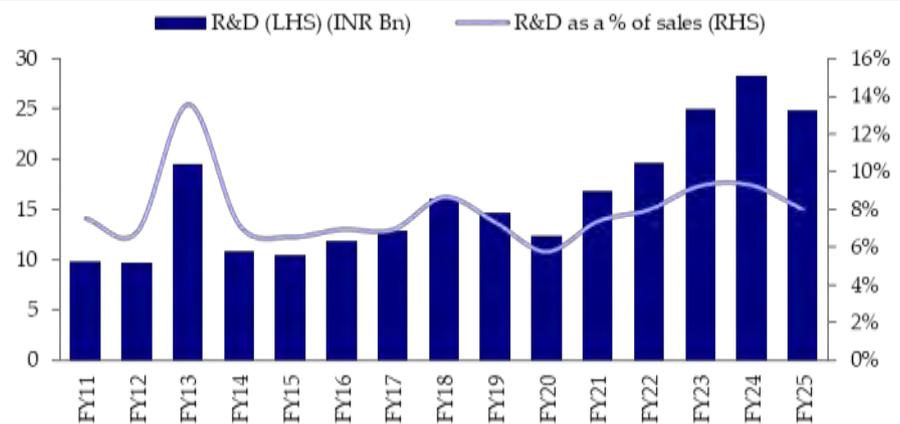


Source: Company, HSIE Research

## Focused R&D to develop products and increase indigenization

Given its focus on innovation-led growth, the company incurred a total R&D expenditure of INR 24.8bn in FY25, which is 8.2% of the total sales (above industry average of 7-8%). In line with India government's strategy of "Make in India" and a rising significance of indigenous product development, R&D spend of HAL has seen a sharp consistent leap post FY20. We believe it will remain elevated with production of LCA Tejas Mk1A, Mk2, and AMCA in the pipeline.

### R&D spend on an increasing trajectory



Source: Company, HSIE Research

## Recent achievements of R&D division in FY25

HAL's significant R&D achievements in FY25 were:

- Site Acceptance Test (SAT) of the first Jaguar DARIN III Fixed Base Full Motion Simulator (FBFMS) completed.
- HAL has received export orders from M/s Lockheed Martin, US for design, development, and supply of SIL units of CIT for Indian Navy's MH60R program.
- HAL is developing AESA radar for UH-M platform in design consultancy with LRDE and DRDO.
- Combat Air Teaming Systems (CATS) was displayed in Aero India 2025.
- Flight trials of indigenously designed & developed Nose Landing Gear Actuator completed successfully on Do-228, on January 10, 2025.
- The first run of improved PTAE-7 engines in TWIN engine configuration for CATS-W application completed on 21 November 2024.
- Design and Development of Mission Management System for DO-228 aircraft completed.
- Release trials of RudraM-III weapon from modified Su-30MKI aircraft successfully carried out.
- Further, the company filed 208 IPR applications in the year, of which 94 IPRs have been granted. Moreover, of the total number of 2,620 IPRs filed by the company, 1,127 IPRs have been granted so far (patents – 371, industrial designs – 171, copyrights – 583, trademark – 2).

## Partnerships fuel technology transfers for product development

In FY25, the company entered following major strategic partnerships and collaborations:

- Manufacturing of GE-414 aero-engines for LCA Mk2 Aircraft in India through ToT with General Electric (GE), US.
- Airframer contract with SAFHAL Helicopters Engines Pvt. Ltd. (a JVC with Safran Helicopter Engines, France) for design, development, manufacture, and support of engines (Aravalli engine) for IMRH and DBMRH.
- Contract with Safran Aircraft Engines (SAE) for export of ring forgings for LEAP engines.
- Establishing up to six-yearly C Checks facility for A-320 family of aircraft at Nasik in collaboration with M/s Airbus, France. It is intended to establish an integrated MRO hub in India for providing one-stop MRO solutions to commercial airlines.
- For development of various upcoming products, HAL collaborates with other entities, which imparts it technological edge against peers. A few of the key joint ventures are provided below. This table also explains the important products, processes, or technologies involved.

### Joint Ventures:

Sr. No.	Name of JV	HAL Share Holding (%)	Purpose
1	BAeHAL Software Ltd.	49	Formed to provide high-quality, cost-effective software solutions and services, especially in aerospace, defence, and IT, leveraging HAL's domain expertise and BAE's global reach to develop systems like flight simulators, avionics, and enterprise solutions for various industries.
2	Indo Avia Services Ltd.	48	Indo Avia Services Limited (IRAL) is a Joint Venture (JV) focused on supporting Russian-origin aircraft in India, involving Hindustan Aeronautics Limited (HAL) and MiG, providing maintenance, overhaul, and modernization for fighter jets, transport aircraft, and helicopters.
3	Safran HAL Aircraft Engines Pvt. Ltd.	50	The purpose of the Safran HAL Aircraft Engines JV is to design, develop, produce, sell, and support new-generation helicopter engines in India, primarily for the Indian MoD's future 13-ton IMRH/DBMRH helicopters.
4	Samtel HAL Display Systems Ltd. (SHDS)	40	The purpose of the Samtel HAL Display Systems (SHDS) Joint Venture (JV) is to indigenously design, develop, manufacture, and support avionics display systems (like Multi-Function Displays - MFDs) for all of Hindustan Aeronautics Limited's (HAL) key aircraft platforms (Su-30MKI, LCA, IJT, LCH).
5	HALBIT Avionics Pvt. Ltd.	50	The purpose of HALBIT Avionics Pvt. Ltd. (a JV between HAL, Elbit Systems, and Merlinhawk) is to create synergistic defence solutions by designing, developing, and integrating advanced avionics, cutting-edge simulators (full mission, virtual, etc.), and comprehensive training systems for India's defence sector.
6	HATSOFF Helicopter Training Pvt. Ltd.	50	The purpose of the joint venture HATSOFF Helicopter Training Pvt. Ltd. is to provide comprehensive, high-quality, and cost-effective helicopter pilot and maintenance training using advanced simulation technology for both civil and military personnel.
7	International Aerospace manufacturing Pvt. Ltd.	50	The purpose of International Aerospace Manufacturing Pvt. Ltd. (IAMPL) (a JV between Rolls-Royce & HAL) is to manufacture high-precision aero engine components, specifically compressor and gas turbine parts, for both civil and military aerospace markets.
8	Helicopter Engines MRO Pvt. Ltd.	50	The primary purpose of the HAL-Safran Joint Venture, Helicopter Engines MRO Pvt. Ltd. (HE-MRO) in Goa, India, is to provide crucial Maintenance, Repair, and Overhaul (MRO) services for Safran's TM333 and Shakti helicopter engines used by the Indian Armed Forces.
9	SAFHAL Helicopter Engines Pvt. Ltd.	50	The Joint Venture Agreement between HAL and Safran Helicopter Engines, France for design, development and manufacture of engines for IMRH and DBMRH in India.

Source: Company, HSIE Research

## Indigenization to ease supply chain issues and aid margins

- HAL is driving self-reliance through the indigenous development of mission-critical systems. This includes advanced avionics like Smart Multi-Function Displays (SMFD), Software Defined Radio (SDR), Automatic Flight Control Systems (AFCS) and Mission Computers.
- Engine development programs such as the Hindustan Turbo Fan Engine-25 for trainers, Hindustan Turbo Shaft Engine-1200 for helicopters and small gas turbines for Unmanned Aerial Vehicles drive indigenization initiative further. The Combat Air Teaming System (CATS), featuring manned-unmanned teaming platforms like the CATS Warrior (loyal wingman), represents HAL's venture into next-generation aerial warfare.
- Indigenous projects like Light Combat Aircraft Mk1A, ALH, Light Combat Helicopter Prachand, Light Utility Helicopter and HTT-40 will continue to be the main revenue drivers for the company. The futuristic projects like LCA Mk 2, AMCA, IMRH, Twin Engine Deck Based Fighter (TEDBF), etc. will drive self-reliance further.
- Concentrated efforts are undertaken by HAL to enhance self-reliance and boost innovation. Some of the key initiatives taken by the company are:
  - Complex Aircraft Systems, LRUs, and other critical items are identified for indigenization under Positive Indigenization Lists (PILs). A total of 3,215 items (including 51 PILs items) have been indigenized so far.
  - Creation of a dedicated indigenization fund by transfer of 3% operating profit after tax of the company, to offer further impetus to indigenization.

### Export opportunity helping diversify revenue streams

- While exports are not very significant revenue contributor for HAL as of now, it is working toward building a durable export client base, given its expertise in building strategic defence aircrafts. Exports formed less than 1.3% of revenue from operations for HAL in FY25.
- They increased their global footprint by supplying aircraft like H-228 to Guyana, Do-228 to Seychelles and Mauritius, helicopters to Nepal, Maldives, Mauritius, Suriname, and Namibia. The company has exported Ring Forgings of super alloys to the UK and US, Su-30 avionics to Malaysia.
- The company is actively trying to increase their exports through various measures such as participating in global air shows to demonstrate their capabilities and by opening export offices in target geographies to increase their reach.

## Major programs anchor orderbook, pipeline

HAL is spearheading below described key defence programs of India. These programs will keep feeding orderbook of HAL for years to come. Due to the strategic importance of HAL as the leading integrator of defence aircrafts, its order book growth is estimated to remain very strong in the medium term.

Key programmes	Details
<b>Design/development/Production</b>	
Tejas light combat aircraft (LCA)	LCA Tejas programme was launched in 1983 to replace ageing MiG-21 fighter aircrafts which had been the mainstay of IAF till then. IAF had operated 874 of MiG-21 in past. LCA received operational clearance in 2006. IAF ordered HAL for a total of 40 Tejas Mk1 between 2006 and 2010. The final aircraft under this order was delivered in 2025. Further, HAL received two different orders of 83 and 97 LCA Tejas Mk1A jets respectively between 2021 and 2024 as part of the aircraft modernisation programme. Contract values of these two orders are INR 480bn and INR 665bn respectively. These aircrafts are expected to be delivered between 2025 and 2032. HAL has signed contracts with General Electric to supply F404 engines for LCA Tejas Mk1A. IAF has planned to procure at least 324 aircrafts across all variants of Tejas including the heavier variant Tejas Mk2 which is under development.
Light combat helicopter (LCH)	LCH programme of India primarily focuses on development and production of indigenous HAL Prachand. It has been developed to provide critical combat support in high altitude areas (above 5000 meters), a need highlighted during the 1999 Kargil war. LCH Prachand makes India prepared for conflicts in mountainous regions. The contract awarded to HAL includes order of producing a total of 156 helicopters (90 for Army and 66 for Airforce). Deliveries are expected to start from FY28 and finish by FY34. The contract is valued at INR 627bn including training and other associated equipment.
Light utility helicopter (LUH)	LUH is developed by HAL as a potential replacement of Cheetah and Chetak helicopters. The initial contract approved by the Defence acquisition council (DAC) is for 12 LSP (Limited series production) variants of LUH at a total cost of INR 15bn. Six each are meant for Army and IAF. These are being manufactured in Tumakuru, Karnataka. Once these orders are delivered, there is an additional requirement of approx. 400 helicopters to replace ageing fleet of Chetak and Cheetah. Potential cost of this overall requirement is INR 160bn. Approval for the same is underway.
Advanced light helicopter (ALH Dhruv)	ALH program of India is centred around the indigenously built Dhruv helicopter. This is a multi-role helicopter for military and civilian applications. Its military variants are Dhruv Mk-1, Mk-II, Mk-III meant for Army, Navy and AirForce. Also, Rudra is its weaponised version. Additionally, Dhruv-NG is next generation version of ALH intended for offshore work and civil transports. Currently HAL is involved in delivering previous orders of 72 helicopters (for Army, Navy, and the Coast guard). Moreover, it has received incremental orders of 40 ALH from MoD in the past two years, for which deliveries are yet to start.
Basic turboprop trainer (HTT-40)	HTT-40 project was started in 2013, and first prototype was rolled out in 2016. In August'20, DAC approved procuring 106 HTT-40s for Indian Air Force. Later, in March'23, HAL signed an agreement with IAF worth INR 68bn for supply of 70 HTT-40s. The second tranche of 36 HTT-40s will be procured after operationalisation of the first tranche, with a possible follow on of 38 more units. As per the initial agreed terms, delivery was to be started in Sep'2025 and to be completed by mar'29. As per the agreed schedule, 12 trainers were to be delivered in FY26 and approx. 20 each in the next three years. HAL has signed a USD 100mn deal with Honeywell aerospace for the supply of 88 TPE331-12B engines for this programme however the supply of engines has been delayed. This has delayed delivery of HTT-40 to IAF. As per the recent status, HAL expected to deliver 3 HTT-40s in FY26.
Su-30MKI	HAL has received an order of supplying Su-30MKI worth INR 135bn. This order is to compensate for losses due to crashes to maintain the sanctioned strength of 272 aircrafts. India already has 260 Su-30MKI in service.

Key programmes	Details
AMCA	<p>The Advanced Medium Combat Aircraft (AMCA) programme is India's ambitious project to develop an indigenous 5<sup>th</sup> generation stealth fighter aircraft. This will be designed by Aeronautical design institute (ADA) under DRDO with significant contribution by HAL and private sector partners such as Tata and L&amp;T. It will have stealth design, AI-driven avionics, advanced weapons, sensor fusion and super cruise ability. The initial approved cost of the project including design, engineering, and building the first five prototypes is INR 150bn. Further, the total cost of producing an expected fleet of 126 aircrafts is INR 1570bn. Prototype is expected to be rolled out by 2028 with first flight in 2029 while full induction is expected by 2035. This is a unique national program which brings together key PSU and private players for a collaborative push under AtmaNirbhar Bharat vision.</p>
Unmanned aerial vehicle (UAV)	<p>HAL is a key production partner in several major indigenous unmanned aerial vehicle programs of India. The two key programs are Combat Air Teaming System (CATS) and the production of TAPAS BH-201 UAV. HAL is the primary integrator and manufacturer for TAPAS BH-201, responsible for building the UAV's airframe, integrating avionics the final drone in collaboration with DRDO. Total development cost of the project is INR 18bn. Furthermore, HAL is also leading the reputed CATS programme which envisions to build unmanned and manned combat aircraft teaming system. It will consist of a manned fighter aircraft (ex: LCA Tejas) acting as a mothership and a set of swarming UAVs governed by this fighter aircraft. Starting with this, the primary aim is to build several advanced aerial platforms that can act as pseudo surveillance satellites with the ability to carry out precision strikes from standoff distance while reducing human error and the threat of human loss.</p>
Key programmes	Details
<b>Upgrade/Overhaul programmes</b>	
Super Sukhoi upgrades	<p>Indian Air Force has taken up a plan to upgrade 75% of the existing Su-30MKI fleet (~200 aircrafts) to the advanced 4.5 generation "Super Sukhoi" standard and increase their working life by 20 years. The new upgrade program worth INR 600-700bn is expected to overhaul the systems to handle modern aerial threats from adversaries. Key among these enhancements is the integration of Uttam AESA Radar, state of the art modern electronic warfare suites, and an AI powered mission computer for faster combat calculations. Further, the weapon package will include BrahMos-NG supersonic missiles, beyond visual range air to air missile (BVRAAM), and the Rudram series of anti-radiation missiles. Contract signing is expected in 2026 and delivery is estimated to go on till 2037. HAL is expected to deliver 12-15 upgraded aircrafts every year till 2037.</p>
Jaguar Darin-III upgrade	<p>There is an ongoing programme of upgrading 60 Jaguar Darin-III which includes advanced avionics and weapon system upgrade. The project cost is approx. INR 30bn and timeline of completion is 2026 (Delayed from original deadline of 2017 due to spare parts unavailability). The new version of the aircraft would include AESA radar and providing multi-target tracking and enhanced resistance to frequency jamming along with electronic warfare suite. This will also include integration of weapons such as air-to-air missile ASRAAM, CBU-15 bombs etc. This is expected to improve life of aircrafts to mid-2030s, beyond which this category of fighters will be phased out.</p>
Mirage-2000 upgrade	<p>In early 1980s, India procured 51 Mirage 2000 aircrafts from French firm Dassault aviation in fly away condition without any license for production. After being in service for four decades as the mainstay fighter, it has been taken up for upgrades to 2000-5 standard. HAL will collaborate with Dassault for this USD 2.4 bn programme. The upgrades will include integration of MICA missile, Indian sensors, glass cockpit, self-protection suite, digital data bus and electronic warfare suite. As a part of the upgrade, India has purchased retired Mirage 2000 aircrafts from France for sourcing the crucial spare parts required to maintain its existing Mirage fleet. While contract for this overall upgrade was signed in FY12, it faced some delays but remains a key fleet modernisation programme.</p>

Key programmes	Details
MiG-29 upgrade	Currently, India has over 100 MiG 29 aircrafts in service. HAL is spearheading modernisation of MiG-29 fleet for both IAF and Indian Navy, which aims to extend its life to beyond 2035 from current mid-2020s. Upgrades for AIF include production of RD-33 engines, integration of high-speed low drag precision guided bombs, and indigenous Astra-Mk1 beyond visual range missile. Furthermore, upgrade programme of MiG-29 with Indian Navy includes indigenous mission computers, laser pods, air to air and air to ground weapons for improved day/night situational awareness, night attack capability and improved precision of attacks etc. these upgrades have timelines till 2029 at an overall cost of approx. INR 60bn. MiG-29 fleet is planned to be phased out in future with manufacturing of indigenous Tejas Mk2 fighter planes.
Dornier Do-228 upgrade & life extension	Ministry of Defence (MoD) has signed a contract with HAL for midlife upgrade of 25 Dornier aircrafts along with the associated equipment at a cost of INR 29bn. The upgrades would include advanced avionics system and primary role sensors with most of the systems and equipment being sourced indigenously. Post upgrades and life extension, it would enhance the operational capability of Do-228 of Indian Navy to perform maritime and coastal surveillance, electronic intelligence, and domain awareness mission. This project is expected to be completed by FY30.
ALH Dhruv Mk-I/Mk-II upgrade	ALH Dhruv MK-1 and Mk-2 were the foundational and baseline military versions of ALH which are undergoing upgrades to subsequent military variants such as Mk-2, Mk-3, Mk-4 and Dhruv-NG (new generation). Mk-2 was improved version of Mk-1 with an integrated architecture display system (glass cockpit) in place of a conventional cockpit, but engine was same in both the versions. Mk-3 is a further improvement on other two versions with addition of Shakti engine, EW suite, electro optical pod and solid-state digital video recorder etc which makes it suitable for utility roles of defence services in high altitude operations. Furthermore, ALH Mk-4 is an advanced version of Mk-3 which is armed with weapon systems such as turret guns, rockets, air to air missiles, air to ground missiles, infra-red jammer etc. All these upgradation works are being carried out by HAL.

Source: Industry, Company, HSIE Research

## Extensive product portfolio to lead India's fleet modernization

Descriptions of the key products manufactured by HAL are as follows. This highlights the deep defence manufacturing expertise offered by the company along with the diversification of the product portfolio. Hence, the company's growth is multi-pronged and not dependent on any single defence program or product.

### Key products

### 2-D appearance

#### Aircrafts

**LCA:** LCA Tejas is a 4.5 generation, all-weather multi-role supersonic fighter aircraft. It is designed and developed by the Aeronautical Development Agency (ADA) and HAL. It can undertake close aerial combat, offensive air support, maritime operations, and ground attack role. This 13-meter-long aircraft weighing 13.5 tons is powered by GE F404 engine and can achieve up to 1.6Mach speed. It is built with extensive use of composite material that makes it relatively lighter and hence agile. It is equipped with the AESA radar that has a low probability of interception. It has nine hard points (weapon stations) capable of firing a variety of weapons such as long range BVR & WVR missiles, bombs, etc. with required precision. Further, LCA MK1A is the most advanced version of LCA Tejas, which is equipped with the AESA radar, electronic warfare suite, self-protection jamming, combat interrogator and transponder (CIT), and other advanced features.



**HTT-40:** Hindustan Turbo Trainer (HTT-40) is a trainer aircraft suitable for beginners with all primary training requirements. It can maintain slow speeds for long, which are suitable for learning requirements of a learner pilot. It is equipped with an AC cockpit, modern avionics, quick pilot change, and can accommodate refueling while engines are still running. This aircraft is ~10 meters long with maximum takeoff mass of 3 tons and an empty mass of 2.4tons. Its range is 1,009kms and can endure ~3 hours in the air with one fueling. Its maximum speed is 450 kmph. It finds its applications in basic flying training, aerobatics, navigation training, night flying and close formation flying.



**Dornier:** The HAL manufactured DO-228 is a versatile multipurpose twin turbo-prop light transport aircraft. Typical applications of a Dornier are maritime surveillance, troop transport, aerial survey, search and rescue, coastguard duties, remote sensing applications, cargo & logistics support, and casualty evacuation. Its overall length is ~17 meters and can accommodate 19 passengers onboard. It is powered by Garrett TPE 331 engine, can have a maximum take-off weight of 6.4tons, and offers a maximum speed of 428 kmph.



## Key products

**IJT:** This is an intermediate jet trainer (IJT), which has been indigenously designed and developed by HAL. It is expected to replace the aging fleet of KIRAN jet trainer aircraft in service with Indian air force for stage-II training. IJT aircrafts are fitted with in-house produced AL-55i jet engines. It provides smooth transition from a basic piston trainer to sophisticated advanced jet trainer. It has a length of 11 meters, with maximum permissible total weight of 5.4 tons and a maximum speed of 0.75Mach (~900kmph). IJT finds its applications for versatile purposes such as pilot training, navigation formation flying, air to ground and ground to air weapon aiming, tactical flying, and night flying trainings.

**Su-30 MKI:** Su-30MKI is a twin seat, twin engine supersonic multipurpose aircraft, which can fly in all weather conditions. It is developed by Sukhoi, Russia, and manufactured under license by HAL. It is capable of in-flight refuelling and superior manoeuvrability. It can carry bombs and varieties of guided and unguided missiles on 12 hard points. Typically, it carries R-73 air to air missiles, Kh-29 air to surface missiles, heavy Brahmos cruise missiles and guided bombs. It can work as multi-role aircraft and is suitable as a fighter, an interceptor, a bomber, and a trainer. It is powered by the NPO Saturn AL-31 FP engine. Further, it is equipped with GPS on board as navigational system, in addition to TACAN air navigation system for positioning accuracy. The Indian air force operates ~260 Su-30 MKIs.

**Hawk:** The Hawk is a tandem seat aircraft for ground attack, weapon training, and flight training. It is powered by Adour Mk871 turbofan engine made by Rolls Royce. This has an integrated navigation/attack system, radio, and inertial navigation system. It is 12 meters long with a maximum take-off weight of 9 tons. Hawk is cleared for a wide range of aerobatic manoeuvres and is capable of upright spinning, and an inverted flight capability of 30 seconds. This can be flown at night as well, dual, or solo, without any additional flight limitations. Its maximum speed is 0.85Mach.

## 2-D appearance



## Key products

## 2-D appearance

### Helicopters

**Dhruv:** This is indigenously designed and developed new generation advanced light helicopter (ALH) which has twin engine and is suitable for multi missions. It is approved both for civil and military operations. Its production started in 2002 and so far, 345 such aircrafts have been produced including 313 for the Indian Airforce. The major variants are Dhruv MK-I, MK-II, MK-III, and MK-IV. In its most advanced version, it is equipped with turret guns, rockets, air to ground missile, infra-red jammer, electronic warfare suite and obstacle avoidance system. Its length is 16 meters, maximum takeoff weight of 5.8 tons and an operational range of ~630kms. It can accommodate 14 passengers including pilots.



# Hindustan Aeronautics: Initiating Coverage

## Key products

## 2-D appearance

**ALH Rudra:** The advanced light helicopter (ALH MK-IV), also known as Rudra, is a weaponized version of ALH designed to meet the requirements of Indian Army and the Airforce. It is designed to carry external stores of up to 900kgs. The helicopter operates both in self-defense as well as attack mode. The helicopter can be fitted with four rocket pods or two air to air missiles or four air to ground missiles along with 20mm nose mounted turret gun. It is also equipped with mission sensors such as electronic warfare suite, video and data recorder and electro optical pod. This also has an advanced feature of helmet pointing system, which uses sensors to track pilot's head movement, allowing them to aim weapons, sensors, or cue data by simply looking at the target. India currently operates ~90 HAL made Rudra helicopters.



**LCH:** Light combat helicopter (LCH) Prachand is a dedicated light attack helicopter to meet IAF's requirements for high-altitude combat operations. Its narrow fuselage has seats for a pilot and a copilot (gunner) in tandem configuration. This machine is designed for low detection through high stealth features (reduced visual, radar, and infra-red signatures) and is equipped with crashworthy landing gears for better survivability in combat situation. It is fitted with indigenous avionics viz. radio communication systems and Identification Friend or Foe (IFF), apart from helmet mounted display system for triggering sensors with pilot aiming at the target. It is powered by two Shakti engines. It can fly at a max speed of 268kmph and can carry a peak weight of 5.8 tons. It is armed with 20mm turret gun, rocket pods, air to surface, and air to air missiles.



**LUH:** Light utility helicopter (LUH) is designed and developed as a replacement of Cheetah and Chetak helicopters, which are in service with the IAF. It is a new generation helicopter in the three tons class incorporating modern features such as glass cockpit, multi-function displays and powered by single turbo shaft engine with sufficient power to operate at a high-altitude environment such as the Himalayas. Its airframe and rotors are made up of composite material, which makes it crashworthy for better survivability in combat situations. LUH can fly at 220 kmph, service ceiling of 6.5km and a range of 350kms with a 500kg payload. A limited series of ~10 LUH is under production. This is expected to meet the emerging needs of the Airforce and army in the helicopter class in the coming decade.



**Cheetah:** First Cheetah was delivered in 1977 after HAL signed a license agreement with the French aerospace company M/S SNIAS. It is a high-performance helicopter designed for a wide range of weight and altitude combinations. It is powered by Artouste-IIIIB turbo shaft engine. The five-seater Cheetah is a versatile multi-role, highly manoeuvrable and rugged in its built. It holds a world record in high-altitude flying among all helicopter categories. It is suitable for commuting, surveillance, logistics, rescue operations, and high-altitude operations. So far, HAL has produced 275 of these helicopters, which are in service both in India and abroad.



# Hindustan Aeronautics: Initiating Coverage

## Key products

## 2-D appearance

**Cheetal:** This is an upgraded version of Cheetah with a modified engine. This project was initiated in 2002 with a motive to provide enhanced high-altitude capability to erstwhile Cheetah helicopters for better operational capabilities and maintenance. This also offered mid-life upgrade for safe and reliable operations. In this helicopter, an automatic back-up engine control system has been provided. Additionally, Artouste-III B engine of Cheetah has been replaced with a modern fuel efficient TM333-2M2 engine for better performance. The application of Cheetal is in various missions such as logistics support, search, and rescue, under slung operations and casualty evacuation.



**Lancer:** The Lancer helicopter is a light-attack helicopter developed by HAL as a cost-effective air mobile weapon system. It has bullet-proofed front panels and a crew seat, while the basic structure has been taken from Cheetah. It is 13 meters long, comes with a peak cruise speed of 176kmph and a range of ~290kms. Lancer is equipped with two jettisonable guns cum rocket pods on each side. Each pod carries one 12.7mm gun and three 70mm rockets. It is also provided with a gun sight for accurate aiming and firing by the pilot. Lancer is suitable for suppression of enemy fire, attack on vehicular convoys, and destruction of enemy machine gun positions.



**Chetak:** Helicopter division of HAL started producing Alouette III helicopters (known as Chetak) by entering an agreement with M/S Airbus in 1962. So far, it has produced and sold 350 of these helicopters, which are in service in India and abroad. This is a two-ton versatile, spacious seven-seater, multirole, multipurpose helicopter. It is powered by Artouste-III B turbo shaft engine and is suitable for cargo logistics, casualty evacuation, search and rescue, patrolling & survey, and offshore operations. Its range is ~500kms and can cruise at a peak speed of 185kmph.



## Key products

## 2-D appearance

### Civil aviation

**Do-228 Aircraft (Civil):** Do-228 is a highly versatile multi-utility light transport aircraft. It is a fuel efficient, rugged, twin turbo prop aircraft developed to meet various requirements of military and civil domain. It is typically a 19-seater and accommodates passenger weight of maximum 1,620kgs. Its max cruise speed is 370 kmph. It is powered by the GARRET TPE 331 engine and plays its active role in maritime reconnaissance, air taxi troop transport, search & rescue, cargo and logistics transport, air ambulance, aerial surveillance, and VIP/executive transportation.



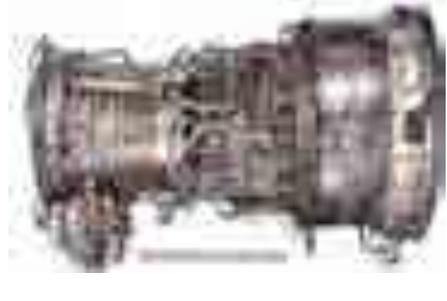
**DHRUV (ALH):** ALH Dhruv designed and developed by HAL is a multi-role, multi mission new generation helicopter used for both civil and military operations. It is powered by two Shakti engines, which enhance safety. The use of composite materials makes the aircraft light. It is equipped with indigenous avionics such as radio communication system, identification friend or foe (IFF) and solid-state digital video recording system. Its missions or roles are multi-fold such as casualty evacuation, underslung cargo, offshore operations, mining/exploration, and VIP transport.



Source: Company, HSIE Research

## Avionics, accessories, and systems

Apart from aircrafts and helicopters, HAL is also involved in production of key avionics, components, systems, and other accessories. The below list highlights key products of this vertical. Application of these products are in manufacturing and repair of various aircrafts and helicopters built by HAL.

<b>Ground radars</b>	<b>Missile inertial navigation</b>	<b>Radio navigation equipment:</b>
		
<b>Laser range system</b>	<b>Flight data recorder</b>	<b>Pilot control unit (PCU) for helicopters</b>
		
<b>Industrial and marine gas turbines:</b>	<b>Forgings</b>	<b>Castings</b>
		

Source: Company, HSIE Research

## Maintenance, repair, and overhaul (MRO)

MRO is the key business vertical of HAL, which contributes more than half of the revenue generated for the company. HAL benefits from having built a large pool of 4,200 aircrafts and 5,200 engines over the years, which keeps coming for MRO services periodically. This keeps the MRO orderbook of HAL strong.

MRO verticals	Key products/aircrafts serviced
Aircraft MRO	AN-32, HS-748, Do-228, MiG-21 Bison, Mirage, Jaguar, Kiran-I, IA, II
Helicopters MRO	Chetak, cheetah, ALH
Power plant services	Industrial 501K, Avon, Garrett, Artouste IIIB etc
Systems, accessories, and avionics	Instrument/Fuel/mechanical, communication/navigation/radar systems

Source: Company, HSIE Research

## Financial analysis

### Accelerated manufacturing to aid revenue growth

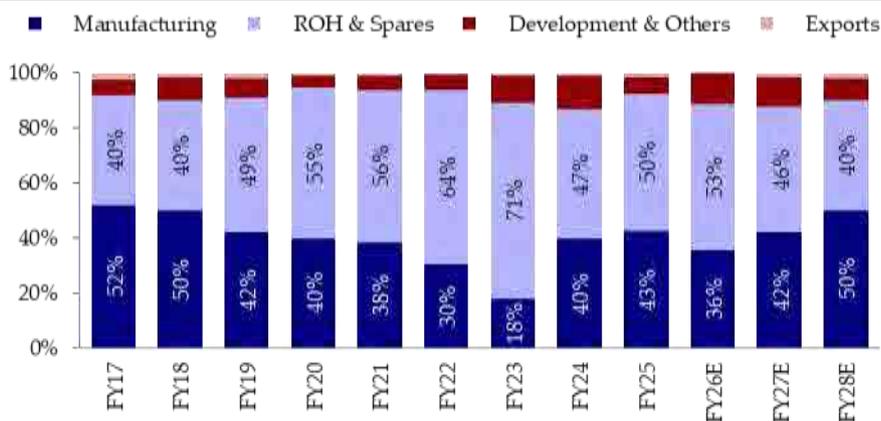
From FY19 to FY25, the ROH (repair and overhaul) & spares division has contributed almost 47% on an average to revenue. During this period, while RoH grew at 11% CAGR, spares grew at a faster pace of 20.5% CAGR. Going forward, we expect both the verticals to scale up in high single-digit CAGRs, driven by Sukhoi fleet upgrade and service order, apart from potential upgrades of Jaguars and MiGs. On the other hand, the manufacturing segment with ~36% average contribution to revenue during FY19-FY25 has delivered a subdued performance, led by delays in order finalization and supply chain issues. This has been reflected in the book to bill rising from 2.9 to 6.1 as manufacturing revenue CAGR was only 7.8% due to slow execution during the same period. We anticipate the order book will get liquidated at an accelerated pace FY28E onwards as supply chain issues get resolved. This would further be aided by the receipt of high value orders FY29E onwards. The management has guided revenue growth of 8-10% over FY26E and FY27E, with low double-digit growth starting from FY28E. We estimate a CAGR of 11% over FY25 to FY28E, on the back of estimated faster execution and consistent MRO growth.

#### Revenue to grow at 11% CAGR



Source: Company, HSIE Research

#### Mfg. revenue gaining strength on the back large platform orders

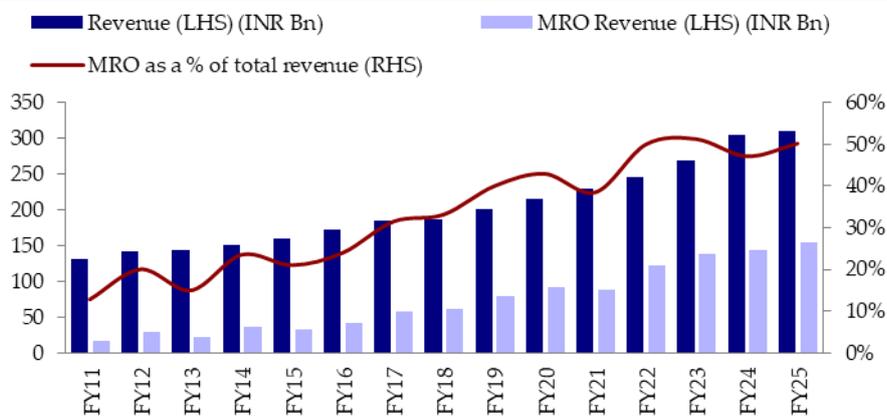


Source: Company, HSIE Research

### MRO to grow at 8-10%

HAL has delivered over 600 aircrafts in the past decade and has simultaneously built a robust MRO business over the existing fleets of all the three-armed forces. This business segment is a significant contributor to the base business of HAL as it constituted 50% of total revenue in FY25 and has hovered between 40-50% over the past five years. Within this segment, the company is now focusing on aircraft upgradation as it is expected to unlock a large revenue stream. This is noteworthy that upgrade of an aircraft costs around 30% of the overall aircraft price, which makes this service lucrative. HAL envisages a long-term growth pipeline from MRO and upgrades of vertical, led by 250 Sukhoi aircrafts planned for MRO and Upgrades, 300 ALHs for upgrade and service, long term MRO agreement with Airbus for its global aircraft fleets and export of MRO services. As the fleet of aircrafts increases in the country from 32 squadrons to 42 squadrons for IAF apart from new aircrafts purchases for Indian Navy and Army, the MRO business will provide revenue growth trajectory for the company. We estimate segment will grow at 8-10% in the medium term.

#### MRO to grow at 8%

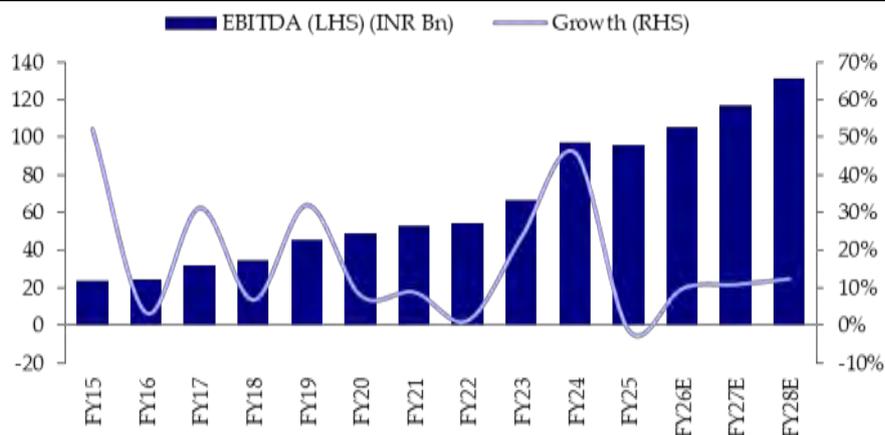


Source: Company, HSIE Research

### Margin stabilizes at higher levels with more indigenization

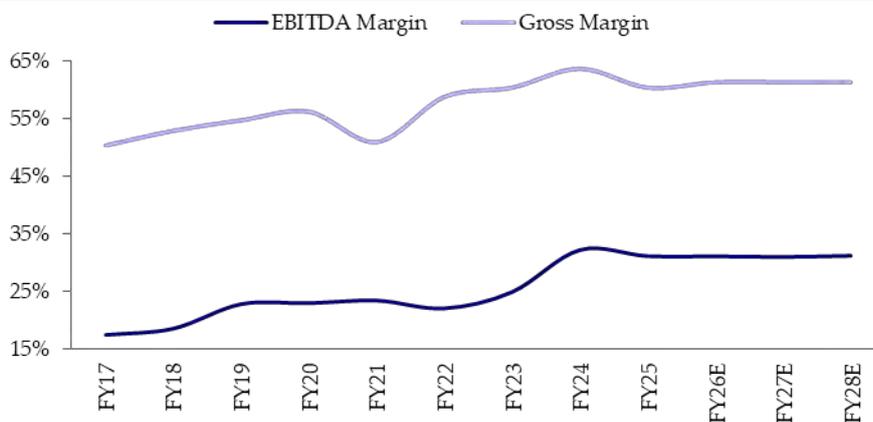
The margins for the repair and overhaul business along with spares (~50% of FY25 revenue) carry a higher EBITDA margin than the manufacturing vertical (~43% of FY25 revenue) due to a favorable cost structure and lower capex. HAL's EBITDA margins have increased from 24.8% in FY23 to 31% in FY25. This growth has been led by rising share of indigenously developed products in the revenue mix. Most new platforms such as LCA Tejas, LCH, LUH, etc. are indigenously developed and HAL has received production orders for the same as well. These projects typically carry better margins due to higher localized content than the licensed manufacturing platforms such as Su-30 MKI, HAWK, CHEETAH, etc. Higher indigenization of upcoming orders will keep the EBITDA margin elevated at ~31% during FY25-28E.

#### EBITDA to grow faster than revenue



Source: Company, HSIE Research

#### Margins to remain stable at strong levels



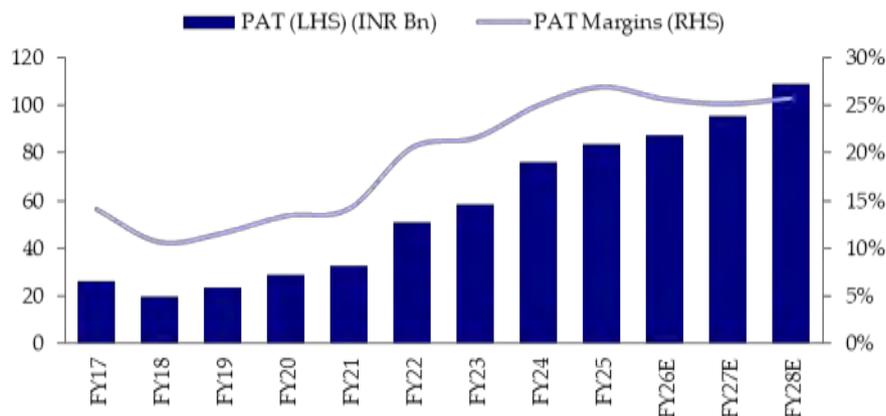
Source: Company, HSIE Research

### Elevated PAT margins through customer advances

HAL enjoys much higher PAT margins than peers, led by high contribution of other income in profitability. This has been supported by consistent increase in customer advances. In this context, it is noteworthy that other income formed 7.5% of PBT in FY20 and grew to 24% in FY25. Also, customer advances grew at a CAGR of 14.5% during FY20-25 to INR 248bn as against a muted revenue CAGR of 7.6% in the same period. This resulted in a rising contribution of other income, which also aided the cash conversion cycle of the company. HAL posted a PAT margin of 27% in FY25 as against 25% in FY24. We expect the PAT margins to

remain healthy in the range of 25% to 26% until FY28E and then inch higher as the company starts executing high-value orders from FY29E.

**PAT to grow at ~9% CAGR till FY28E**

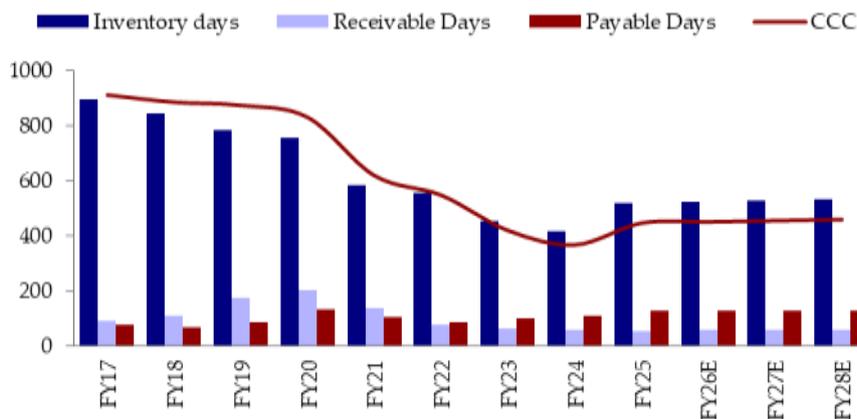


Source: Company, HSIE Research

**Cash conversion cycle to remain flattish**

HAL's cash conversion cycle has improved significantly from 910 days in FY17 to 445 in FY25. This improvement has taken place majorly due to better inventory management, efficient sourcing, and gradual development of the domestic ecosystem. HAL also receives customer advances both against orders and at achievement of milestones. This receipt of customer advances form 30% of total capital employed, on an average, which helps in managing its working capital efficiently without stressing the balance sheet much. We expect the cash conversion cycle to remain flattish at ~455 days until FY28E.

**CCC to remain stable at comfortable levels till FY28E**



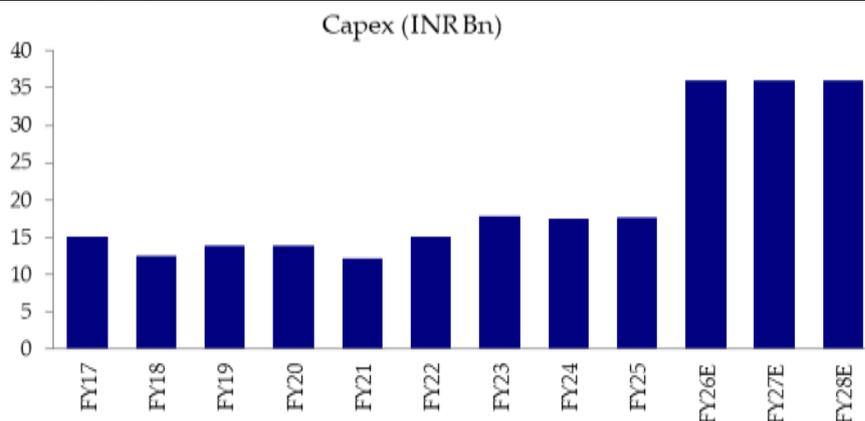
Source: Company, HSIE Research

### Planned capex of INR 150bn to build infrastructure for future projects

In FY25, the company spent INR 17.5bn on capital expenditure. Most of this money was spent toward major infrastructure projects like the new greenfield helicopter factory in Tumakuru, expanding LCA Tejas production lines, and setting up repair and overhaul (ROH) facilities for Su-30 jets and AL-31FP engines. The remaining amount was used for standard equipment replacement and upgrading existing plants. Looking ahead, the company plans to spend between INR 140-150bn over the next five years. This budget is specifically targeted at:

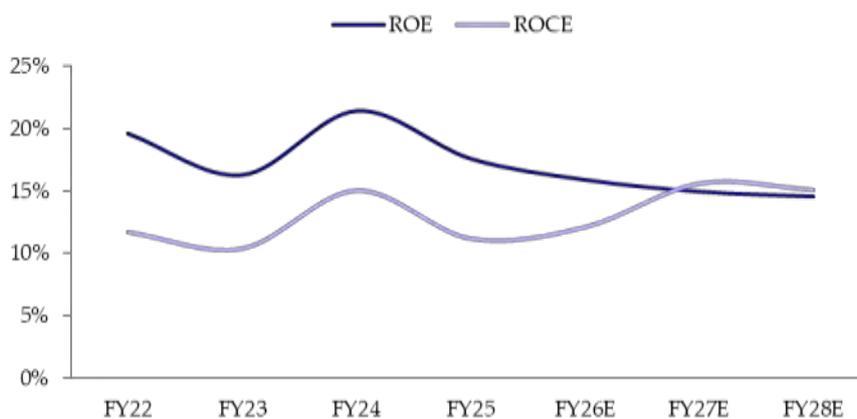
- **New manufacturing:** Building the infrastructure to produce LCA Mk2 fighters, GE-414 engines, and IMRH (Indian multi-role helicopter) engines.
- **Maintenance:** Expanding repair and overhaul capacity for current and future aircrafts.
- **Design and development:** Investing in facilities to support the R&D for the AMCA (5th-generation fighter) and the IMRH projects.

#### Heavy Capex planned over FY26-FY28E for large orders



Source: Company, HSIE Research

#### Healthy RoE & RoCE to sustain over the next 3 years



Source: Company, HSIE Research

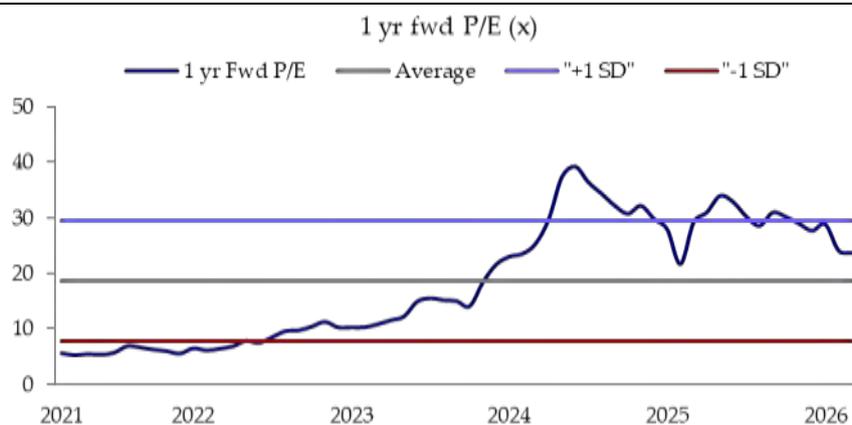
## View and valuation

HAL's orderbook of INR 2.4trn provides visibility of revenue booking through the coming years. India's need for aircrafts (32 squadrons expected to go up to 42 squadrons) and helicopters among all three-armed forces positions HAL as a critical defence supplier with order visibility of high-value projects such as Tejas MK2, AMCA, and LUH over the medium term. HAL's proven capability in R&D and indigenization with multiple critical platforms under development make it a frontline contributor for modernization of the armed forces. HAL's established expertise in designing, developing, manufacturing, servicing, and upgrades of aircrafts, helicopters, aero engines, and avionics enables it to be a key beneficiary of India's growing defence expenditure. HAL also reduces its revenue volatility through consistent MRO and upgrade services, which are estimated to increase over the years as the fleet size increases and starts to age.

Despite a strong orderbook and promising long-term revenue growth visibility, the company faces headwinds in the short term. This is reflected in the subdued performance during FY19-25, led by delays in order finalization and supply chain issues exacerbated by slower-than-required execution. This was further demonstrated in the book to bill ratio rising from 2.9 to 6.1 as manufacturing revenue CAGR was only 7.8% during the same time.

Hence, while we remain optimistic about the company's ability to deliver revenue growth in the long term, its execution in the short term will be a key monitorable, in our view. Further, as the stock is trading at XXX FY28E EPS with an estimated PAT CAGR of ~9.3% during FY25-28E, we believe the current valuation discounts the anticipated growth adequately. Any meaningful improvement in the execution pace compared to the recent past has the potential to deliver higher PAT CAGR.

We initiate coverage on the stock with a REDUCE rating and a target price of INR 3,625, based on 20x FY28E EPS.



Source: HSIE Research

## Key risks and concerns

### Downside risks

- **Budgetary allocations:** Over the years, the ministry of defence has been receiving growing and adequate allocations in the Union budgets. Rising geopolitical uncertainties and the need to be strategically equipped for country's protection pave the way for further enhancement in defence budget allocations in the coming years. Any reduction in defence budgetary allocations could derail revenue growth and compress the company's profitability. Moreover, the modernization programs of Indian armed forces highly depend upon continued growth in defence budget allocations.
- **Execution and liquidity:** Slower execution or any delay in procurement cycles for Tejas, LCA, LCH, or LUH platforms could disrupt timely revenue recognition. Furthermore, unfavorable shifts in payment milestones could severely strain the working capital. Hence, timely execution of projects at hand is necessary for the company to maintain liquidity and in garnering future projects.
- **Supply chain dependencies:** Reliance on foreign products and licensed technology exposes the company to delay in receipt of critical components and/or partnership disruptions. Specifically in the current juncture, continued delays in GE F-404 engine deliveries due to geopolitical friction pose a significant threat to production timelines of Tejas MK1A.

### Upside risk

- **Operational acceleration:** Expedited rollout of LCA Mk1A/Mk2 (current capacity at 24 per year) and rotorcraft projects with sustained margins offer significant earnings upside. Normalization of the GE engine supply chain would further de-risk the delivery schedule of Tejas Mk1A and hence accelerate the company's financial performance.

## Company background

Hindustan Aeronautics Ltd (HAL) is a premier aerospace company under the ministry of defence, India. Due to its impressive contributions toward strengthening India's defence over the years, its status has been upgraded from Navratna to Maharatna in 2024. HAL is the only defence company to have achieved this status.

HAL was started as a private limited company in 1940 by a visionary industrialist Seth Walchand Hirachand to manufacture aircrafts. Later, in 1947 post-independence, the company's control came to the Indian government.

Over the years, HAL has grown to become a defence behemoth, driven by its deep R&D focus and innovative manufacturing practices. It has excelled in all its areas of operations, namely design, development, manufacturing, and overhaul of advanced fighter aircrafts, trainers, helicopters, transport aircrafts and associated engines, accessories, avionics, and airborne systems. It has also diversified into manufacturing of structures for space vehicles such as polar/geostationary satellite launch vehicles (PSLV/GSLV), Indian remote sensing, and other satellites. It is also present in the domains of manufacturing of industrial and marine gas turbines, apart from providing commercial services at HAL airports in Bangalore and Nasik.

Since its inception, HAL has produced over 4,200 aircrafts and over 5,200 engines spread over 17 unique designs. It has also done extensive overhauling work covering 11,000 aircrafts and 33,000 engines. This provides HAL a deep moat against the peers and makes it a flagbearer of AtmaNirbhar Bharat mission.

## Organization and key divisions

HAL has five different divisions spread across geographies, as listed below. These are categorized based upon products manufactured by them.

### Production divisions

Key divisions	Major products & services
<b>Bangalore complex</b>	
Aircraft division, Bangalore	Manufacturing of Structural work packages for export
LCA TEJAS division, Bangalore	Manufacturing of Light Combat Aircraft (LCA)-Tejas
Engine division, Bangalore	<ul style="list-style-type: none"> <li>➤ Manufacturing and overhauling of Adour Mk871, Shakti, Artouste IIIB &amp; Garrett TPE 331-5 engines.</li> <li>➤ Overhaul of Adour Mk804/811, Dart, Gnome, Orpheus and TM332-2B2 engines</li> </ul>
Aircraft overhaul division, Bangalore	Overhaul and upgrade of Jaguar, Mirage-2000, Kiran & Hawk
Foundry & Forge division, Bangalore	Manufacturing of castings, forgings and Rolled rings
Aerospace division, Bangalore	<ul style="list-style-type: none"> <li>➤ Structural packages for launch vehicles (PSLV, GSLV) and satellites (INSAT, IRS)</li> <li>➤ Integration of Booster Rockets and Cryogenic Engines</li> </ul>
IMGT Division, Bangalore	<ul style="list-style-type: none"> <li>➤ Manufacturing and overhauling of LM2500 industrial &amp; marine gas turbine.</li> <li>➤ Repair and overhaul of SGT A20 AV (Industrial Avon) and SGTA05 engines</li> </ul>

Key divisions	Major products & services
<b>MiG complex</b>	
Aircraft Manufacturing division, Nasik	Manufacturing of Su-30MKI Aircraft
Aircraft overhaul division, Nasik	Overhauling of MiG-21 series, Su-30MKI aircraft
Sukhoi engine division, Koraput	Manufacturing and overhauling of AL-31 FP engine for Su-30 MKI
Engine division, Koraput	<ul style="list-style-type: none"> <li>➤ Manufacturing of RD33 engine</li> <li>➤ Overhauling of R11, R25, R29B and RD33 engines</li> </ul>

Key divisions	Major products & services
<b>Accessories complex</b>	
Transport aircraft division, Kanpur	Manufacturing of Do-228 Aircraft in both Civil and Military version
Accessories division, Lucknow	Manufacturing and overhauling of mechanical, electrical, hydraulic and fuel system
Avionics division, Hyderabad	Manufacturing and RoH of communication systems, Primary airborne radar and ground radar systems, secondary surveillance radar systems, mission, display, and radar computers
Avionics division, Korwa	Manufacturing & RoH of navigation and attack systems, cockpit displays, flight data recorders, sensor package for Brahmos and Prithvi missiles

Key divisions	Major products & services
<b>Helicopter complex</b>	
Helicopter division, Bangalore	Manufacturing of advanced light helicopter (ALH Dhruv), Light combat helicopter (LCH), Cheetal and Chetak
Barrackpore division	Overhaul and servicing of Chetak, Cheetah, Lancer and Cheetal helicopters
Helicopter MRO division, Bangalore	Maintenance, repair, and overhaul facility for helicopter
Aerospace composite division, Bangalore	Manufacturing of composite parts and assemblies Rubberised fuel tank for helicopters (ALH)

## Design complex

Key divisions	Major products & services
<b>R&amp;D division</b>	
Central material and process laboratory, Bangalore	Development of materials, castings, forgings, and new processes, testing of material properties and NDT facilities
Aircraft upgrade R&D Centre (AURDC), Nasik	Aircraft/system upgrade work on Russian aircraft (Mig series and Su-30)
Gas turbine R&D centre (GTRDC), Koraput	Design improvement of Russian engines
Aerospace system & equipment R&D centre (ASERDC) Lucknow	Design and development of mechanical, hydraulic, and electrical accessories like hydraulic actuators, starter, generator and ground test equipment
Aerospace system & equipment R&D centre (ASERDC) Korwa	Design and development of avionics and navigation systems
Transport aircraft R&D centre (TARDC), Kanpur	Development and upgrades of transport aircrafts
Strategic Electronics R&D Centre (SLRDC), Hyderabad	Design and development of communication, navigation, radars, and utility management systems etc.
Aircraft R&D centre (ARDC), Bangalore	Design and development of fixed wing aircraft (LCA, IJT, UAV, HTT-40), ground and flight testing, wind tunnel testing facilities
Aero engine R&D centre (AERDC), Bangalore	Development and upgrades of aero engines and test bed design
Mission & combat system R&D centre (MCSRDC), Bangalore	Design and development of mission avionics hardware, navigation and weapon guidance, weapon, and sensor integration etc
Rotary wing R&D centre (RWRDC), Bangalore	Design & development of Rotary wing platforms (ALH, LCH, LUH)

Source: Company, HSIE Research

## Annexure I: Management Personnel

Name (designation)	Description
Dr. D.K. Sunil (Chairman and Managing Director)	<ul style="list-style-type: none"> <li>➤ An HAL veteran of 38 years, he rose from Management Trainee to Chairman &amp; Managing Director (Sept 2024), subsequently leading the company to Maharatna status and the top market capitalization spot among DPSUs.</li> <li>➤ He holds a Ph.D. in Electronics Science and an M.Tech in Aircraft Production (IIT Madras), specializing in high-end systems like Active ESA Radar and Automatic Flight Control Systems for the Prachand and LUH.</li> <li>➤ He personally holds 12 copyrights and one patent, and under his guidance, HAL's intellectual property portfolio expanded to over 1,100 IPRs, including 371 patents.</li> <li>➤ Beyond HAL, he holds key governance roles in India's aerospace ecosystem, including positions at ADA, IN-Space, and CSIR-NAL, driving national self-reliance in defence technology.</li> </ul>
Shri Barenaya Senapati (Director Finance & CFO)	<ul style="list-style-type: none"> <li>➤ A Fellow Chartered Accountant and 30-year HAL veteran who was appointed Director (Finance) and CFO in late 2024, following his role as Executive Director (Finance).</li> <li>➤ Played a pivotal role in HAL attaining Maharatna status and was instrumental in finalizing major contracts for fighter aircraft, helicopters, and high-revenue repair and overhaul (ROH) services.</li> <li>➤ Modernized finance functions by implementing the e-CBRS (Online Claims Bills Realization system) and successfully settling long-standing multi-state sales tax disputes in coordination with the MOD.</li> <li>➤ Recipient of the "CA, CFO – Large Corporates PSU" award from the ICAI in 2025 and serves on the Executive Board of the Standing Conference of Public Enterprises (SCOPE).</li> </ul>
Shri Ravi K (Director Operations)	<ul style="list-style-type: none"> <li>➤ An IIM Ahmedabad alumnus and 30-year veteran appointed <b>Director (Operations)</b> in 2024 after serving as ED (Corporate Planning).</li> <li>➤ Spearheaded the record <b>₹36,000+ crore contract</b> for 83 LCA Mk1A jets and established facilities to produce 16 aircraft annually.</li> <li>➤ Transformed the LCA Division into a lead integrator by outsourcing major assemblies and enhancing fleet serviceability through digital integration.</li> </ul>
Shri M.G. Balasubrahmanya (Director Human Resources)	<ul style="list-style-type: none"> <li>➤ A 35-year HAL veteran appointed <b>Director (Human Resources)</b> in 2025, overseeing HR, Training, Medical, and Media Communications.</li> <li>➤ Holds a Master of Social Work (PM &amp; IR) and an LLB, specializing in industrial relations and competency assessment.</li> <li>➤ Instrumental in aligning HR policies with business needs while driving automation, skill development, and productivity-focused employee engagement.</li> </ul>
Shri Ajay Kumar Shrivastava (Director Engineering and Research & Development)	<ul style="list-style-type: none"> <li>➤ A 37-year HAL veteran and certified Project Management Professional appointed <b>Director (Engineering and R&amp;D)</b> in July 2025.</li> <li>➤ Graduate in Electronics Engineering from HBTI Kanpur and a postgraduate in MS (Aviation Safety &amp; Aircraft Airworthiness) from ENAC/ENSICA, Toulouse, France. He is also a certified Project Management Professional.</li> <li>➤ Spearheaded the certification of the <b>HTT-40 trainer</b> and the successful avionics upgrade of the <b>HJT-36</b>, demonstrated at Aero India 2025.</li> </ul>
<b>Chief Executive Officers</b>	
Shri Saket Chaturvedi (CEO, MiG Complex)	<ul style="list-style-type: none"> <li>➤ Engineering graduate from MITS Gwalior with an M.Tech from MANIT Bhopal and MBA in Marketing &amp; leadership training at IIM Ahmedabad and IAS Toulouse.</li> <li>➤ Reduced Su-30MKI overhaul cycles to 15 months and earned a state-level award for excellence in energy conservation and management.</li> <li>➤ Progressed through key roles in maintenance and outsourcing to become CEO of the MiG Complex effective April 1, 2023.</li> </ul>
Shri Jayakrishnan S (CEO, Bangalore Complex)	<ul style="list-style-type: none"> <li>➤ Holds a B.Tech in Production Engineering from TKM College of Engineering, University of Kerala, and joined HAL in 1989.</li> <li>➤ Successfully managed leadership roles as General Manager for Aircraft, Intermediate Jet Trainer (IJT), and Airport Services Centre Divisions.</li> <li>➤ Appointed CEO of Bangalore Complex in 2024 after 36 years of experience across production, exports, and business development.</li> </ul>

## Hindustan Aeronautics: Initiating Coverage

Name (designation)	Description
Shri M Satyanarayana (CEO, Accessories Complex)	<ul style="list-style-type: none"> <li>➤ B.Tech in Electronics &amp; Communication from Nagarjuna University and M.Tech in Aircraft Production Engineering from IIT Madras.</li> <li>➤ Successfully led the Accessories Division at Lucknow and Avionics Division at Hyderabad as General Manager during his tenure.</li> <li>➤ Appointed CEO of Accessories Complex in 2025, bringing 36 years of expertise across Russian, Western, and indigenous aircraft platforms.</li> </ul>
Shri P B Rangarao (CEO, Helicopter Complex)	<ul style="list-style-type: none"> <li>➤ Mechanical Engineering graduate from REC Warangal with a PGDBM from XIME Bengaluru and leadership training from IIM Ahmedabad.</li> <li>➤ Progressed through critical roles in ALH manufacturing, blade shops, and transmission projects during a distinguished 30-year career.</li> <li>➤ Appointed CEO of Helicopter Complex in July 2025 after serving as Executive Director of the Helicopter Division.</li> </ul>

Source: Company, HSIE Research

# Hindustan Aeronautics: Initiating Coverage

## P&L (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>Net Revenues</b>	2,28,823	2,46,200	2,69,275	3,03,811	3,09,810	3,40,615	3,78,952	4,23,033
Growth (%)		7.6	9.4	12.8	2.0	9.9	11.3	11.6
COGS	1,12,553	1,01,777	1,06,995	1,10,740	1,23,128	1,32,158	1,47,033	1,64,137
Employee Expense	43,052	46,044	49,104	52,907	57,304	60,629	67,453	75,300
Other Expenses	38,535	60,977	69,644	62,438	60,399	69,409	76,790	86,602
<b>EBITDA</b>	<b>34,684</b>	<b>37,402</b>	<b>43,531</b>	<b>77,725</b>	<b>68,979</b>	<b>78,418</b>	<b>87,675</b>	<b>96,994</b>
EBITDA Growth (%)		7.8	16.4	78.6	(11.3)	13.7	11.8	10.6
<b>EBITDA Margin (%)</b>	<b>15.2</b>	<b>15.2</b>	<b>16.2</b>	<b>25.6</b>	<b>22.3</b>	<b>23.0</b>	<b>23.1</b>	<b>22.9</b>
Depreciation	11,579	11,105	17,847	14,072	13,404	13,052	15,542	18,032
<b>EBIT</b>	<b>23,105</b>	<b>26,297</b>	<b>25,684</b>	<b>63,654</b>	<b>55,576</b>	<b>65,366</b>	<b>72,133</b>	<b>78,962</b>
Other Income (Including EO Items)	3,643	9,847	16,730	19,231	26,082	24,484	26,144	32,342
Interest	2,592	582	580	321	87	100	100	100
<b>PBT</b>	<b>24,156</b>	<b>35,562</b>	<b>41,835</b>	<b>82,563</b>	<b>81,571</b>	<b>89,750</b>	<b>98,177</b>	<b>1,11,204</b>
Total Tax	10,379	1,447	6,818	26,039	25,032	29,212	31,865	36,413
<b>RPAT</b>	<b>13,777</b>	<b>34,116</b>	<b>35,017</b>	<b>56,524</b>	<b>56,539</b>	<b>60,538</b>	<b>66,312</b>	<b>74,791</b>
Other Items	-	-	-	-	-	-	-	-
<b>Adjusted PAT</b>	<b>13,777</b>	<b>34,116</b>	<b>35,017</b>	<b>56,524</b>	<b>56,539</b>	<b>60,538</b>	<b>66,312</b>	<b>74,791</b>
APAT Growth (%)		147.6	2.6	61.4	0.0	7.1	9.5	12.8
<b>Adjusted EPS (Rs)</b>	<b>97.1</b>	<b>151.9</b>	<b>87.1</b>	<b>114.0</b>	<b>125.1</b>	<b>131.0</b>	<b>142.9</b>	<b>163.3</b>
EPS Growth (%)		56.5	(42.6)	30.8	9.8	4.8	9.1	14.3

## Balance Sheet (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>SOURCES OF FUNDS</b>								
Share Capital - Equity	3,344	3,344	3,344	3,344	3,344	3,344	3,344	3,344
Reserves	1,50,934	1,89,825	2,32,415	2,88,074	3,46,508	4,06,188	4,71,033	5,46,448
<b>Total Shareholders Funds</b>	<b>1,54,278</b>	<b>1,93,169</b>	<b>2,35,759</b>	<b>2,91,418</b>	<b>3,49,852</b>	<b>4,09,532</b>	<b>4,74,377</b>	<b>5,49,792</b>
Long Term Debt	-	-	-	-	-	-	-	-
Short Term Debt	91	-	-	-	-	-	-	-
<b>Total Debt</b>	<b>91</b>	<b>-</b>						
<b>Net Deferred Taxes</b>	<b>(524)</b>	<b>(5,656)</b>	<b>(11,257)</b>	<b>(14,543)</b>	<b>(15,680)</b>	<b>(15,680)</b>	<b>(15,680)</b>	<b>(15,680)</b>
<b>Other Non-current Liabilities &amp; Provns</b>	<b>1,09,229</b>	<b>1,40,526</b>	<b>1,28,006</b>	<b>1,26,290</b>	<b>2,71,864</b>	<b>11</b>	<b>11</b>	<b>11</b>
<b>TOTAL SOURCES OF FUNDS</b>	<b>2,63,075</b>	<b>3,28,039</b>	<b>3,52,508</b>	<b>4,03,165</b>	<b>6,06,036</b>	<b>3,93,863</b>	<b>4,58,708</b>	<b>5,34,123</b>
<b>APPLICATION OF FUNDS</b>								
Net Block	62,218	59,276	57,986	57,802	59,703	83,605	1,05,057	1,24,059
CWIP	6,633	9,491	6,369	9,369	10,911	10,911	10,911	10,911
Other Non-current Assets	44,489	59,567	77,575	69,063	75,429	28,565	27,571	26,538
<b>Total Non-current Assets</b>	<b>1,13,340</b>	<b>1,28,334</b>	<b>1,41,931</b>	<b>1,36,234</b>	<b>1,46,043</b>	<b>1,23,081</b>	<b>1,43,539</b>	<b>1,61,507</b>
Inventories	1,66,730	1,43,473	1,21,487	1,32,175	2,16,757	1,89,073	2,12,368	2,39,319
Debtors	56,681	46,415	47,192	46,169	46,478	2,26,191	2,79,043	2,94,233
Other Current Assets	1,08,592	1,16,565	1,47,006	1,87,515	2,55,889	1,00,617	1,22,708	1,43,514
<b>Cash &amp; Equivalents</b>	<b>71,774</b>	<b>1,43,477</b>	<b>2,03,166</b>	<b>2,64,316</b>	<b>3,81,823</b>	<b>3,49,773</b>	<b>3,73,479</b>	<b>4,62,030</b>
<b>Total Current Assets</b>	<b>4,03,776</b>	<b>4,49,930</b>	<b>5,18,850</b>	<b>6,30,175</b>	<b>9,00,946</b>	<b>8,65,653</b>	<b>9,87,598</b>	<b>11,39,096</b>
Creditors	22,556	25,576	31,350	34,129	51,057	46,079	51,668	58,128
Other Current Liabilities & Provns	2,31,486	2,24,649	2,76,923	3,29,115	3,89,896	5,48,792	6,20,761	7,08,352
<b>Total Current Liabilities</b>	<b>2,54,042</b>	<b>2,50,225</b>	<b>3,08,273</b>	<b>3,63,243</b>	<b>4,40,953</b>	<b>5,94,871</b>	<b>6,72,429</b>	<b>7,66,480</b>
<b>Net Current Assets</b>	<b>1,49,734</b>	<b>1,99,705</b>	<b>2,10,578</b>	<b>2,66,932</b>	<b>4,59,994</b>	<b>2,70,782</b>	<b>3,15,169</b>	<b>3,72,616</b>
<b>TOTAL APPLICATION OF FUNDS</b>	<b>2,63,075</b>	<b>3,28,039</b>	<b>3,52,508</b>	<b>4,03,165</b>	<b>6,06,036</b>	<b>3,93,863</b>	<b>4,58,708</b>	<b>5,34,123</b>

# Hindustan Aeronautics: Initiating Coverage

## CASH FLOW (INR Mn)

Year ending March	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Reported PBT	42,835	52,245	65,095	1,02,249	1,08,673	1,16,846	1,27,460	1,45,654
Non-operating & EO Items	10,348	30,438	22,165	16,389	1,874	(24,484)	(26,144)	(32,342)
Interest Expenses	2,044	559	258	314	87	100	100	100
Depreciation	12,217	12,870	23,821	14,221	13,627	13,052	15,542	18,032
Working Capital Change	92,481	15,894	4,515	(31,251)	47,556	(68,782)	(20,680)	31,104
Tax Paid	(8,755)	(10,275)	(27,557)	(19,693)	(35,382)	(29,212)	(31,865)	(36,413)
<b>OPERATING CASH FLOW ( a )</b>	<b>1,51,170</b>	<b>1,01,731</b>	<b>88,297</b>	<b>82,228</b>	<b>1,36,435</b>	<b>7,521</b>	<b>64,413</b>	<b>1,26,134</b>
Capex	(12,086)	(15,006)	(17,812)	(17,552)	(17,569)	(36,000)	(36,000)	(36,000)
Free Cash Flow (FCF)	1,39,084	86,726	70,485	64,677	1,18,865	(28,479)	28,413	90,134
Investments	-	(1,12,562)	(45,985)	(63,116)	(1,14,697)	-	-	-
Non-operating Income	286	(285)	6,517	16,567	24,555	24,484	26,144	32,342
<b>INVESTING CASH FLOW ( b )</b>	<b>(11,800)</b>	<b>(1,27,852)</b>	<b>(57,280)</b>	<b>(64,101)</b>	<b>(1,07,711)</b>	<b>(11,516)</b>	<b>(9,856)</b>	<b>(3,658)</b>
Debt Issuance/(Repaid)	(58,598)	(91)	-	-	-	-	-	-
FCFE	80,486	86,635	70,485	64,677	1,18,865	(28,479)	28,413	90,134
Share Capital Issuance	-	-	-	-	-	-	-	-
Dividend	(10,032)	(13,376)	(16,719)	(19,729)	(25,414)	(27,955)	(30,750)	(33,825)
Others	(2,072)	(1,171)	(594)	(260)	(372)	(100)	(100)	(100)
<b>FINANCING CASH FLOW ( c )</b>	<b>(70,702)</b>	<b>(14,637)</b>	<b>(17,313)</b>	<b>(19,989)</b>	<b>(25,785)</b>	<b>(28,055)</b>	<b>(30,850)</b>	<b>(33,925)</b>
<b>NET CASH FLOW (a+b+c)</b>	<b>68,668</b>	<b>(40,758)</b>	<b>13,704</b>	<b>(1,861)</b>	<b>2,939</b>	<b>(32,050)</b>	<b>23,707</b>	<b>88,551</b>
EO Items, Others	-	-	-	-	-	-	-	-
Closing Cash & Equivalents	71,462	30,704	44,408	42,547	45,485	13,436	37,142	1,25,693

## KEY RATIOS

	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>PROFITABILITY (%)</b>								
GPM	50.8	58.7	60.3	63.5	60.3	61.2	61.2	61.2
EBITDA Margin	15.2	15.2	16.2	25.6	22.3	23.0	23.1	22.9
EBIT Margin	10.1	10.7	9.5	21.0	17.9	19.2	19.0	18.7
APAT Margin	6.0	13.9	13.0	18.6	18.2	17.8	17.5	17.7
RoE		19.6	16.3	21.4	17.6	15.9	15.0	14.6
RoIC (or Core RoCE)		13.4	12.9	30.2	21.2	32.9	75.4	67.5
RoCE		11.7	10.4	15.0	11.2	12.1	15.6	15.1
<b>EFFICIENCY</b>								
Tax Rate (%)	43.0	4.1	16.3	31.5	30.7	32.5	32.5	32.7
Fixed Asset Turnover (x)	2.2	2.3	2.3	2.4	2.2	1.9	1.8	1.7
Inventory (days)	585	556	452	418	517	522	527	532
Debtors (days)	135	76	63	56	55	55	55	55
Other Current Assets (days)	173	173	199	225	301	108	118	124
Payables (days)	103	86	97	108	126	127	128	129
Other Current Liab & Provsns (days)	369	333	375	395	459	588	598	611
Cash Conversion Cycle (days)	618	546	418	366	446	450	454	458
Working Capital (days)	421	386	242	196	288	(30)	(26)	(29)
Net D/E (x)	(0.5)	(0.7)	(0.9)	(0.9)	(1.1)	(0.9)	(0.8)	(0.8)
Interest Coverage (x)	8.9	45.2	44.3	198.2	640.3	653.7	721.3	789.6
<b>PER SHARE DATA (Rs)</b>								
EPS	97.1	151.9	87.1	114.0	125.1	131.0	142.9	163.3
CEPS	131.7	185.1	140.5	135.0	145.1	150.6	166.2	190.3
Dividend	30.00	40.00	50.00	29.50	38.00	41.80	45.98	50.58
Book Value	461.4	577.7	705.0	435.7	523.1	612.4	709.3	822.1
<b>VALUATION</b>								
P/E (x)	39.9	25.5	44.5	34.0	31.0	29.6	27.1	23.7
P/BV (x)	8.4	6.7	5.5	8.9	7.4	6.3	5.5	4.7
EV/EBITDA (x)	35.3	30.8	25.1	30.0	32.1	28.6	25.3	22.0
EV/Revenues (x)	5.4	4.7	4.1	7.7	7.1	6.6	5.9	5.0
OCF/EV (%)	12.3	8.8	8.1	3.5	6.2	0.3	2.9	5.9
FCF/EV (%)	11.4	7.5	6.4	2.8	5.4	(1.3)	1.3	4.2
FCFE/Mkt Cap (%)	6.2	6.7	5.4	2.5	4.6	(1.1)	1.1	3.5
Dividend Yield (%)	0.8	1.0	1.3	0.8	1.0	1.1	1.2	1.3

Source: Company, HSIE Research

# Mazagon Dock Shipbuilders

## Spearheading the naval modernization drive

Mazagon Dock Shipbuilders Ltd (MDL) operates as the primary shipyard for the Indian Navy, specializing in the design, construction, and refit of frontline warships and conventional submarines. The company's technical capability is demonstrated in the fact that it has a track record of delivering a total of 805 marine vessels in its lifetime, much higher than peers. This specialization is led by a shipyard capacity designed for the simultaneous assembly of 10 warships and 11 submarines. India's naval capabilities lag most of the major economies and thus the government is pushing to modernize and increase the country's naval strength. It is being achieved through procurement of major advanced platforms such as submarines, destroyers, frigates, and corvettes. We believe MDL will remain a key beneficiary of India's naval modernization, Make in India, and Maritime Vision 2047 initiatives. Observing MDL's technological moat and significantly large order pipeline worth over INR 3trn, we initiate coverage on the stock with an ADD rating and a target price of Rs. 2,950, valuing it at 40x FY28E EPS.

- Order book and strong pipeline:** The order backlog as of Q2FY26 stands at INR 274bn, with project 17A frigates and ONGC offshore platforms serving as the primary revenue contributors through FY27E. The medium-term pipeline then shifts toward the submarine segment, where contracts for additional Scorpene-class vessels and P-75(I) AIP-equipped units are estimated between INR 1-1.1trn. These programs have progressed into late-stage negotiations and are expected to be awarded shortly. Long-term revenue visibility is supported by a series of upcoming surface combatant programs, including project 17B frigates, project 15C destroyers, and landing platform docks, bringing the pipeline to over INR 3 trn executable over the next decade.
- Diversification to unlock new opportunities:** MDL's diversification strategy to expand into manufacturing of offshore vessels, commercial ships and servicing the global market is gaining momentum. Current orders for ONGC offshore contracts and export orders of six hybrid-powered vessels validate their move. The company's planned acquisition of a 51% stake in Colombo Dockyard PLC provides expansion in the Indian ocean region for ship repair and refit. The planned capex of INR 50bn in Tuticorin Greenfield yard expands its capacity for commercial shipbuilding and green vessels.
- R&D and indigenization efforts:** MDL invests c.1% of its annual sales into R&D for next-gen product development and indigenization. It has increased its indigenization content in surface combatants to 75%, up from 42% and in submarines to 32%, with plans to take it to 60% for the next batch. This helps MDL in securing major platform orders and supports margins, as under the Make in India initiative, preference is given to companies with higher indigenization.
- Financials:** MDL delivered a 25.9% revenue CAGR over FY22-25. We forecast a revenue/EBITDA/PAT CAGR of 13.2%/12.1%/7.2% over FY25-FY28, with EBITDA margins at 17.5% in FY28E.

YE March (INR mn)	FY23	FY24	FY25	FY26E	FY27E	FY28E
Net Sales	78,272	94,666	1,14,319	1,25,814	1,44,163	1,65,997
EBITDA	7,978	14,116	20,600	22,210	24,051	29,005
APAT	11,190	19,370	24,135	24,844	26,070	29,726
Diluted EPS (INR)	55.5	96.0	59.8	61.6	64.6	73.7
P/E (x)	39.0	22.5	36.2	39.1	37.3	32.7
EV/EBITDA (x)	38.1	20.9	34.6	36.6	33.7	27.8
RoCE (%)	25.0	35.1	33.6	27.3	23.7	22.6

Source: Company, HSIE Research

### ADD

CMP (as on 05 Mar 2026)	INR 2,353
Target Price	INR 2,950
NIFTY	24,766

#### KEY STOCK DATA

Bloomberg code	MAZDOCKS IN
No. of Shares (mn)	403
MCap (INR bn) / (\$ mn)	949/10,360
6m avg traded value (INR mn)	3,131
52 Week high / low	INR 3,778/2,126

#### STOCK PERFORMANCE (%)

	3M	6M	12M
Absolute (%)	(10.1)	(11.9)	4.7
Relative (%)	(3.4)	(11.1)	(3.8)

#### SHAREHOLDING PATTERN (%)

	Sep-25	Dec-25
Promoters	81.2	81.2
FIs & Local MFs	5.7	5.4
FPIs	2.0	1.8
Public & Others	11.2	11.6

Pledged Shares

Source: BSE

Pledged shares as % of total shares

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Focus charts

Order book expected to increase exponentially



Source: Company, HSIE Research

Large order funnel provides revenue visibility

Project	Value (INR bn)
P75 (additional order)	350
P-75(I)	700
Landing Platform Dock	350
Mine Counter Measure Vessel	400
P17B	500
P15C	700
<b>Total</b>	<b>3000</b>

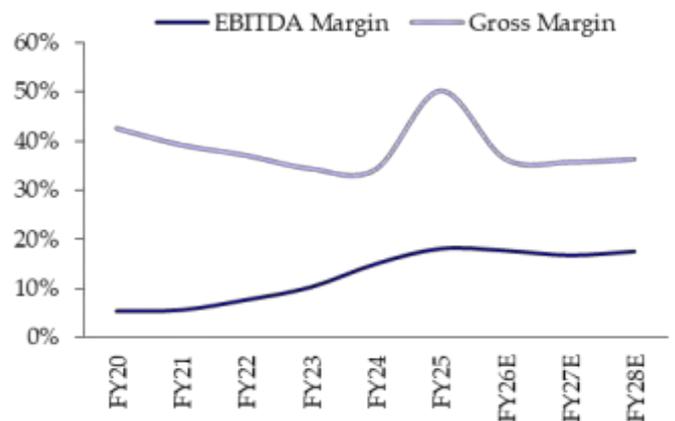
Source: Company, HSIE Research

Revenue to grow at a healthy CAGR of ~13%



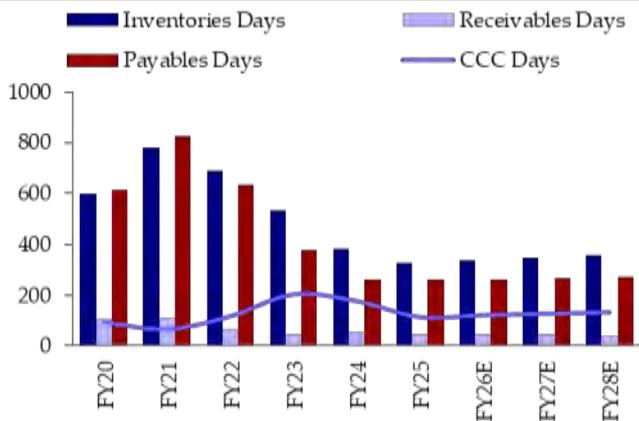
Source: Company, HSIE Research

EBITDA margins to stay strong in high-teens till FY28E



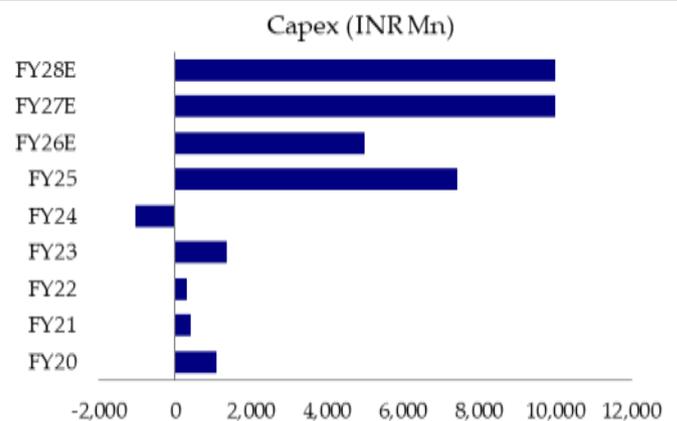
Source: Company, HSIE Research

CCC among the best in the industry



Source: Company, HSIE Research

New order inflows require large capex



Source: Company, HSIE Research

## P17A anchors orderbook with 2Y revenue visibility

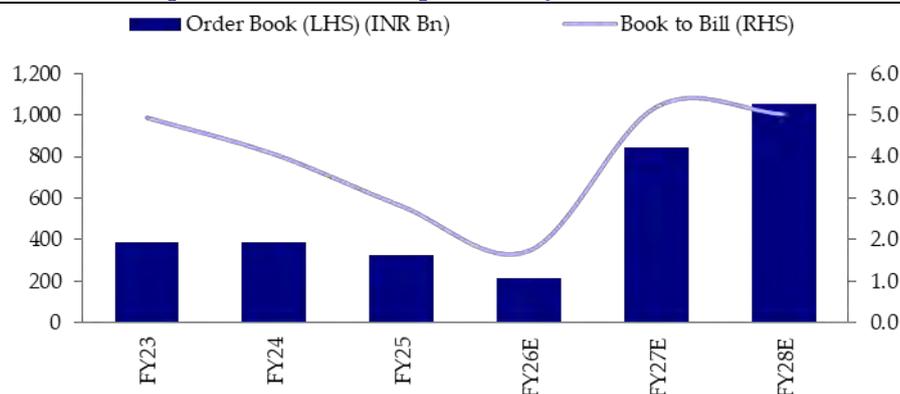
- MDL's orderbook stood at INR 274bn by the end of Q2FY26 and was INR 322bn at the end of FY25. This reduction in the orderbook came due to deliveries of P15B destroyers, P17A frigates, and P75 submarines. The book to bill at the end of FY25 was at 2.8, providing revenue visibility over the next two years.
- Currently, P17A stealth frigates order is anchoring MDL's orderbook accounting for more than 40% of total order backlog at the end of Q2FY26. Further, the company is executing offshore platform contracts for ONGC worth ~INR 65 bn, which is expected to contribute INR 30bn in FY27E. The company also has export orders for six Multipurpose Hybrid Powered Vessels (MPVs) for a European client with a total project value of INR 7.2bn with delivery planned between FY27E and FY28E.
- The major orders that MDL expects to receive in the near term include the additional orders of three units of P75 submarines (Scorpene class diesel electric hybrid attack submarines) and another six units of P75(I) submarines. P75 (I) is the next generation submarine with air independent propulsion (AIP) and higher indigenization content. These orders will take MDL's orderbook over INR 1.2trn according to the management. As it takes 8-10 years to build a submarine, these orders once received in the near term will provide visibility of consistent revenue growth until FY34 (assuming no delays).

### Orderbook details (as of Q3FY26)

Types	Particulars	Project Value (INR bn)	Nos. (Contracted)	Client	Balance amount (INR bn)	Nos. (Pending to be delivered)
Shipbuilding	P15B Destroyers	287	4	MOD	14	0
	P17A Stealth frigates	273	4	MOD	99	1
	ICGS (CTS, NGOPV, FPV)	29	21	MOD	28	21
	Multipurpose Hybrid Powered Vessel (MPV)	7	6	Export	6	6
Submarine and Heavy Engineering	P75 Kalvari Submarines	296	6	MOD	18	0
	Medium refit and Life Certification of Submarines	24	1	MOD	9	1
	ONGC (PRPP, DSF II & PRP 8 Grade A)	65	3	ONGC	44	3
	AIP	18	1	MOD	17	1
	Others	2		Others	1.4	
<b>Total</b>		<b>998</b>			<b>238</b>	

Source: Company, HSIE Research

### Order book expected to increase exponentially



Source: Company, HSIE Research

## Accelerated Navy upgrade drives Rs 1trn submarine pipeline

MDL has a strong future order pipeline visibility as the Navy upgrades and maintains its fleet or adds new ships. While MDL has already delivered six submarines of Scorpene class between 2017 and 2025, the 3 additional Scorpene class submarines are under negotiation with an order value of ~INR 350bn. This order is expected to be awarded by Q1FY27E. Further, for the six AIP submarines commercial negotiations are ongoing. Consortium of MDL with Thyssenkrupp is a front runner for this project. The project is estimated to be valued ~INR 700bn and expected to be awarded by Q1FY27E. As the P75 Scorpene project is a repeat order, the execution work can begin immediately and start contributing toward the revenue. However, for the P75(I) project, design finalization and other preparatory works will take minimum twelve months before manufacturing kicks off. So, once these two projects are awarded, P75 and P75(I) will start contributing to revenue FY27E and FY28E onwards respectively. These two orders together are expected to take care of the company's revenue for the next five years at least. Also, once these two orders are awarded, it will take the company's order book above INR 1.2trn, which could be a significant growth driver for the company.

### Large order funnel provides revenue visibility

Project	Value (INR bn)
P75 (additional order)	350
P-75(I)	700
Landing Platform Dock	350
Mine Counter Measure Vessel	400
P17B	500
P15C	700
<b>Total</b>	<b>3000</b>

Source: Company, HSIE Research

## R&D to fuel product development and indigenization

MDL's R&D expenditure for FY25 stood at INR 1.1bn, i.e., ~1% of its revenue. This ratio has been gradually coming down over the past four years from ~2% in FY21. Acknowledging the need for innovation-led manufacturing, MDL plans to increase R&D for product development and indigenization. These efforts will give the company a technical edge, reduce dependence on imports, and increase profitability. In our view, rising efforts toward indigenization will require higher R&D expenditure, which in turn will benefit the company in the form of predictable supply chain and improved profit margins.

Over the past decade, MDL has pursued multiple targeted R&D initiatives in collaboration with academic institutions, startups, and MSMEs in the fields of core defence as well as other critical areas such as underwater technology, and ecofriendly transportation solutions.

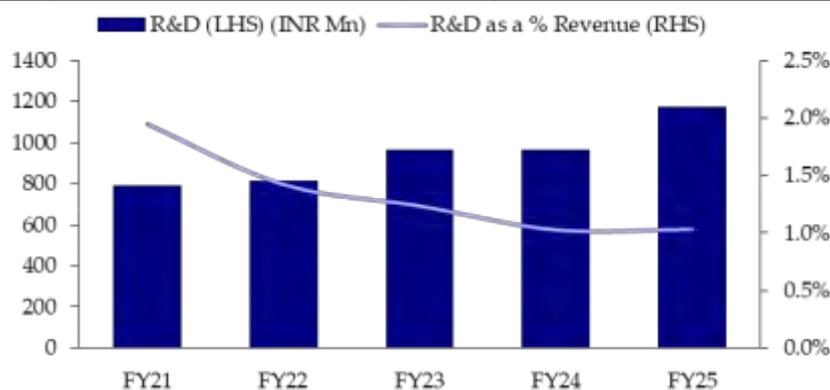
In FY25, the below-mentioned R&D projects with AI initiatives were successfully completed through collaboration with IIT Chennai, and startups within the Tamil Nadu Defence Corridor. These will add advanced AI capabilities in future new products. These projects are:

- AI enabled Computerize Radiography (RT)
- AI based Robotic weld inspection using phased array ultrasonic testing
- AI enables Remotely Operated Vehicles (ROVs)

Other products developed by MDL are:

- **Midget Submarine** - The Midget Submarine Program is MDL's flagship R&D program. It is poised to be India's first Indigenously Designed, Constructed & Tested Submarine. It will be undertaken entirely from internal funding.
- **Fuel Cell-Based Electric Vessel (FCEV)** - FCEV is the first hydrogen boat prototype which has been conceptualized and developed by MDL with Tata Advanced Systems Ltd and Vijai Marine Services Pvt Ltd as technology partners. It is a six Passenger boat, fitted with a six KW Electric motor and a 10.2 KWH battery which can run for 22 hours, fueled by compressed Hydrogen. This FCEV uses green hydrogen which emits near zero toxic waste, very few moving parts with low heat and acoustic signature. Hence, it becomes appropriate for defence applications.
- **AUV Swarm Drones** - MDL is developing 'AUV Swarm Drones' as its iDEX initiative, in collaboration with M/s Sagar Defence Engineering Pvt. Ltd. The swarm of AUVs will help in locating mine and neutralizing it after getting confirmation from the Mothership.
- The company is also working on next generation quantum communication with DRDO and iDEX along with multiple IITs.

### R&D expenditure lower than industry average (~7%)



Source: Company, HSIE Research

## 75% local content to drive margin expansion and OEM independence

MDL aligns its operations closely with government of India's AtmaNirbhar Bharat Vision and has been at the forefront of the Make in India movement. It started its dedicated indigenization vertical in 2015. Since then it has actively engaged with domestic MSMEs to replace imported components with domestic alternatives and achieved a high degree of indigenization. These efforts are not limited to the retrofitting and replacement, but also encompass development of innovative components for constructing new submarines and warships. MDL is fostering creation of a vibrant ecosystem of domestic MSMEs for manufacturing warships and submarine components without relying much on imports. MDL's in-house innovations and partnerships under programs like iDEX and MDL innovation program demonstrate its commitment to indigenization.

### Below listed are the details of current progress on indigenization drive:

- 74 major systems and components indigenized so far for ships and submarines. A majority of these were carried out in collaboration with various MSMEs of India, which in turn helped ecosystem development
- 51 submarine equipment indigenized out of 174 total items
- There are 1,024 components submitted by MDL to ministry of defence's positive indigenization list (PIL). Out of these, 24 components are already indigenized.
- Key systems under development for indigenization: Electric propulsion motor, controllable pitch propeller and shaft, and helicopter fire fighting system
- Submarine technologies under development (iDEX projects): Sonar Beacon, Windlass & Capstan, Digital bearing time device

MDL's efforts toward indigenization are evident from the fact that percentage of indigenous content in the ships built by MDL has been steadily increasing from 42% in P15 Delhi Class Destroyers (built in 90s) to 75% in P17A Nilgiri Class Frigates (under-construction). The indigenization content in Scorpene class submarines has reached close to 32% under P-75. The P-75 (I) project for AIP submarines has a target of indigenization of more than 60%.

## Exports to aid diversification, lessen revenue cyclicality

- For diversifying its revenue and reducing dependence on the ministry of defence orders, MDL intends to tap the global ship repair market for both naval and commercial ships and submarines in future.
- Pursuing the above-mentioned objective, MDL has signed an export contract for six 7,500 DWT Multipurpose Hybrid Powered Vessels (MHPVs) with a European client. The total value for the order is ~USD 85mn (INR 7bn), with an option for four more vessels. The company is also actively pursuing new orders across Southeast Asia, the Middle East, and Africa leveraging their expertise in patrol vessels, offshore support vessels, and green shipping techniques.
- It has also bagged an order for Inspection of Pipes and Valves from M/s BHIC Submarine Engineering Services Sdn.
- Bhd. Malaysia. In addition, the company has also been awarded a contract for Maintenance Repair & Overhaul (MRO) of MI 17 Helicopters of the Nepali Army. Further, MDL has also signed an MoU with Asyad Drydock Company (ADC), Oman, for collaboration on new build/repair of Commercial and Defence platforms.

## Colombo dockyard acquisition to tap global shipbuilding and repair projects

### Colombo dockyard acquisition

- MDL has entered into an agreement to acquire a majority stake in Colombo Dockyard PLC (CDPLC), a leading Sri Lankan company, with operations in ship building and ship repair. This acquisition will secure a minimum 51% equity for a consideration of USD 52.96mn. Completion of this transaction would make CDPLC a subsidiary of MDL. With CDPLC's strategic location, proven capabilities, and strong regional presence, this acquisition will position MDL as a key player in South Asia. It will help MDL to play a significant role in enhancing maritime collaboration between India and Sri Lanka. Also, it would enable MDL to tap strategic key naval routes for trades and services, which would fetch additional shipbuilding and repair projects.

### Teaming Agreement with Swan Defence

- In Oct'25, MDL signed an agreement with Swan Defence and Heavy Industries Ltd (SDHI) for a collaboration in the design and construction of Landing Platform Docks (LPDs) for the Indian Navy.
- The Defence Acquisition Council (DAC) had accorded approval for the acquisition of LPDs earlier this year. LPDs would be instrumental for Indian Navy to project power, undertake amphibious operations, and deliver humanitarian assistance and disaster relief missions.
- MDL is expected to bring forward its expertise in ship design, project management, and system integration while SDHI will provide its large and sophisticated shipbuilding infrastructure for the construction of vessels. This collaboration expects to reduce build periods, enhance quality, and achieve cost efficiencies in construction of the complex platforms.

### Recent MoUs

- The Brazilian Navy and the Indian Navy in association with MDL entered an MoU in Dec'25 for the exchange of information related to maintenance of Scorpene class submarines and other military ships. The MOU covers cooperation areas like procurement opportunities, exchange of experiences in defence industries, partnerships in research, development, and technological innovation.
- MDL signed an exclusive MoU with the Naval Group in France in Oct'25 for offering the evolved Scorpene Submarines to a friendly country for its ongoing submarine acquisition program.

## Project 17A and P75 benchmarks MDL's lead in the next naval order cycle

- **Project 15:** Under Project-15, Delhi class destroyers were built for Indian Navy by MDL. It has three ships namely INS Delhi, INS Mysore and INS Mumbai commissioned between 1997 and 2001. It has lower domestic manufacturing content compared to its improved versions P-15A and P-15B. Delhi class destroyer is equipped with four quad launchers for antiship missile system. The installed main gun is a 100mm gun supplied by Russia. Surface to air missile in this destroyer is Russian Shtil. This class of destroyers are fitted with the Rafael Barak point air defence missile system. 15A and 15B are built to improve upon the functionalities of P-15 with higher domestic value addition.
- **Project 15A:** Kolkata class destroyers, also known as project-15A, are a class of stealth guided missile destroyers constructed for the Indian Navy. In this class, there are three ships INS Kolkata, INS Kochi and INS Chennai. All these were constructed by MDL. These were commissioned between 2014-16. Kolkata class destroyer is the largest destroyer of the Indian Navy incorporating stealth features, advanced sensors such as MF-STAR AESA radar, advanced Sonar, and electronic warfare systems. This is equipped with advanced weapons such as Brahmos supersonic cruise missiles, Barak-8 surface to air missiles, Melara guns, torpedoes, and ASW rockets.
- **Project 15B:** Visakhapatnam class destroyers, also called as the P15 Bravo class or P-15B is another class of advanced guided missile destroyers. It is an upgraded derivative version of Kolkata class destroyers. Under Make in India initiative, a total of four ships have been built under this program. Four ships in this program are INS Visakhapatnam, INS Mormugao, INS Imphal, and INS Surat. All four have been built by MDL. They have been commissioned by Indian Navy between FY22 and FY25. In this class, an estimated 72% of the components are indigenously sourced as compared to 59% of Kolkata class and 42% of Delhi-class destroyers. This is equipped with sixteen Brahmos anti-ship cruise missiles, OTO Melara naval gun, thirty-two Barak-8 surface to air missiles, twin torpedo launchers, decoys, MF-STAR AESA radars, sonars, and electronic warfare.

### *Comparison of P-15A and P-15B*

P-15B is an advanced version of P-15A as it has relatively much lower radar signature and, hence, improved stealth capabilities. It also has a rail-less helicopter traversing system for safer operations in bad weather, advanced combat management system, ship data network, and automatic power management systems.

- **Project 17:** P17 of Indian Navy represents the Shivalik class stealth frigates. The names of the ships are INS Shivalik, INS Satpura, and INS Sahyadri. These were the first warships constructed in India that had stealth features. They incorporate structural, thermal, and acoustic stealth features. All three of them were built by MDL during 2000-10 and commissioned in 2012. They were designed for enhanced stealth and land attack capabilities, succeeding the earlier Talwar class frigates built by Russia. They are equipped with a wide range of electronics and sensors including ELTA radars, hull mounted sonar array, Melara naval gun, Brahmos supersonic anti-ship missiles, and BEL made electronic warfare suite.
- **Project 17A:** It is the Indian Navy's ambitious program of constructing seven advanced, multi mission stealth frigates indigenously. It is made up of radar absorbent materials and thermal suppression system to reduce radar and

infrared signatures adding to the stealth capability. It has ~ 75% indigenous content and are equipped with Brahmos supersonic missiles, AESA radars, and modern sonar. This program includes four ships built by MDL namely INS Nilgiri, INS Udaygiri, INS Taragiri, all three delivered between 2024 and 2025. Additionally, the fourth warship INS Mahendragiri is under construction and is expected to be delivered in 2026. Apart from these, construction of three ships has been assigned to Garden Reach shipbuilders. These are INS Himgiri (delivered in 2025), INS Dunagiri, and INS Vindhyagiri (both expected to be delivered in 2026).

- **Project 25:** This is the first indigenous class of Corvettes known as Khukri class project, which included overall four ships, two constructed by MDL and remaining two by Garden Reach shipbuilders. The ships constructed by MDL include INS Khukri and INS Kuthar. They were commissioned in 1989-90, though after being in service for 32 years, INS Khukri was decommissioned in 2021. Ships constructed by Garden Reach are INS Kirpan and INS Khanjar, both commissioned in 1991. Of these, INS Kirpan was decommissioned in 2023. Project 25 ships replaced the ageing Petya-II class corvettes, which were built by the Soviet Union. Hence, Project-25 was a crucial step toward building corvettes indigenously.
- **Next-Generation Offshore Patrol Vessels (NGOPV):** MDL is entrusted with building of six advanced NGOPV for the Indian coast guard. These vessels come with in-built AI powered maintenance features, which enable early fault detection and reduce downtime. They are also equipped with advanced weapon system, electronic warfare, sensors for navigation, and fire control radars. Its helipad and hangar can accommodate a multirole helicopter or an UAV, which can aid in aerial surveillance. Currently, this is under construction.
- **Fast Patrol Vessels (FPV):** A fast patrol vessel is a modern, high-speed warship mainly under the service of the Indian coast guard, which is designed for rapid response and various security missions such as coastal surveillance, anti-smuggling, search and rescue, fisheries protection, and monitoring. It has a top speed of 27 knots and a range of 1,500 nautical miles. The Indian coast guard has placed a contract of INR 10.7bn with MDL for 14 FPVs.
- **Sishumar class submarines:** Submarines of this class had four submarines, of which two—INS Shalki and INS Shankul—were manufactured and commissioned by MDL in 1992 and 1994 respectively. These are still in service. These were India's first two indigenously built submarines and their construction is considered a pioneering step by a domestic shipyard. MDL had received a license, material packages and technology transfer from HDW, Germany, for the same. Additionally, it had assembled knocked down kits of the first two submarines—INS Shishumar and INS Shankush—in 1986, which were built by HDW, Germany.
- **Project 75 (Kalvari-class/Scorpene):** Project 75 is a program envisaged by the Indian Navy to indigenously build six Scorpene class attack submarines. All six are constructed by MDL in collaboration with a naval group of France. All of them were commissioned between 2017 and 2025. Their names are INS Kalvari, INS Kahnderi, INS Kharanj, INS Vela, INS Vagir, and INS Vagsheer. These submarines have superior stealth features and the ability to attack with precision guided weapons. These are armed with six torpedo launching tubes, tube launched anti-ship missiles. These attack submarines can travel at a maximum submerged speed of 20 knots and have the ability to remain underwater for 21 days. They are used for intelligence gathering, surveillance, anti-surface warfare, and anti-submarine warfare.

## Submarine expertise helps secure future naval orders

MDL has produced 807 vessels so far since inception including 32 warships. Below table highlights the key products/ships manufactured. These are in service with Indian Navy, Indian coast guard and others.

Key products	2-D appearance
<p><b>Destroyers:</b> Indian Navy’s destroyers, primarily Kolkata class and Visakhapatnam class, are stealth guided missile destroyers. Their length is ~163 meters, speed more than 30 knots, with combined gas, and gas propulsion (COGAG), and displacement capacity of 7,400-8,100 tons at full load. It is armed with Brahmos missiles for defending itself from land/ship attack, Barak-8 missiles for aerial defence, 76mm guns, and torpedoes for anti-submarine defence. It is also equipped with advanced MF-STAR AESA radar, BEL Nagin Sonar and sophisticated combat management system. There are totally thirteen key destroyers under service with the Indian Navy. These are the navy’s primary battleships.</p>	
<p><b>Frigates:</b> Indian Navy frigates are medium sized multirole stealth warships featuring advanced indigenous and foreign systems. They are primarily used for escorting other ships focusing on anti-submarine and anti-air warfare. Older Talwar class frigates have been upgraded and now modern frigates have been built under Nilgiri class and Shivalik class. Modern frigates have their length in the range of 145-150meters, displacement of 6,200-6,700 tons at full load, and speed of up to 32 knots. They are armed with Barak-8, Brahmos missiles, 76mm guns, torpedoes, AESA radars, indigenous sonars, and electronic warfare systems. They also are equipped with helicopter deck for accommodating helicopters such as LUH Dhruv for air defence. Indian Navy has a total of 18 frigates under service and three more are under construction with MDL and GRSE.</p>	
<p><b>Corvettes:</b> These are warships designed for good maneuverability, speed, and striking ability with the capacity of helicopter operations. They have significant anti-submarine, anti-surface capabilities. Their displacement is much lower compared to destroyers and frigates ~2,500-3,500 tons. Their length is also much lower at around 109 meters and a speed of 25 knots. They are armed with modern guns, medium guns, torpedoes, rockets and can carry one helicopter. They are smallest warships and are excellent for coastal defence, anti-piracy and near shore operations. In Indian context, they are cost effective options for patrolling India’s extensive coastline and islands. Indian Navy has around 21 corvettes under its service.</p>	

## Mazagon Dock Shipbuilders: Initiating Coverage

### Key products

### 2-D appearance

**Missile boats:** These are small, agile, and relatively inexpensive vessels with a clear focus on anti-ship missile attack capability. They serve as high-speed attack ships and specially designed for coastal defence and surveillance operations. Examples of missile boats are Soviet made Vidyut class and Chamak class vessels. Indian Navy is working on indigenous next generation missile vessels (NGMV) designed for advanced strikes with Brahmos missiles and stealth features. Length of a typical missile boat is ~89meters. It has a displacement capacity of 1417 tons and can achieve faster speed up to 33 knots.



**Submarines:** Indian Navy has overall 19 active submarines across four classes—Kalvari, Sindhughosh, Shishumar, and Arihant. Their applications include anti-surface and anti-submarine warfare, intelligence gathering, long range strikes and general maritime security. MDL has constructed two submarines of Shishumar class and six of Scorpene class. Arihant class vessels are four nuclear powered ballistic missile submarines. From this class, INS Arihant and INS Arighat are under service while INS Aridhaman and S5 class are being constructed.



**Offshore patrol vessels (OPV):** OPVs have specific roles of coastal defence and surveillance, anti-piracy and anti-trafficking operations, search and rescue, protection of offshore assets and mine warfare. OPVs have an overall length of 115 meters and can achieve speed up to 23knots. This vessel has a flight deck and hangar facility, which can accommodate one large helicopter up to 11 tons. It accommodates up to 150 crew members. The vessel is fitted with a main gun of 76mm and two each of the smaller guns of 30mm and 12.7mm. These OPVs are deployed by Indian coast guard and Indian Navy both. Examples of these OPVs are vessels of Samarth class, Vikram class, Sankalp class, and Saryu class.



**Fast patrol vessels (FPV):** FPVs are indigenously built medium range weapon surface platform deployed for coastal patrolling including shallow waters. Its main applications include fisheries protection, anti-smuggling, anti-terrorism, and anti-piracy operations. FPV has a length of 55meters and can achieve a top speed of 27knots. It is fitted with a 30mm gun and two of the smaller 12.7mm guns. It accommodates a crew of 42 members. It is faster than OPVs and is utilised for quicker response. These vessels are mainly used by Indian coast guards (ICG) and a few recent examples of FPVs are ICGS Ajit, ICGS Aparajit, ICGS Amulya, and ICGS Akshar.



## Mazagon Dock Shipbuilders: Initiating Coverage

### Key products

### 2-D appearance

**Floating Dry Docks:** Floating dry docks are U-shaped auxiliary docks, which can submerge into water and be placed below ships that are in need of repair. Water is then pumped out of the floating dry dock, raising the ship out of water. The ship becomes blocked on the dock and then can be repaired. These docks have no engines and are pulled by tugs. The length of such docks is typically 120-300meters and they have a lifting capacity of 4000-20000 tons. They have cranes on the top deck, facilities for crew, and a machinery control room on upper deck. These are crucial for repairing ships where conventional dry docks are not available.



**Fleet Tankers:** MDL also builds fleet tankers that are designed and manufactured to the owner's requirements. They can handle both liquid (ship fuel, oil, aircraft fuel etc) and solid cargo (ammunition etc). They have modern cargo handling facilities on board and can fuel multiple ships together at sea. Typically, their length is 175 meters, speed up to 20 knots, and deadweight of 18000 tons.



**Training ships:** These are designed for training of cadets and other sea officers. They have length of ~106 meters, displacement of 2400 tons and speed up to 18 knots. They are equipped with advanced navigational and communication devices for coordination and smooth operations.



**Tugs:** MDL built tugs have a length of ~30 meters and speed of 12knots. They come in two variants- bollard pulls (standard of pulling power of a tug) of 25 and 45 tons. Tugs are highly manoeuvrable and capable of escort operations, berthing/unberthing, emergency towing operations, and pushing/pulling ships.



**Barges:** Barges are typically flat-bottomed box shaped boats, which do not have their own propulsions. They are generally pushed or pulled by tugs. They have shallow draft and, hence, can navigate in shallow waters where large ships cannot be used. These barges can carry large amount of cargo on inland waterways (river, canals, etc.) and sometimes the sea. They are versatile in operations and can carry dry cargo, liquid cargo, as well as heavy equipment.



**Dredgers:** Dredgers are special purpose boats or machines that are used to excavate underwater materials like sand, mud, or gravel from river, harbours, or lakes. Their main applications include keeping ports and rivers navigational by deepening channels, land reclamation, coastal protection, construction of new harbours, and extraction of resources.



## Key products

## 2-D appearance

**Support vessels:** These support vessels are multipurpose in nature, as they are suitable for deck cargo, diesel fuel, and fresh water. They are equipped with an offshore crane for lifting the loads. Further, they are equipped with a helicopter deck of ~22meters diameter. These vessels are 94 meters long with a displacement of 100 tons and a top speed of 14.5 knots. Their applications include transporting supplies and equipment for naval and coast guard operations, moving drilling rigs, towing, and supplying offshore platforms with cargo and personnel from shore bases.



**Ferries:** These ferries are designed to carry vehicles as well as passengers. MDL produces two variants of such ferries namely RO-Pax Ferry-1 and RO-Pax Ferry-2. The earlier category has a capacity of carrying vehicles on the upper deck apart from 300 passengers on the main upper deck. It can carry 150-ton cargo in cargo holds. The latter category is much bigger and advanced. It can carry vehicles and 400 seating passengers on the main deck and 400 additional standing passengers on the upper deck. This has capacity to carry 170-ton cargo in the cargo holds. The designs can be customised as per the owner's requirements.



**General cargo vessels:** These are versatile vessels deigned for carrying and transporting grain, coal, metal concentrates, containers, general cargo, machinery, electronics, vehicles, pallets, and dangerous cargo etc. Key features include multiple cargo holds, several decks and onboard cranes for loading/unloading. They are typically ~116 meters long with a deadweight of 7500 tons and can achieve a top speed up to 11 knots.



Source: Company, HSIE Research

## Scalable foundation for accelerated delivery

Delivering 12 frontline vessels (including six submarines) in a decade provides a scalable foundation for accelerated delivery.

The table below highlights consistent successful track record of orderbook building and delivery of complex shipbuilding projects over the years. It validates the superior capability of MDL, which makes it a suitable candidate for being awarded the future naval/offshore projects and offers future orderbook growth visibility.

### Key events and historical project delivery timelines:

Year	Key events/project deliveries
FY13	<ul style="list-style-type: none"> <li>➤ INS Sahyadri, a Shivalik class multi-role frigate (project-17) was delivered to the Indian Navy</li> <li>➤ The first multi-support vessel (MSV-1) was delivered to M/S. Cotemar, Mexico for multifaceted offshore operations</li> <li>➤ Production of first ship of project-15B, India's Visakhapatnam class missile guided destroyers commenced</li> <li>➤ Wet basin and 300 Ton Goliath Crane of Mazdock modernisation project commissioned</li> <li>➤ <b>Orderbook position:</b> Three destroyers of project-15A, four destroyers of project-15B, and six submarines of Scorpene class in hand and at various stages of construction.</li> </ul> <p><b>Pipeline:</b></p> <ul style="list-style-type: none"> <li>➤ Seven multi-mission frigates under project-17A</li> </ul>
FY14	<ul style="list-style-type: none"> <li>➤ Multi-purpose Support Vessel (MSV-II) was sold and delivered to M/S. RY offshore Bahamas</li> <li>➤ The first ship of P-15A INS Kolkata was commissioned</li> <li>➤ <b>Orderbook position:</b> Two destroyers of project-15A, four destroyers of project-15B, and six submarines of Scorpene class in hand and at various stages of construction.</li> </ul> <p><b>Pipeline:</b></p> <ul style="list-style-type: none"> <li>➤ Seven multi-mission frigates under project-17A</li> </ul>
FY15	<ul style="list-style-type: none"> <li>➤ Contract to construct and deliver four nos. of Project-17A class frigates signed with MoD. Three more of these ships were allocated to Garden reach shipping (GRSE) where MDL was expected to render lead yard services.</li> <li>➤ <b>Orderbook position:</b> Two destroyers of project-15A, four destroyers of project-15B, six submarines of Scorpene class, and four multi-mission frigates under project-17A in hand and at various stages of construction.</li> </ul>
FY16	<ul style="list-style-type: none"> <li>➤ INS Kochi, a Kolkata class stealth guided missile destroyer under project-15A was delivered</li> <li>➤ <b>Orderbook position:</b> One destroyer of project-15A, four destroyers of project-15B, six submarines of Scorpene class, and four multi-mission frigates under project-17A in hand and at various stages of construction.</li> </ul>
FY17	<ul style="list-style-type: none"> <li>➤ INS Chennai, a Kolkata class stealth guided missile destroyer under project-15A was delivered. With this, project 15-A has been completed.</li> <li>➤ <b>Orderbook position:</b> Four destroyers of project-15B, six submarines of Scorpene class, and four multi-mission frigates under project-17A in hand and at various stages of construction.</li> </ul>
FY18	<ul style="list-style-type: none"> <li>➤ INS Kalvari, the first Submarine of the Scorpene class, project-75 was delivered to Indian Navy</li> <li>➤ Production of first and second frigate under project-17A commenced</li> <li>➤ <b>Orderbook position:</b> Four destroyers of project-15B, five submarines of Scorpene class, and four multi-mission frigates under project-17A in hand and at various stages of construction. In value terms, outstanding orderbook was <b>INR 514bn</b> as on June'18.</li> </ul>
FY19	<ul style="list-style-type: none"> <li>➤ MDL signed a contract with Bharat Electronics Ltd for supplying LRSAM (Long range surface to air missiles) and MFSTAR(Multi function Surveillance, Track and Guidance Radar) for P15B and P17A ships</li> <li>➤ Production of third frigate under project 17A and fourth ship under project-15B commenced.</li> <li>➤ <b>Orderbook position:</b> Four destroyers of project-15B, five submarines of Scorpene class, and four multi-mission frigates under project-17A in hand and at various stages of construction. In value terms, outstanding orderbook was <b>INR 510bn</b> as on Mar'19.</li> </ul>
FY20	<ul style="list-style-type: none"> <li>➤ Second Scorpene Submarine of P-75, 'INS Khanderi' was delivered to the Indian Navy</li> <li>➤ Tug 'Andaman' &amp; Tug 'Nicobar' were commissioned</li> <li>➤ <b>Orderbook position:</b> Four destroyers of project-15B, four submarines of Scorpene class, and four multi-mission frigates under project-17A in hand and at various stages of construction.</li> </ul>
FY21	<ul style="list-style-type: none"> <li>➤ Third Submarine of Scorpene project INS Karanj was successfully delivered to the Indian Navy</li> <li>➤ <b>Orderbook position:</b> Four destroyers of project-15B, three submarines of Scorpene class, and four multi-mission frigates under project-17A in hand and at various stages of construction.</li> </ul>

## Mazagon Dock Shipbuilders: Initiating Coverage

Year	Key events/project deliveries
FY22	<ul style="list-style-type: none"> <li>➤ Fourth Submarine of Scorpene project INS Vela was successfully delivered to the Indian Navy</li> <li>➤ First destroyer under project-15B, INS Visakhapatnam was delivered and commissioned</li> <li>➤ <b>Orderbook position:</b> Three destroyers of project-15B, two submarines of Scorpene class, and four multi-mission frigates under project-17A in hand and at various stages of construction.</li> </ul>
FY23	<ul style="list-style-type: none"> <li>➤ The second ship of project 15B (missile destroyer), INS Mormugao and fifth Submarine of Scorpene project INS Vagir was successfully delivered to the Indian Navy</li> <li>➤ <b>Orderbook position:</b> Two destroyers of project-15B, one submarine of Scorpene class, and four multi-mission frigates under project-17A in hand and at various stages of construction.</li> </ul>
FY24	<ul style="list-style-type: none"> <li>➤ Delivered and commissioned third ship of project 15B (guided missile destroyer), INS Imphal</li> <li>➤ Handed over submarine INS Shishumar to Indian navy after successful completion of its medium refit cum life certification (MRLC)</li> <li>➤ MDL signed three separate contracts with Indian coast guard for construction and delivery of one training ship, six next generation offshore patrol vessels, and fourteen fast patrol vessels.</li> <li>➤ It also signed a contract with a Danish client for construction and delivery of six DWT multipurpose hybrid power vessels</li> <li>➤ MDL signed two MRO contracts of MI-17 helicopters for Nepali army.</li> <li>➤ As a diversification move, MDL won an offshore contract of INR 47bn from ONGC for wellhead platforms and associated pipeline project.</li> <li>➤ <b>Orderbook position:</b> One destroyer of project-15B, one submarine of Scorpene class, and four multi-mission frigates under project-17A in hand and at various stages of construction. In value terms, it stood at INR 386bn.</li> </ul> <p><b>Pipeline:</b></p> <ul style="list-style-type: none"> <li>➤ Shortlisted as a strategic partner for Project 75(I), advanced submarines with air independent propulsion and extended underwater endurance</li> <li>➤ MDL has Submitted bids for additional Scorpene class submarines</li> </ul>
FY25	<ul style="list-style-type: none"> <li>➤ Delivered 4<sup>th</sup> Visakhapatnam class destroyer INS Surat under project 15B</li> <li>➤ Delivered 1<sup>st</sup> Nilgiri class frigate INS Nilgiri under project 17A</li> <li>➤ Delivered the 6<sup>th</sup> P-75 Scorpene class submarine, INS Vagsheer</li> <li>➤ In a rare event, Indian Navy commissioned all three frontline combatants INS Nilgiri, INS Surat and INS Vagsheer together on the same day (15<sup>th</sup> Jan 25).</li> <li>➤ <b>Orderbook position:</b> Three multi-mission frigates under project-17A in hand and at various stages of construction. Additionally, current orderbook includes training ships, next generation offshore patrol vessels, fast patrol vessels for Indian coast guard, and multi purpose vessels and oil&amp;gas platforms for ONGC. In value terms, it stood at INR 323bn.</li> </ul>

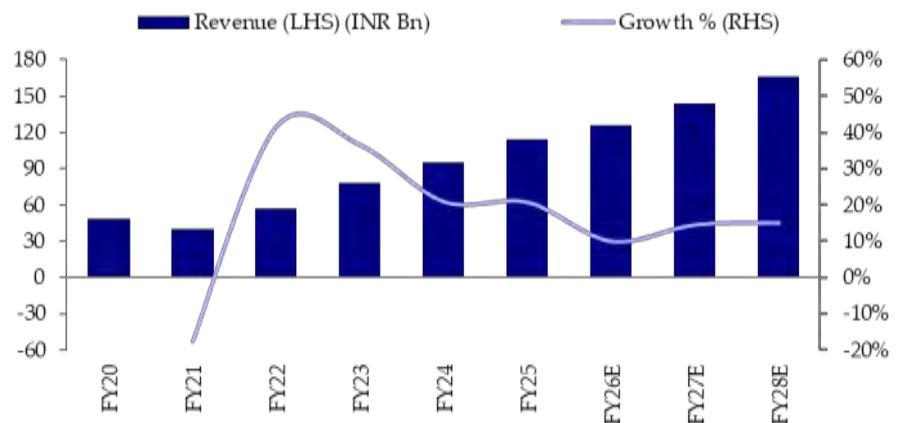
Source: Company, HSIE Research

## Financial Analysis

### Revenue growth occurring due to accelerated order inflow

MDL's revenue has grown from INR 49bn in FY20 to INR 114.3bn in FY25, at a CAGR of 18.4%. MDL has a huge order pipeline of INR 3000bn contributed mainly (~35%) by P-75(AS) and P-75(I) submarines which are expected in FY27E. Once order is received for these submarines, MDL can start work on P-75 (AS) immediately as these are repeat orders, however for P-75(I), it needs to invest in R&D/certifications and hence work can start only after a year approximately. These projects coupled with other frigates (P17B), destroyers (P15C) and marine equipment such as landing platform dock and mine counter measure vessel will drive revenue growth in medium to long term. We forecast a revenue CAGR of 13.2% over FY26E to FY28E to reach INR 166bn in FY28E, aided by improved execution and order inflows.

#### Revenue to grow at a healthy CAGR of ~13%

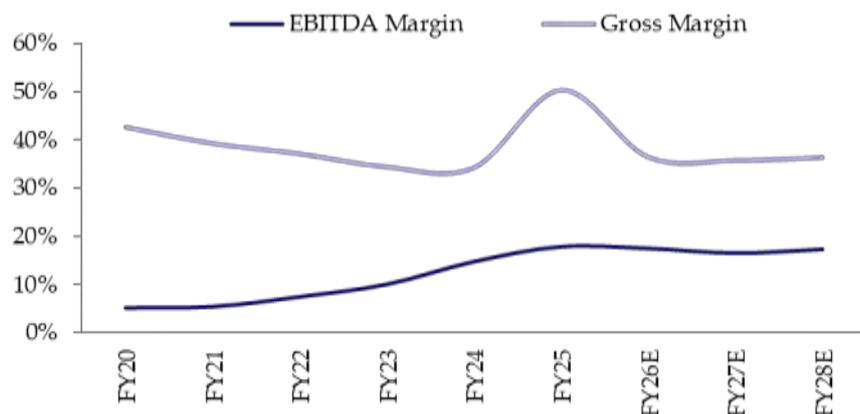


Source: Company, HSIE Research

### EBITDA margin to remain strong in high-teen range until FY28E

EBITDA has jumped from INR 2.6bn in FY20 to INR 20.6bn in FY25, with margins increasing significantly from 5.3% to 18% in the same period. The EBITDA growth in this period was driven by revenue growth (18.4% CAGR), tight cost control on projects, favourable product mix and supply chain localisation. We estimate EBITDA margins will remain steady in the range of 17-18% during FY25-FY28E except FY27E where it is estimated to decline marginally to 16.7%, led by submarine-related development expenditure. We expect the margins to stabilize between 16-17% post FY28E.

#### EBITDA margins to stay strong in high-teens till FY28E

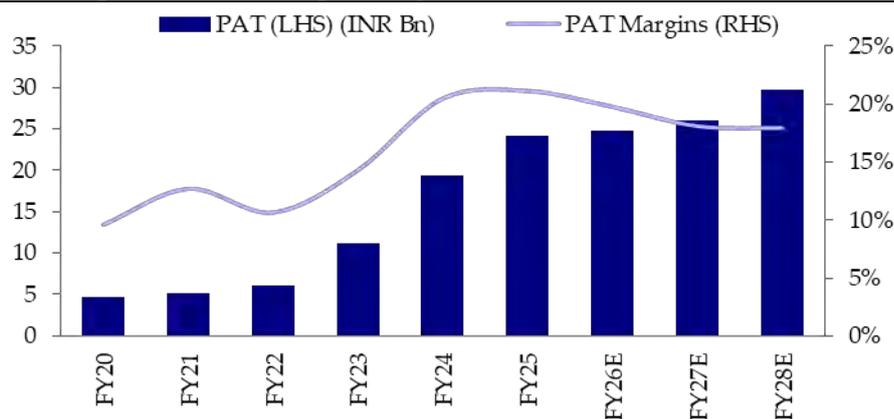


Source: Company, HSIE Research

### PAT margins to normalize despite healthy EBITDA due to cash drag

Supported by debt free balance sheet, rising EBITDA and operating leverage, PAT grew at an impressive 38.7% CAGR from INR 4.7bn to INR 24.1bn during FY20-FY25E. In the same period, PAT margins improved from 9.6% in FY20 to 21.1% in FY25. We expect PAT margins to normalize gradually to 18% in FY28E, driven by cash drag-led lower growth in other income despite healthy rise in EBITDA. This is noteworthy that the other income is a significant contributor to PBT as it constituted 76.8% in FY20 and remained elevated at 36.6% in FY25 despite declining steadily as operating income grew rapidly during this period. We estimate other income to gradually reduce to ~31% of PBT in FY28E.

#### PAT margins to normalize gradually to 18% in FY28E

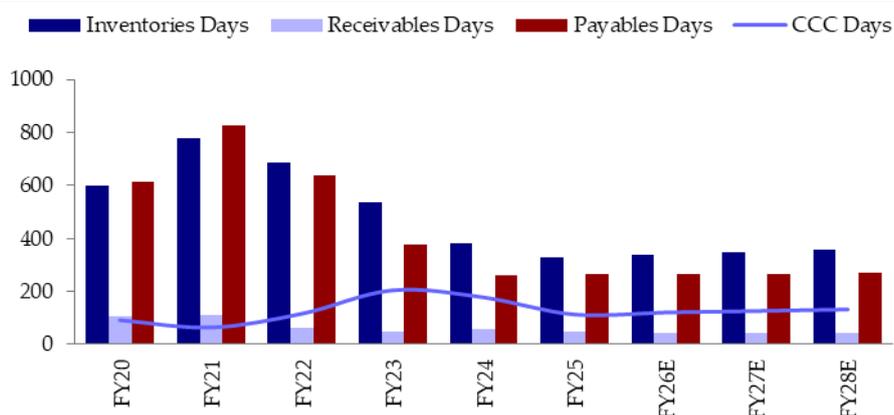


Source: Company, HSIE Research

### Cash conversion cycle remains strong supported by customer advances

The cash conversion cycle for MDL stood at 113 days in FY25. We have seen declining trends for both inventory days and receivable days due to faster execution and prompt customer advances. Hereon, we expect receivable days to go down further as MDL increases its contract liability (customer advances) days on receiving submarine orders. Further, inventory days are expected to inch up due to long gestation timelines involving R&D/certifications of submarine orders. The CCC is also supported by extremely favorable milestone payment terms that MDL has with the Navy. We expect CCC to go up only marginally to 132 days in FY28E as increase in inventory days gets partially compensated by marginal increase in payable days.

#### CCC among the best in the industry



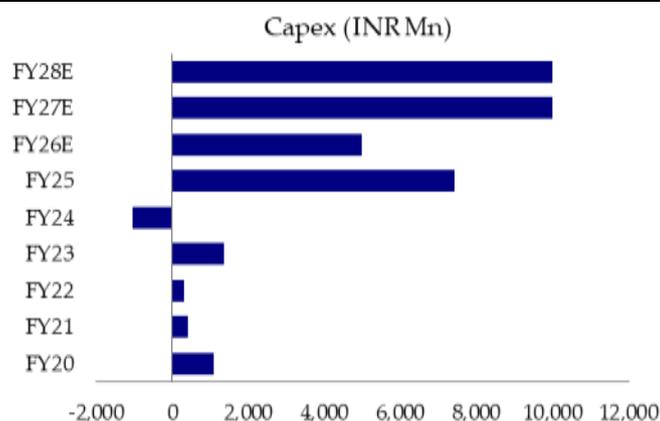
Source: Company, HSIE Research

### Large capex plans ahead

The company invested more than INR 18 bn over FY20-FY25 on modernization of the Mumbai and Nhava facilities, which expanded its capacity to build 10 warships and 11 submarines simultaneously. The management has provided an overview of its capex requirements over the next decade, totaling INR 170-180bn. It has invested INR 5bn for a new floating dry dock, which is expected to be completed by FY26-end. Moreover, INR 10bn has been earmarked for Nhava and South Yard Annex, mainly for removing bottlenecks, upgrading the facility, and increasing the capacity. An additional INR 10bn will be required for the infrastructure for P-75(I) submarines. The main capex for the next five years will be for a greenfield shipyard to be set up in Tuticorin, Tamil Nadu, for commercial shipbuilding with an estimate of INR 50bn (phase 1). Apart from this, an incremental INR 100bn will be required for phase 2 and phase 3 of setting up commercial shipbuilding post FY32E.

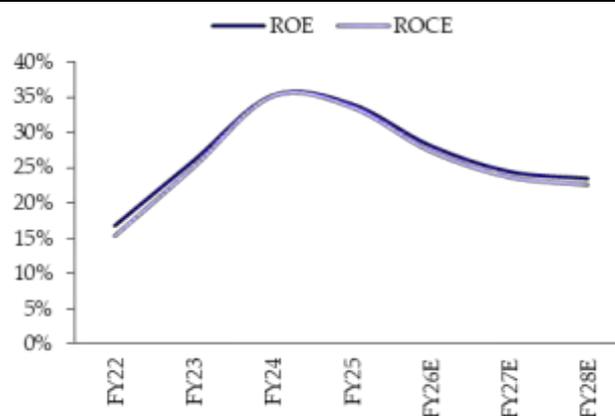
The company plans to fund the near-term capex through internal accruals, and the Tuticorin project will be mainly funded with the help of state subsidies and financing schemes.

#### New order inflows require large capex



Source: Company, HSIE Research

#### RoE & RoCE peaked in FY24

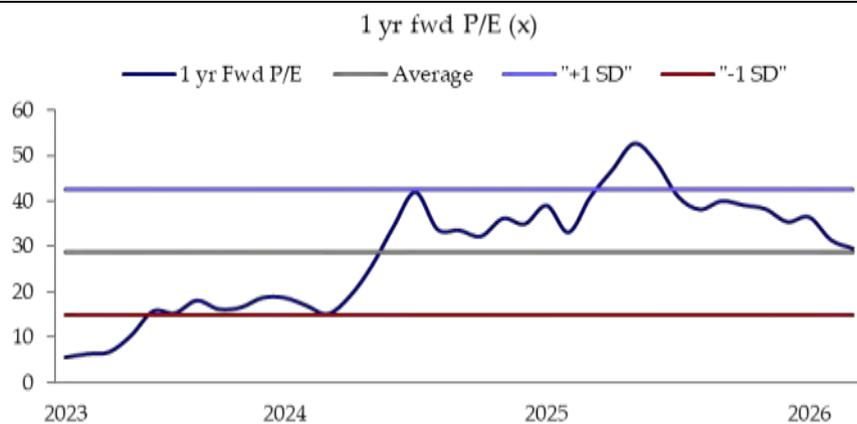


Source: Company, HSIE Research

### View and valuation

MDL aims to evolve from a defence-focused yard to a complete versatile global shipyard with MRO service stations across geographies and order book spanning from commercial ship contracts to defence vessels. To realize this mission, MDL is investing heavily in capex and expanding capacity owing to its strong balance sheet. The company's near and medium-term growth outlook is supported by its heavy order pipeline with major contracts including P75(AS), P75(I), next gen frigate expected to be received over the next three years, taking its orderbook well above INR 1.5trn. Once received, these orders will provide revenue growth visibility to the company over the next 7-8 years. The company operates efficiently with low working capital days, supported by favourable advances and payment terms. The company enjoys low competitive intensity due to high technological moat and a long track record of working with Indian Navy.

Observing MDL's technological moat and significantly large order visibility, we initiate coverage on the stock with an ADD rating and a target price of Rs. 2,950, valuing it at 40x FY28E EPS. We believe MDL will remain a key beneficiary of India's naval modernization, Make in India, and Maritime Vision 2047 initiatives.



Source: HSIE Research

## Key risks and concerns

- **Client concentration:** For MDL, a major portion of the orderbook is tied to the ministry of defence, specifically catering to the Indian Navy. However, in recent years, the company has started diversifying its order book by securing orders from ONGC and few global clients. Any significant reduction in budget allocation to Indian navy/ministry of defence has a potential to delay execution of various ongoing projects. However, the company's recent initiatives of securing non-defence clients to diversify revenues will go a long way in mitigating this client concentration risk.
- **Prolonged procurement cycles:** High dependence on the nomination and negotiation process of the ministry of defence often leads to long lead times in securing projects and receiving milestone cash flows. These administrative and cost-approval delays can create liquidity constraints for the company.
- **Global supply chain dependence:** Critical subsystems—such as sensors, weaponry, and propulsion systems are sourced from foreign Original Equipment Manufacturers (OEMs). This reliance on external entities for the supply of key components leaves the company exposed to various risks such as global logistics disruption, export restrictions, and geopolitical shifts. MDL is working toward increasing indigenization to reduce this external dependency.
- **Capacity constraints and structural bottlenecks:** The scarcity of physical space at the Mumbai facility may pose challenges for the company with respect to simultaneous execution of various projects. While ongoing expansions in Nhava Sheva and Tuticorin are expected to resolve this issue, it may be a few quarters away. Hence, the risk persists in the near term.
- **Rising competition:** The ongoing nomination-based project allotment process is facing competition with the advent and rising presence of private players. Modular construction, competitive bidding and the need for agility may pose risk to the company in securing future naval contracts. However, the experience and expertise of having built complex naval vessels in past would act as a strong mitigant.

## Company background

- Mazagon Dock Shipbuilders Ltd (MDL) is the leading shipbuilding yard of India among all defence PSU shipyards. Started as a dry dockyard in Mazagon in 1774, MDL became nationalized in 1960. From a humble start as a small ship-repair shop, it has now become a leading producer of warships for Indian Navy and offshore structure for energy companies.
- Since 1960, MDL has delivered 807 vessels including 32 warships (ranging from various advanced destroyers to missile boats) and 8 submarines. It has also delivered several cargo ships, passenger ships, supply vessels, multi-purpose support vessels, water tankers, tugs, dredgers, fishing trawlers and offshore patrol vehicles. It offers an entire spectrum of naval warfare capabilities – ranging from cutting edge stealth technologies and sophisticated underwater systems to advanced surface combat readiness.
- It was conferred a status of Mini Ratna-I in 2006 and Navratna in 2024, by department of public enterprises. Hence, MDL has become the only government-owned Shipyard having “Navratna” status.
- MDL holds the distinction of being the only public sector Defence shipyard to have built both Destroyers and Submarines for the Indian Navy. It has a capacity of producing 11 submarines and 10 warships concurrently, reflecting its scale and readiness to deliver complex shipbuilding projects.
- To further highlight its strong execution capabilities and track record of delivering promptly, we note that MDL has delivered six Kalavari class Scorpene submarines between 2017-25 despite Covid disruptions. Additionally, it delivered seven destroyers between 2014 and 2025 i.e., one destroyer every eighteen months. Most of these ships were delivered on or ahead of the deadline.
- **Infrastructure:** MDL is equipped with below-mentioned world class infrastructure, which enables it to develop and manufacture a wide range of warships and other offshore vessels. Its total shipbuilding capacity is 4,17,600 DWT.

Shipbuilding division	Submarine division
➤ Dry docks: 4	➤ Pressure hull fabrication shops
➤ Wet basins: 2	➤ Integrated assembly workshop and Dry dock
➤ Big slipways: 3	➤ Pipe fabrication workshop
➤ Small slipways: 6	Submarine sub-section assembly and section formation shops
Production, assembly, and electrical shops	➤ Cradle assembly shop for equipment outfitting.
300 Tonne Goliath Crane	➤ Non-pressure hull fabrication workshop
Shore integration facility	Shore integration facility
Machining, fitting, and instrumentation shop	Engineering and machine shop
	Weapon integration facility

Source: Company, HSIE Research

## Annexure I: Key management personnel

Name (designation)	Description
Capt. Jagmohan (Retd.) (Chairman & Managing director)	<ul style="list-style-type: none"> <li>➤ He is a Naval Architect from Cochin University with MTech degrees from both IIT Delhi and IIT Kharagpur.</li> <li>➤ Joined as CMD in April 2025, he previously served 25 years in the Indian Navy and held leadership at GRSE.</li> <li>➤ He leads overall strategy, specializing in complex warship designs like Advanced Stealth Frigates and ASW Corvettes.</li> </ul>
Shri. Biju George (Director Shipbuilding)	<ul style="list-style-type: none"> <li>➤ He earned a postgraduate degree in Ocean Engineering and Naval Architecture from IIT Kharagpur.</li> <li>➤ Associated with MDL for over 30 years, he notably served as Project Superintendent for the prestigious P17A Frigate program.</li> <li>➤ He directs all shipbuilding operations, focusing on delivering high-tech missile destroyers and frigates for the Indian Navy.</li> </ul>
Shri. Ruchir Agrawal (Director Finance & CFO)	<ul style="list-style-type: none"> <li>➤ He is a fellow member of ICWAI and the Institute of Chartered Ship Brokers, London.</li> <li>➤ Appointed in March 2025, he brings 31 years of financial expertise from his previous tenure at Indian Oil (IOCL).</li> <li>➤ He manages MDL's financial strategy and was key in establishing India's first non-finance company entity in IFSC.</li> </ul>
Comde. S B Jamgaonkar (Retd.) (Director Submarine & Heavy Engineering)	<ul style="list-style-type: none"> <li>➤ A Mechanical Engineer who completed a specialized Postgraduate course in Nuclear Technology from BARC, Mumbai.</li> <li>➤ Joined MDL in 2023 after 29 years in the Navy, he assumed his current Director role in March 2025.</li> <li>➤ He leads submarine construction and the critical integration of Air Independent Propulsion (AIP) systems for enhanced endurance.</li> </ul>
Cdr. Vasudev Puranik IN (Retd.) (Director Corporate Planning & Personnel)	<ul style="list-style-type: none"> <li>➤ He holds a B. Tech in Mechanical Engineering from JNU and a master's in engineering from Pune University.</li> <li>➤ Associated with MDL since 2010, he has over 22 years of prior experience in the Indian Navy.</li> <li>➤ He oversees strategic corporate planning and HR, having successfully led the P-75 Scorpene submarine project earlier</li> </ul>

Source: Company, HSIE Research

## Mazagon Dock Shipbuilders: Initiating Coverage

### P&L (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Net Revenues	40,478	57,333	78,272	94,666	1,14,319	1,25,814	1,44,163	1,65,997
Growth (%)		41.6	36.5	20.9	20.8	10.1	14.6	15.1
COGS	24,602	36,067	51,391	62,275	56,823	80,030	92,697	1,05,740
Employee Expense	6,528	7,987	7,927	8,966	9,788	11,411	13,407	15,139
Other Expenses	7,109	8,931	10,976	9,310	27,108	12,162	14,008	16,113
EBITDA	2,239	4,347	7,978	14,116	20,600	22,210	24,051	29,005
EBITDA Growth (%)		94.2	83.5	76.9	45.9	7.8	8.3	20.6
EBITDA Margin (%)	5.5	7.6	10.2	14.9	18.0	17.7	16.7	17.5
Depreciation	597	745	756	831	1,152	866	1,190	1,515
EBIT	1,642	3,602	7,222	13,285	19,448	21,344	22,861	27,490
Other Income (Including EO Items)	4,480	3,963	6,868	11,015	11,212	11,823	11,939	12,182
Interest	84	72	64	51	44	42	40	38
PBT	6,038	7,493	14,027	24,248	30,617	33,125	34,760	39,635
Total Tax	1,504	1,862	3,566	6,160	7,843	8,281	8,690	9,909
RPAT	4,535	5,631	10,461	18,089	22,773	24,844	26,070	29,726
Share of Net Profit/(loss) of associate	604	477	730	1,281	1,362	-	-	-
Adjusted PAT	5,139	6,108	11,190	19,370	24,135	24,844	26,070	29,726
APAT Growth (%)		18.9	83.2	73.1	24.6	2.9	4.9	14.0
Adjusted EPS (Rs)	25.5	30.3	55.5	96.0	59.8	61.6	64.6	73.7
EPS Growth (%)		18.9	83.2	73.1	(37.7)	2.9	4.9	14.0

### Balance Sheet (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>SOURCES OF FUNDS</b>								
Share Capital - Equity	2,017	2,017	2,017	2,017	2,017	2,017	2,017	2,017
Reserves	32,300	36,560	45,585	60,418	77,382	95,270	1,14,040	1,35,443
Total Shareholders' Funds	34,317	38,577	47,602	62,435	79,399	97,286	1,16,057	1,37,460
Long Term Debt	-	-	-	-	-	-	-	-
Short Term Debt	-	-	-	-	-	-	-	-
Total Debt	-	-	-	-	-	-	-	-
Net Deferred Taxes	(4,236)	(4,468)	(4,501)	(5,998)	(6,783)	(6,783)	(6,783)	(6,783)
Other Non-current Liabilities & Provns	9,020	7,108	5,451	5,690	9,271	9,641	11,017	12,655
<b>TOTAL SOURCES OF FUNDS</b>	<b>39,101</b>	<b>41,217</b>	<b>48,552</b>	<b>62,126</b>	<b>81,887</b>	<b>1,00,145</b>	<b>1,20,292</b>	<b>1,43,332</b>
<b>APPLICATION OF FUNDS</b>								
Net Block	7,949	9,566	10,070	8,197	14,443	18,644	27,525	36,087
CWIP	802	869	616	682	1,332	1,332	1,332	1,332
Other Non-current Assets	17,401	17,327	18,413	21,553	17,204	17,718	18,533	19,499
Total Non-current Assets	26,152	27,762	29,099	30,432	32,979	37,694	47,391	56,918
Inventories	58,886	77,001	73,569	57,134	45,371	74,377	88,688	1,04,064
Debtors	9,814	10,231	10,204	18,646	10,849	15,511	17,181	19,101
Other Current Assets	72,018	63,435	44,396	40,183	29,599	31,564	34,866	38,797
Cash & Equivalents	80,279	1,14,805	1,32,864	1,42,096	1,61,496	1,59,768	1,61,344	1,64,623
Total Current Assets	2,20,997	2,65,472	2,61,032	2,58,058	2,47,315	2,81,220	3,02,080	3,26,585
Creditors	63,773	61,834	44,808	44,475	37,560	57,770	67,675	78,066
Other Current Liabilities & Provns	1,44,276	1,90,183	1,96,771	1,81,889	1,60,847	1,61,000	1,61,504	1,62,105
Total Current Liabilities	2,08,048	2,52,017	2,41,579	2,26,364	1,98,408	2,18,769	2,29,179	2,40,171
Net Current Assets	12,948	13,455	19,453	31,695	48,908	62,451	72,901	86,415
<b>TOTAL APPLICATION OF FUNDS</b>	<b>39,101</b>	<b>41,217</b>	<b>48,552</b>	<b>62,126</b>	<b>81,887</b>	<b>1,00,145</b>	<b>1,20,292</b>	<b>1,43,332</b>

## Mazagon Dock Shipbuilders: Initiating Coverage

### Cash Flow (INR Mn)

Year ending March	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Reported PBT	6,038	7,493	14,027	24,248	30,617	33,125	34,760	39,635
Non-operating & EO Items	(3,801)	(3,567)	(6,145)	(10,072)	(10,166)	(11,823)	(11,939)	(12,182)
Interest Expenses	84	72	64	51	44	42	40	38
Depreciation	711	745	756	831	1,152	866	1,190	1,515
Working Capital Change	(782)	(3,345)	9,576	(1,450)	8,559	(15,412)	(8,314)	(9,568)
Tax Paid	(1,567)	(3,025)	(3,122)	(6,772)	(9,425)	(8,281)	(8,690)	(9,909)
<b>OPERATING CASH FLOW ( a )</b>	<b>682</b>	<b>(1,626)</b>	<b>15,156</b>	<b>6,838</b>	<b>20,781</b>	<b>(1,483)</b>	<b>7,046</b>	<b>9,528</b>
Capex	(419)	(320)	(1,356)	1,030	(7,431)	(5,070)	(10,070)	(10,070)
Free Cash Flow (FCF)	263	(1,946)	13,800	7,868	13,349	(6,553)	(3,024)	(542)
Investments	-	-	(6,580)	24,269	(18,731)	-	-	-
Non-operating Income	3,902	3,584	6,439	5,849	13,171	11,823	11,939	12,182
<b>INVESTING CASH FLOW ( b )</b>	<b>3,483</b>	<b>3,264</b>	<b>(1,497)</b>	<b>31,148</b>	<b>(12,991)</b>	<b>6,753</b>	<b>1,869</b>	<b>2,112</b>
Debt Issuance/(Repaid)	-	-	(0)	-	-	-	-	-
FCFE	263	(1,946)	13,800	7,868	13,349	(6,553)	(3,024)	(542)
Share Capital Issuance	-	-	-	-	-	-	-	-
Dividend	(1,553)	(1,801)	(2,164)	(4,478)	(7,120)	(6,956)	(7,300)	(8,323)
Others	(46)	(31)	(16)	(8)	(1)	(42)	(40)	(38)
<b>FINANCING CASH FLOW ( c )</b>	<b>(1,598)</b>	<b>(1,832)</b>	<b>(2,180)</b>	<b>(4,485)</b>	<b>(7,120)</b>	<b>(6,998)</b>	<b>(7,339)</b>	<b>(8,361)</b>
<b>NET CASH FLOW (a+b+c)</b>	<b>2,566</b>	<b>(194)</b>	<b>11,480</b>	<b>33,501</b>	<b>669</b>	<b>(1,728)</b>	<b>1,576</b>	<b>3,279</b>
EO Items, Others	-	-	-	-	-	-	-	-
Closing Cash & Equivalents	7,399	7,205	18,684	52,185	52,854	51,126	52,702	55,981

### Key Ratios

	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>PROFITABILITY (%)</b>								
GPM	39.2	37.1	34.3	34.2	50.3	36.4	35.7	36.3
EBITDA Margin	5.5	7.6	10.2	14.9	18.0	17.7	16.7	17.5
EBIT Margin	4.1	6.3	9.2	14.0	17.0	17.0	15.9	16.6
APAT Margin	12.7	10.7	14.3	20.5	21.1	19.7	18.1	17.9
RoE		16.8	26.0	35.2	34.0	28.1	24.4	23.5
RoIC (or Core RoCE)		(4.7)	(6.8)	(12.1)	(18.1)	(23.0)	(34.1)	(66.1)
RoCE		15.3	25.0	35.1	33.6	27.3	23.7	22.6
<b>EFFICIENCY</b>								
Tax Rate (%)	24.9	24.9	25.4	25.4	25.6	25.0	25.0	25.0
Fixed Asset Turnover (x)	3.8	4.4	5.6	7.5	5.7	5.0	4.1	3.7
Inventory (days)	780	688	535	383	329	339	349	359
Debtors (days)	110	64	48	56	47	45	44	42
Other Current Assets (days)	649	404	207	155	95	92	88	85
Payables (days)	825	636	379	262	263	263	266	269
Other Current Liab & Provsns (days)	1,301	1,211	918	701	514	467	409	356
Cash Conversion Cycle (days)	64	116	204	177	113	121	126	132
Working Capital (days)	(587)	(691)	(507)	(369)	(306)	(255)	(194)	(139)
Net D/E (x)	(2.3)	(3.0)	(2.8)	(2.3)	(2.0)	(1.6)	(1.4)	(1.2)
Interest Coverage (x)	19.6	50.3	113.4	259.5	442.0	510.6	575.7	728.7
<b>PER SHARE DATA (Rs)</b>								
EPS	25.5	30.3	55.5	96.0	59.8	61.6	64.6	73.7
CEPS	28.4	34.0	59.2	100.2	62.7	63.7	67.6	77.4
Dividend	7.70	8.93	10.73	22.20	17.65	17.25	18.10	20.63
Book Value	170.1	191.3	236.0	309.6	196.8	241.2	287.7	340.8
<b>VALUATION</b>								
P/E (x)	85.0	71.5	39.0	22.5	36.2	39.1	37.3	32.7
P/BV (x)	12.7	11.3	9.2	7.0	11.0	10.0	8.4	7.1
EV/EBITDA (x)	159.2	74.1	38.1	20.9	34.6	36.6	33.7	27.8
EV/Revenues (x)	8.8	5.6	3.9	3.1	6.2	6.5	5.6	4.9
OCF/EV (%)	0.2	(0.5)	5.0	2.3	2.9	(0.2)	0.9	1.2
FCF/EV (%)	0.1	(0.6)	4.5	2.7	1.9	(0.8)	(0.4)	(0.1)
FCFE/Mkt Cap (%)	0.1	(0.4)	3.2	1.8	1.5	(0.7)	(0.3)	(0.1)
Dividend Yield (%)	0.4	0.4	0.5	1.0	0.8	0.7	0.8	0.9

Source: Company, HSIE Research

# Bharat Dynamics

## Primed for growth; paced by execution

The Indian missile market is entering a scale-up phase projected to extend through 2030 and beyond, driven by the convergence of defence modernization amid escalating geopolitical tensions. Within this landscape, Bharat Dynamics Ltd (BDL) operates as the primary manufacturer of guided missile systems, supplier of surface to air missiles (SAMs), anti-tank guided missiles (ATGMs), and lightweight torpedoes. This portfolio provides BDL with access to 50%+ of the domestic missile market. Beyond domestic procurement, BDL is expanding its role as a global exporter, evidenced by recent contracts for the Akash weapon system. The incremental demand in order book is expected to be led by modernization of existing weapons and introduction of next-gen tactical ballistic systems. While the addressable market is expanding, rising private sector participation in the guided-weapons ecosystem will influence long-term margins and order wins for BDL adversely. While we align with BDL's strategic relevance in India's defence ecosystem and its strong order pipeline, we believe the current stock valuation is elevated vis-à-vis its execution pace. We would monitor the pace of execution before turning constructive on the stock. We initiate coverage on the stock with a REDUCE rating, valuing at 35x FY28E EPS, arriving at a target price of Rs. 1,120.

- **INR 500bn order pipeline:** BDL's order backlog as of FY25 ended at INR 228bn (book-to-bill 6.8x), comprising Akash, MRSAM, Astra, ATGMs, and torpedoes. As supply chain disruptions of previous years ease out, delivery cycle and revenue growth are expected to accelerate along with an increased localization profile during FY25-FY28E. Near-term inflows include QRSAM (INR 110-120 bn), torpedoes (INR 10 bn), ATGMs, Astra Mk1, Akash NG SAM, base orders (INR 30 bn p.a.), and refurbishment orders (INR 20 bn p.a.). Management has targeted an order inflow of INR 200bn over the next 2-3 years and INR 500bn over 5-6 years, which we believe is plausible.
- **Growing exports:** Export contributions reached 38% of FY25 revenue, up from less than 10% prior to FY24, marking a shift as a growth driver. This expansion is supported by GoI policies and approvals for the export of Akash system to friendly nations. Demand for SAMs, ATGMs, and torpedoes from international markets have increased, following India's success in these platforms. We anticipate export to continue being a significant contributor to the revenue.
- **R&D fueling indigenization:** BDL is gearing up to increase R&D spend from 6.6% in FY25 to 9% in FY30E. This amplified R&D expenditure has increased indigenization in key defence platforms to the levels of ~80-90%. BDL is also intensifying its capex intensity to expand production lines, diversify into development of new products, and meet the expected demand surge.
- **Financials and valuations:** BDL delivered a 5.9% revenue CAGR over FY22-25 due to supply chain hinderances. We forecast a better execution trend ahead, leading to revenue/EBITDA/PAT CAGR of 21.4%/38.8%/28.8% over FY25-FY28E, with EBITDA margins of 21.1% in FY28E.

YE March (INR mn)	FY23	FY24	FY25	FY26E	FY27E	FY28E
Net Sales	24,894	23,693	33,451	40,609	48,958	59,893
EBITDA	4,082	5,366	4,724	7,959	9,481	12,625
APAT	3,522	6,127	5,496	7,531	9,154	11,745
Diluted EPS (INR)	9.6	16.7	15.0	20.5	25.0	32.0
P/E (x)	132.1	75.9	84.7	61.8	50.8	39.6
EV/EBITDA (x)	17.1	17.9	12.7	10.4	8.4	6.7
RoCE (%)	6.9	9.0	7.6	12.9	19.3	21.4

Source: Company, HSIE Research

## REDUCE

CMP (as on 05 Mar 2026)	INR 1,281
Target Price	INR 1,120
NIFTY	24,766

### KEY STOCK DATA

Bloomberg code	BDL IN
No. of Shares (mn)	367
MCap (INR bn) / (\$ mn)	469/5,125
6m avg traded value (INR mn)	2,473
52 Week high / low	INR 2,097/1,030

### STOCK PERFORMANCE (%)

	3M	6M	12M
Absolute (%)	(15.3)	(11.3)	20.4
Relative (%)	(8.7)	(10.4)	11.9

### SHAREHOLDING PATTERN (%)

	Sep-25	Dec-25
Promoters	75.0	75.0
FIs & Local MFs	11.3	11.0
FPIs	2.4	2.3
Public & Others	11.3	11.8
Pledged Shares	-	-

Source: BSE

Pledged shares as % of total shares

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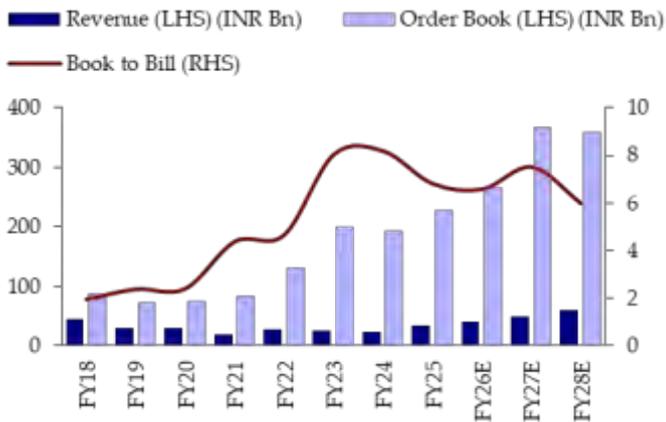
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# Bharat Dynamics: Initiating Coverage

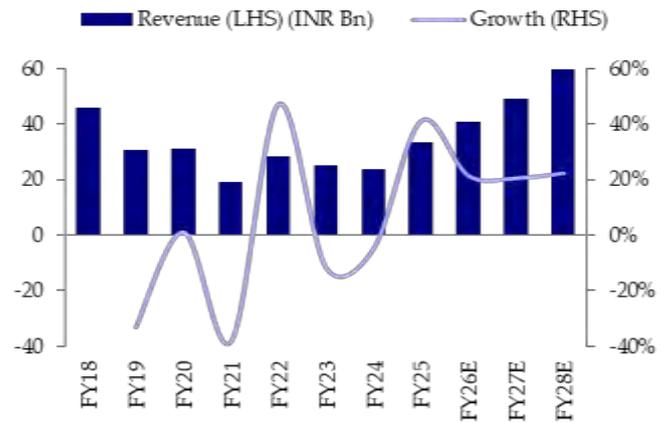
## Focus charts

### Healthy book to bill providing revenue visibility



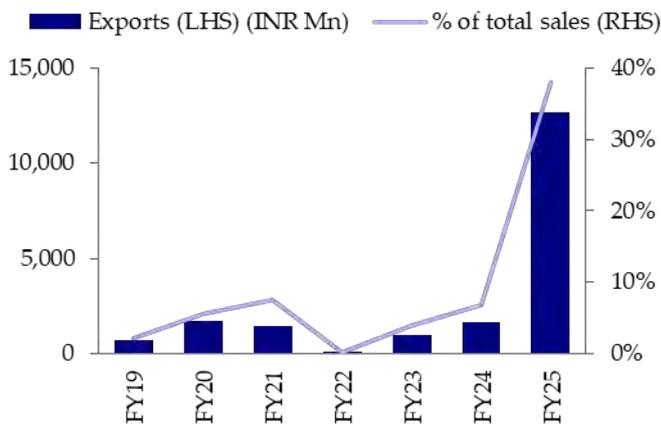
Source: Company, HSIE Research

### Continued revenue growth from FY26 onwards



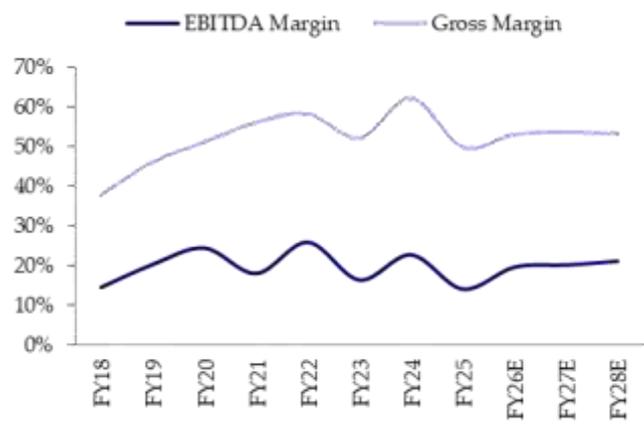
Source: Company, HSIE Research

### One off export order lifted FY25 export revenue



Source: Company, HSIE Research

### Margin to stabilize at 21% from FY28 onwards



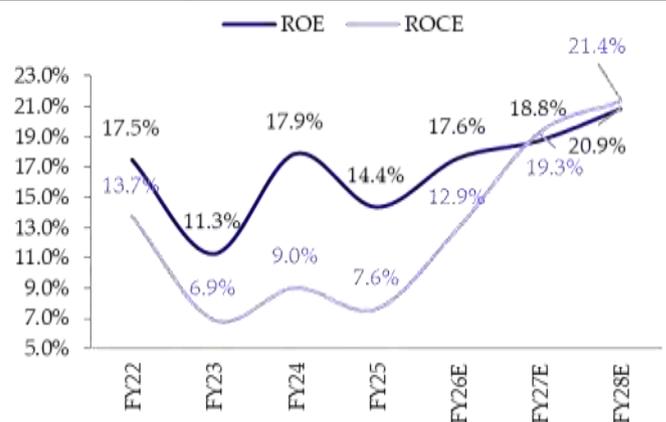
Source: Company, HSIE Research

### Inventory days peaked out in FY24



Source: Company, HSIE Research

### RoE & RoCE expected to rise in near term



Source: Company, HSIE Research

## Orderbook offering multiyear revenue visibility

Order book of Bharat Dynamics Ltd (BDL) stood at INR 228bn at FY25-end, with a book to bill of 6.8x giving visibility of revenue booking for the coming years. Management expects to close FY26 with an order backlog of INR 360bn. To achieve this, the company needs to garner an estimated INR 160bn worth orders in FY26E. While BDL has already received INR 54bn worth of orders in FY26 so far, to reach an aggregate order inflow value of INR 160bn in FY26, bigger strategic orders like QRSAM and Akash NG need to come through. We believe that the QRSAM order could be delayed to Q1 of FY27; hence, we estimate an order inflow of INR 80 bn for FY26, lower than management estimates.

Order book position on date – INR 268bn as per our estimates.

### After a soft FY24, order inflows revived strongly in FY25, continued in FY26

Date	FY	Order Value (INR bn)	Order
Dec'25	FY26	24.6	ATGMs & SAM (Emergency Procurement)
Nov'25	FY26	21.0	Invar anti-tank missiles
Jul'25	FY26	8.1	ATGMs
Mar'25	FY25	43.6	supply of armaments to IAF
Jan'25	FY25	29.6	MRSAM for Indian Navy
Sep'23	FY24	2.9	Surface to air missiles for IAF
Mar'23	FY23	81.6	Akash Weapon Systems for 3rd & 4th Regiments of Army
Mar'23	FY23	2.6	CMDS for MLH Helicopters
Feb'23	FY23	USD 25.5 mn	Export
May'22	FY23	29.7	ASTRA MK-I Beyond Visual Range (BVR) Air to Air Missile
Dec'21	FY22	4.7	Refurbishment of IGLA - 1M missiles.
Nov'21	FY22	1.7	Supply and support of CMDS
Mar'21	FY21	11.9	Milan 2T ATGM
Mar'21	FY21	3.7	MRSAM Missile Rear Sections for Indian Air Force
Jan'21	FY21	6.3	Konkurs-M ATGM
May'20	FY21	2.9	MRSAM Missile Sections for Indian Air Force
Jun'19	FY20	11.9	Heavy weight Torpedoes
Jul'18	FY19	USD 14.33 mn	Export

Source: BSE, Company, HSIE Research

- BDL's order book is majorly anchored by missiles and missile systems such as Astra MK1, ATGMs, Akash weapon system, INVAR, and refurbishment orders.
- The management expects orders worth INR 200bn over the next 2-3 years and outlines a pipeline of orders totaling INR 500bn over the next five years. These include recurring base orders of INR 30bn and refurbishment orders worth INR 20bn each year.
- The near to medium-term order pipeline is bolstered by order expectation of QRSAM, additional MRSAM, Akash SAM for 5th and 6th regiment, MIGM, torpedoes, Astra MK1, Akash NG and VSHORAD. The long-term order pipeline includes programs that are still in the development phase such as project Kusha, Astra MKII BVR, etc.

## India's evolving missile defence strategy creating order pipeline

In our view, four main factors are shaping the growth of the Indian missile sector. This is expected to drive the company's order pipeline.

- **New military platforms:** The military is introducing new fighter platforms that require specialized missiles. This includes naval ships like the Project 17A frigates, aircraft such as the Tejas Mk1A, and mobile defence units like the QRSAM and VSHORAD.
- **Ongoing deliveries:** India is currently receiving and deploying high-tech foreign systems such as the S-400 air defence squadrons and heavy-duty torpedoes for its submarine fleet.
- **Upgrading current platforms:** Indian defence sector is undergoing significant modernization of its existing platforms and weapons. This involves developing and installing modern missiles on to the warships and aircrafts.
- **Exports:** Moreover, there is a growing international interest in Indian technology, particularly for the Akash air defence system, which is opening new export markets.

## Aiming for product diversification to reduce revenue volatility

BDL is moving beyond its traditional strengths to become a broad-based defence technology company. While they are still leaders in building missiles for air defence and anti-tank operations, they are now branching out into new areas like guided bombs, drone payloads, and high-tech cruise missile engines. They are even starting to develop components for space programs and specialized fuel for rockets.

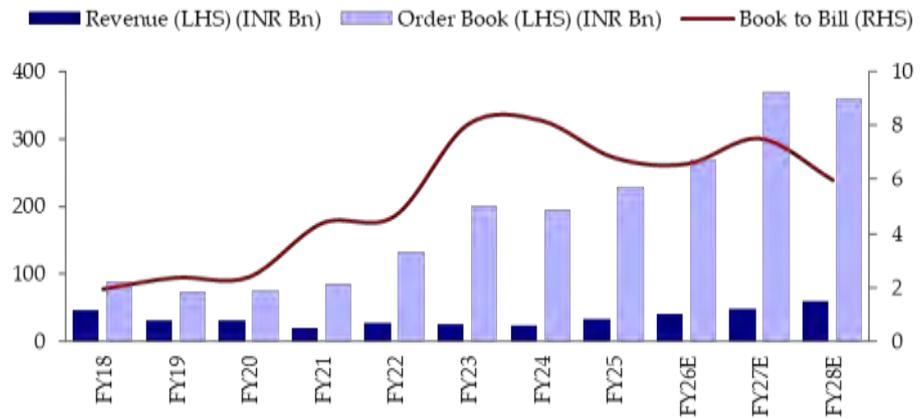
The company has various programs in the pipeline, which if executed well, will provide revenue stability and growth. The list below highlights few key programs and expected timelines for their order finalization.

### Future programs in development

Product	Expected Order Finalization
<b>With DRDO</b>	
Quick reaction surface to air missile (QRSAM)	FY27
Akash new generation surface to air missile (NG SAM)	FY27
Vertical launch short range surface to air missile (VLSRSAM)	FY27
Man portable anti-tank guided missile (MPATGM)	FY27
Long range land attack cruise missile (LRLACM)	FY28
Smart anti airfield weapon (SAAW)	FY27
Electrical Heavy Weight Torpedo	FY27
Multi influence ground mine (MIGM)	FY27
Sonobuoy	FY26
<b>In House R&amp;D</b>	
Amogha III anti-tank guided missile (ATGM)	FY27
Drone Fired Missile	FY27
<b>Foreign Collaboration</b>	
Mistral	FY27
Advance short range air to air missile (ASRAAM)	FY27
122 mm GRAD Rockets	FY26

Source: Company, HSIE Research

Healthy book to bill providing revenue visibility



Source: Company, HSIE Research

Supply chain woes impact revenue despite hefty order backlog

As of 2025 fiscal year end, BDL has maintained an order book of INR 228bn. This results in a book-to-bill ratio of 6.8x, a figure higher than the industry average. While this indicates high demand, historical data indicates a consistent lag in converting these orders into revenue. Over the past 10 fiscal years, execution timelines have fluctuated due to dependencies on foreign Original Equipment Manufacturers (OEMs) for critical sub-systems.

BDL has historically traded at a premium to other DPSU integrators such as BEL and HAL. This premium suggests that market is pricing in an accelerated future growth. However, this is worth noting that projected growth rate is mathematically inflated by a low base effect caused by under-performance in previous years rather than a fundamental shift in the production capability.

BDL faces obstacles ahead despite a strong orderbook

Below are three primary factors projected to influence BDL’s project execution, revenue and profitability in the coming years.

- **Supply Chain Dependencies:** Continued reliance on international components for missile seekers and propulsion systems makes delivery schedules vulnerable to geopolitical shifts.
- **Competitive Landscape:** The defence acquisition procedure (DAP) now allows private entities (such as Solar Industries, Adani Defence, Apollo Micro System etc.) to compete for missile contracts, which poses challenges for BDL’s historical monopoly.
- **Product Mix:** A transition from legacy systems to newer, indigenous platforms often involves higher initial R&D costs and lower initial yields, which may compress operating margins for BDL in the short term.

In our view, the company’s current rich stock valuation appears to overlook the historical volatility in BDL’s delivery schedules, as revenue growth in the recent years have been less than optimal. If execution does not align with the order book in coming quarters, there is a possibility of a downward revision in EPS estimates and accordingly its multiples too.

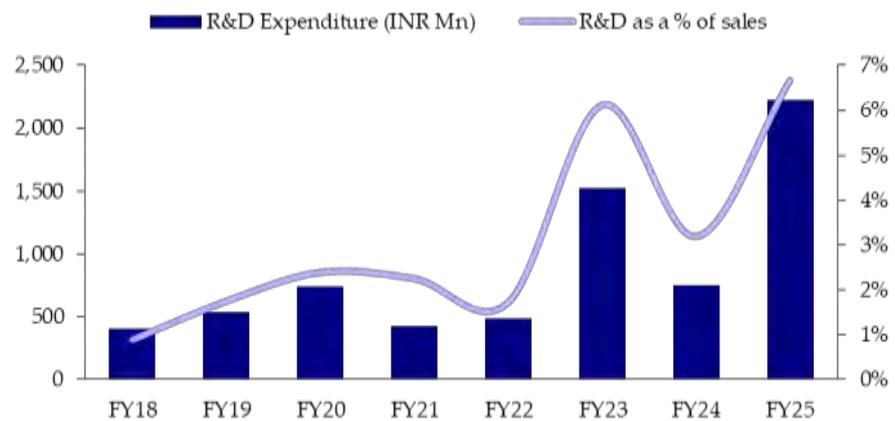
## R&D fueling self-reliance and an expanding product portfolio

Bharat Dynamics Ltd (BDL) is transitioning its operational model from licensed manufacturing to one driven by indigenous technology. The company's strategy centers on achieving self-reliance in missile subsystems and diversifying its product portfolio through increased capital allocation toward Research & Development (R&D).

BDL has implemented a structured growth in R&D spending to facilitate technological autonomy.

- **Financial allocation:** R&D expenses rose to 6.7% of revenue in FY25, a significant increase from 3.2% in FY24. The company has established a target to allocate 9% of annual revenue to R&D through FY30.
- **Technological integration:** Efforts are directed at incorporating Artificial Intelligence (AI), Machine Learning (ML), Quantum Computing, and Industry 4.0 practices in existing and future products.
- **Core subsystems:** While software integration is a priority, the primary focus remains on the indigenization of critical hardware. Hence, the company is investing in indigenization of key systems such as seekers, edge processors (advanced CPUs etc. which enables application of AI), and advanced propulsion systems.
- **Diversification:** Increased R&D investment is intended to expand the product portfolio beyond the core missile segment, so that the company could achieve revenue diversification.

### R&D as a % of sales on an increasing trajectory



Source: Company, HSIE Research

## Indigenization reducing Foreign OEM dependency

BDL's indigenization strategy targets the reduction of dependency on Foreign Original Equipment Manufacturers (OEMs) and the realization of "AtmaNirbhar Bharat" objectives.

Historically, products designed by foreign OEMs under transfer of technology (ToT) agreements could achieve an indigenization level of up to 60%, varying across products and manufacturers. However, current initiatives have increased these levels to between 70% and 90% for several product lines. For systems designed by the DRDO, indigenization levels even exceed 90% for various products. The table below highlights degrees of indigenization achieved for various product lines. It is worth noticing that increasing domestic value additions helps the company by not only reducing dependence on foreign suppliers but also achieving higher profit margins.

## High degree of indigenization achieved in specific missile programs

Missile System/Program	Indigenization Level (%)
Konkurs-M	96.0%
Akash	96.0%
Varunastra	86.8%
TAL-XP	82.9%
Invar	78.6%
Milan-2T	71.0%

Source: Company, HSIE Research

## Ecosystem partners aid indigenization, product development

The company utilizes a multi-tiered approach to source and develop indigenous components through external partnerships.

- Srijan Portal Engagement:** BDL utilizes the Ministry of Defence's Srijan portal to transition imported items to domestic production. To date, BDL has listed 1,198 imported items for indigenization. Out of those, 217 items have been successfully indigenized through this platform.
- MSME and start-up integration:** BDL provides technical support to MSMEs to meet quality standards. The company has entered MoUs with various startups to address specific technical problems. In this manner, it is creating an innovation-led defence ecosystem, which is expected to create a pipeline of domestic niche technologies. Facilitated by Srijan portal and iDEX platform, company has signed MoUs with various startups and MSMEs specifically for IR Seeker technology, lithium-based thermal batteries, and laser guidance systems.
- Partnerships and joint ventures:** For potential technology development and supporting innovation, BDL continues to engage in joint development with DRDO and academia. It also pursues Government-to-Government (G2G) agreements and collaborations with global OEMs for co-development of products with advanced features and technologies.

Some of the key JVs or collaborations in which BDL is a partner are mentioned below:

### Domestic collaborations:

- PTC Industries - BDL JV:** A strategic JV formed in 2025, focuses on design, development, and manufacture of advanced missile propulsion systems, aero-engines, and guided bombs.
- Mishra Dhatu Nigam Ltd (MIDHANI):** BDL is working with MIDHANI For the establishment of a "Metal Bank" to secure critical raw materials for missile production.
- DRDO Partnership:** BDL serves as the joint development partner with DRDO for next-generation Anti-Tank Guided Missiles (ATGMs) and Surface-to-Air Missiles (SAMs).
- IIIT Hyderabad:** BDL is working with IIIT Hyderabad for the joint development of AI and ML-based technologies for its product range.
- T-Hub (Hyderabad):** To leverage its strong balance sheet, BDL is aiming to invest in innovative startups and, hence, it is collaborating with T-Hub to identify startups with deep tech capabilities for futuristic weapon systems.
- Yantra India Ltd (YIL):** It signed an agreement in Nov/25 (alongside HAL) to utilize a 10,000-ton forging press facility for manufacturing large aluminum alloy components.

### Collaboration with international partners (global OEMs)

- **MBDA (UK/France):** BDL has entered several MoUs for the assembly and integration of missile systems like Mistral and Milan.
- **Thales:** BDL has been pursuing joint manufacturing discussions with Thales for the 70mm laser-guided rocket system (FZ275 LGR), and “Starstreak” air defence system (VSHORADS) under transfer of technology frameworks.

## Major programs driving the order pipeline

In collaboration with DRDO, BDL has been at the forefront of executing various missile programs of India, which are of national importance. The focus on indigenization reflected in R&D efforts of BDL shows its commitment to “Make in India” initiative. The table below highlights various defence programs in which BDL is participating. These programs provide strong visibility of the company’s future order pipeline.

Key programmes	Details
QRSAM	QRSAM is a highly-ambitious missile programme of India, which has been developed by DRDO in collaboration with BEL and BDL. This is an indigenous mobile short range air defence system. It is entrusted with the duty of protecting marching infantry and tanks from aerial threats like fighter jets, UAVs, and missiles. It is well-equipped with advanced systems such as active-phased array surveillance and tracking radars, RF-seekers, electronic counter-counter measures (ECCM) for jamming environments, etc. This fills the gap in India’s defence system between “very short range” and “medium range” levels. Its operational range is 30-40kms and aerial altitude is 9-14kms. Current QRSAM order is expected in March’26 with a potential overall size of INR 350bn.
AKASH NG SAM	The Akash NG (next generation) programme is indigenous surface to air missile system developed by DRDO to counter modern aerial threats. It is a technological leap over the conventional Akash featuring a longer-range (up to 80km vs 30km earlier), lighter in weight (350kg vs 700kg) and smaller footprint for better mobility and deployment. The NG version also has faster reaction time, an advanced indigenous RF-seeker for fire and forget capability, and an indigenous AESA radar. It offers better electronic counter-counter measures (ECCM) and higher accuracy for attacks with better precision. Post successful trials, Akash-NG has received interest from various organisations. Indian armed forces have planned its acquisitions apart from various other countries such as Brazil, Morocco, and Armenia.
Astra beyond visual range air to air missile (BVRAAM)	BVRAAM is a set of beyond visual range air to air missiles, which are widely used by the Indian armed forces. MoD has awarded BDL a contract of INR 30bn for the supply of indigenously developed Astra Mark-I BVRAAM and associated equipment. This order covers 248 missiles for deployment with Indian Airforce and Indian Navy. They will be integrated with Su-30MKI, Tejas, and MIG-29 aircrafts. Astra Mk-1 and Mk-2 taken together have significant potential for future orders, given they boost India’s air superiority without reliance on foreign suppliers. They also have substantial export potential, especially with regards to supplying to friendly nations.
MRSAM	MRSAM is a critical part of Indian layered aerial defence system, which has been developed by DRDO and Israel aerospace industries. The ministry of defence (MoD) has signed a contract with Bharat Dynamics Ltd (BDL) for the supply of MRSAM for the Indian Navy at a cost of INR 30bn. MRSAM is a standard fit for current and future Indian naval ships for strengthening maritime security.
VLSRSAM	This vertical launch short-range surface to air missile program is an indigenous ship borne weapon system developed by DRDO to replace older foreign supplied missile systems. This system is planned to be installed on at least 25 frontline warships (destroyers, frigates, and corvettes) by 2035. It offers a long-term orderbook visibility for BDL.
MIGM (Multi Influential Ground Mines)	MIGM is an advanced, indigenously developed underwater naval mine by DRDO, featuring multi-sensor detection for improved underwater warfare capability. DRDO and Indian Navy have successfully undertaken combat firing of MIGM. It is designed to enhance the Indian Navy’s combat capabilities against stealth ships and submarines. Bharat Dynamics and Apollo Microsystems are its production partners, which are expected to benefit from future procurement orders of MIGM.

Source: Industry, Company, HSIE Research

## Diversified product portfolio to cater to military requirements

Key products	2-D appearance
<p><b>Radars</b></p> <p><b>Torpedo advanced lightweight (TAL):</b>                      This is an underwater weapon that can be launched from a ship, fixed wing aircraft, or a helicopter. This is indigenously developed by DRDO and manufactured by BDL. It has electrical propulsion with digital guidance systems, which is used for targeting submarines in shallow and deep waters. It is 2.75 meters long, 32cm in diameter and weighs 220kg (war shot version). Further, it can operate at a depth of 10-450 meters with a max speed of 33 knots and can carry a warhead of 50kgs. This is a crucial anti-submarine weapon which boosts India's underwater defence.</p>	
<p><b>Varunastra (Heavyweight Torpedo):</b>                      Varunastra is an indigenously developed ship launched heavy weight (1850Kg) torpedo capable of targeting submarines in shallow/deep waters. It uses acoustic homing with wide look angles, which is suitable for tracking silent submarines. It is quite large and heavy as compared to the advanced light torpedo as its dimensions are 7.8m long and 53cm diameter. It can achieve up to 40 knots and can operate at a varying depth of 8 to 600meters. It carries 250kg of conventional warhead and can attack target silently, making it a lethal indigenous underwater weapon.</p>	
<p><b>Medium range surface-to-air missile (MRSAM):</b>                      MRSAM is a critical part of India's layered air defence strategy which was jointly developed by DRDO and Israel aerospace industries. It is a high response, quick reaction, vertically launched supersonic missile designed to neutralize aerial threats such as fighter aircrafts, helicopters, UAVs, guided bombs, and missiles. It is guided by advanced radar and active RF seeker for precise engagement with the target. It is 4.5 meters long with a diameter of 23Cm. This missile has a weight of 275Kg and can carry an explosive warhead of 60Kgs up to a range of 70Kms. It is used by Army, Navy, and Airforce as different variants.</p>	
<p><b>Dishani:</b>                      Dishani is an advanced directional sonobuoy and an expendable air deployed acoustic sensor system used in anti-submarine warfare. It is a self-contained package containing acoustic sensors, parachute, electronics, and mechanical assemblies, which can be dropped from an aircraft into the sea. Upon entering the water, it separates into an underwater sensor unit and a surface radio transmitter, which relays the acoustic signals back to the deploying aircraft. It has a selectable operating depth (30 to 300m) and a selectable operating life (0.5 to 8 hours). Its launch height could be up to 1000m for helicopters and up to 8000m for a fixed wing aircraft. It is a potent system, which provides vital acoustic intelligence to Indian naval aircrafts for submarine hunting.</p>	

## Key products

## 2-D appearance

### Quick reaction surface to air missile (QRSAM):

QRSAM is an indigenously developed quick reaction surface to air missile capable of search on move, track on move and fire on short halts. It is a 270kg missile with a length of 4.4 m and 22cm diameter. It can carry a warhead of 32kg and defend effectively against aerial threats such as fighter jets, UAVs, and missiles, etc. Its range is up to 30kms, and highest altitude achieved is 6kms. It can engage with six targets simultaneously. This is a dependable mobile short-range air defence system with 360-degree radars, which can operate in a challenging weather as well as tough electronic warfare environments. This complements Akash missile system and MRSAM in filling critical gaps in India's layered air defence architecture.



### Multi-influential ground mines (MIGM):

MIGM is an advanced, indigenously developed underwater naval mine to counter modern stealth ships and submarines. It is developed by DRDO for enhancing Indian Navy's underwater warfare capabilities. It detects various signatures emitted by marine vessels such as acoustic, pressure, magnetism, and electric field to identify targets. It has got built-in electronics system that comprises data acquisition electronics with ARM processor along with peripheral devices for processing the data and generating the command to detonate. It can be deployed from ships, submarines, and coastal outpost platforms, etc. These mines can be cable controlled and are autonomous seabed-based. Introduction of these mines offer a great potency to Indian naval underwater warfare.



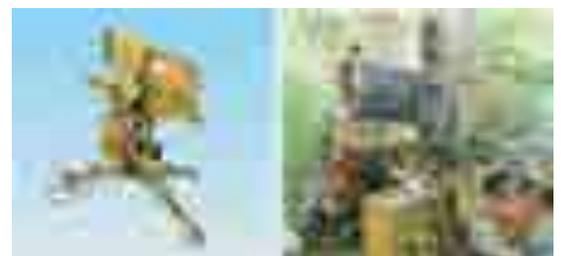
### Vertically-launched short range surface to air missile:

VL-SR SAM is a vertically launched surface to air missile with an all-weather capability for use by Indian Navy. Its dimensions include 3.9m length and 18cm diameter. It weighs 170kg and possesses a warhead capacity of 15kg. This missile offers protection to a naval ship from various aerial threats and has a strike range of up to 80kms.



### FLAME:

FLAME is Fagot launcher adapted to Milan Equipment an indigenously modified cost-effective launcher for firing Milan-2T anti-tank guided missile (ATGM). This man portable launcher weighs 26kgs and offers a firing rate of up to 3 missiles/minute with a target tracking rate of 60kmph from a 1km distance. Additionally, for safety and convenience of the soldiers, FLAME is enabled with blast protection functionality and allows fast loading and re-loading of the missiles on the Launcher.



### Konkurs launcher test equipment (KLTE):

KLTE is a micro controller-based test equipment to check the serviceability of Konkurs anti-tank guided missile (ATGM) launchers. It is man portable and ruggedized to be used in extreme war conditions such as temperature ranging from -40 degrees to +50 degrees Celsius.



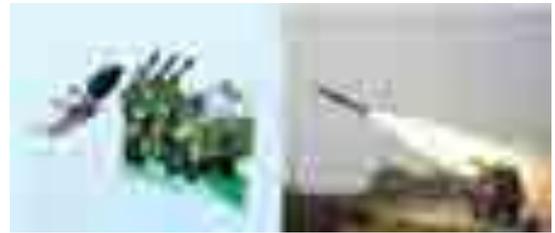
## Bharat Dynamics: Initiating Coverage

### Key products

### 2-D appearance

#### Akash weapon system:

The Akash is an indigenous medium-range surface to air missile system designed to protect vulnerable areas from aerial threats such as aircrafts, missiles, and UAVs. It forms a key part of India's layered defence architecture and features command guidance, mobile platform, and capability of engaging with multiple targets together. Its additional strength includes in-built electronic counter-counter measures (ICCM) and identifying friend or foe (IFF) functionality. Akash is a medium-range surface to air missile with a typical range of 30km, extending up to 70kms. The key difference between Akash and QRSAM is the reaction time which is ~3-4 seconds in case of QRSAM while the same for Akash is 10-20 seconds. Additionally, Akash can be launched from a static launcher while QRSAM can be launched on the move as well. Both serve key purposes and form critical parts of India's layered defence structure.



#### Konkurs missile test equipment (KMTE):

KMTE checks the health and functionality of Konkurs missiles. It is designed to be carried by soldiers and operated in harsh weather conditions (-40 degree to +50-degree Celsius temperature, dust, and water). These battery-operated devices are domestically manufactured by BDL supporting India's self-reliance initiative.



#### Anti-submarine warfare suite (ASW Suite):

BDL is a key supplier of anti-submarine warfare suite equipped with systems such as torpedoes, and torpedo defence system including fire control systems. ASW suite is customizable as per the client requirements. Various subsystems can be a part of the suite as per the need, which include sonar, underwater communication devices, rocket launchers, torpedo launch tubes, sonar domes, naval air command system (NACS), and rockets.



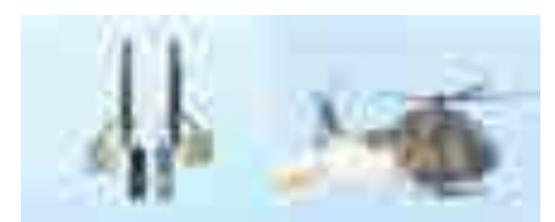
#### Astra weapon system:

ASTRA weapon system is an indigenously developed family of beyond visual range, air to air missiles (BVRAAM), designed by DRDO for Indian Airforce and Indian Navy to engage enemy aircrafts at long distances. It has three variants Mk-1, Mk-2, and upcoming Mk-3. Range of Mk-1 is 80-110kms with an altitude of up to 20kms. Its dimensions include length of 3.84m and a diameter of 18cm. Its top speed could be up to 4.5Mach. This has been integrated with Su-30 MKI and LCA Tejas. Mk-2 has a higher range of up to 160kms and future Mk-3 has a potential range of up to 350kms. This system of missiles combines inertial navigation with mid-course updates and terminal active radar homing for precision. Its successful flight tests confirm high accuracy against supersonic targets.



#### Counter measures dispensing system (CMDS):

CMDS is an airborne defensive system providing self-protection to the aircraft against radar guided and infrared seeking missiles by dispensing Chaffs and Flares. It creates false targets to misdirect incoming missiles and improve platform survivability. This system integrates seamlessly with other electronic warfare sensors such as radar warning receivers to detect threats and dispense suitable decoys in pre-programmed manner for self-protection.



## Key products

## 2-D appearance

### Smart anti-airfield weapon (SAAW):

SAAW is a long range (up to 100KMs), standoff, precision air to surface guided bomb. It has been designed by DRDO to destroy enemy airfield assets such as runways, bunkers, and radars with a high accuracy from a standoff distance. It is a cost-effective alternative to missiles, which use propulsion of source aircraft for desired launch speed and offer deep precision for critical infrastructure strikes. It can hit targets around 100kms away keeping the launch aircraft safe. Also, it offers precision of sub-7 meters with GPS and sub-3 meters with seekers. This can be launched from Su-30MKI and Jaguar aircrafts.



### Anti-torpedo decoy launching system:

This is meant to counter the threat posed by active and passive incoming torpedo. This anti-torpedo decoy system is mounted externally on the pressure hull of the submarine and below the submarine superstructure. This is equipped with expandable decoys to simulate as false credible targets and jammers to generate broadband noise in the underwater environment. This aims to distract the incoming torpedo and protect the platform.



### Helina (Dhruvastra):

HELINA is HELIcopter-launched Nag i.e., and it is an evolved version of land-based missile NAG. It is an air to surface missile system which is launched from an advanced light helicopter. The ALH is equipped with two twin launchers, one on either side, carrying a total of eight missiles. Helina is an advanced fire and forget anti-tank guided missile. It is equipped with an imaging infrared seeker for all weather, day, and night operations. It is capable of automatic target detection and tracking, which enables lock on to the target before launch. Once fired from helicopters like ALH, it can engage, and attack targets up to 7km away. Helina variant is mainly used by Indian Army while Dhruvastra is used by Indian Airforce.



### Amogha-III (ATGM):

It is a third-generation fire and forget anti-tank guided missile designed and developed by BDL. It can attack the target in top or direct modes, both up to 2.5km. It is equipped with tandem high explosive anti-tank (HEAT) warhead with penetration more than 65cm beyond explosive reactive armor (ERA). Imaging infrared seeker enables the missile to lock on to the target so that attack has high precision. While Amogha-3 and Helina both are generation three ATGMs, Amogha-3 is man portable and, hence, suitable for infantry and predominantly used by foot soldiers with a shorter range than Helina which is helicopter-borne.



### NAG ATGM:

NAG is a third-generation fire and forget anti-tank guided missile developed by DRDO. It is designed to destroy modern tanks and armored vehicles. It is equipped with imaging infrared guidance (IIR) and a tandem explosive warhead for attacking the target with precision. Its top attack capability makes it a lethal weapon for Indian armed forces. Its maximum range is 4km. Its helicopter launched versions are called Helina (deployed by Indian Army) and Dhruvastra (deployed by Indian Airforce).



## Key products

## 2-D appearance

### INVAR ATGM:

The INVAR ATGM is a laser-guided mechanized infantry weapon with tandem warheads fired from the main gun barrel of T90 tank to destroy armored vehicles equipped with explosive reactive armor (ERA). It offers long range precision strikes against stationary as well as moving targets. It is electronic jamming resistant, lethal weapon with a range up to 5km. This has been designed by Russia and produced by BDL in India under license.



### Milan-2T ATGM:

It is a man portable second generation ATGM used by infantry to destroy tanks fitted with explosive reactive armor (ERA). It can destroy both moving and stationary targets. It has a length of 112cm and caliber of 115mm with a range up to 1.85km. It can penetrate up to 85cm behind explosive reactive armor (ERA).



### Konkurs-M ATGM:

Just like Milan-2T, Konkurs-M is also a man portable second generation ATGM with tandem HEAT (high explosive anti-tank) warheads. However, it has higher range (up to 4kms) than that of Milan (up to 1.85Kms). Further, the weight of Konkurs-M is 16.5kg, which makes it heavier than Milan-2T (7Kg). Due to this, Konkurs-M offers greater reach and deeper ERA penetration, making it a formidable long-range threat.



### Unified launcher:

The unified launcher is a versatile, all terrain system for aiming, launching, and guiding various anti-tank guided missiles such as Konkurs-M, Milan-2T and Invar. It helps in visual detection and subsequent tracking of a target and automatic determination of the flying missile coordinates. It also helps in carrying out guidance for both stationary and moving targets.



Source: Company, HSIE Research

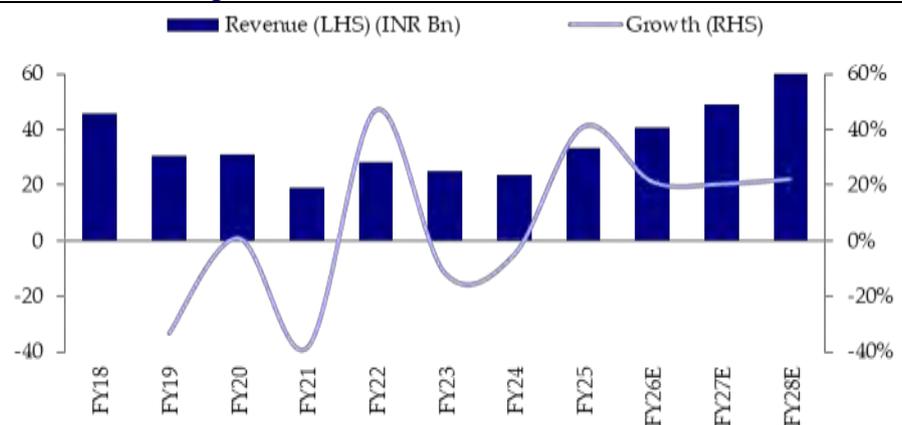
## Financial analysis

### Revenue CAGR at 21.4% over FY25 to FY28

BDL's revenue saw a steady decline from FY17 to FY21, due to execution issues and muted order inflows. The revenue picked up in FY22 only to moderate until FY24. We estimate BDL's revenue to grow at a CAGR of 21.4% over FY25 to FY28. This growth will come on the back of high-value order inflows, execution of Akash-NG, ATGM, and QRSAM and an expected recovery from supply chain issues faced in previous years.

The management has guided to reach an operational revenue of INR 100bn until FY31 (20% CAGR during FY25-FY31E) and closing FY26 at a 20% to 25% revenue growth. We believe the company can achieve this estimated 20% CAGR over the next six years; however, the consistency of execution is debatable, and hence periodic revenue delivery is a key monitorable.

#### Continued revenue growth from FY26 onwards



Source: Company, HSIE Research

### Export potential to reduce domestic dependency

BDL has prioritized the export of weapon systems as one of the primary growth drivers. In FY25, the company recorded an all-time high export turnover of INR 12.7bn, rising significantly from INR1.6bn in FY24. As of FY25-end, the export order book stands at INR 11.7bn, which is ~5% of the company's overall orderbook (INR 228bn). The company aims to diversify revenue streams by increasing exports with a stated target of achieving exports as 25% of annual revenue by FY29. For achieving this milestone, the company is prioritizing exports of high-value systems. Product portfolio for exports includes the below weapons:

- **Anti-Tank Guided Missiles (ATGMs):** Konkurs-M, Milan-2T, and Amogha-III.
- **Surface-to-Air Missiles (SAMs):** Akash Weapon System.
- **Underwater Weapons:** Lightweight Torpedoes (TAL) and Varunastra (Heavyweight Torpedo).
- **Airborne Systems:** Counter Measures Dispensing Systems (CMDS) and Astra Air-to-Air missiles.

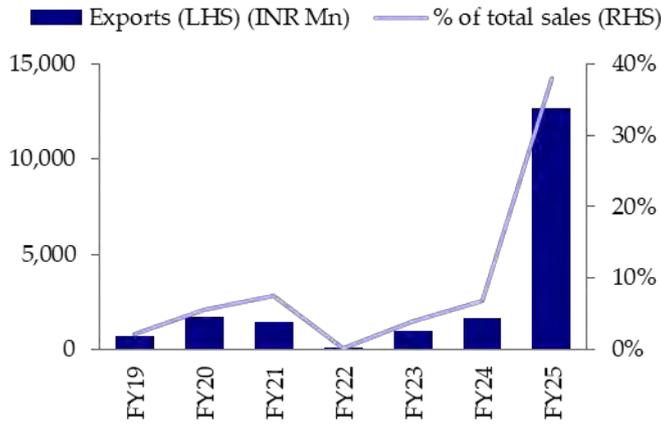
Additionally, there is high interest globally in the Akash Weapon System, which has been cleared for exports to nine countries.

To capture global market share, BDL has established a dedicated Export Cell to formulate country-specific entry strategies. Further, the company is in the process of establishing representative offices in foreign nations. It has appointed channel partners and agents in multiple geographies to facilitate localized business development. Also,

## Bharat Dynamics: Initiating Coverage

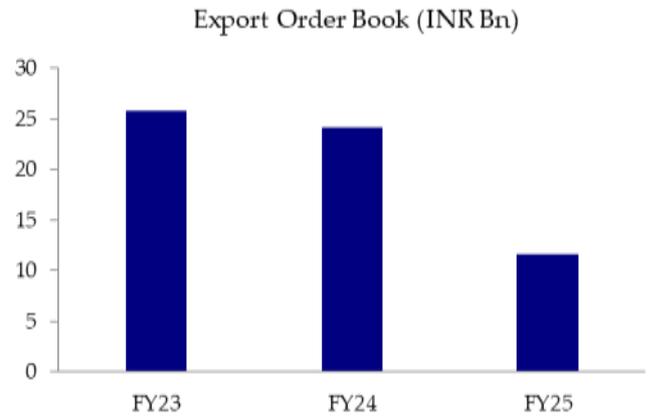
it is collaborating with Indian Embassies and Defence Representatives to engage with foreign Ministries of Defence and Armed Forces. BDL is positioning its products as indigenous, state-of-the-art solutions with competitive pricing and minimal reliance on foreign OEMs. This self-reliance reduces supply chain risks and enhances BDL's reliability as a primary supplier to friendly foreign nations. Moreover, the company is pursuing integration with the global value chains of major international defence OEMs through co-production agreements and strategic joint ventures. The company's strategic move toward building export markets for its products is a key monitorable.

### One off export order lifted FY25 export revenue



Source: Company, HSIE Research

### Diminishing export order book, estimated to pick up

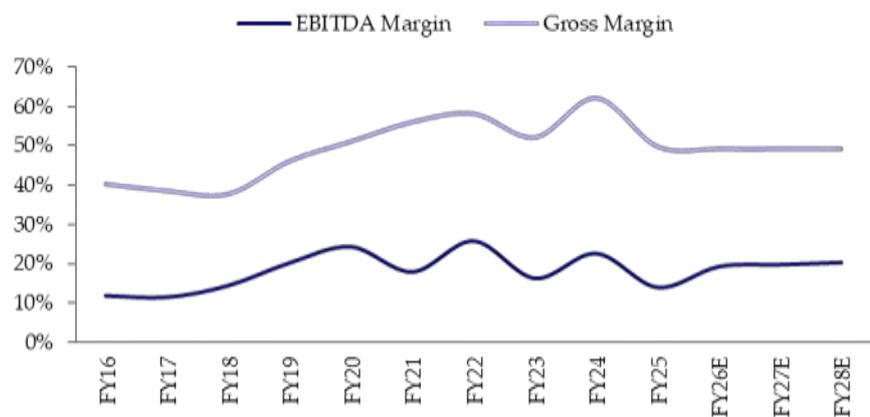


Source: Company, HSIE Research

## Profitability to inch up higher

BDL has significantly improved its EBITDA margin from FY20 owing to higher indigenization and reduction in employee costs. The management has guided a margin of 20-22% over the next few years. The margin is also dependent on the product mix in manufacturing. We estimate margins will reach 21.1% in FY28E from 14.1% in FY25, with an estimated sharp increase to 19.6% in FY26, driven by prudent product mix, improved execution and operating leverage.

### Margin to stabilize at 21% from FY28 onwards

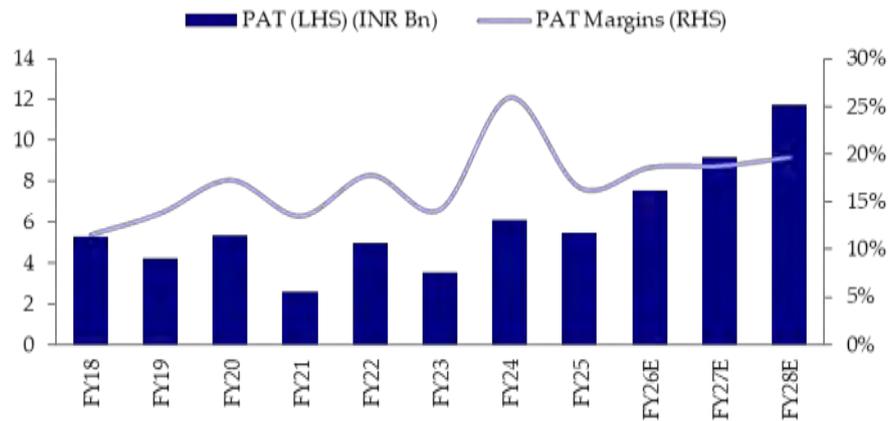


Source: Company, HSIE Research

### Higher PAT margins aided by customer advances

Like other DPSUs, BDL also enjoys higher PAT margins than peers due to periodic receipt of customer advances, which bolster the company's PAT through interest income earned on advances. It is noteworthy that customer advances grew from INR 8.6bn in FY22 to INR 33.7bn in FY25. This has resulted in other income of INR 11.1bn (15.7% of PBT) to INR 35.0 bn in FY25 (46.8% of PBT).

#### PAT margins to increase steadily till FY28E

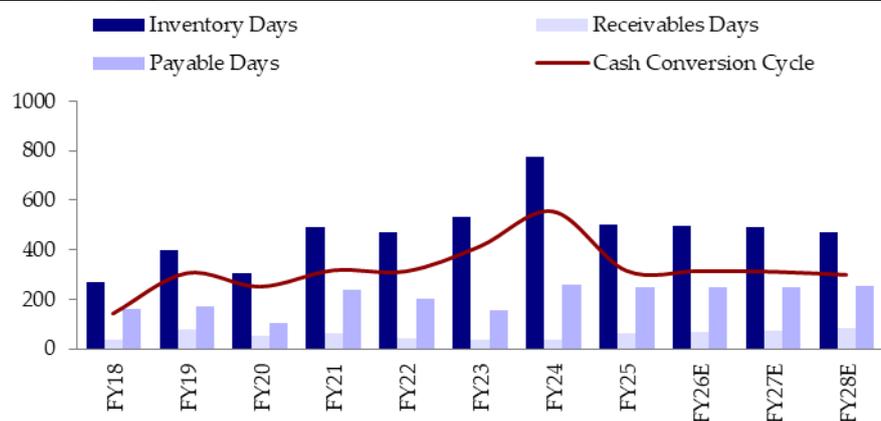


Source: Company, HSIE Research

### Cash conversion cycle to dip marginally

BDL's cash conversion cycle has increased steadily from FY17 to FY24 due to increase in inventory holding as the complete materials required to fulfil orders were experiencing supply chain issues. The CCC fell in FY25 to 315 days from 555 days in FY24, signaling a turnaround; we expect it to dip marginally till FY28E.

#### Inventory days peaked out in FY24

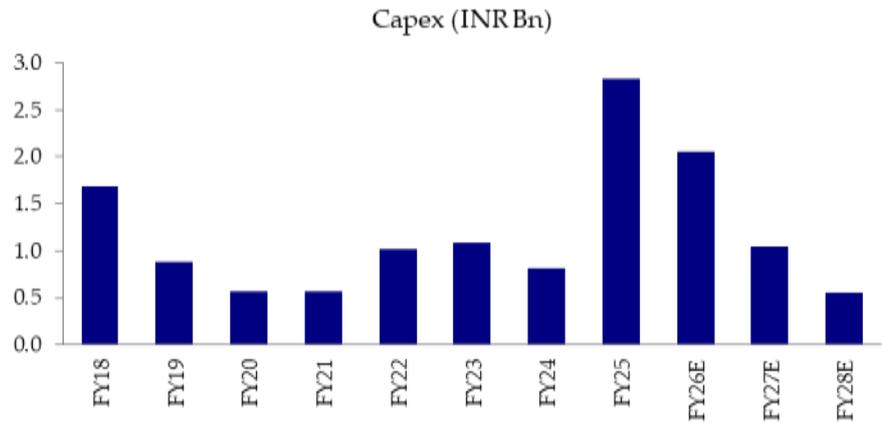


Source: Company, HSIE Research

### Capex to taper down after FY26

BDL spent INR 2.8bn toward capex programs for modernization of plant & machinery and other infrastructure development, including joint development programs. Most of this amount was dedicated to establishing the infrastructure work for establishment of propellant plant at Jhansi, infrastructure work for Phase-II at Ibrahimpatnam. The company has planned a capex of INR 2bn for FY26. It includes construction of Jhansi unit to manufacture SAMs, VSHORD, rockets and propellants for various ATGMs, etc., phase-II infrastructure development at Ibrahimpatnam and ceramic Radome facility at Kanchanbagh. BDL is making efforts to increase the indigenization content in the manufacturing of ATGMs, SAMs, Air to Air Missiles, and Torpedoes.

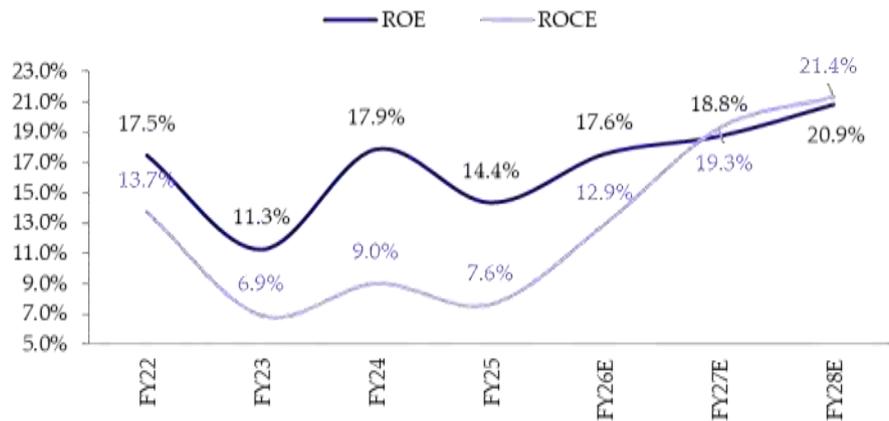
**Planned capex of INR 2,000 mn in FY26**



Source: Company, HSIE Research

**RoE and RoCE:** We estimate return ratios to improve at a steady pace until FY28E.

**RoE & RoCE expected to rise in near term**

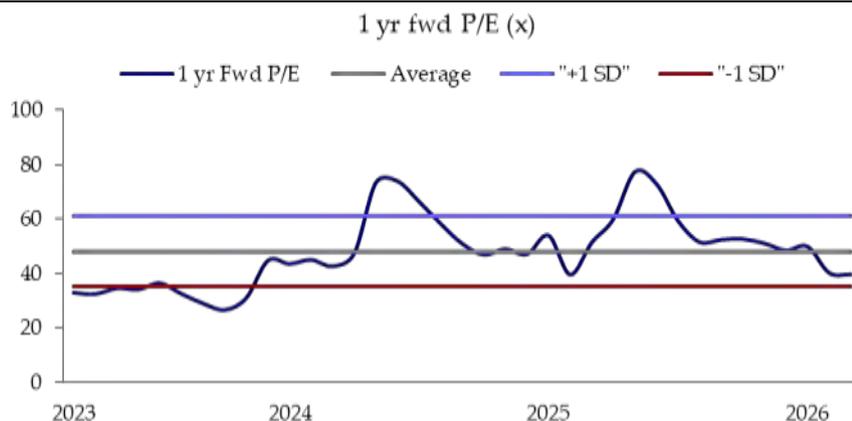


Source: Company, HSIE Research

### View and valuation

BDL occupies a specialized niche within the Indian defence sector as the primary manufacturer of guided missile systems. Analysis of the company's current financial position and operational history reveals a divergence between its order backlog and its realized output.

While we align with BDL's strategic relevance in India's defence ecosystem and its strong order pipeline, we believe the current stock valuation is elevated vis-à-vis its execution pace. We would monitor the pace of execution before turning constructive on the stock. We initiate coverage on the stock with a REDUCE rating, ascribing a multiple of 35x on its FY28E EPS and arriving at a target price of Rs. 1,120.



Source: HSIE Research

## Key risks and concerns

### Downside risks:

- **Budgetary allocation and revenue volatility:** Any decline in defence budget allocation by government of India may result in subdued order flows or cash flow receipts for BDL. This risk hasn't materialized so far as central government has been allocating adequate capital for defence sector over the years. Assuming there is any slowdown in budget allocations in future or cash flows are delayed, it would have the potential to defer contract finalization for key programs such as VSHORAD, QRSAM, and Akash NG. This risk of execution delay could create volatility in the company's revenue profile. Given the strategic nature of the defence contracts and rising geopolitical unrest, we believe defence allocations by the central government will remain robust.
- **Execution delay:** The company has been successful in securing large orders periodically which reflects in its book to bill ratio being above seven consistently since FY23. Despite this, it is unable to report any significant revenue growth in this period due to slow execution. We believe it needs to ramp up execution to keep pace with the rapid growth of the defence ecosystem in India. Slow execution of existing projects at hand could adversely impact future project inflows.
- **Technological dependency and innovation constraints:** BDL's operational model maintains a heavy reliance on DRDO and international OEMs for core technology transfers. This dependency potentially could keep future order flows volatile and impact margins adversely. As BDL is progressively investing in R&D, we believe this dependency will reduce in the medium term.

### Upside risks:

- **Acceleration of strategic procurement timelines:** The current valuation assumes the finalization of the QRSAM and Project Kusha contracts by FY27 and FY29, respectively. Any advancement in the procurement cycle for these high-value strategic systems would serve as a significant growth catalyst for the company. This has potential to front-load order book growth and improve long-term revenue visibility ahead of the estimates.

## Company background

- Bharat Dynamics Ltd (BDL) is government of India enterprise under the ministry of defence. It was established in 1970 in Hyderabad. It was conferred the status of a “Mini Ratna” company by the Indian government in 2000.
- BDL works in collaboration with DRDO and foreign OEMs for manufacturing and supplying of various missiles and allied equipment to the Indian armed forces.
- BDL was chosen as the prime production agency for the ambitious government-led initiative in 1983 “Integrated Guided Missile Development Program” under Dr APJ Abdul Kalam. This project led to achieving self-sufficiency in missile technology, which led to the creation of vital missiles of India namely Prithvi, Akash, Trishul, Nag and Agni. This project triggered the recognition of BDL as a prominent defence solutions provider.
- It has graduated from being a missile manufacturer to a weapon system integrator and complete defence solutions provider for the Indian armed forces. It has four manufacturing units, three in Telangana state (Hyderabad, Bhanur, and Ibrahimpatnam) and one in Andhra Pradesh (Visakhapatnam). Further, BDL is planning to set up another manufacturing unit in Amravati (Maharashtra) as a part of its expansion plan. The company is expected to produce very short-range air defence system (VSHORAD) in this planned new facility. Additionally, it is constructing a facility for missile propulsion system in Jhansi.
- With support of DRDO, BDL has indigenously designed and developed several missiles and underwater weapons. Starting from anti-tank guided missiles (ATGM), the company has now become a key producer of surface to air missiles, air to air missiles, underwater weapon systems and associated equipment. Some of the key products are Akash weapon systems (surface to air missile), heavy weight torpedoes, and light weight torpedoes.
- The company’s core business areas include missiles, launchers, ground equipment, underwater weapons and decoys, airborne counter measures, weapon system integration, refurbishment/life extension of missiles, and integration of airborne system with platforms.

## Annexure I: Management Personnel

Name (designation)	Description
Commodore A. Madhavarao (Retd.) (Chairman and Managing Director)	<ul style="list-style-type: none"> <li>➤ He holds a B. Tech in Electrical Engineering, an ME in Electronics &amp; Telecommunication, an MSc in Defence Studies, an MBA in Finance, and a Master of Management Studies. He joined BDL in March 2020 after serving in the Indian Navy for over 30 years.</li> <li>➤ Appointed as CMD in July 2023, he directs BDL's corporate strategy and "Make-in-India" initiatives, having previously held key leadership roles as Director (Technical) and Executive Director of the Kanchan Bagh Unit.</li> <li>➤ He played a critical role in the induction of the nuclear submarine INS Chakra and spearheaded BDL's record FY25 export performance, which reached an all-time high of INR 12.7 bn.</li> </ul>
Shri U Raja Babu (Director general Missiles & Strategic Systems)	<ul style="list-style-type: none"> <li>➤ He is a Graduate in Mechanical Engineering from Andhra University, holds a master's degree from IIT Kharagpur, and an MBA from JNTU. He began his career with the Indian Air Force in 1988 before transitioning to DRDO in 1995, where he has served for over 30 years.</li> <li>➤ As Director General (Missiles &amp; Strategic Systems) and a Government Nominee Director on the BDL Board since July 2023, he oversees the design and development of advanced missile avionics for tactical, strategic, and cruise missile systems.</li> <li>➤ He was the primary architect and Program Director for "Mission Shakti," India's first successful Anti-Satellite (A-SAT) Missile Test, an achievement that earned him the Path-breaking Research &amp; Outstanding Technology Development Award.</li> </ul>
Shri Amit Satija (Joint Secretary (DIP):	<ul style="list-style-type: none"> <li>➤ He is an IAS officer of the 2008 batch (AGMUT cadre), holding a bachelor's degree in economics and a Master of Management Studies (MMS) from the Jamnalal Bajaj Institute of Management Studies (JBIMS), Mumbai.</li> <li>➤ Appointed as a Government Nominee Director on the BDL Board in August 2024, he serves as Joint Secretary (Defence Industries Promotion) within the Department of Defence Production, Ministry of Defence.</li> <li>➤ He oversees the critical iDEX (Innovations for Defence Excellence) initiative and the Srijan Portal, spearheading the indigenization of over 1,100 imported items and fostering a startup ecosystem to develop niche defence technologies.</li> </ul>
Shri P V Raja Ram (Director Production):	<ul style="list-style-type: none"> <li>➤ He holds a bachelor's degree in mechanical engineering from Osmania University. He joined BDL in 1988 and since then, he has served in various leadership capacities, including Executive Director of the Kanchan Bagh Unit.</li> <li>➤ Appointed as Director (Production) in June 2023, he manages the manufacturing operations across BDL's units, focusing on the production of Surface-to-Air Missiles (SAMs), Anti-Tank Guided Missiles (ATGMs), and Underwater Weapons.</li> <li>➤ He played a pivotal role in the successful production and supply of the Akash Weapon Systems (Army and Air Force versions) and spearheaded the implementation of Industry 4.0 practices in the plants to enhance their manufacturing efficiency and output quality.</li> </ul>

Source: Company, HSIE Research

## P&L (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>Net Revenues</b>	<b>19,138</b>	<b>28,174</b>	<b>24,894</b>	<b>23,693</b>	<b>33,451</b>	<b>40,609</b>	<b>48,958</b>	<b>59,893</b>
Growth (%)		47.2	(11.6)	(4.8)	41.2	21.4	20.6	22.3
COGS	8,412	11,790	11,913	8,973	16,779	19,086	22,717	28,030
Employee Expense	5,011	5,707	5,325	6,000	5,488	6,091	6,854	7,786
Other Expenses	2,268	3,417	3,574	3,354	6,460	7,472	9,547	11,452
<b>EBITDA</b>	<b>3,447</b>	<b>7,261</b>	<b>4,082</b>	<b>5,366</b>	<b>4,724</b>	<b>7,959</b>	<b>9,841</b>	<b>12,625</b>
EBITDA Growth (%)		110.6	(43.8)	31.4	(12.0)	68.5	23.6	28.3
<b>EBITDA Margin (%)</b>	<b>12.2</b>	<b>12.3</b>	<b>10.9</b>	<b>7.6</b>	<b>11.6</b>	<b>12.5</b>	<b>12.8</b>	<b>12.9</b>
Depreciation	945	904	773	670	707	791	868	908
<b>EBIT</b>	<b>2,502</b>	<b>6,357</b>	<b>3,309</b>	<b>4,695</b>	<b>4,017</b>	<b>7,168</b>	<b>8,972</b>	<b>11,718</b>
Other Income (Including EO Items)	946	776	1,554	3,618	3,504	2,905	3,264	3,973
Interest	39	34	45	31	33	32	31	30
<b>PBT</b>	<b>3,409</b>	<b>7,099</b>	<b>4,818</b>	<b>8,282</b>	<b>7,488</b>	<b>10,041</b>	<b>12,205</b>	<b>15,661</b>
Total Tax	831	2,100	1,296	2,155	1,991	2,510	3,051	3,915
<b>RPAT</b>	<b>2,578</b>	<b>4,999</b>	<b>3,522</b>	<b>6,127</b>	<b>5,496</b>	<b>7,531</b>	<b>9,154</b>	<b>11,745</b>
Exceptional Gain/(loss)	-	-	-	-	-	-	-	-
<b>Adjusted PAT</b>	<b>2,578</b>	<b>4,999</b>	<b>3,522</b>	<b>6,127</b>	<b>5,496</b>	<b>7,531</b>	<b>9,154</b>	<b>11,745</b>
APAT Growth (%)		93.9	(29.6)	74.0	(10.3)	37.0	21.6	28.3
<b>Adjusted EPS (Rs)</b>	<b>14.1</b>	<b>27.3</b>	<b>9.6</b>	<b>16.7</b>	<b>15.0</b>	<b>20.5</b>	<b>25.0</b>	<b>32.0</b>
EPS Growth (%)		94.0	(64.8)	74.0	(10.3)	37.1	21.6	28.3

## Balance Sheet (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>SOURCES OF FUNDS</b>								
Share Capital - Equity	1,833	1,833	1,833	1,833	1,833	1,833	1,833	1,833
Reserves	25,015	28,473	30,282	34,535	38,257	43,679	50,270	58,726
<b>Total Shareholders' Funds</b>	<b>26,847</b>	<b>30,306</b>	<b>32,115</b>	<b>36,368</b>	<b>40,090</b>	<b>45,512</b>	<b>52,103</b>	<b>60,559</b>
Long Term Debt	-	-	-	-	-	-	-	-
Short Term Debt	-	-	-	-	-	-	-	-
<b>Total Debt</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Net Deferred Taxes</b>	<b>(477)</b>	<b>(571)</b>	<b>(564)</b>	<b>(707)</b>	<b>(1,227)</b>	<b>(1,227)</b>	<b>(1,227)</b>	<b>(1,227)</b>
<b>Other Non-current Liabilities &amp; Provns</b>	<b>7,560</b>	<b>9,523</b>	<b>32,550</b>	<b>36,975</b>	<b>33,734</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>TOTAL SOURCES OF FUNDS</b>	<b>33,931</b>	<b>39,257</b>	<b>64,100</b>	<b>72,636</b>	<b>72,596</b>	<b>44,288</b>	<b>50,878</b>	<b>59,335</b>
<b>APPLICATION OF FUNDS</b>								
Net Block	7,427	7,043	6,463	6,724	6,674	8,030	8,312	8,056
CWIP	215	407	743	729	1,171	1,171	1,171	1,171
Other Non-current Assets	2,508	2,385	2,952	2,851	4,573	2,970	2,870	2,769
<b>Total Non-current Assets</b>	<b>10,150</b>	<b>9,835</b>	<b>10,159</b>	<b>10,303</b>	<b>12,418</b>	<b>12,172</b>	<b>12,354</b>	<b>11,996</b>
Inventories	13,970	16,545	18,224	19,825	26,451	25,884	30,434	36,093
Debtors	3,227	3,042	1,846	3,104	8,264	7,677	9,658	13,291
Other Current Assets	16,183	16,651	17,343	27,176	27,161	24,078	29,028	35,512
<b>Cash &amp; Equivalents</b>	<b>15,610</b>	<b>18,995</b>	<b>38,589</b>	<b>42,285</b>	<b>41,904</b>	<b>43,540</b>	<b>52,459</b>	<b>64,390</b>
<b>Total Current Assets</b>	<b>48,990</b>	<b>55,232</b>	<b>76,001</b>	<b>92,390</b>	<b>1,03,779</b>	<b>1,01,179</b>	<b>1,21,579</b>	<b>1,49,286</b>
Creditors	7,426	5,525	4,644	7,984	15,056	13,104	15,596	19,429
<b>Other Current Liabilities &amp; Provns</b>	<b>17,784</b>	<b>20,286</b>	<b>17,416</b>	<b>22,074</b>	<b>28,546</b>	<b>55,959</b>	<b>67,458</b>	<b>82,518</b>
<b>Total Current Liabilities</b>	<b>25,210</b>	<b>25,811</b>	<b>22,060</b>	<b>30,058</b>	<b>43,602</b>	<b>69,063</b>	<b>83,054</b>	<b>1,01,947</b>
<b>Net Current Assets</b>	<b>23,780</b>	<b>29,422</b>	<b>53,942</b>	<b>62,333</b>	<b>60,177</b>	<b>32,116</b>	<b>38,525</b>	<b>47,339</b>
<b>TOTAL APPLICATION OF FUNDS</b>	<b>33,931</b>	<b>39,257</b>	<b>64,100</b>	<b>72,636</b>	<b>72,596</b>	<b>44,288</b>	<b>50,878</b>	<b>59,335</b>

## CASH FLOW (INR Mn)

Year ending March	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Reported PBT	3,409	7,435	4,818	8,282	7,488	10,041	12,205	15,661
Non-operating & EO Items	(691)	(59)	(1,068)	(3,033)	(821)	(2,905)	(3,264)	(3,973)
Interest Expenses	39	34	45	31	33	32	31	30
Depreciation	945	904	773	670	707	791	868	908
Working Capital Change	7,756	(983)	18,915	(274)	(3,701)	(2,527)	2,510	3,116
Tax Paid	(778)	(2,034)	(2,181)	(1,560)	(2,031)	(2,510)	(3,051)	(3,915)
<b>OPERATING CASH FLOW ( a )</b>	<b>10,680</b>	<b>5,297</b>	<b>21,303</b>	<b>4,117</b>	<b>1,674</b>	<b>2,922</b>	<b>9,299</b>	<b>11,826</b>
Capex	(566)	(1,020)	(1,083)	(809)	(2,827)	(2,050)	(1,050)	(550)
Free Cash Flow (FCF)	10,114	4,276	20,220	3,308	(1,154)	872	8,249	11,276
Investments	(7,380)	(5,305)	(11,715)	(8,287)	(4,258)	-	-	-
Non-operating Income	609	595	1,087	1,871	3,014	2,905	3,264	3,973
<b>INVESTING CASH FLOW ( b )</b>	<b>(7,338)</b>	<b>(5,730)</b>	<b>(11,710)</b>	<b>(7,224)</b>	<b>(4,071)</b>	<b>855</b>	<b>2,214</b>	<b>3,423</b>
Debt Issuance/(Repaid)	-	-	-	-	-	-	-	-
FCFE	10,114	4,276	20,220	3,308	(1,154)	872	8,249	11,276
Share Capital Issuance	-	-	-	-	-	-	-	-
Dividend	(1,691)	(1,453)	(1,669)	(1,452)	(2,167)	(2,109)	(2,563)	(3,289)
Others	(36)	(32)	(45)	(32)	(35)	(32)	(31)	(30)
<b>FINANCING CASH FLOW ( c )</b>	<b>(1,726)</b>	<b>(1,485)</b>	<b>(1,714)</b>	<b>(1,484)</b>	<b>(2,202)</b>	<b>(2,141)</b>	<b>(2,594)</b>	<b>(3,319)</b>
<b>NET CASH FLOW (a+b+c)</b>	<b>1,616</b>	<b>(1,919)</b>	<b>7,878</b>	<b>(4,590)</b>	<b>(4,600)</b>	<b>1,636</b>	<b>8,919</b>	<b>11,930</b>
EO Items, Others	-	-	-	-	-	-	-	-
Closing Cash & Equivalents	88	1,771	2,152	881	377	1,668	1,727	2,623

## KEY RATIOS

	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>PROFITABILITY (%)</b>								
GPM	56.0	58.2	52.1	62.1	49.8	53.0	53.6	53.2
EBITDA Margin	18.0	25.8	16.4	22.6	14.1	19.6	20.1	21.1
EBIT Margin	13.1	22.6	13.3	19.8	12.0	17.7	18.3	19.6
APAT Margin	13.5	17.7	14.1	25.9	16.4	18.5	18.7	19.6
RoE		17.5	11.3	17.9	14.4	17.6	18.8	20.9
RoIC (or Core RoCE)		23.2	10.6	12.4	9.7	34.2	(1,614.8)	(264.9)
RoCE		13.7	6.9	9.0	7.6	12.9	19.3	21.4
<b>EFFICIENCY</b>								
Tax Rate (%)	24.4	29.6	26.9	26.0	26.6	25.0	25.0	25.0
Fixed Asset Turnover (x)	1.8	2.6	2.4	2.1	2.8	2.9	3.3	3.9
Inventory (days)	489	472	533	774	503	495	489	470
Debtors (days)	63	41	36	38	62	69	72	81
Other Current Assets (days)	309	216	254	419	296	216	216	216
Payables (days)	236	200	156	257	251	251	251	253
Other Current Liab & Provs (days)	339	263	255	340	311	503	503	503
Cash Conversion Cycle (days)	316	312	413	555	315	313	310	298
Working Capital (days)	285	265	412	634	300	27	24	12
Net D/E (x)	(0.6)	(0.6)	(1.2)	(1.2)	(1.0)	(1.0)	(1.0)	(1.1)
Interest Coverage (x)	63.9	185.6	73.0	151.2	121.4	223.4	288.6	389.4
<b>PER SHARE DATA (Rs)</b>								
EPS	14.1	27.3	9.6	16.7	15.0	20.5	25.0	32.0
CEPS	19.2	32.2	11.7	18.5	16.9	22.7	27.3	34.5
Dividend	9.22	7.93	4.55	3.96	5.91	5.75	6.99	8.97
Book Value	146.5	165.4	87.6	99.2	109.4	124.2	142.1	165.2
<b>VALUATION</b>								
P/E (x)	90.3	46.5	132.1	75.9	84.7	61.8	50.8	39.6
P/BV (x)	8.7	7.7	14.5	12.8	11.6	10.2	8.9	7.7
EV/EBITDA (x)	63.0	29.4	104.5	78.8	89.6	53.0	42.0	31.8
EV/Revenues (x)	11.3	7.6	17.1	17.9	12.7	10.4	8.4	6.7
OCF/EV (%)	4.9	2.5	5.0	1.0	0.4	0.7	2.3	2.9
FCF/EV (%)	4.7	2.0	4.7	0.8	(0.3)	0.2	2.0	2.8
FCFE/Mkt Cap (%)	4.3	1.8	4.3	0.7	(0.2)	0.2	1.8	2.4
Dividend Yield (%)	0.7	0.6	0.4	0.3	0.5	0.5	0.6	0.7

Source: Company, HSIE Research

# Data Patterns (India)

## Capitalizing on defence electronics growth story

Data Patterns (India) Ltd (DPL) operates as a vertically integrated developer and manufacturer of electronic subsystems for the defence and aerospace sectors. Over the past three decades, the company has developed and demonstrated superior design and manufacturing capabilities across radars, avionics, missile systems, electronic warfare, and satellite communications. A core operational strategy involves the use of military-grade Commercial Off-the-shelf (COTS) reusable building blocks, which reduces cost and cycle time of production. This modular backward integrated approach allows them to price the products lower than peers and still make robust profitability. This acts as a technical moat for the company and helps it significantly in winning contracts. By maintaining inhouse control over the full design cycle, the company reduces reliance on imported technology and products, supporting both capital and operational efficiency. This design and production control improves domestic value addition and aligns well with the government's strategy of increasing self-reliance in the sector. Data Patterns is positioned at the forefront for capitalizing the tailwinds offered by the defence electronics sector of India. Accordingly, we initiate coverage with a BUY rating and a target price of INR 3,770, assigning a PE multiple of 55x on FY28E EPS.

- Development to production:** As per management estimates, the total addressable market for all its products is USD 4.7bn by 2030, growing at a 9% CAGR. To capture this growing market, DPL applies a differentiated strategy. It targets DRDO-led development orders expecting them to transition into large production orders. In this manner, it gets an early entry into these projects ensuring to take complete advantage of overall project lifecycle. As the share of production contracts increases and execution picks up, it will reflect in the form of strong revenue growth and rising profitability, aided by operating leverage. Also, having been part of various defence programmes, DPL is making concentrated efforts to transition from a sub systems manufacturer to a full-fledged solution provider.
  - Order book and pipeline:** The company's order book stood at INR 7.4 bn as of Q3FY26 is diversified across production, development, and service segments contributing 36%, 31% and 33% respectively. The company's closing orderbook is estimated to reach INR 13.1bn by FY28 at a CAGR of 21.6% during FY25-28E.
  - Growth through participation in key defence programmes:** DPL participates in various defence programmes of national importance. It is involved as a key supplier of electronic subsystems in the production/upgrades of LCA Tejas Mk1A, AMCA, light utility helicopter (LUH), Dornier, MI-17, Sukhoi-30 MKI, Brahmos missiles, Arudhra & Ashwini radars, and AESA radars. It is also contributing to various electronic warfare programmes of the Indian army, navy, and Airforce apart from strategic ISRO projects such as PSLV and GSLV rockets.
- This participation is expected to ensure the company's long-term growth.
- Financials and valuation:** DPL delivered a 31.8% revenue CAGR over FY22-25. Hereon, we forecast a revenue/EBITDA/PAT CAGR of 22.3%/22.2%/20% over FY25-FY28E, with EBITDA margins at 38.7% in FY28E.

YE March (INR mn)	FY23	FY24	FY25	FY26E	FY27E	FY28E
Net Sales	4,535	5,198	7,084	8,692	10,611	12,964
EBITDA	1,718	2,216	2,750	3,329	4,085	5,017
APAT	1,240	1,817	2,218	2,648	3,171	3,835
Diluted EPS (INR)	23.8	32.5	39.6	47.3	56.6	68.5
P/E (x)	131.4	96.3	78.9	66.1	55.2	45.6
EV/EBITDA (x)	98.7	77.2	63.2	51.8	42.2	34.2
RoCE (%)	13.5	14.2	15.9	16.4	17.1	18.0

Source: Company, HSIE Research

### BUY

CMP (as on 05 Mar 2026)	INR 3,359
Target Price	INR 3,770
NIFTY	24,766

#### KEY STOCK DATA

Bloomberg code	DATAPATT IN
No. of Shares (mn)	56
MCap (INR bn) / (\$ mn)	1882,053
6m avg traded value (INR mn)	1,817
52 Week high / low	INR 3,422/1,373

#### STOCK PERFORMANCE (%)

	3M	6M	12M
Absolute (%)	21.4	35.6	137.4
Relative (%)	28.1	36.5	128.9

#### SHAREHOLDING PATTERN (%)

	Sep-25	Dec-25
Promoters	42.4	42.4
FIs & Local MFs	9.8	10.3
FPIs	11.4	11.5
Public & Others	36.4	35.8
Pledged Shares	0.0	

Source: BSE

Pledged shares as % of total shares

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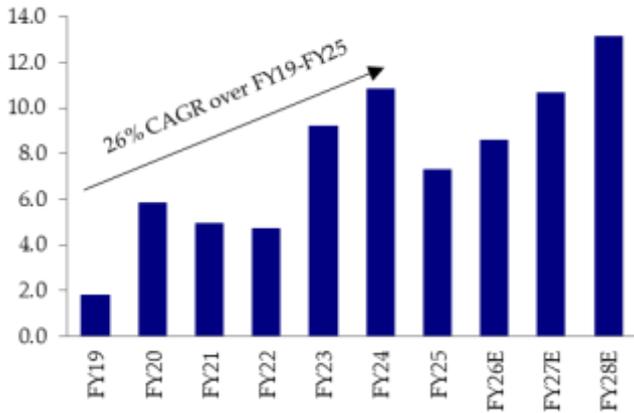
**Aryan Singh Dalal**

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# Data Patterns (India): Initiating Coverage

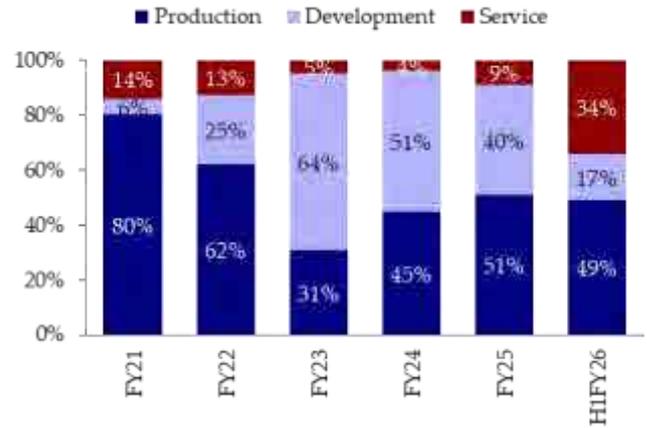
## Focus charts

Orderbook (INR Bn) CAGR of ~18% over FY25-FY28E



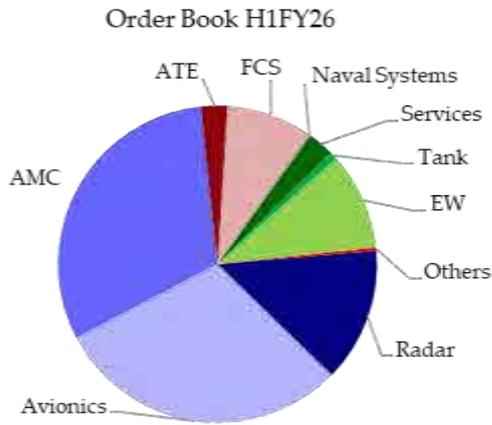
Source: Company, HSIE Research

Developmental order book transitioning to production



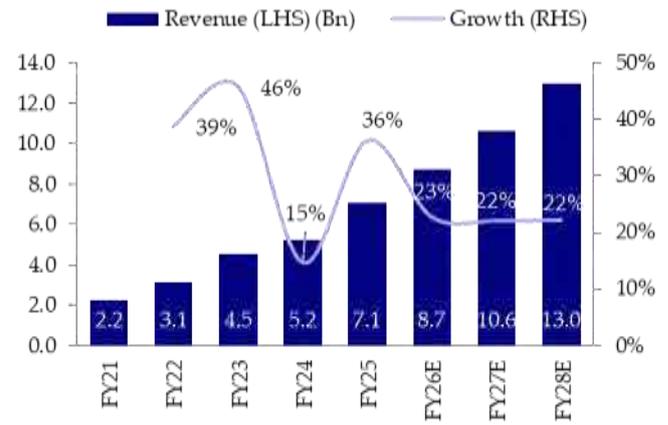
Source: Company, HSIE Research

Avionics, AMC and radars chunky contributors to OB



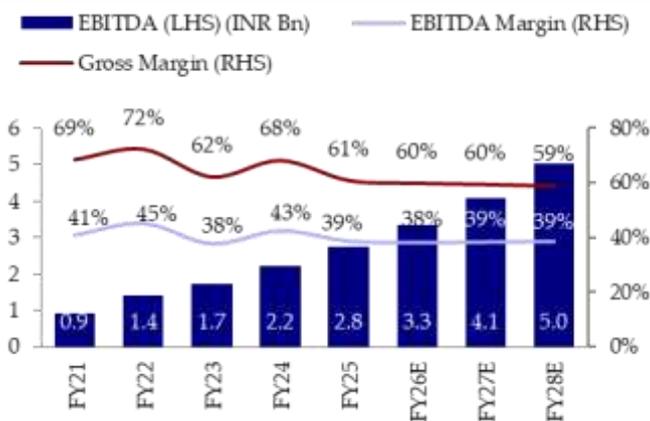
Source: Company, HSIE Research

Revenue to grow at a CAGR of ~22%



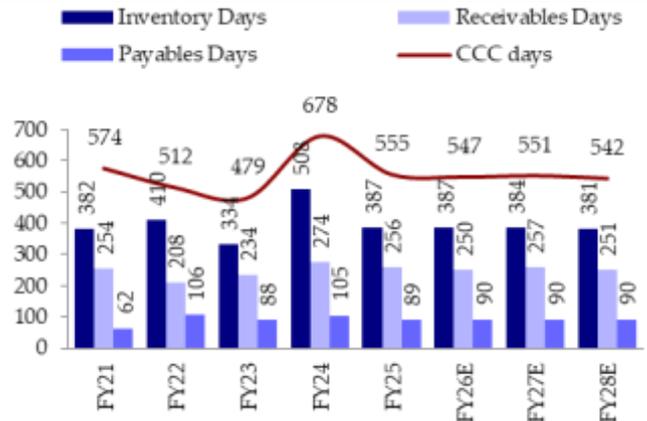
Source: Company, HSIE Research

EBITDA margins to stabilize at ~39% till FY28E



Source: Company, HSIE Research

CCC days to stay range bound till FY28E



Source: Company, HSIE Research

## A development focused orderbook to lead future production order inflow accelerating top line growth

- The orderbook for the company Data Patterns Ltd (DPL) stands at INR 7.4bn at the end of Q3FY26. The order inflow for 9MFY26 was INR 5.9bn. Also, as of Q3FY26, the orderbook (including the negotiated contracts but pending receipts) stood at INR 18.7bn, which is the highest-ever level achieved by the company. This is ~2.6x FY25 revenues, which will enable the company to aim for revenue growth in the coming years.
- The orderbook for the company is diversified across three segments: production, development, and service, with each contributing 49%, 17%, and 34% respectively at the end of H1FY26 and 51%, 40% and 9% respectively at FY25-end.
- As DPL is an IP-driven company, it invests a significant number of resources toward product development. As the company supplies its products mainly to DPSUs, ministry of defence, and ISRO, the customer base is quite concentrated; however, its products portfolio is significantly diversified. Hence, its orderbook is estimated to remain strong in the coming years.
- The management expects an order inflow of ~INR 10bn by the end of FY26. Also, it anticipates an order pipeline of INR 20-30 bn over the next two years, given negotiations of various contracts are at advanced stages.
- The company has been investing heavily toward development of innovative products to address this growing defence electronics market. The company aspires to build full systems and become system integrator from the current level of being a sub system/sub-components provider.
- The company is proactively developing systems well ahead of the formal requirements to ensure that they are ready with the products as and when market demand comes through. This approach of anticipating future defence requirements and building indigenous products in advance makes it a preferred contender for the large orders due to faster expected delivery. While building the orderbook, the company prefers profitability over growth as a strategy, which helps it maintain strong operating margins.
- The company also participates in the Brahmos program and has developed fire control systems and other electronic systems for Brahmos. After the successful implementation of the land-based BrahMos launcher, the company has received an order from BrahMos Aerospace Pvt Ltd to develop flight qualified launchers in the BrahMos System.
- The company has delivered multiple units to equip Su-30 aircraft with the Brahmos missile launch capability. The company has also developed Missile Checkout System that validates the health of the missiles in storage. Recently, DPL developed a seeker for Brahmos missile, and it has been successfully flight tested, this opens an avenue of an order inflow of around 100 systems. The company also services an AMC contract for Brahmos components. This extensive participation in Brahmos missile program by DPL, provides long term visibility of development, production, and service contracts for Brahmos as the Brahmos program expands.

## DPL's USD 4.65bn TAM by 2030 provides long-term visibility

The management guides a total addressable market (TAM) of USD 4.65 bn by 2030, growing at a CAGR of 9% across all its segments and products. Data patterns focus is across three key verticals which are radars, electronic warfare and communication systems and satellites; it also looks at COTS and Avionics as fuel for order inflows.

### Radars

- The company has successfully developed nine precision approach radars. These were delivered to MoD for deployment by the Indian army and navy. The potential opportunity lies in fire control radars, X-band radars, and smaller radars for UAVs. Additionally, radio frequency (RF) and infrared (IR) seekers for missiles are important segments in the domain of radars. As DPL's IP has been developed inhouse, its indigenously produced radars also have export potential due to their cost competitiveness.
- India has ~14,500 KMs of land borders to monitor, of which ~7,000 KMs are critical. This represents a significant opportunity for expansion of radar market, its modernization, and upgrades in the future. The radar market is ~USD 1.2bn currently, which is expected to grow to USD 1.9bn by 2035 at a CAGR of 4.4%, according to the industry reports.
- The company not only works in military radars segment but also in civilian radars for industries such as space, weather, oceanography, etc.

### Electronic warfare

- The company has successfully developed and delivered Communications Intelligence (COMINT) and Electronics Intelligence (ELINT) systems. Furthermore, the company has developed Electronic Support Measures (ESM) receivers from 1MHz to 40GHz. It has made great strides in airborne wide band jammer pods to protect the aircrafts from enemy radars. One such example is Talon shield pod for protecting Su-30 aircraft.
- The India airborne EW market is worth USD 700mn as of 2025, which is expected to grow at ~4.5% CAGR until 2033 to grow to USD 1bn, as per industry reports. This growth is expected to be led by modernization of platforms such as LCA Tejas MK1A, Tejas MK2, AMCA, and upgrade of the Su-30 etc. There is an increased focus on EW systems in all these mentioned platforms due to advancement in functionalities of radars and jammers. Rising usage of electromagnetic spectrum for combat is leading to innovations in the domain of electronic warfare.

### Communication Systems, ATE and Satellites

- The company in communication systems domain has developed systems for land, air, and satellite platforms. They have developed software defined radios (SDR) platform for fighter aircrafts, radio relay for airborne platforms/UAVs and land-based radio relays. The potential opportunity lies in SDR, as they can be integrated seamlessly across multiple platforms and satellites to enhance communication network and reduce information lag. There is a lot of interest and demand for SDR across platforms by the Indian army and Airforce.
- The company has designed and built micro satellites, which have capabilities to design payloads like ESM, imaging (RF and EO/IR), and other remote sensing equipment, etc. There is a large opportunity for defence and commercial satellites in domestic and international markets.
- Development of Automatic Test Equipment (ATE) for critical aerospace requirements has been one of the company's core businesses for over 25 years.

## Data Patterns: Initiating Coverage

Even various departments of the armed forces require these ATE for validation of electronics, missiles, etc. The market size for testing equipment in India in 2018 was USD 46mn; this is expected to grow to USD 80mn by 2030, according to industry reports. This market will further expand as the space market expands.

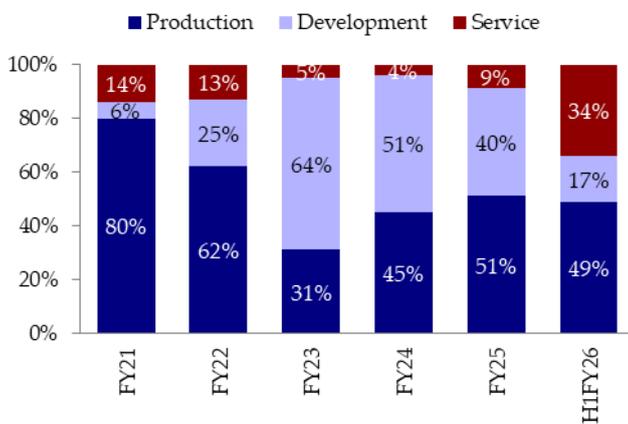
### Avionics

- The company has focused on avionics displays as one of their key technology domains. These displays must withstand airborne standards and there is a premium placed on these displays due to multi-disciplinary technological content. Their products have been used on the LCA, Intermediate Jet Trainers and LUH. The entire Glass Cockpit of the LUH is produced and delivered by the company along with the accompanying data interface unit. The defence electronics avionics market is led by modernization needs in the existing aircrafts and the need of advanced combat capabilities in the new aircraft procurements.

### COTS (commercial off the shelf)

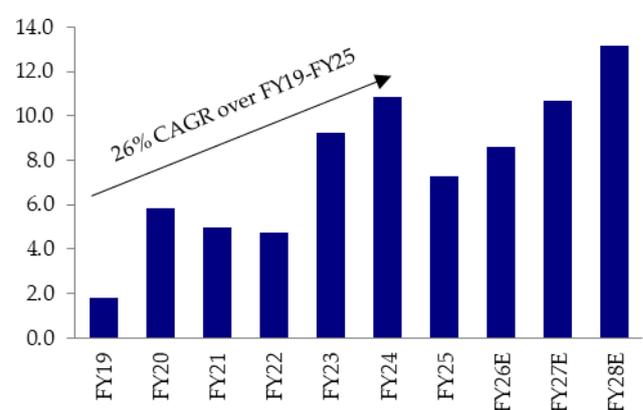
- Military COTS is typically a COTS product developed or customized to respond to specific military requirements. COTS modules are designed as reusable building blocks for building military electronics systems with a quick turnaround time. COTS are now becoming the building blocks of defence equipment replacing bespoke components. The advantages of COTS include faster upgrades, plug, and play feature and lower cost. These products have a favorable cost-to-performance ratio. DPL has an extensive library of 1,000+ reusable building blocks (COTS), which helps it deliver various orders with reduced cycle time and higher profitability.

### Developmental order book transitioning to production



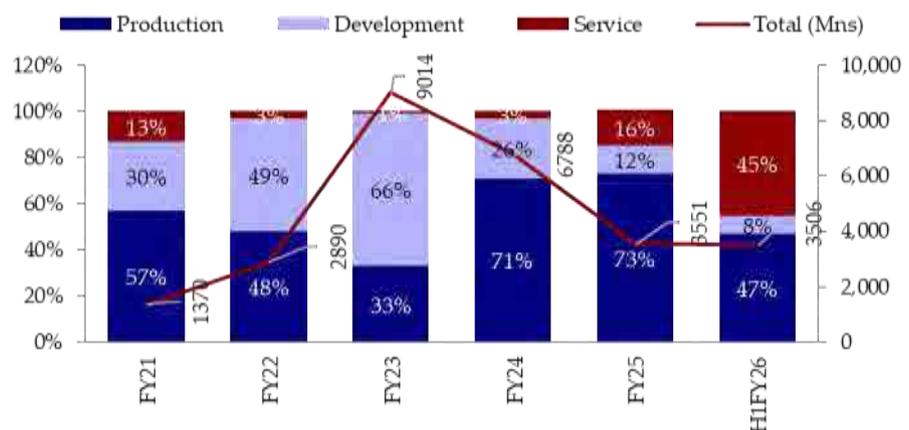
Source: Company, HSIE Research

### Orderbook (INR Bn) CAGR of ~18% over FY25-FY28E



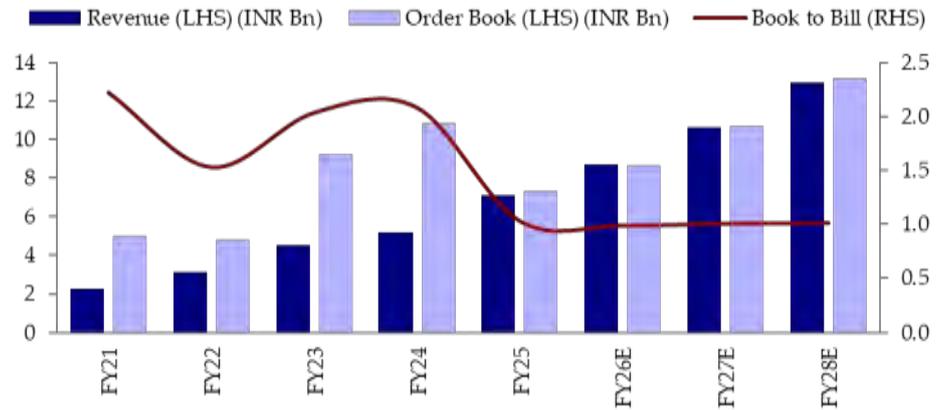
Source: Company, HSIE Research

### Order inflow rising in favor of production



Source: Company, HSIE Research

Revenue growing commensurate to order book



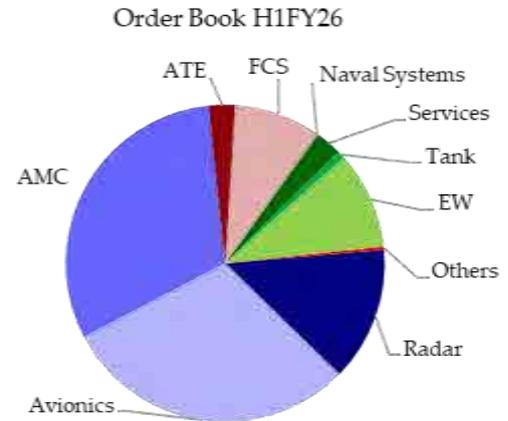
Source: Company, HSIE Research

Orderbook by product mix FY25



Source: Company, HSIE Research

Avionics, AMC and radars chunky contributors to OB



Source: Company, HSIE Research

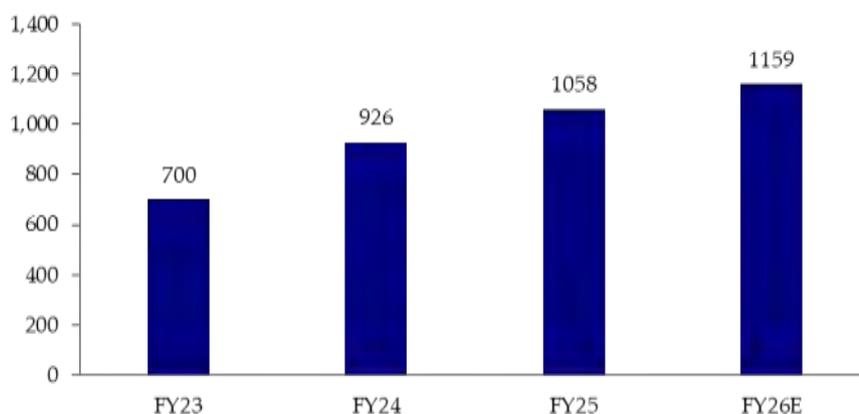
## R&D fuelling developmental orders helping DPL build IP and transition toward full systems provider

DPL invests heavily in R&D through product development, which has provided the company with its inhouse IP. Its innovation focus is visible in the fact that they have invested around INR 1.8bn over the past five years toward R&D-related capex. The company is transitioning to become a full-systems provider from a components manufacturer and to achieve that, they need to further invest towards R&D capex. It will enable them to develop complete products and end to end solutions. In this regard, company has planned to invest INR 1.5bn over the next two years for product development. These developmental products will later bring in revenue growth post trials and qualifications. These development contracts constituted 31% of the closing orderbook and 37% of revenue for 9MFY26. 65-70% of overall engineer base of the company is involved in R&D, and they focus on product development in the areas of radars, electronic warfare, and communications.

Furthermore, the company has signed MoUs in both segment space and defence. Few key MoUs are listed as below:

- Signed a tripartite agreement with Bharat Forge and BEML in Sep'25 to collaborate on India's AMCA fighter Jet program.
- Signed a licensing and ToT agreement with ISRO and IN-SPACe (Indian National Space Promotion and Authorisation Centre) in Oct'23 to gain miniature synthetic aperture radar (SAR) technology, enhancing remote sensing capabilities for high resolution imaging.

### Total Engineer Base on a rising trend



Source: Company, HSIE Research

## Presence in various strategic defence programs positioning DPL for multi-year mandates

- **Light Combat Aircraft (Tejas):** LCA Tejas program is India's most reputed defence project to develop a light multi role, 4.5 generation supersonic fighter jets to replace ageing MIG-21s. It is an indigenous platform with a variant Mk1A featuring AESA radar, electronic warfare suites and indigenously built missiles and other weapons. India aims to acquire ~320 LCAs across variants Mk1, Mk1A, and Mk2. Data Patterns supplies radar warning receivers (RWR), AESA radar hardware/software, avionics, electronic warfare and communication products, identification friend or Foe equipment, flight control radars and automated test equipment to this programme.
- **Advanced Medium Combat Aircraft (AMCA):** AMCA programme of India is a very ambitious project to develop its indigenous fifth generation, twin engine, multi role stealth fighter aircraft jet for Indian Airforce and Navy. Its prototype is being aimed to be rolled out by FY27 and operational clearance is expected by 2032. By 2047, IAF expects to induct ~200 AMCA fighter jets. AMCA is expected to possess capabilities like super-cruise for sustained supersonic speed with stealth features, advanced avionics, and inbuilt weapons. These features will provide competitive edge to the Indian Airforce. Data Patterns aims to provide critical electronic subsystems and systems to AMCA including Large Area Display (LAD), Distributed Aperture System (DAS), avionics, electronic warfare, and radars. LAD is a digitally smart cockpit display integrating sensor, radar and weapon data in a useable form enabling efficient decision making for pilots. LAD facilitates AI-enabled electronic piloting features that provide assistance and act as a virtual co-pilot. Further, DAS is 360 degrees infrared sensor system providing complete situational awareness in a war-like environment.
- **Light Utility Helicopter (LUH):** India's LUH program is a transformational upgrade initiative, led by Hindustan Aeronautics Ltd (HAL) with deliveries expected by March'26. This program aims to replace ageing Chetak/Cheetah with a modern indigenously designed 3-ton class helicopters with glass cockpit and advanced avionics for army and Airforce. This is aimed to serve as a "capability platform" in place of a "survival platform" for the next 3-4 decades. HAL is targeting to replace ~400 Chetak/Cheetahs and scale it further up to 1,000 LUHs in the next two decades. Data Patterns provides key electronic subsystems to LUH such as smart cockpit display system, BLDC motor drivers and actuator controllers (converts electronic commands into mechanical actions), automated test equipment, sensor interfaces, onboard avionics, radar warning receivers and engine fire detection units.
- **Intermediate jet trainer (IJT):** This is a jet aircraft for advanced pilot training after basic training programs. One of the key examples of IJTs is HJT-36 Yashas, developed and built by Hindustan Aeronautics Ltd. It teaches advanced manoeuvres, spin recovery and weapon training (air to air, air to ground). This prepares pilots for fighter jets and aims to replace ageing HJT-16 Kiran. Data Patterns develops and integrates sophisticated avionic systems which as electronic brain of the aircraft manages navigation, communication, and flight management systems, for IJT. Company also supplies glass cockpit displays and various other control, measurement and testing systems, which are critical for smooth functioning and safety of the aircraft.
- **Dornier and MI-17 upgrades:** Dornier aircraft (HAL Do-228) is a twin-engine turboprop (turbine used as a propeller) aircraft built by HAL under license from Dornier GmbH, Germany, for military, coastguard transport, and civil logistics purposes. Further, MI-17 helicopter is an important logistic vehicle deployed by

Indian Airforce which is used for troops/cargo logistics, fire support, surveillance, search and rescue and high-altitude operations in mountains. They operate at nighttime as well. They are instrumental in supporting operations of IAF in Siachen glaciers. There are ~120 Do-228 aircrafts along with ~200 Mi-17 helicopters deployed in the service of military currently. Both these fleets are undergoing significant upgrades indigenously. Do-228 is being upgraded by HAL and Data Patterns is supplying crucial avionics, cockpit displays and maritime patrol radars in this operation. Also, Mi-17 upgrade has been taken up by Bharat Electronics Ltd (BEL). Data Patterns supplies key electronic subsystems for this upgrade operations such as radar warning receivers (RWR), Line Replaceable Units (LRUs), counter measure dispensing systems and missile approach warning systems etc.

- **Sukhoi-30 MKI upgrade:** Sukhoi-30 MKI is an Indian aircraft built by HAL, designed by Russia. It is twin engine, multirole, all weather fighter jet serving under Indian Air Force since 2002. There are approx. 260 Su-30 currently under service in India. Under "Super Sukhoi" program IAF has taken up 84 Su-30 aircrafts for upgradation for integrating advanced indigenous systems for enhancing the capability and increasing the lifespans of the aircrafts. This upgrade program can go up to 200 fighter aircrafts in the subsequent phases. Data Patterns is actively involved in this upgradation program. It has developed and supplied Hawk I AESA radar, radar warning receiver to this program. Additionally, it has supplied launch and fire control system along with missile checkout equipment for Brahmos missile which has been successfully integrated with Su-30 MKI upgraded aircrafts.
- **Brahmos missile program:** Brahmos missile program is a successful joint venture between India's DRDO and Russia's NPOM. It is a supersonic cruise missile capable of being launched from air, sea, land, and submarines. It is combat proven and is being indigenously manufactured and tested in UP and Kerala. Its successful application in operation Sindoor has showcased its reliability and accuracy boosting global confidence. Hence, it has received validations and procurement interests from various countries such as Indonesia, Vietnam, and Philippines. Key contributions of Data Patterns in this program include indigenously built missile checkout equipment ensuring launch readiness of the missile, electronic subsystems such as Fire control systems, launch control systems, and RF seeker guidance systems.
- **Laser-guided bombs (LGBs):** India develops and uses its own laser-guided bombs such as Sudarshan, a DRDO product converting standard bombs into a smart ammunition. Additionally, a DRDO developed guidance kit TARA adds wings and tail fins to unguided bombs and extends its range and precision using electro-optical and infrared guidance. Data Patterns is directly involved in this project and supplies a crucial product laser-guided bomb tester, which is a battery-operated portable system. It verifies pre-flight readiness of the bomb for functionality and guidance.
- **Radar modernization (Arudhra and Ashwini):** These radars are indigenous state of the art radars developed by DRDO and manufactured by BEL. These are part of IAF modernization efforts and improves low altitude air surveillance capabilities. Arudhra is a 4D multi aperture PESA radar (passive electronically scanned array) with 360 degrees rotation capability. It tracks a wide range of aerial targets, including fighter jets up to a range of 400kms. On the other hand, Ashwini is a highly mobile AESA radar (active electronically scanned array) for surveillance of low altitude areas (30m to 15kms) for a range of 150km. This is instrumental for border surveillance. On a comparative basis, AESA is more advanced than PESA as it is capable of superior faster tracking, with multiple simultaneous beams, multi frequency and better jamming resistance capability, but it is more expensive as well. PESA offers single beam and works on single frequency at a time but is

preferred for its cost-effective nature in certain platforms where budget is a constraint. Data Patterns is a key contributor to the modernization program of the above-mentioned radars. Its specific contributions include supply of phased array antenna components for the S-band radar apart from providing subsystems for radar signal processing, transmitters, receivers, and digital conversion modules. Their involvement ensures supplying key subsystems as cheaper but effective import substitutes.

- **Airborne phased array radar:** This program of India is led by DRDO for development and BEL for manufacturing. It aims to build indigenous AESA radar (active electronically scanned array) to be integrated with fighter jets and other larger aircrafts. It expects to enhance surveillance, detection, and electronic warfare capabilities with improved indigenisation. Its key systems include Uttam AESA radar for integration into Tejas Mk1A, Arudhra radar for surveillance and detection, surveillance aircraft AEW&CS (airborne early warning and control) developed by DRDO and Rajendra, a multi-function phased array radar for surface to air missiles systems. Data Patterns has developed and supplied key electronic systems and subsystems to this program. Among the offering, independent radar platforms include HAWK AESA radar series and precision approach radar. Apart from this, key subsystems supplied are airborne central unit for early warning radar, transmit/receive modules (fundamental building blocks of AESA radar), radar signal processors and airborne line replaceable units (LRUs).
- **Precision approach radars (PAR):** India's precision approach radar (PAR) program is an indigenously developed and deployed advanced radar systems for improved flight safety in Indian air force and Indian Navy airfields. This program enables precise landing in poor weather conditions using phased array technologies for accurate vertical/horizontal guidance. The radar guides aircrafts from a distance (~25Kms) and guides the pilot precisely for a touchdown even in bad rainy weather or in emergency situations. PAR is also used by Indian Navy for various vessels. Recent deployments include INS Dega (Visakhapatnam) and INS Utkrosh (Andaman & Nicobar Islands). Data Patterns is a key supplier of complete PAR systems with cutting edge phased array technology, electronic beam steering, installation, integration, and comprehensive support such as training and maintenance.
- **Various electronic warfare programs:** Electronic warfare (EW) is the use of electromagnetic spectrum to gain a military advantage against the enemy forces by disrupting their weapon systems while protecting the friendly systems. Indian EW programmes focus on indigenous, integrated systems and aim for electronic superiority with advanced jamming and surveillance. There are various EW programs running in India including:
  - **Army EW programs:** Programs such as Samyukta and integrated electronic warfare program (IEWP) for intercepting, jamming enemy communications and taking electronic protection measures (EP) to defend enemy's electronic countermeasures (ECM).
  - **Navy EW programs:**
    - **Shakti:** Installed on warships to provide electronic defence against anti-ship missiles.
    - **Nayan:** This is a communication intelligence system (COMINT) for intercepting, analyzing, and recording enemy voice and data signals in high-frequency range.
    - **Tushar:** Shipborne electronic warfare program to defend ships from threats.

- **Sarvadhari:** An airborne system for intercepting and analyzing enemy radio communications developed under Samudrika program of DRDO.
  - **Sarang:** It detects, locates, and analyzes radar and communication emissions, improving situational awareness for a ship in the electronic environment.
  - **Sarakshi:** An airborne electronic support system to detect, intercept, and analyze enemy radar and communications signals for intelligence gathering.
  - **Nikash:** This is an indigenous airborne EW system whose primary function involves intercepting and analyzing enemy signals while protecting friendly forces' communication signals.
- **Air force EW programs:**
- **Airborne self-protection Jammer (ASPJ):** This is an EW system designed to protect military aircrafts from hostile radars and missiles by identifying enemy threats and emitting signals to confuse or disorient their trajectories by creating false targets.
  - **Swayam Raksha Kavach (SRK) Suite:** This is a self-protection Armor for fighter jets providing advanced radar warning, jamming and threat response capability. It detects, analyses, and disrupts enemy electronic systems in the contested space.

**Advanced airborne warning and control system (AWACS) EW:** It combines capabilities of advanced electronic warfare suites along with AESA radars and battle management systems for jamming/deception of enemy signals. This also detects threats like stealth fighter aircrafts from more than a hundred KMs and coordinates air-operations. In effect, it acts as a flying command centre for airborne military operations.

Data Patterns supplies critical electronic warfare systems such as EW suites, jammer pods, spectrum monitoring devices, and direction-finding systems. In addition to this, company offers advanced ultra-high frequency monitoring receivers for wide band searching, monitoring, and pinpointing enemy signals for electronic intelligence (ELINT) and communication intelligence (COMINT). It also provides radar warning receivers to alert pilots of any incoming threat. Among electronic attack and countermeasure devices, it provides ground and air-based jammer systems to neutralise enemy radar communications. Furthermore, among subsystems, it offers signal processing units, radio frequency/microwave modules and automated test equipment.

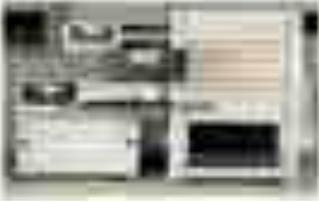
- **Naval vessel upgrades:** India's naval vessel upgrade program is an ambitious indigenous drive which involves massive fleet expansion (aiming for 200 vessels by 2035) with up to 80% domestic content. It aims to equip these ships with combat system, AESA radar, advanced propulsion system, stealth feature, and numerous advanced missiles. Strategically through this program, India wants to shift from primarily coastal defence to projecting power in Indo-pacific zone with reduced foreign dependence. It also aims to counter rising Chinese naval presence in the Indian ocean area. Key contributions of Data Patterns to this naval vessel upgrade program are through radar and electronic warfare systems, navigation systems, cockpit displays, power supply equipment and high-speed processing modules in ruggedised military environment. The key objective is to provide support for detection, targeting and situational awareness.

- **Dharashakti program:** Dharashakti integrated electronic warfare system is an INR 50bn project which is designed for Indian Army and approved by ministry of defence for mass production. It gives army complete command over the electromagnetic spectrum by detecting, intercepting, jamming, and disrupting enemy radar signals while protecting their own communications. It uses electro-optical advanced visual and infrared sensors for surveillance and threat assessment. Data Patterns participates in this program by providing comprehensive radar systems (fire control, X-band, UAV radars) and their core components (signal processors, transmit/receive modules, and antennas). Additionally, it supplies electronic warfare units for airborne/ground platforms and communication systems.
- **ISRO programs (PSLV and GSLV rockets):**
  - The Polar Satellite Launch Vehicle (PSLV) is a third-generation medium lift launch vehicle developed and built by ISRO for launching satellites in sun-synchronous orbits (SSO) at an altitude of 600-900kms. It is primarily used for launching earth observation and remote sensing satellites. Satellites in SSO are above a particular city at same fixed local time every day. Hence, their applications include local monitoring. Also, they are used for monitoring crop health, coastal security, natural calamity, and infrastructure development. Notable missions include Chandrayaan-1 and Mangalyaan-1.
  - The geosynchronous satellite vehicle (GSLV) on the other hand is a fourth generation rocket capable of launching heavier satellites at higher altitudes. It is mainly used for launching communication satellites at altitudes of ~36,000kms to enable deep space research. Communication, broadcasting, weather forecasting and navigation services are key applications of satellites launched through GSLV rockets. Notable missions include Chandrayaan-2 & 3.

Data Patterns supplies critical electronic systems such as testing infrastructure and tracking solutions to PSLV and GSLV. It develops complex test benches and automated test equipment to validate functionality and performance of all electronic systems of PSLV and GSLV. It also provides tracking radar to ISRO for monitoring precise flight trajectory of both these rockets during their launch. Its other contributions include subsystems such as flight control electronics, cable harness subsystems, control units and inertial sensors which are part of the launch vehicle system.

### Products categories

DPL operates in high-growth categories of defence and space electronics. Few of the notable verticals are:

Product categories	Key products	2-D appearance
Radars	Surveillance radars, weather radars, fire control radars	
Electronic Warfare	Communication intelligence (COMINT) and electronic intelligence (ELINT), Jammers, Airborne EW suites consisting of Radar warner and Jammer pods.	
Commercial off the Shelves (COTS)	COTS modules designed and manufactured as reusable building blocks for producing military electronics systems in a time efficient manner	
Avionics	Used in Light combat aircraft (LCA), intermediate Jet trainers and Light Utility Helicopters (LUH)	
Communication ATE and Satellites	Underwater electronics and other communication systems used by armed forces, Automated test equipment Small and Nano satellites	

Source: Company, HSIE Research

## Data Patterns: Initiating Coverage

Within these categories, DPL designs, develops, and manufactures a wide range of products which find their application in critical domains of military and space. Few of these key products are highlighted below:

Key products	2-D appearance
<p><b>Commercial off the shelf (COTS) boards:</b> DPL designs COTS module products which are used in system level products such as rugged military electronics and automatic test equipment. Use of these modular products ensures very fast turnaround for final delivery of system level products, enabling a shorter time to market for end customers. Additionally, it reduces dependence on imported products. Examples: VPX multicore single board computer, Narrow band receiver, oscillator, and frequency synthesizer etc.</p>	
<p><b>Brahmos Checkout:</b> Company designed and built Brahmos missile checkout which validates the performance of the missile. It also tests the articles on the field after its deployment in the war zone, thus ensuring its foolproof launch on demand.</p>	
<p><b>Laser Guided Bomb Tester:</b> This portable battery-operated laser guided bob system enables a pre-flight test of laser guided bombs. It is designed to offer required guidance and portability through a built-in battery pack and sunlight readable displays.</p>	
<p><b>Infrared guided missile tester:</b> This is a portable infrared target simulator used to perform pre-flight serviceability check on Infrared waves guided missiles without removing them from the launch platform.</p>	
<p><b>Identify friend or foe (IFF):</b> This combat and air traffic control identification system that uses radars to electronically distinguish friendly forces from the hostile ones. DPL makes compatible products for airborne and ground applications both and includes subsystems such as transponders and interrogators etc.</p>	
<p><b>Nano Satellite:</b> DPL designs, develops, and manufactures off-the shelf products for Nano satellite bus suitable for Low earth orbit (LEO) satellite missions.</p>	

## Data Patterns: Initiating Coverage

### Key products

### 2-D appearance

**Radars and radar subsystems:** This family of various radars and subsystems include airborne central unit for an early warning radar, tracking radars, phased array antenna components and coastal surveillance radars etc. Key radars and subsystems produced are:

Wind profile radar

Precision approach radar

Doppler weather radar

S-band phased array antenna for low level tracking radar  
"Ashwini"



**Navigation system:** Company had designed and manufactured Fiber optic Gyro based inertial measurement units for underwater applications. This is used by Naval operations units.



**Data Buoy CPU:** This is a central processing unit that manages sensor data received from a Buoy floating in open water such as weather, wave, and water quality. Additionally, it transmits real time data to a remote server for processing. This also manages power supply to the Buoy. Such buoys aid in ship navigation and weather forecasting.



**Decoy launch control panel:** It is a system that allows military ships and submarines to remotely deploy decoys to defend against incoming threats like torpedoes or anti-ship missiles.



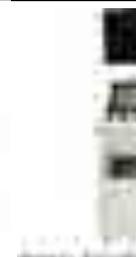
**Torpedo 4 axis actuator controller:** It is a niche electronic system that manages the velocity and steering of a Torpedo.



**Nirbhay UAV Actuator Controller:** This is a critical component in the Nirbhay long range cruise missile's flight control system. Its main role is to translate electrical control signals from the missile's guidance computer into precise mechanical movements of the missile.



**Consoles:** DPL designs and manufactures various consoles as per the system level requirements. Consoles are essentially display and control units that ensure smooth transmission of information from a radar system to an operator. Company manufactures a variety of consoles such as Naval Console for missiles and torpedoes launch, Radar operation console for tracking radars, console for helicopters and Console for land-based missile launchers.



## Data Patterns: Initiating Coverage

### Key products

### 2-D appearance

**Next generation software defined radios for fighter aircrafts:** This is a highly flexible communication system used in fighter aircrafts. It uses software (in place of conventional hardware) to perform functions. Additionally, it allows for on-the-fly reconfigurations to handle multiple frequencies and enables versatile communications like voice, data, and videos. Its interoperability with legacy systems makes it suitable for modern electronically networked warfare.



**Launch and fire control system (FCS):** This is an integrated system that includes the launcher and a fire control system to accurately launch and guide missiles. FCS uses radars, sensors, and computers to track targets, compute interception coordinates for a successful engagement. It can be ground, ship or air launched.



**Waveform generator:** This is an electronic test instrument which is used to create a variety of defined electrical signals or waveforms. These signals serve as critical inputs or stimulating triggers for testing, designing, troubleshooting, and repairing of electronic devices and circuits.



**Light utility helicopter Cockpit display:** This display system is a modern glass cockpit with integrated digital screens providing pilots a rich pool of flight related critical information, navigation updates, engine performance, and system status updates on a single interface.



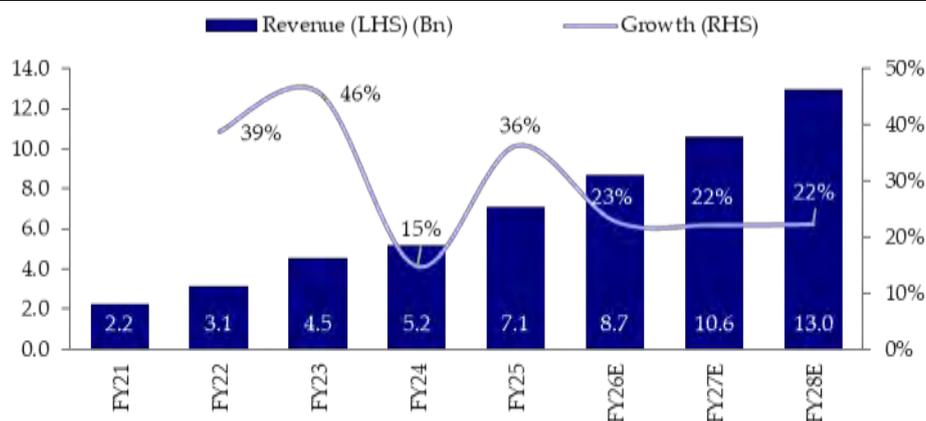
Source: Company, HSIE Research

## Financial performance

### Revenue to grow at a CAGR of 22.3% till FY28

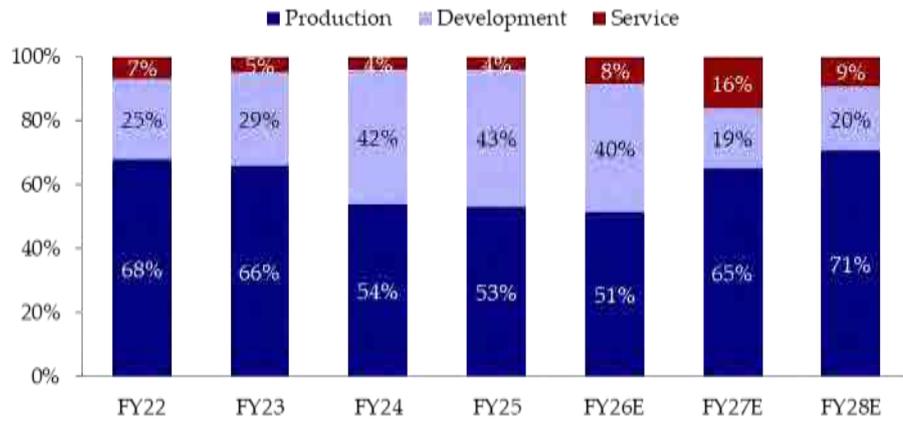
- Data Patterns Ltd (DPL) closed FY25 with a revenue of INR 7.1 bn at a growth of 36% over FY24. This performance was on a soft base of FY24 when company had delivered a YoY growth of 14.6%. We estimate a revenue CAGR of 22.3% during FY25-28E balanced across the years.
- The company derives its majority of its revenue from DRDO. In FY25, DRDO contributed 41% towards aggregate revenue while DPSUs and exports accounted for 31% and 15% respectively. Key products include radar and electronic warfare which accounted for 69% of revenue in FY25 and ~82% in H1FY26.
- The company has an extensive product portfolio under development stage with DRDO, which post completion, field trials and qualification provides a long runway for production order inflows in the medium term. We estimate share of production orders to grow from 53% in FY25 to 71% in FY28E. This will also be margin accretive for the company.
- The company's IP driven approach distinguishes it from its competitors. DPL has an extensive library of 1000+ reusable building blocks (COTS), which helps it deliver various orders with reduced cycle time, and higher profitability through backward integration. Advantages of COTS are faster upgrades, plug, and play feature and lower cost. Hence, company can bid lower than competitors for the same product and still achieve higher profitability. It is also able to deliver products faster than the competitors.
- DPL is also actively building a team to market its products in the export markets. Exports accounted for 15% of overall revenue in FY25. Company aims to increase this share by building products as per the technology requirements of the overseas markets.
- Currently approved platforms such as the Tejas MK1A, Su-30 upgrade, QRSAM, upgradation of radars, etc. provide visibility in the short term for the company to receive incremental orders.
- Analysing all the above growth levers, we pencil in a growth of 23%/22%/22% for FY26/FY27/FY28. Our estimates are lower than the top end of management guidance (20-25%) for FY27 and FY28, as we aim to monitor the materialisation of large ticket orders, before getting incrementally bullish.

### Revenue to grow at a CAGR of ~22%



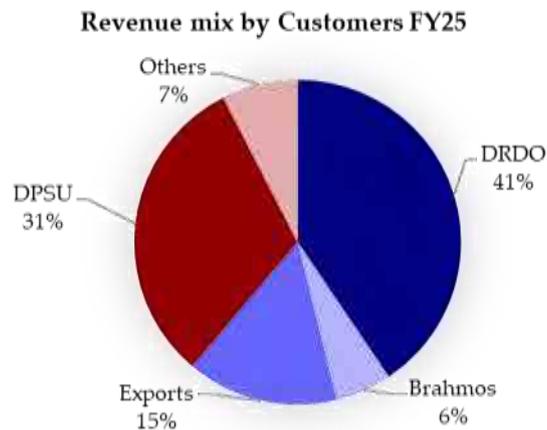
Source: Company, HSIE Research

Production to contribute the highest to revenue among all segments



Source: Company, HSIE Research

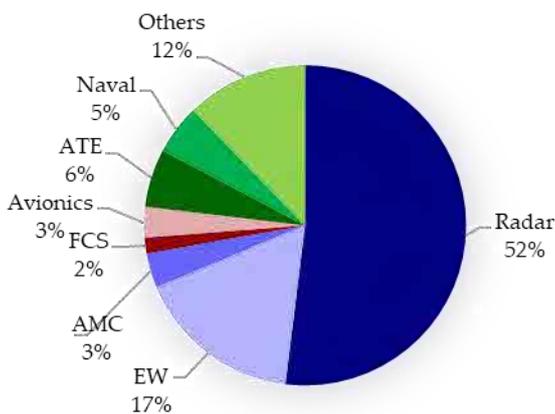
Revenue mix by Customers FY25



Source: Company, HSIE Research

Radars and EW contributing c.70% to revenue

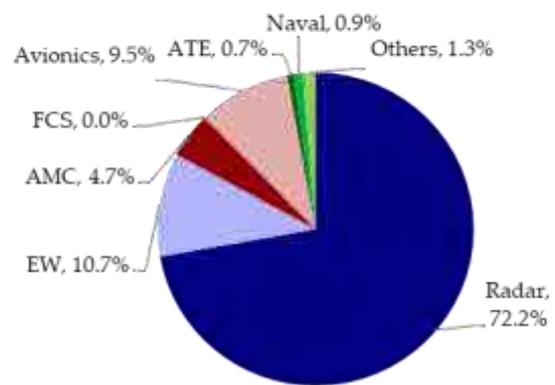
Revenue Mix by Products FY25



Source: Company, HSIE Research

Radars and EW contributing c.83% to revenue

Revenue Mix by Product H1FY26

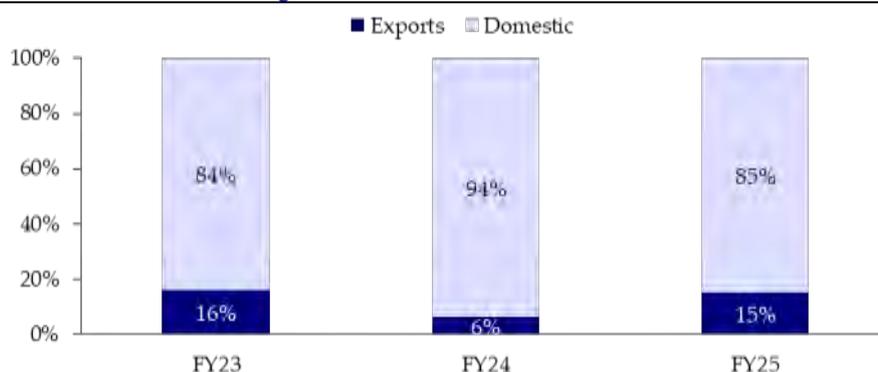


Source: Company, HSIE Research

### Exports potential

- Exports constituted 15% of revenue in FY25. DPL sees ample opportunity to service the global market and focuses on developing international standard products.
- To cater to the global demand of defence products, DPL plans to set up a marketing team focused on international clients. The export order inflows in FY24 and FY25 were INR 1.1bn and INR 687mn respectively. The export order backlog stood at INR 782mn at the end on H1FY26. Recently, the transportable precision approach radar (TPAR) exported to a European customer has successfully received client acceptance, and the company expects positive traction from it, going forward. The major geographies that DPL exports to remain the Asia Pacific and Southeast Asia.

#### Exports still at nascent stage

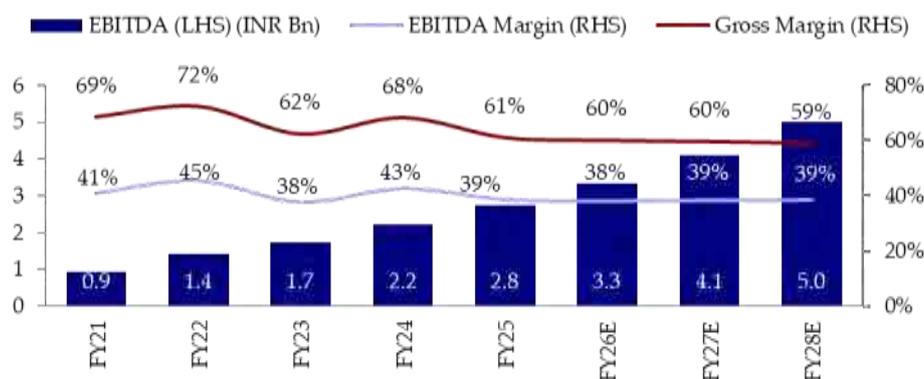


Source: Company, HSIE Research

### Profitability to increase in the long term

- DPL commands industry-leading EBITDA margin due to its innovation driven approach and an inhouse IP-led product portfolio. COTS-led backward integration enables it to command healthy pricing power and register strong profitability. We believe that with increasing proportion of production orders (commanding higher margins than development orders), and increasing scale, EBITDA margin of the company will remain sustainably high in 38-39% zone. Accordingly, we pencil in EBITDA margin at 38.3%/38.5%/38.7% for FY26E/FY27E/FY28E. This translates into an EBITDA CAGR of 22.2% during FY25-28E.

#### EBITDA margins to stabilize at ~39% till FY28E

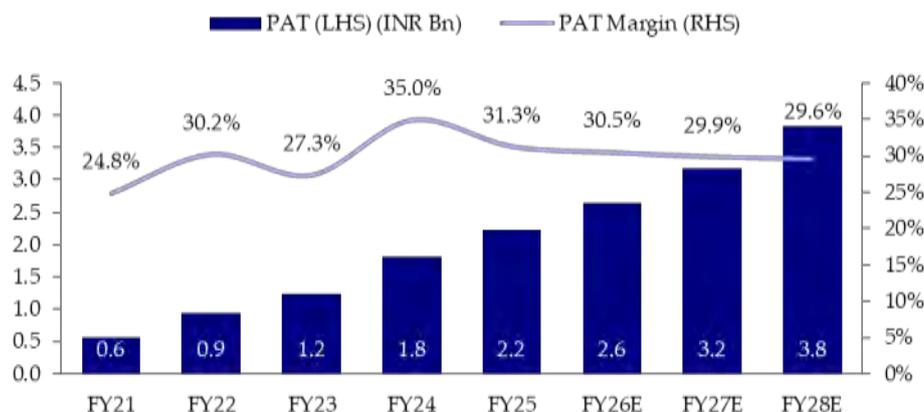


Source: Company, HSIE Research

### PAT margins stabilizing at 30%

- We expect PAT margins to gradually normalize to 29.6% by FY28E from 31.3% in FY25, owing to a rising depreciation charge, a relatively lower growth in the other income and a high working capital. Nevertheless, it will remain a strong PAT margin for the company in the coming years.

#### PAT margins to stabilize at ~30% by FY28

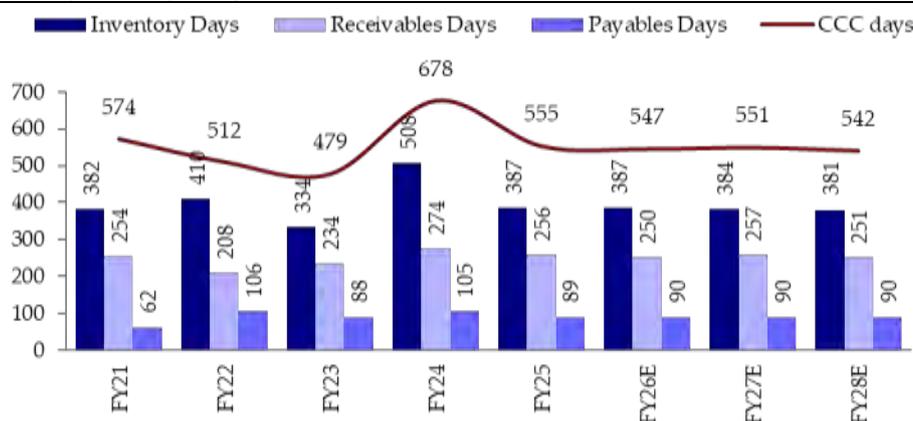


Source: Company, HSIE Research

### Cash conversion cycle to remain rangebound

- DPL has a high cash conversion cycle (CCC), in line with the industry. During FY23 and FY24, company had received large orders amounting to INR 15.8bn on a FY22 closing orderbook base of INR 4.8bn.
- To cater to this amplified orderbook, company had to accumulate raw material inventory which lifted its CCC days to 678 days in FY24 from 479 days in FY23. It normalised to 555 days in FY25 as shored up inventory got liquidated and resulted in a strong 36% YoY revenue growth in FY25.
- Except this occasion, CCC has historically remained in the range of 450-550 days. We estimate CCC to remain around ~550 days in the next three financial years, as management intends to continue taking up longer cycle developmental orders to build complete final products.

#### CCC days to stay range bound till FY28E

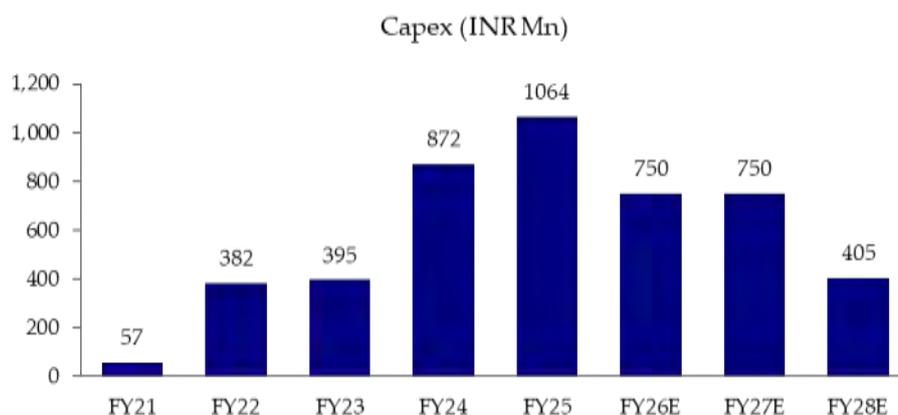


Source: Company, HSIE Research

### Capex to focus on product development

- In the past five years, company has done a total capex of around INR 2.8 bn. Furthermore, it is estimated to carry out capex of INR 2.0 bn over the next three years.
- The capex will mainly focus on product development and technological advancement with key areas being radars, EW, and communication systems, with a little portion earmarked for capacity expansion for future anticipated orders.
- Upcoming anticipated orders such as project Kusha is technologically intensive and hence may require capex towards product development. Due to sustained cash generation and debt free balance sheet, we believe this projected capex will be carried out with internal accruals itself and won't lead to any meaningful leverage.

#### Planned capex of INR 2.0 bn over three years

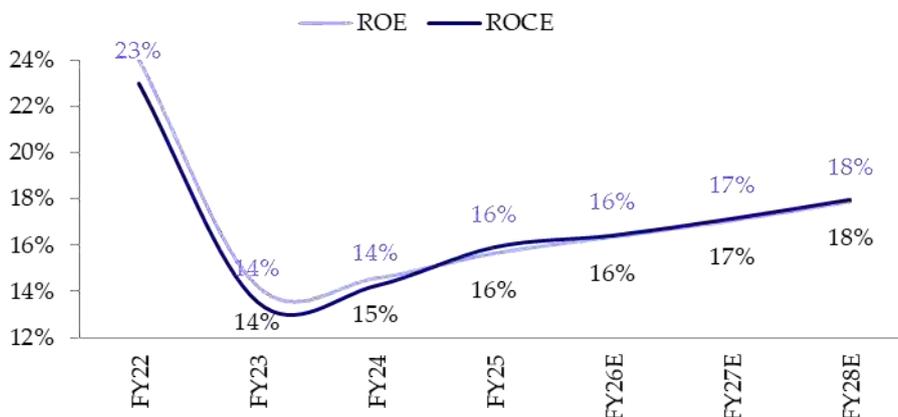


Source: Company, HSIE Research

### RoE and RoCE

- Due to adequate product pricing despite elevated trade cycle and a prudent mix of developmental cum production revenues, it has been reporting a consistent increase in capital efficiency ratios over the years.
- We anticipate RoE and RoCE to remain strong in the range of 16-18% during FY26-28E.

#### RoE and RoCE to gradually inch up in the near term

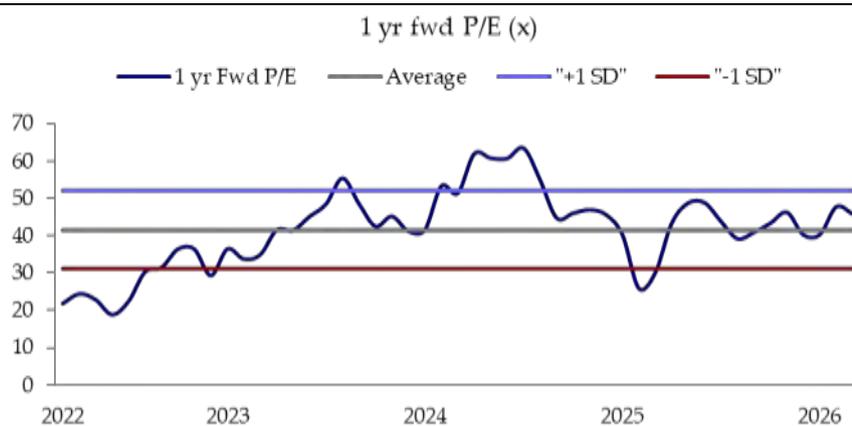


Source: Company, HSIE Research

## View and valuation

DPL commands the highest margin among its peers due to its modular and innovative approach. Backward integration led by COTS module helps it win new defence contracts ahead of the peers, as it can price the contracts lower and can still command industry-leading profitability. The company's aim to remain debt-free will also cushion the PAT margins. This combination of strong growth with robust margins and, hence, healthy capital efficiency ratios makes it a suitable candidate for playing defence growth story of India. Data Patterns is positioned at the forefront for capitalizing the tailwinds offered by the defence electronics sector of India. We view these as catalysts for the company's long growth trajectory.

Accordingly, we initiate coverage on the stock with a BUY rating, valuing it at a PE of 55x on FY28E EPS, arriving at a target price of Rs. 3,770.



Source: HSIE Research

## Risks and concerns

- **Customer concentration:** DPL has a concentrated customer base, which includes reputed companies such as DRDO, ISRO, MoD, and DPSUs. These are mostly government entities and hence the overall flow of orders depends upon government's budgetary allocations. Hence, any delay in finalization of projects or funds allocation could impact the company's financials. This is a genuine risk for all the private defence sector companies. However, given the central government's clear focus on increasing budgetary allocations toward defence and its strategic nature, we believe this risk would have limited impact on DPL. Moreover, potential to supply products to the export market can prove to be supportive to the diversification of the revenues and, hence, mitigate the customer concentration risk.
- **Research and developmental risk:** As company invests heavily in research and development projects, they need to pass trials and qualification cycle for its products. These projects carry significant upfront costs without much of the revenues in the initial phase. Additionally, these projects have longer lifecycles. So, it requires the company to have a sound balance sheet and manage cash flows efficiently so that they can sustain low-revenue nature of the product life cycle. The company also needs to navigate through stringent delivery schedules and field trials while funding it themselves. Realistically, there are possibilities that a few of the products may not be finally accepted after going through the screening process of the customers and hence investments done on those products may need to be written off. While this risk exists for DPL, we believe given its multi-decade experience of product development and a modular nature of its product portfolio, it should be able to manage the risk effectively.
- **Working capital management:** As we have observed, having long working capital cycles is the industry characteristic for private sector defence players. The development-intensive nature of DPL's product portfolio adds on to the requirement of capital to service these projects. Any delays in customer payments, reduced advance payments from them or the sudden requirement to pay suppliers might adversely impact the company's cash flows and working capital cycle. Hence, it is necessary that the company manages working capital efficiently as they plan on remaining debt-free.
- **Large orders:** DPL is currently a sub-systems provider and plans to graduate to the level of being a front-end systems provider. Accordingly, it will be bidding for large-ticket orders. As bidding for these large orders would attract competition from the existing larger companies, DPL may need to compromise on the profitability of the orders in the short term. However, we believe given the company's technical expertise, backward integration benefits, and a strong balance sheet, it will be able to withstand competition and find its way ahead.

## Company background

- Data Patterns (India) Ltd (DPL) is a vertically integrated defence and aerospace electronics solutions provider. It has in-house design and development capabilities, which have been validated by their three-decade long association with Defence PSUs, armed forces, DRDO, ISRO and other industry participants.
- Unlike many traditional defence component manufacturers, DPL manages the entire lifecycle of a defence product -from design and software development to electronic hardware, mechanical assembly, and quality testing.
- The company specializes in production of high-end electronic systems used in extreme war environments. Their core competencies include radar systems, electronic warfare, avionics, satellite systems, and missile systems.
- The company has its manufacturing facility in Chennai spread across 10.28 acres of land, with an aggregate 200,000 square foot built-up area. The facility holds 20 dedicated mechanical assembly stations to assemble small and large systems. This facility also houses 70 workstations for testing modules and small systems apart from possessing capabilities to handle complex boards involving 22 layers, 6,000 components and 21,000 soldering points. The facility also has electronic manufacturing services (EMS) assembly capacity of 600 boards per day and a fully operational electromagnetic interference (EMI) and electromagnetic compatibility (EMC) test facility. The facility has a hangar for large systems integration, where they plan for complete radar integration, electronic warfare vehicle integration, and satellite integration in a clean room.
- DPL serves as a key partner to India's major defence and space organizations primarily DRDO, HAL, BEL, and ISRO. It also works closely with various verticals of Indian armed forces by supplying them components and maintenance services directly. Moreover, they have also collaborated with global defence contractors for export-oriented components and subsystems.
- The company had a total of 1,545 employees, with 65%+ being engineers in FY25. It is gearing up to expand the team size by 200+ employees in FY26 to cater to a highly anticipated influx of new orders.

### **DPL has successfully completed development and manufacturing of various key defence subsystems. Key milestones listed below:**

- The company was incorporated in 1998. Starting operations from 2001, they developed a fire control system for Brahmos, designed and developed the launch pad countdown system.
- Further, they developed glass cockpit displays/avionics. Company participated in upgradation of tracking radars, developed RF and microwave capabilities allowing entry to build complete systems. It also designed and developed complete radar capabilities.
- Company built a nano satellite which was deployed in 2017, developed EW receivers, satellite, and ground stations. It also designed open RWR (radar warning receivers) and electronic intelligence (ELINT) for airborne platforms.
- Company carried out its IPO successfully in 2021. With the money raised, it initiated expansion of its manufacturing facilities. It built capacity to handle large and heavy equipment, integration of large radars, and mobile EW systems along with satellite integration facility.
- Company's track record of producing sophisticated defence subsystems include radio relays, engine control units, components for Sonars servo and actuator control systems.

- Further, the company developed software defined radio (SDR) for land and air. It also developed satellites and satellites subsystems. Showcasing its expertise in complex defence manufacturing, it successfully tested the seeker for Brahmos in FY25, which was used in operation Sindoor. Rising export opportunities for Brahmos missiles creates more opportunities for DPL.

## Annexure I: Experienced board of directors and management team

Name (designation)	Description
Mr.Srinivasagopalan Rangarajan (Promoter, Chairman & MD)	He has over three decades of experience in business development, corporate affairs finance, and marketing. He holds a bachelors degree of Technology in Chemical Engineering from University of Madras, and a master's degree in science from IIT, Madras.
Ms. Rekha Murthy Rangarajan (Promoter, Whole Time Director)	She holds two decades of experience in administration, facility maintenance, HRD, process engineering and special projects. Her educational qualifications include BA from Bangalore University and MA in applied psychology from Madras University. She was awarded the Mercedes Benz Ritz Woman of Merit Award in 2015.
Mr. Vijay Ananth K (Whole Time Director, COO and Chief Information Security Officer):	Mr Vijay has over two decades of experience in software engineering and product management. He holds a bachelor's degree in computer science from Manomanian Sundaranar University and a master's degree in computer applications from the University of Madras. He joined DPL in 1998 as a software trainee and rose through ranks over next two decades to the current position of whole time director in 2022.
Mr. Venkata Subramanian Venkatachalam (Chief Financial Officer)	He is a fellow member of the Institute of Chartered Accountants of India. Also, he holds a B.com degree from Madurai Kamaraj University. He has over two decades of experience in the finance sector. He joined DPL in the year 2000 as a manager finance and rose through ranks to become CFO of the company in 2019.
Mr.Desinguraja Parthasarathy (Chief Technology Officer)	Mr. Parthasarathy hold bachelor's degree in engineering from University of Madras. He has thirty-two years of experience in the domain of product development. He joined the DPL's subsidiary in 1989 as an engineer R&D and moved ahead in career with the group, eventually taking the responsibility of the chief technology officer of DPL in 2004.
Mr. Thomas Mathuram Susikaran (SVP – Business Development)	He holds a bachelor's degree in engineering from Madurai Kamaraj University and a Masters' degree of technology in electrical engineering from IIT, Madras. He has over twenty-one years of experience in the fields of business development and marketing. He joined subsidiary of DPL in the year 2000 as marketing manager and rose to the current designation over the years.

Source: Company, HSIE Research

## Data Patterns: Initiating Coverage

### P&L (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>Net Revenues</b>	<b>2,240</b>	<b>3,109</b>	<b>4,535</b>	<b>5,198</b>	<b>7,084</b>	<b>8,692</b>	<b>10,611</b>	<b>12,964</b>
Growth (%)		38.8	45.9	14.6	36.3	22.7	22.1	22.2
COGS	704	861	1,709	1,651	2,761	3,477	4,287	5,315
Employee Expense	484	624	790	990	1,141	1,321	1,528	1,776
Other Expenses	131	214	317	341	432	565	711	856
<b>EBITDA</b>	<b>920</b>	<b>1,410</b>	<b>1,718</b>	<b>2,216</b>	<b>2,750</b>	<b>3,329</b>	<b>4,085</b>	<b>5,017</b>
EBITDA Growth (%)		53.3	21.8	29.0	24.1	21.1	22.7	22.8
EBITDA Margin (%)	12.2	12.3	10.9	7.6	11.6	12.5	12.8	12.9
Depreciation	56	66	85	161	139	163	207	240
<b>EBIT</b>	<b>864</b>	<b>1,344</b>	<b>1,634</b>	<b>2,055</b>	<b>2,611</b>	<b>3,166</b>	<b>3,878</b>	<b>4,777</b>
Other Income (Including EO Items)	26	40	92	460	463	488	481	488
Interest	145	110	77	93	121	122	132	152
<b>PBT</b>	<b>745</b>	<b>1,274</b>	<b>1,648</b>	<b>2,422</b>	<b>2,953</b>	<b>3,531</b>	<b>4,228</b>	<b>5,114</b>
Total Tax	190	334	408	605	735	883	1,057	1,278
<b>RPAT</b>	<b>556</b>	<b>940</b>	<b>1,240</b>	<b>1,817</b>	<b>2,218</b>	<b>2,648</b>	<b>3,171</b>	<b>3,835</b>
Exceptional Gain/(loss)	-	-	-	-	-	-	-	-
<b>Adjusted PAT</b>	<b>556</b>	<b>940</b>	<b>1,240</b>	<b>1,817</b>	<b>2,218</b>	<b>2,648</b>	<b>3,171</b>	<b>3,835</b>
APAT Growth (%)		69.1	31.9	46.5	22.1	19.4	19.7	21.0
Adjusted EPS (Rs)	11.9	19.5	23.8	32.5	39.6	47.3	56.6	68.5
EPS Growth (%)		63.7	22.2	36.3	22.1	19.4	19.7	21.0

### Balance Sheet (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>SOURCES OF FUNDS</b>								
Share Capital - Equity	17	104	112	112	112	112	112	112
Reserves	2,062	5,641	11,559	13,130	14,970	17,164	19,766	22,890
<b>Total Shareholders Funds</b>	<b>2,079</b>	<b>5,745</b>	<b>11,671</b>	<b>13,242</b>	<b>15,082</b>	<b>17,276</b>	<b>19,878</b>	<b>23,002</b>
Long Term Debt	98	7	3	-	-	-	-	-
Short Term Debt	235	60	5	-	-	-	-	-
<b>Total Debt</b>	<b>332</b>	<b>68</b>	<b>7</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
Net Deferred Taxes	9	(8)	(3)	23	225	225	225	225
Other Non-current Liabilities & Provns	383	280	1,414	150	317	265	306	357
<b>TOTAL SOURCES OF FUNDS</b>	<b>2,804</b>	<b>6,085</b>	<b>13,089</b>	<b>13,416</b>	<b>15,624</b>	<b>17,765</b>	<b>20,409</b>	<b>23,583</b>
<b>APPLICATION OF FUNDS</b>								
Net Block	292	442	912	1,206	1,411	1,976	2,499	2,646
CWIP	-	173	14	72	128	128	128	128
Other Non-current Assets	381	1,246	1,106	1,632	2,339	2,591	2,873	3,214
<b>Total Non-current Assets</b>	<b>673</b>	<b>1,861</b>	<b>2,032</b>	<b>2,909</b>	<b>3,877</b>	<b>4,695</b>	<b>5,499</b>	<b>5,987</b>
Inventories	737	1,198	1,930	2,668	3,185	3,685	4,508	5,546
Debtors	1,559	1,983	3,825	3,988	5,964	5,953	7,471	8,915
Other Current Assets	228	247	1,083	3,426	4,101	4,211	4,379	4,587
<b>Cash &amp; Equivalents</b>	<b>88</b>	<b>1,771</b>	<b>5,478</b>	<b>3,927</b>	<b>1,264</b>	<b>2,555</b>	<b>2,615</b>	<b>3,510</b>
<b>Total Current Assets</b>	<b>2,613</b>	<b>5,199</b>	<b>12,315</b>	<b>14,009</b>	<b>14,514</b>	<b>16,405</b>	<b>18,973</b>	<b>22,558</b>
Creditors	120	382	446	501	838	857	1,057	1,311
Other Current Liabilities & Provns	363	593	812	3,001	1,929	2,478	3,006	3,651
<b>Total Current Liabilities</b>	<b>483</b>	<b>974</b>	<b>1,258</b>	<b>3,502</b>	<b>2,767</b>	<b>3,335</b>	<b>4,063</b>	<b>4,962</b>
<b>Net Current Assets</b>	<b>2,131</b>	<b>4,224</b>	<b>11,057</b>	<b>10,507</b>	<b>11,746</b>	<b>13,070</b>	<b>14,910</b>	<b>17,596</b>
<b>TOTAL APPLICATION OF FUNDS</b>	<b>2,804</b>	<b>6,085</b>	<b>13,089</b>	<b>13,416</b>	<b>15,624</b>	<b>17,765</b>	<b>20,409</b>	<b>23,583</b>

## Data Patterns: Initiating Coverage

### Cash Flow (INR Mn)

Year ending March	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Reported PBT	745	1,274	1,648	2,422	2,953	3,531	4,228	5,114
Non-operating & EO Items	(23)	(23)	(36)	(439)	(431)	(488)	(481)	(488)
Interest Expenses	145	110	77	93	121	122	132	152
Depreciation	56	66	85	161	139	163	207	240
Working Capital Change	(299)	(621)	(1,412)	(213)	(2,976)	(316)	(2,000)	(2,064)
Tax Paid	(190)	(284)	(534)	(631)	(706)	(883)	(1,057)	(1,278)
<b>OPERATING CASH FLOW ( a )</b>	<b>434</b>	<b>522</b>	<b>(172)</b>	<b>1,394</b>	<b>(899)</b>	<b>2,130</b>	<b>1,029</b>	<b>1,675</b>
Capex	(57)	(382)	(395)	(872)	(1,064)	(750)	(750)	(405)
Free Cash Flow (FCF)	377	140	(567)	522	(1,963)	1,380	279	1,270
Investments	115	(836)	(3,778)	(3,691)	596	-	-	-
Non-operating Income	29	20	345	2,324	1,359	488	481	488
<b>INVESTING CASH FLOW ( b )</b>	<b>88</b>	<b>(1,198)</b>	<b>(3,828)</b>	<b>(2,239)</b>	<b>890</b>	<b>(262)</b>	<b>(269)</b>	<b>83</b>
Debt Issuance/(Repaid)	(279)	(265)	(60)	(7)	-	-	-	-
FCFE	98	(125)	(628)	515	(1,963)	1,380	279	1,270
Share Capital Issuance	-	3,000	5,000	-	-	-	-	-
Dividend	(4)	(111)	(182)	(252)	(364)	(455)	(569)	(711)
Others	(166)	(266)	(377)	(166)	(133)	(122)	(132)	(152)
<b>FINANCING CASH FLOW ( c )</b>	<b>(449)</b>	<b>2,359</b>	<b>4,381</b>	<b>(425)</b>	<b>(496)</b>	<b>(577)</b>	<b>(701)</b>	<b>(862)</b>
<b>NET CASH FLOW (a+b+c)</b>	<b>73</b>	<b>1,683</b>	<b>381</b>	<b>(1,270)</b>	<b>(505)</b>	<b>1,291</b>	<b>59</b>	<b>896</b>
EO Items, Others	-	-	-	-	-	-	-	-
Closing Cash & Equivalents	88	1,771	2,152	881	377	1,668	1,727	2,623

### Key Ratios

	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>PROFITABILITY (%)</b>								
GPM	68.6	72.3	62.3	68.2	61.0	60.0	59.6	59.0
EBITDA Margin	41.1	45.4	37.9	42.6	38.8	38.3	38.5	38.7
EBIT Margin	38.6	43.2	36.0	39.5	36.9	36.4	36.6	36.9
APAT Margin	24.8	30.2	27.3	35.0	31.3	30.5	29.9	29.6
RoE		24.0	14.2	14.6	15.7	16.4	17.1	17.9
RoIC (or Core RoCE)		28.2	20.6	18.0	16.4	16.1	17.6	18.9
RoCE		23.0	13.5	14.2	15.9	16.4	17.1	18.0
<b>EFFICIENCY</b>								
Tax Rate (%)	25.4	26.2	24.8	25.0	24.9	25.0	25.0	25.0
Fixed Asset Turnover (x)	6.3	5.6	4.2	3.4	3.9	3.5	3.3	3.6
Inventory (days)	382	410	334	508	387	387	384	381
Debtors (days)	254	208	234	274	256	250	257	251
Other Current Assets (days)	37	29	87	241	211	177	151	129
Payables (days)	62	106	88	105	89	90	90	90
Other Current Liab & Provns (days)	59	70	65	211	99	104	103	103
Cash Conversion Cycle (days)	574	512	479	678	555	547	551	542
Working Capital (days)	552	471	501	708	667	620	598	568
Net D/E (x)	0.1	(0.3)	(0.5)	(0.3)	(0.1)	(0.1)	(0.1)	(0.2)
Interest Coverage (x)	6.0	12.2	21.1	22.0	21.6	26.0	29.4	31.5
<b>PER SHARE DATA (Rs)</b>								
EPS	11.9	19.5	23.8	32.5	39.6	47.3	56.6	68.5
CEPS	44.7	20.8	25.3	35.3	42.1	50.2	60.3	72.8
Dividend	2.06	2.14	3.24	4.50	6.50	8.13	10.16	12.70
Book Value	1,223.3	110.7	208.5	236.5	269.4	308.6	355.1	410.9
<b>VALUATION</b>								
P/E (x)	262.7	160.5	131.4	96.3	78.9	66.1	55.2	45.6
P/BV (x)	2.6	28.2	15.0	13.2	11.6	10.1	8.8	7.6
EV/EBITDA (x)	6.0	113.8	98.7	77.2	63.2	51.8	42.2	34.2
EV/Revenues (x)	2.5	51.6	37.4	32.9	24.5	19.8	16.2	13.2
OCF/EV (%)	7.8	0.3	(0.1)	0.8	(0.5)	1.2	0.6	1.0
FCF/EV (%)	6.8	0.1	(0.3)	0.3	(1.1)	0.8	0.2	0.7
FCFE/Mkt Cap (%)	1.8	(0.1)	(0.4)	0.3	(1.1)	0.8	0.2	0.7
Dividend Yield (%)	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.4

Source: Company, HSIE Research

# Astra Microwave Products

## Moving up the value chain by leveraging R&D

Astra Microwave Products Ltd (AMPL) is an attractive proxy play on India's growing defence and space sectors. The company has a three-decade history in designing and manufacturing high-quality radio frequency and microwave modules, sub-systems, and systems. Its research-led approach enables the development of mission-critical equipment, such as the Active Antenna Array Unit (AAAU), positioning it to participate in large-scale AESA radar programs. The company aims to be a complete systems supplier and an end-to-end solution provider to defence integrators. Its operational segments provide a healthy TAM, providing ample room for growth in the medium term. Further, it is looking to diversify the revenue mix by catering to space, meteorological, and hydrological sectors. AMPL expects participation in platforms like QRSAM, project Kusha, project P-75I, and LCA Tejas MK2, which will fuel its next leg of growth. The large order pipeline providing revenue growth visibility allows us to be constructive on the company. Accordingly, we initiate coverage on AMPL with an ADD, valuing the company at 40x FY28E EPS and arriving at a target price of Rs. 1,130.

- Healthy TAM of INR 250bn:** Management estimates the total TAM for the company at INR 240-250bn through FY28E, diversified across multiple sub-sectors. While radars form the biggest slice of the pie (INR 110Bn), they are followed by missiles and telemetry (INR 20Bn) and electronic warfare (INR 7.5Bn). AMPL's research-led approach helps it capitalize on growth opportunities offered by key segments by providing high-quality mission critical sub-systems and systems.
- Growing orderbook, pipeline:** Astra's order backlog stood at INR 22.3bn at Q3FY26-end (book-to-bill of 1.86x at FY25 end). The major transition that led to its growth and margin expansion during FY20-FY25 was a deliberate shift from low-margin export orders to high-margin domestic production orders. The share of domestic orders rose from 18% in FY20 to 69% in FY25. The order pipeline in store for AMPL consists of high-value orders such as the sub-systems for QRSAM, AAAU for Uttam AESA radars through the Virupaksa program, and EW suite related to the Su-30 MKI upgrades.
- R&D to deepen technological moat and aid in securing large orders:** With an R&D team of 633 employees, AMPL plans to increase its R&D spend from 5% of revenue to 7% by FY28E. It will help in securing sub-system developmental orders for future defence platforms and complete system orders, which will drive revenue growth and margin expansion in the medium term. Led by cutting-edge R&D, AMPL has a presence in large platform orders of national importance such as the Akash Missile System, Virupaksha Radar Upgrade, Atulya air defence fire control radar, Netra airborne early warning radar, and other EW platforms.
- Financials and valuation:** AMPL delivered a 11.9% revenue CAGR over FY22-25, with management guiding 15-20% growth ahead. We forecast a revenue/EBITDA/PAT CAGR of 19.2%/21.1%/20.5% over FY25-FY28, with EBITDA margins at 26.8% in FY28E.

YE March (INR mn)	FY23	FY24	FY25	FY26E	FY27E	FY28E
Net Sales	8,155	9,088	10,512	12,408	14,867	17,808
EBITDA	1,476	1,916	2,690	3,210	3,957	4,776
APAT	698	1,211	1,535	1,809	2,172	2,687
Diluted EPS (INR)	8.1	12.9	16.2	19.0	22.9	28.3
P/E (x)	123.5	77.4	61.6	52.3	43.5	35.2
EV/EBITDA (x)	58.9	49.9	36.3	30.3	24.9	20.7
RoCE (%)	11.6	13.5	13.9	13.2	13.9	14.7

Source: Company, HSIE Research

### ADD

CMP (as on 05 Mar 2026)	INR 1,030
Target Price	INR 1,130
NIFTY	24,766

#### KEY STOCK DATA

Bloomberg code	ASTM IN
No. of Shares (mn)	95
MCap (INR bn) / (\$ mn)	98/1,068
6m avg traded value (INR mn)	420
52 Week high / low	INR 1,196/608

#### STOCK PERFORMANCE (%)

	3M	6M	12M
Absolute (%)	13.4	2.2	67.4
Relative (%)	20.1	3.0	58.9

#### SHAREHOLDING PATTERN (%)

	Sep-25	Dec-25
Promoters	6.5	6.5
FIs & Local MFs	14.6	14.8
FPIs	6.5	6.3
Public & Others	72.4	72.4
Pledged Shares	-	-

Source: BSE

Pledged shares as % of total shares

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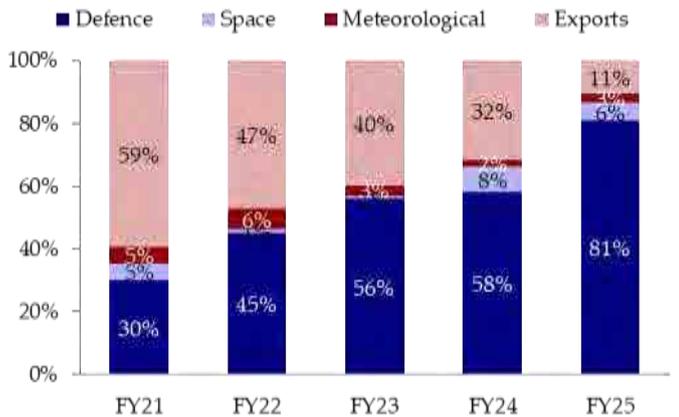
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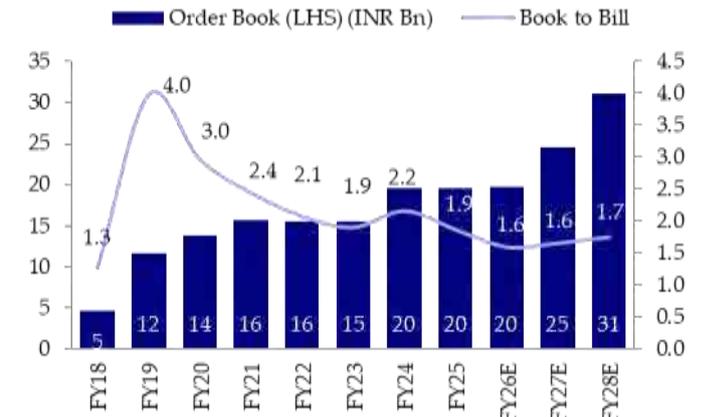
Focus Charts

Declining exports in favour of domestic is aiding EBITDA margins



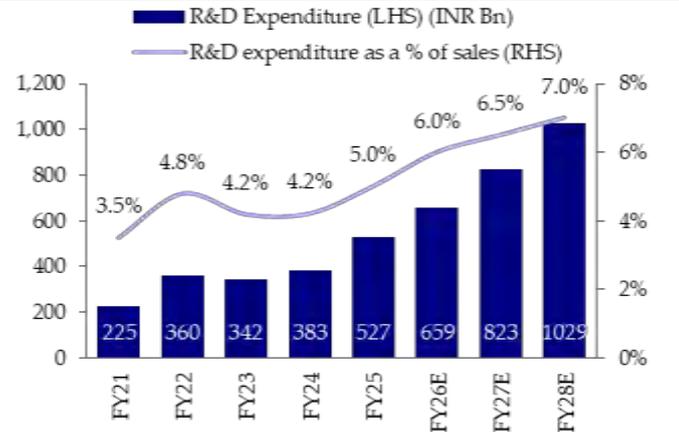
Source: Company, HSIE Research

Order book to rise on platform mandates



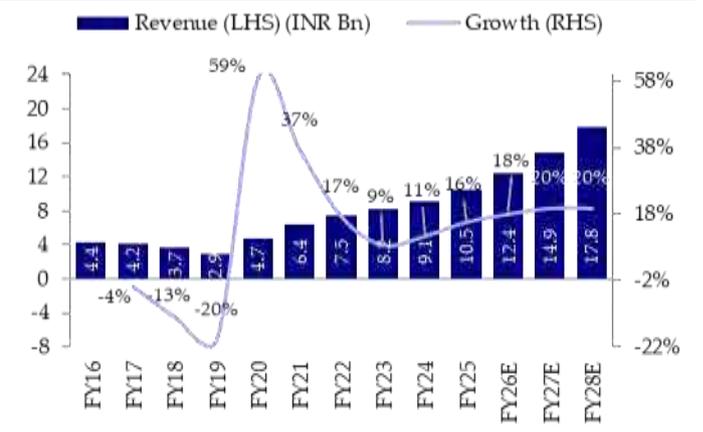
Source: Company, HSIE Research

R&D Spend increasing at a steady pace



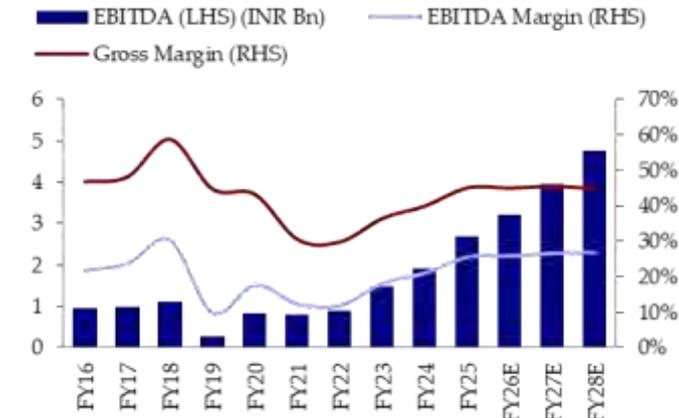
Source: Company, HSIE Research

Revenue to continue growth at 19% CAGR



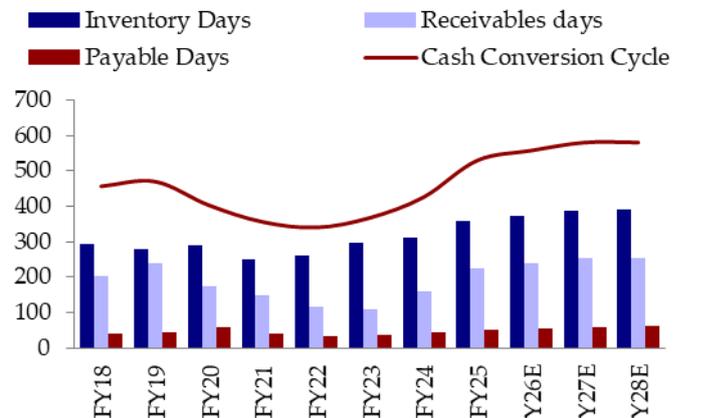
Source: Company, HSIE Research

EBITDA to increase steadily led by domestic orders



Source: Company, HSIE Research

Cash Conversion Cycle to peak out in medium term

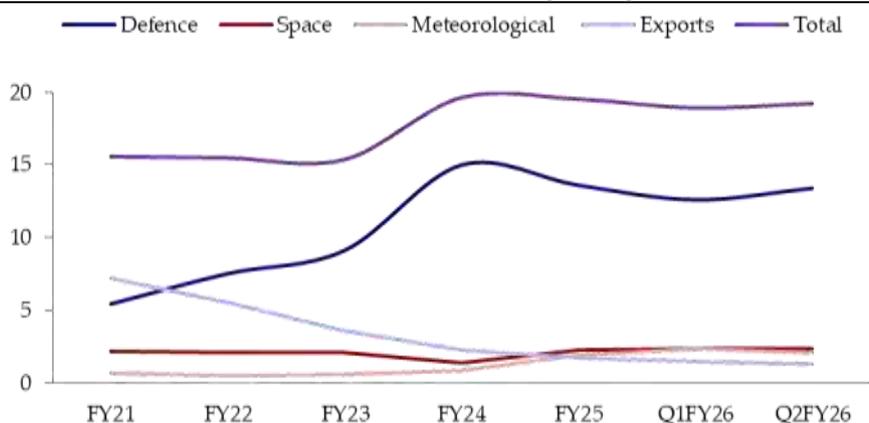


Source: Company, HSIE Research

## Strategic shift toward domestic orders drives margin

- The order book of Astra Microwave Products Ltd (AMPL) stood at INR 22.3Bn at standalone levels by the end of Q3FY26. The book to bill stood at 1.86 on the order backlog of FY25, which provides visibility for the short term. Additionally, the strong order pipeline is expected to pave the way for the future orderbook build-up.
- AMPL's order book comprises majorly four segments, namely, defence, space, meteorology, and exports. In the below chart, it can be observed that FY21 onwards, the defence orderbook has steadily grown while the same for exports have commensurately declined. The order book for the space and meteorological segments have remained in a narrow range at subdued levels. This change was a result of the company's strategy to focus more on defense orders, observing the rising need of indigenous defence products in the country. In FY20, defence constituted a meagre 18% and exports was 59% of the order book but the scenario became starkly opposite in FY25 when defence formed 69% of the orderbook while exports share was only 9%. This transition of product mix helped AMPL increase its overall profitability as domestic defence orders provided higher margins due to in-house developed technology and much better value additions versus the exports orders, which were mostly offset and build to print (BTP) in nature, providing lower margins. Domestic business on an average carry 40-45% of gross margin as against 8-10% gross margin in exports.

### Standalone order book trend (INR Bn): Defence gaining share



Source: Company, HSIE Research

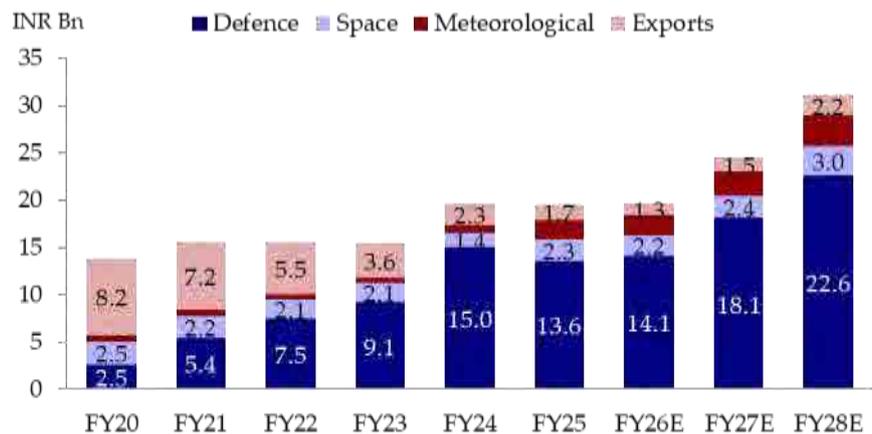
## Astra leveraging its deep tech to grab critical orders establishing itself as an indispensable electronics player

- AMPL has leveraged its deep expertise and knowledge in building a diverse order book. Its achievements in production of monolithic microwave integrated circuits (MMICs) and active array antenna units (AAAU) have helped them get critical orders for components in Uttam AESA radars. These radars are required not only for LCA Tejas MK1 and MK1A but also will be required in the prestigious future projects like LCA Tejas MK2 and AMCA. These electronic components and subsystems will also be required for upgradation of existing fighter aircraft fleets such as Su-30 MKI. AMPL has been selected as a development cum production partner by DRDO for Virupaksha radar, which is a key requirement for the Su-30MKI upgrade. This provides a long runway of recurring revenue to AMPL through supplying, servicing, training, and upgradation of these components.

## Astra Microwave Products: Initiating Coverage

- AMPL's venture into anti-drone segment has resulted in fruitful orders and the biggest segment for them is radars. They are leveraging their expertise to make radars for UAV tracking. The next big segment for Astra is expected to be space as they are already long-time partners with space institutions. So far, they have been supplying subsystems to ISRO and other space institutions. Their ambitious plan in this segment includes launching their own satellite and operating them for client for monitoring of critical assets in return for a recurring rental income. In our view, this is an upcoming business model that has a potential to attract clients rapidly and can ensure a consistent revenue stream to players like AMPL.
- The pipeline of defence projects under which AMPL expects to receive significant quantum of orders including the much-awaited QRSAM, Project Kusha, Tejas Mk 2, and AMCA. While the award of orders under these programs may be a few quarters away, once awarded, they have the potential to provide the company visibility of multiyear growth and revenue streams.

### Defence staying dominant in order book



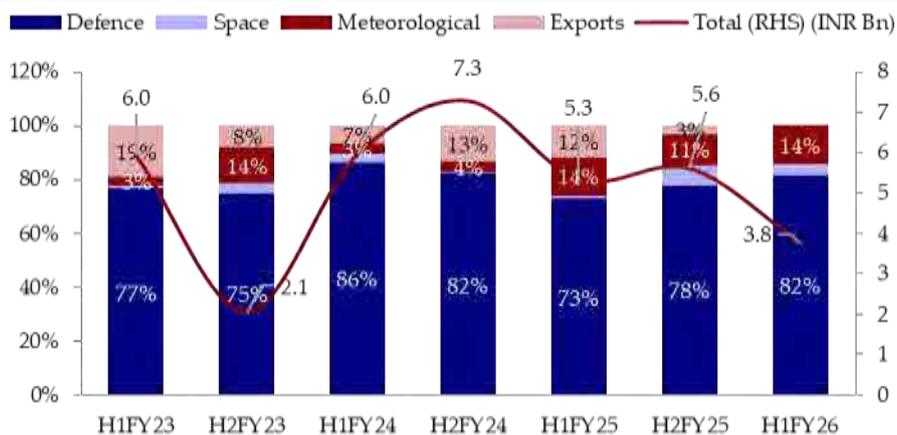
Source: Company, HSIE Research

### Order book to rise on platform mandates



Source: Company, HSIE Research

Defence remains mainstay; space rising from nascent levels (Order inflows)



Source: Company, HSIE Research

## INR 250bn addressable market until FY28 to expand orderbook

As per management estimates, the total addressable market (TAM) for AMPL is ~INR 250bn — to be awarded between FY25 to FY28. This TAM is diversified across multiple sub-sectors.

### TAM for AMPL (FY25 to FY28E)

Sectors	TAM (INR Bn)
Radars	100-110
Electronic warfare	7-7.5
Missiles & Telemetry	18-20
Space	5-6
Meteorology/Hydrology	9-10
Turnkey Projects	50-60
Special Projects	20-30
Exports	15-20
<b>Total</b>	<b>240-250</b>

Source: Company, HSIE Research

### Radars offer the largest opportunity for AMPL

- Radar programs constitute the largest segment for AMPL and provides the greatest opportunity. In the near term, the Indian radar market is projected to grow at a CAGR of 20.6% between CY24-33E, reaching USD 1.4bn. This growth is led by increasing defence budgets, increased requirement of radars in surveillance and missile guidance. Additional growth opportunities come from aviation surveillance, weather forecasting (doppler radar networks), and traffic monitoring in smart cities.
- AMPL is already involved in the complete design and development of Active Array Antenna Unit (AAAU) hardware, signal processing, and radar data processing for AESA multi-function radar. DRDO recently selected AMPL and BEL as development cum production partner (DcPP) for development and integration of Virupaksha AESA radar onto the Su-30MKI fighter fleet under the “Super Sukhoi” program.
- The total addressable market of radars include Arudhra radar (INR 4bn), high-power radar (INR 11bn), Uttam AESA radar for LCA Mk1A, LCA Mk2, Su-30MKI, AMCA, twin engine deck based fighter, (together INR 26bn), long range radar (INR 10bn), LRSAM (INR 5bn), QRSAM (INR 20bn), space debris radar (INR 14bn), S-band radar (INR 12bn), fire control radar (INR 13bn) and others.

### Electronic warfare demand up as defence sector gets competitive

- Globally, the EW market is expected to reach USD 40bn by CY2029 at a CAGR of 7% compared to CY25 when it was USD 30bn, supported by advancements in electronic support measures, directed energy weapons, and space-based EW systems. In India, the market stood at USD 710mn in CY24 and is projected to grow to USD 1,084mn by CY33 at a CAGR of 4.4%. The sector is evolving with AI-driven threat analysis, cognitive EW systems, and quantum computing applications. Future advancements include autonomous EW systems capable of real-time adaptive responses.
- AMPL has been supplying varieties of EW sub systems and components to DPSUs and to programs of Indian Navy and Indian Army. The company is also associated with Jammers’ program of LCA MK1A, Su-30 MKI, and other fighter platforms in India. We expect the company to benefit from the increase in fighter jet programs in India both for production and upgradation.

## Company participating in many strategic missile programmes

- The global missile market is valued at ~USD 60bn, growing at a pace of 5.5% p.a. Within this superset, the APAC market accounts for less than 10% share. India, which has a low single-digit share of the global missile market is growing in early double digits. With the advent of innovative missiles such as Brahmos, Akash-NG, and Astra, the Indian missile market is slated to expand significantly.
- AMPL supplies critical subsystems for key missiles projects such as Astra, Akash, QRSAM, submarine launched cruise missile (SLCM), next generation anti-radiation missile (NGARM), and Brahmos. This segment is a key growth area for AMPL.

## Space segment holds huge scope for innovative business solutions

- The global space economy is valued at USD 418bn in CY24, with India's share at a miniscule USD 8bn. By 2033, India aims to capture 8% of the global market (USD 44bn), led by private sector participation and lunar/asteroid missions. This presents a large opportunity for AMPL, which already has deep experience in working with ISRO for their space programs.
- AMPL has major plans to grow in the space vertical. It aims to provide complete end-to-end solutions through space for weather, meteorology, and agriculture. The company is one of the key suppliers providing radiofrequency components for radar satellite and geosynchronous satellite program for ISRO. It is a part of a consortium shortlisted by **IN-SPACE** (Indian National Space Promotion and Authorization Centre) to build India's first private satellite constellation, focusing on high-resolution radar. Moreover, the company's ambitious plans include launching its own satellite and utilize it to generate and sell data for various clients.

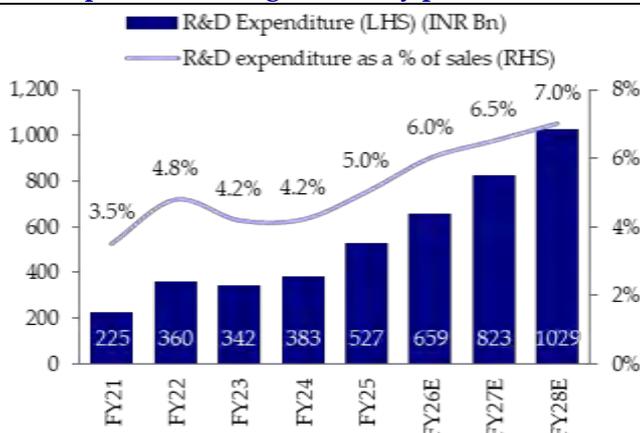
## Meteorology sector set to expand in India

- The global market for meteorology is USD 14.3bn as of CY25, which is expected to grow to USD 19bn by CY30 at a CAGR of 5.9%. India's industrial meteorology sector is very small but is set to expand. The share of this segment for AMPL is not very significant yet as only a small amount of meteorology-related RF components are exported by the company. Despite this being a small division right now, there is ample scope for innovation-led new product development, which can be leveraged to build new revenue streams.

### Cutting-edge R&D provides moat in radars, EW, and missiles

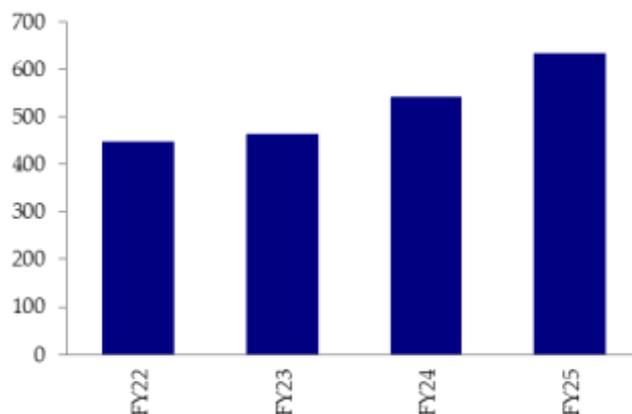
- R&D spend for AMPL has increased from INR 225 mn in FY21 to INR 527mn in FY25 (a 23.6% CAGR). Currently, it is 5% of the revenue and is forecasted to increase to 7% by FY28E, closer to the industry average. This increase could be financed through internal accruals, led by increased profitability and scale.
- The R&D team currently stands at 633 employees in FY25. The team size has grown to this level from 446 employees in FY21. The company has dedicated facilities for R&D, spread over a total of 450,000 sq. ft. across six units.
- AMPL focuses a lot on its R&D initiatives as it plans to graduate to the level of being a front-end system manufacturer and integrator. This is planned to be achieved through sophisticated R&D facilities and qualification of in-house products so that they could secure orders from ministry of defence and other DPSU integrators.
- AMPL has an in-house implementation of LEAP framework, which emphasizes collaborations with defence PSU's, start-ups and various academic institutions to help increase IP-driven product capabilities in the shortest time.
- One of the praiseworthy achievements of AMPL is the successful development of the Active Array Unit for the Uttam AESA radar, a critical component in India's indigenous radar program for the LCA Tejas. Due to an embargo on the import of key Monolithic Microwave Integrated Circuits (MMICs), AMPL executed in-house R&D to develop critical electronic components such as power amplifiers and chips. This move led to the successful production and qualification of AAAU for the Uttam AESA Radar. It catapulted AMPL among the frontline subsystem manufacturers from a small component developer. This also increased value addition, indigenization, and improved profitability for the company. The technology developed during this program was later leveraged in other high profile DRDO projects including air defence fire control radar (ADFCR), QRSAM, LCA Mk-II, and AESA radar for Su-30 MKI.
- The key focus areas of AMPL for R&D are radars, seekers, RF systems, EW, Doppler weather radar and electro-optical (EO) systems. The company has made quite a few advancements in EO systems through its JV Astra Rafael Comsys.
- Development of critical new technologies like photonics radar subsystems, submarine communication sub-systems and systems like Active Protection System (APS) radar are in advanced stages of development phase.

R&D Spend increasing at a steady pace



Source: Company, HSIE Research

R&D employees stand at 663 in FY25

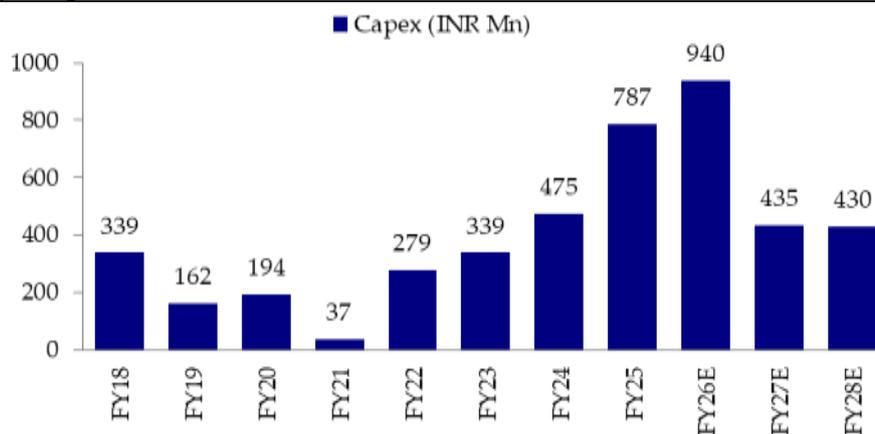


Source: Company, HSIE Research

## Major capex already over; company ready to execute larger orders

As reflected in the below chart, AMPL has already done a substantial portion of capex in the past five years for expansion of facilities and purchase of various test equipment. Its capex for FY25 was INR 787mn. Further, it has earmarked INR 900mn capex for building additional production capacity to take care of expected rise in volume of defence and space projects. Any incremental capex plans will be serviced mainly through internal accruals with minimal requirement of term loans. As per our estimates, the company can achieve a revenue up to INR 20bn (~2x FY25 revenues) with the current capacity; hence, requirement of any significant capex soon is improbable. This provides great comfort vis-à-vis balance sheet stability of the company.

### Major capex behind



Source: Company, HSIE Research

## Defence programs build execution credibility

AMPL has been a key supplier of critical subsystems and systems to various Indian defence programs across the radar, electronic warfare, and missile sectors. A few key defence programs where AMPL is involved are:

- **Akash missile systems:** This is indigenously developed medium range, surface to air (SAM) missile system designed by DRDO. These are deployed to protect vulnerable areas and strategic assets from aerial threats such as fighter jets, cruise missiles, air to surface missiles and UAVs. Its speed is Mach 2.5 to 3.5 and commands an effective range of up to 25-45Kms. It is mounted on various mobile platforms for deployments across several terrains and can engage multiple targets simultaneously.
- AMPL is an important supplier of radio proximity fuse (RPF), antennas, radio frequency/microwave subsystems and command guidance units. RPF is a crucial part of missile initiation, which ensures that the warhead detonates at a prespecified optimal distance from the target.
- **Virupaksha radar:** Virupaksha is India's next generation Active Electronically Scanned Array (AESA) radar for upgrading Sukhoi Su-30 MKI fighter planes. It has been developed by DRDO and uses advanced Gallium Nitride (GaN) based transmit/receive (T/U) module in place of traditional Gallium Arsenide (GaA) modules. GaN ensures higher efficiency, increased power density, better thermal management, and improved jamming resistance. Virupaksha detects fighter aircrafts located up to 400Kms and stealth aircrafts up to 200Kms, significantly more than traditional radars. It can track 64-100 targets simultaneously. AMPL supplies high frequency electronics and Active Array Modules (AAMs), which are building blocks for radar's antenna enabling powerful electronic beam steering. Virupaksha is crucial for upgrading India's Su-30MKI fighter fleet. The country currently has 259 operational Su-30 MKI aircrafts.
- **Air defence fire control radar:** An ADFCR in conjunction with anti-aircraft guns forms a formidable ground-based air defence system. The key purpose of this system is to offer protection against various air threats such as fighter aircrafts, enemy helicopters, and UAVs, at short and very short ranges. It works around the clock in all-weather conditions and even in the presence of enemy jamming. This guides anti-aircraft guns and missile systems to engage aerial targets. This combines radar, electro optical sensors, and laser range finders mounted on a mobile platform. ATULYA developed by DRDO and manufactured by BEL is a prominent Indian ADFCR. AMPL supplies critical radio RF/microwave components such as antenna beam forming units, mono pulse receivers, array group receivers, radio proximity fuses for missiles, and transmitters for ADFCRs.
- **Uttam Active Electronically Scanned Array (AESA) Radar:** Uttam AESA radar is a critical component for Indian fighter jets like Tejas Mk1A, Mk2, AMCA and TEDBF (twin engine deck-based fighter). It is indigenously developed and has a capability of tracking 64 targets simultaneously with a detection power of fighter sized targets beyond 100Kms (potentially 160Kms). It employs 980 T/R modules for high power and beam agility helping in faster target detection, lower probability of interception and enhanced electronic warfare. AMPL supplies active antenna array unit (AAAU) for agile beam steering, transmit/receive (T/R) modules using indigenous monolithic microwave integrated circuits (MMICs), exciters and receivers for radar signals, and beam forming units. Their contributions are considered significant for smooth operations of Uttam AESA radars.

- **Netra Airborne early warning and control (AEW&C) platform:** Netra is India's indigenous airborne surveillance system deployed on specific aircrafts inbuilt with radars for long-range detection and tracking of various air, land, or sea-based threats. It provides 240 degrees electronic scan coverage and integrates seamlessly with fighter aircrafts and ground stations for real-time data sharing. Air-to-air refuelling allows extended operational time up to nine hours. It is equipped with electronic warfare such as electronic and communication support measures for threat detection and analysis. AMPL is a key supplier of critical electronic components that form the core of Netra's surveillance radar. The key components include active antenna array units (AAAU; for steering the beam without physically moving the antenna), T/R modules, receivers, and exciters for signal processing. It also provides antenna beam formation units, solid state power amplifiers and monolithic microwave integrated circuits (MMICs) for radar's power output and signal integrity.
- **Ground surveillance radars (GSRs):** GSRs sends out radio frequency signals and analyses echo to identify moving targets differentiating them from static objects. It provides continuous surveillance and real-time tracking of vehicles, low flying helicopters, and pedestrians. Their key applications are border security, perimeter defence, wildlife conservation, and providing early warning to battlefield troops by tracking enemy movements. It functions effectively in all types of weather and can operate unattended for hours, reducing the requirements of human intervention. AMPL supplies its own in-house developed and manufactured complete ground surveillance radar as well as its critical subsystems and other components. The key components supplied by AMPL are T/R modules, radar central units, exciters, receivers, coherent frequency generators, antennas, antenna beam forming units, and MMICs.
- **Software defined radios (SDR):** SDR is a versatile radio communication system where components like carrier frequency, modulation, and network access are implemented through software. Its military applications include tactical communication (voice/data) for troops, vehicles and UAVs for intelligence, surveillance, electronic warfare, and radar control. AMPL offers high-end military grade complete software defined radio systems through its JV company Astra Rafael Comsys (ARC) manufactured in India. Further, AMPL supplies specific hardware units such as LRUs and SBC 2 cards, which helps in integration of SDRs into various defence platforms such as Su-30 MKI fighter jets. Also, it provides associated software and applications that enable network-centric capabilities, allowing high-speed data, and video transfer across the battlefield.
- **Various electronic warfare programs:** Electronic warfare (EW) is the use of electromagnetic spectrum to gain a military advantage against the enemy forces by disrupting their weapon systems while protecting the friendly systems. Indian EW programs focus on indigenous, integrated systems and aim for electronic superiority with advanced jamming and surveillance. There are various EW programs running in India including:
  - **Army EW programs:** Programs such as Samyukta and integrated electronic warfare program (IEWP) for intercepting, jamming enemy communications, and taking electronic protection measures (EP) to defend enemy's electronic countermeasures (ECM).
  - **Navy EW programs:**
    - **Shakti:** Installed on warships to provide electronic defence against anti-ship missiles.

- **Nayan:** This is a communication intelligence system (COMINT) for intercepting, analyzing, and recording enemy voice and data signals in high-frequency range.
- **Tushar:** Shipborne electronic warfare program to defend ships from threats.
- **Sarvadhari:** An airborne system for intercepting and analyzing enemy radio communications developed under Samudrika program of DRDO.
- **Sarang:** It detects. Locates and analyses radar and communication emissions improving situational awareness for a ship in the electronic environment.
- **Sarakshi:** An airborne electronic support system to detect, intercept, and analyze enemy radar and communications signals for intelligence gathering.
- **Nikash:** This is an indigenous airborne EW system whose primary function involves intercepting and analyzing enemy signals while protecting friendly forces' communication signals.

### ➤ Air force EW programs:

- **Airborne self-protection Jammer (ASPJ):** This is an EW system designed to protect military aircrafts from hostile radars and missiles by identifying enemy threats and emitting signals to confuse or disorient their trajectories by creating false targets.
  - **Swayam Raksha Kavach (SRK) Suite:** This is a self-protection armor for fighter jets providing advanced radar warning, jamming and threat response capability. It detects, analyze, and disrupt enemy electronic systems in the contested space.
  - **Advanced AWACS EW:** It combines capabilities of advanced electronic warfare suites along with AESA radars and battle management systems for jamming/deception of enemy signals. This also detects threats like stealth fighter aircrafts from more than a hundred KMs and coordinates air-operations. In effect, it acts as a flying command center for airborne military operations.
- **Role of AMPL:** AMPL supplies critical RF and microwave sub-systems for above-mentioned EW programs of Indian Airforce, Navy, and Army. They form key parts of radar warning receivers (RWRs) and jamming systems. Its contributions include EW simulators, antennas, receivers, monolithic microwave integrated circuits (MMICs), modules and subsystems for Uttam AESA radar, wideband systems, detector log video amplifiers (DLVAs) and digital instantaneous frequency measurement (DIFM). AMPL is a crucial supplier of subsystems for EW programs enabling indigenous capability in defence technology.
  - **Anti-drone solutions:** India's anti-drone (counter UAV system) programs include Indrajaal, an AI-powered drone defence system offering a mobile 360-degree dome for critical infrastructure and DRDO laser weapon for neutralizing drone swarms and aircrafts. This also includes integrated counter UAS grid, which essentially is a network of static and mobile systems such as radars, RF sensors, camera, jammers, and missiles for protection of border and sensitive areas. In this program, AMPL supplies radar modules, RF and microwave systems, software defined radios, and critical components for jamming systems.

- **Programs of Indian space research organization (ISRO):** Key programs of ISRO include:
  - **Navigation:** Positioning services for vehicles, disaster management, and mobile phones.
  - **Earth observation:** Geoportals like Bhuvan and MOSDAC for climate, disaster, agriculture, and mapping.
  - **Communication:** Satellite for telecommunications and broadcasting.
  - **Others:** Lunar missions (Chandrayaan) and Mars orbiter missions (Mangalyaan), etc.

AMPL has a long-standing relationship with ISRO for providing critical space components such as spacecraft subsystems, T/R modules, solid state power amplifiers (SSPAs), ground up/down converters, mobile satellite service terminals, transponders, antenna systems, and telemetry tracking systems.

For these programs, AMPL works closely with various defence organizations of India such as DRDO, Bharat Electronics Ltd, Bharat Dynamics, ISRO, and Hindustan Aeronautics Ltd. This adds immense credibility to the technical capabilities of the company and offers positive guidance about its future growth opportunities.

**Key subsystems helping Astra win recurring base orders**

**Radar Electronics (Defence):**

Radar is an electronic system that uses radio waves to detect and determine the range, angle, and velocity of objects. Radio waves sent by radars result into echoes reflected from the targets such as aircrafts, ships, or vehicles. These echoes are further processed to build a picture of the surrounding environment of the target object.

Key instruments of the radar electronic systems are explained as below.

Key products	2-D appearance
<p><b>Active Antenna Array Unit (AAAU):</b> It combines active electronically scanned array (AESA) radar technology with passive IFF (identification Friend or Foe) antennas to provide steerable radio wave beams for advanced performance in military communication systems.</p>	
<p><b>Transmit Receive (T/R) modules:</b> T/R modules are components used in the manufacturing of phased array antennas that take care of amplification and control of radio signals for both transmitting and receiving.</p>	
<p><b>Up and Down Converters:</b> These are used in satellite communications. Up converters raise the frequency of a signal for transmission from Earth to a satellite (uplink), while down-converters lowers the frequency of a received signal for processing on the Earth (downlink). These instruments help in converting low intermediate frequency to high radio frequency.</p>	
<p><b>Electronic Beam Forming Units:</b> These units use antenna arrays to electronically steer, focus and shape radio frequencies or other signal beams. Its common applications are 5G networks, Radar, SONAR, and Satellite communications.</p>	
<p><b>Solid state power amplifiers (SSPA):</b> These are electronic devices that amplifies radio frequency signals using solid state components like transistors.</p>	
<p><b>Antennas:</b> These are metallic devices that converts electrical signals into electro-magnetic waves (e.g., radio frequency waves) for transmission, and vice versa for reception. These are used for wireless communications in systems such as radio, TV, radar, and Wi-Fi.</p>	

Source: Company, HSIE Research

**Electronic warfare (defence):**

Electronic warfare (EW) is the use of the electromagnetic spectrum to control, attack an enemy, or protect friendly forces. Categories of EW are:

- **Electronic attack (EA):** EW is used as electronic attack by using electromagnetic energy to create a desired effect on enemy forces such as jamming radar or communications or using deceptive measures to confuse targeting systems.
- **Electronic protection (EP):** It involves protecting against enemy jamming, developing secure communication channels, and creating electronic systems less susceptible to interference.
- **Electronic warfare support (EWS):** Actions taken to detect, intercept and locate sources of enemy electromagnetic radiation such as enemy radar and communication signals to provide prompt targeting capability and electronic intelligence.

**Key subsystems manufactured by AMPL for facilitating electronic warfare are:**

Key products	2-D appearance
<p><b>Wideband and Ultra-Wideband Subsystems:</b> Wideband (WB) and Ultra-wideband (UWB) subsystems are wireless communication technologies that use a large range of frequencies. The large bandwidth enables UWB systems to transmit large amounts of data at high speeds over short distances. Its applications include precise object finding, indoor navigation, asset tracking, and real-time location services.</p>	
<p><b>EDLVA and BLI Super Components:</b> Extended dynamic logarithmic video amplifier (EDLVA) analysis a wide range of dynamic signals and provides radar warning. Additionally, baseline interferometer (BLI) helps locate the source of the threat and direction of the incoming signal which is critical to the situational awareness.</p>	
<p><b>DIFM receivers:</b> Digital instantaneous frequency receivers (DIFM) are critical subsystems which are instrumental in quickly and accurately identifying enemy signals in a crowded electromagnetic environment. It detects and identifies incoming enemy radar signals, intercepts them and jams or deceive them by providing instantaneous frequency information. Essentially, it acts as an electronics intelligence (ELINT) tool.</p>	
<p><b>Homodyne Receivers:</b> It demodulates incoming radio frequency signal by mixing it with a local oscillator to convert incoming signal to zero frequency. Due to its low-cost, low-power consumption it is used in radar systems, consumer electronics such as wireless remote control and satellite communications.</p>	

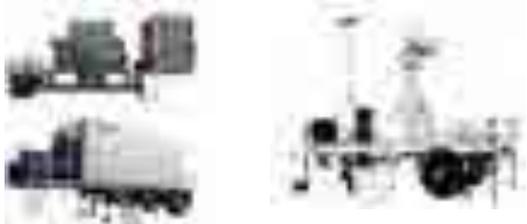
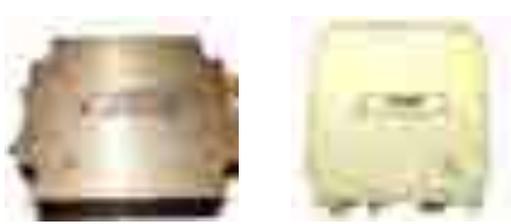
## Astra Microwave Products: Initiating Coverage

Key products	2-D appearance
<p><b>MMIC:</b> Monolithic microwave integrated circuit (MMIC) is a type of integrated circuit (IC) that operates at microwave frequency (300MHz to 300GHz). Its small size and single chip design reduces signal loss. Further, low-cost attribute makes this suitable for mass production. Its applications are in the fields of satellite communications, radar systems, wireless and cellular phones, and military applications. Power amplifications, low noise amplification, and high-frequency switching are its key functions.</p>	

Source: Company, HSIE Research

### Strategic electronics (defence):

Few important subsystems manufactured by AMPL which are used as strategic electronics for executing key military actions are:

Key products	2-D appearance
<p><b>Command Guidance Unit:</b> This is a missile controlling system where commands are sent from an external source like a ground station or an aircraft.</p>	
<p><b>Radio proximity fuse:</b> Radio proximity fuse is a fuse that detonates an explosive device automatically when it reaches within a predetermined distance of the target. It works on the Doppler principal and gets triggered whenever the amplitude of the reflected signals exceeds a predetermined value.</p>	
<p><b>Transponders:</b> This is an electronic device, which receives an incoming signal and automatically reverts with a different signal with additional information. The term is a blend of transmitter and responder. Its key applications include air traffic control by displaying location, altitude of incoming aircrafts, satellite communications, electronic toll collections, vehicle keys and RFID tags.</p>	
<p><b>Phased array-based Telemetry Tracking System:</b> This uses an electronic array of antennas to track telemetry signals such as from aircraft and satellites by electronically steering a focussed beam without physical movements of antennas.</p>	
<p><b>Ground and airborne data link systems:</b> This subsystem enables two-way secure communication for exchange of information such as video, telemetry, and control commands. This acts as a very useful connecting link between airborne systems such as aircrafts and UAVs with on ground systems such as antennas and terminals.</p>	

Source: Company, HSIE Research

## Astra Microwave Products: Initiating Coverage

### Telemetry (defence):

Telemetry is the remote collection, transmission and analysis of the data received from assets like aircraft, missiles, UAVs, satellites and ground vehicles to monitor performance, status, longitude, latitude, speed and system stress. This can be considered a useful tool for intelligence gathering that captures real-time health of aircrafts, military vehicles, UAVs, ships, etc., for immediate adjustments and decision-making. It measures performance parameters such as torque and vibration of aircraft components such as engine, transmission, and braking systems etc under stressed situations. This also intercepts and analysis telemetry data of foreign aircrafts/UAVs/ships to gain intelligence on their capabilities such as missile range, accuracy, and warheads.

Few strategically important telemetry subsystems manufactured by AMPL are described below:

Key products	2-D appearance
<p><b>Data and Video Telemetry Transmitters:</b> These are electronic devices that automatically transmits information such as video feeds and sensor data from an aircraft/ship/UAV to a receiving station for monitoring and analysis. It is used in rockets, missiles, aircrafts, and UAVs to transmit data to on-ground stations.</p>	
<p><b>Auto-Track Antenna Systems:</b> These are automated devices that use an algorithm to continuously steer an antenna to follow a moving target such as an aircraft or drone to maintain a strong communication link. Key applications are satellite communications and drone/aircraft communication.</p>	
<p><b>High Altitude Proximity Sensor:</b> This is a device designed to detect obstacles at significant elevation using technologies like radar and barometric pressure. Its common applications are autonomous navigation, obstacle avoidance, and terrain mapping for aircrafts and UAVs.</p>	

Source: Company, HSIE Research

### Ground application electronics (space):

Key products	2-D appearance
<p><b>Sub-systems for Multi-Object Tracking Radar (MOTR):</b> MOTR is a sophisticated radar system that uses a phased array antenna to electronically steer its radar beam allowing it to detect and dynamically track multiple targets simultaneously.</p>	
<p><b>Ka-Band Indoor/Outdoor Units:</b> These are components of a satellite communication system that work together to transmit and receive signals. The outdoor unit located near the antenna performs low noise amplification and signal conversion from high Ka band frequencies (27GHz to 40GHz) to low intermediate frequencies like L band (1GHz to 2 GHz) for transmission to the indoors. The indoor unit then receives this signal and carries out filtering, digitization, and data processing.</p>	

Source: Company, HSIE Research

## Astra Microwave Products: Initiating Coverage

### Flight model electronics (space):

#### Key products

**Sub-Systems for SAR Payloads:** Synthetic aperture radar (SAR) payload is a radar instrument on a satellite or an aircraft that uses the synthetic aperture technique to create high-resolution images of the earth's surface.

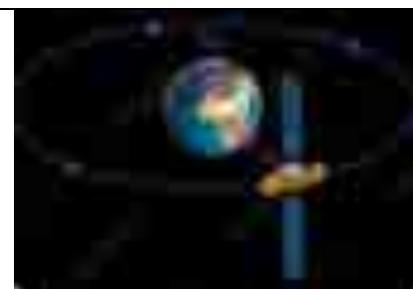
#### 2-D appearance



**Sub-Systems for Remote Sensing Satellites:** Remote sensing satellites, also known as Earth observation satellites, orbit the earth to collect information without physical contact by using high accuracy sensors to measure electromagnetic radiation. They are used for identifying deforestation, forest fires, monitoring cloud formation and weather patterns, for providing alerts pertaining to volcanic eruption and floods and assisting in mineral exploration and agriculture.



**Sub-Systems for Geostationary Satellites:** Geostationary satellites are Earth orbiting satellites that appear stationary in sky from a ground observer's perspective as its orbital period matches with the Earth's rotation period. These are commonly used for continuous data transmission for services like the internet and phone calls, consistent broadcasting of satellite TV and radio services, and weather monitoring.



### Metrology/hydro

#### Key products

**Doppler weather radars:** This is a specialized radar system, which applies the Doppler effect to measure the velocity of atmospheric targets such as wind, snow, or hail. It transmits radio waves and analysis reflected signals to identify rainfall intensity, wind speed & direction, and storm movement.

#### 2-D appearance



**Agromet Meteorological Stations (AMS):** This is a specialized automatic weather station designed to collect granular local weather data that is highly relevant to the agricultural activities in that area. Unlike standard weather forecasts that focus on a large region/city, AMS focuses on a small locality and provides information about soil sensing, rain gauge, solar radiation, humidity, and leaf wetness. This information directly influences crop growth, health, and yield.



**Avalanche radars:** These are radar systems that use radio waves to automatically detect, track, and monitor snow movement in mountainous areas to provide early warnings. It provides path and size of an avalanche very precisely. They are crucial for avalanche safety as these radars can operate even in poor visibility, day, or night by seeing through fog and snow. Additionally, these are intelligent systems that can work remotely from a safe distance and monitor large areas without needing to be installed in hazardous locations.



## Homeland security

Key products	2-D appearance
<p><b>Counter UAV Radar-Drishti:</b> This is a type of radar system used in a broader anti-drone system to detect, track, and classify drones. These radars emit radio signals and analyze returning echoes to identify location, size, and speed of UAVs. Its applications include protecting key military installations, critical infrastructure, and managing drone traffic in urban airspace for safety of commercial aircrafts.</p>	
<p><b>Perimeter Intrusion Detection Radar (PIDS):</b> This is a security system that uses radar technology to detect unauthorized movement along a boundary such as a fence line. These systems provide 24/7 all-weather surveillance to identify intruders like human, animal, vehicle, or drones, even in low light conditions.</p>	

Source: Company, HSIE Research

### Antennas:

- AMPL produces varieties of antennas such as Horn antenna, Helical antenna, Spiral antenna, Biconical antenna, Auto track antenna and several others. The basic application of these antennas includes a wide range of wireless communication from everyday consumer devices like smartphone and routers to specialized systems like radars, satellite communications, broadcasting, IoT, geographical location tracking, and military uses. Antennas work by converting electrical energy into radio waves for transmission and vice versa for the reception of signals.

### Others:

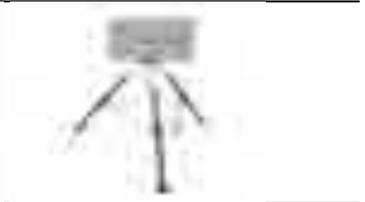
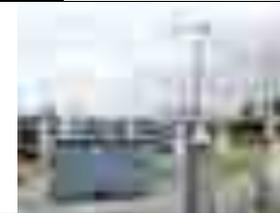
- Apart from these above-mentioned sub-systems, AMPL also manufactures various key defence products such as unmanned vehicles, robotic arms/systems, automation solutions, global navigation satellite systems (GNSS), and high-frequency printed circuit boards (PCB).

### Systems:

- Having developed expertise in manufacturing various electronic subsystems, AMPL is now graduating into production of various systems. It promises to take it to the next orbit as it would become tier-1 vendor from a tier-2 vendor, receiving orders directly from ministry of defence and its divisions (Army, Navy, and Airforce). This would ensure a steeper revenue growth path with increased profitability.

## Astra Microwave Products: Initiating Coverage

Key systems produced by AMPL are:

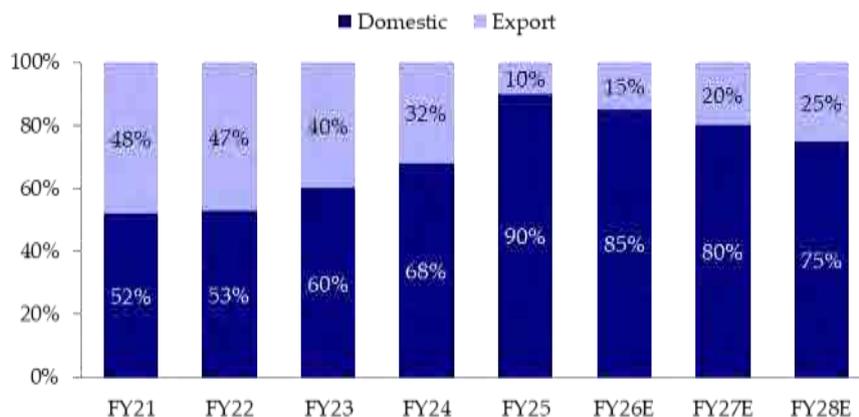
Key products	2-D appearance	
Multi-function radar systems		
Instrumentation radar and telemetry systems		
Perimeter intrusion detection radar		
Metrology radar systems		
Air traffic management radar systems		

Source: Company, HSIE Research

### Astra focusing on providing end-to-end solutions in export market to expand margins and increase topline

- AMPL currently exports its products majorly to three countries the US, Singapore, and Israel. Exports account for 11% of revenues for Astra, we estimate this export mix to move towards 25% over the next three financial years.
- Over the medium term, the company plans to become a major defence exporter and is actively making headway toward it. Currently, it is capturing the export market through the categories of deemed exports, defence offset, and build to print (BTP) categories that command lower margins. Through R&D and IP generation, the company is aiming to take direct export orders of complete systems and subsystems from agencies to increase margins and achieve topline growth.
- At the current juncture, FY25 exports account for ~9% of the total order backlog; however, this figure is higher at 19% in the telemetry segment reflecting strong international demand.
- In Radar Electronics, Astra is expanding its global footprint through joint ventures, such as its collaboration with Rafael Advanced Defence Systems. it exports radar components to Israel, the US, and Singapore. Further, it supplies EW components to allied nations. It also exports space components and metrological RF components to the western world while hydrological subsystems are supplied to Israel and Singapore. The company aims to collaborate with other export partners, not only as distributors but also the technology contributors. In this way, it is expected to garner complex export orders which could command stronger profitability.

#### Export contribution to revenue reduced over FY21-FY25



Source: Company, HSIE Research

### Strategic partnerships driving defence offset contracts, ToT

- Astra Rafael Comsys Pvt. Ltd.: AMPL and Rafael Advanced Defence Systems Ltd., Israel (RAFAEL), formed a joint venture company called Astra Rafael Comsys Pvt Ltd (ARC) in Aug'19. It has India's first private sector military grade SDR (Software Defined Radio) manufacturing facility, spread across 48,000 sq. ft. Its operations include production, integration, customization, marketing, sales, and life cycle support in the subsegments of radio communication systems, Electronic Warfare Systems, electro optics and Signal Intelligence Systems.
- Navictronics Pvt Ltd: AMPL and Manjeera Digital Systems Pvt Ltd, Hyderabad has formed a joint venture in Nov'24. Both entities hold 50% shares each in the JV. This JV is formed to manufacture NavIC chip and GNSS products. NavIC chip is a microchip designed to receive signals from India's indigenous satellite navigation system. It provides precise location and timing of devices in India and works as a self-reliant India GPS alternative for civilian and strategic applications in phones, vehicles, and defence. Further, GNSS products pertain to global navigation satellite systems that provide geo-spatial positioning, navigation, and timing.
- AMPL signed an MoU in Sep 2024 with Premier Explosives Ltd, for a strategic alliance to jointly develop India-designed defence products.
- AMPL also signed an MoU with L&T at Aero India 2025, to collaborate on radar technology and systems. The company has also partnered with DRDO for critical components for Akash Missile Systems. It is a long-standing partner of ISRO and has been involved in reputed projects like NISAR (NASA-ISRO synthetic aperture radar).
- AMPL is exploring JVs with international players in the field of anti-drone, EW, and satellites, apart from eyeing large defence procurement programs of government of India to offset requirements.

## Financial performance

### Revenue to grow at a CAGR of 19.2%

We estimate AMPL will deliver a revenue of INR 12.4bn in FY26E, growing to INR 17.8bn in FY28E, in turn reporting a CAGR of 19.2% during FY25-FY28E. This growth in the topline is expected to come on the back of existing orders of radars and EW, supported by a pipeline of big-ticket orders such as Virupaksha radar and QRSAM to be received over the next few years. The TAM of INR 240-250bn guided by the management for period until FY28 provides a segway for consistent growth and the segmental growth of sectors provides visibility until CY33 and beyond. The big projects taken up by India in the domains of submarines, fighter aircrafts (under development LCA Tejas MK 2) and project Kusha offer the company a long-term growth trajectory.

### Revenue to continue growth at 19% CAGR

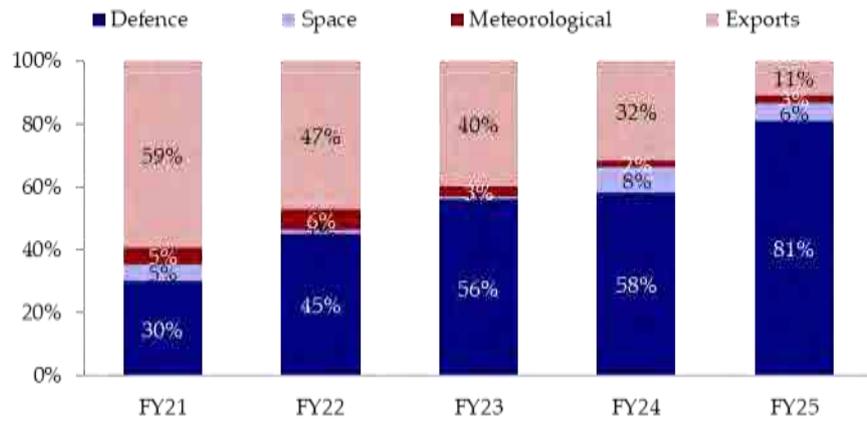


Source: Company, HSIE Research

### Increasing profitability supported by a better domestic mix

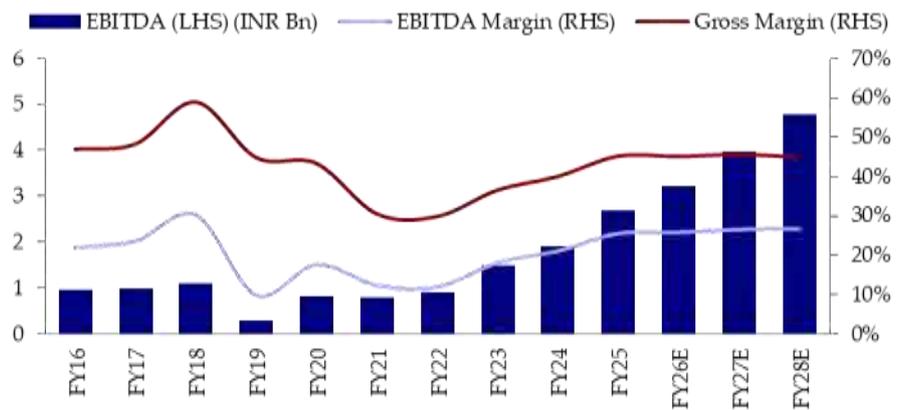
We expect the EBITDA margin to improve marginally going forward as the product mix improves in favor of domestic orders. AMPL is expected to take up domestic defence orders increasingly where the margins average ~40% as against 9% in case of exports. It is noteworthy that the management intends to continue working with export clients as it helps in improving indigenization and provides access to foreign technology. The company aims to achieve a mix of 70% to 30% in domestic to export orders respectively in the medium term. This mix should drive the topline but will keep the margins ~28%+/-1.5% during FY26E-FY28E. We pencil in EBITDA increasing from INR 2.7bn in FY25 to INR 4.8bn in FY28E at a CAGR of 21.1%, with EBITDA margin improving from 25.6% in FY25 to 26.8% in FY28E steadily.

**Declining exports in favour of domestic is aiding EBITDA margins**



Source: Company, HSIE Research

**EBITDA to increase steadily led by domestic orders**

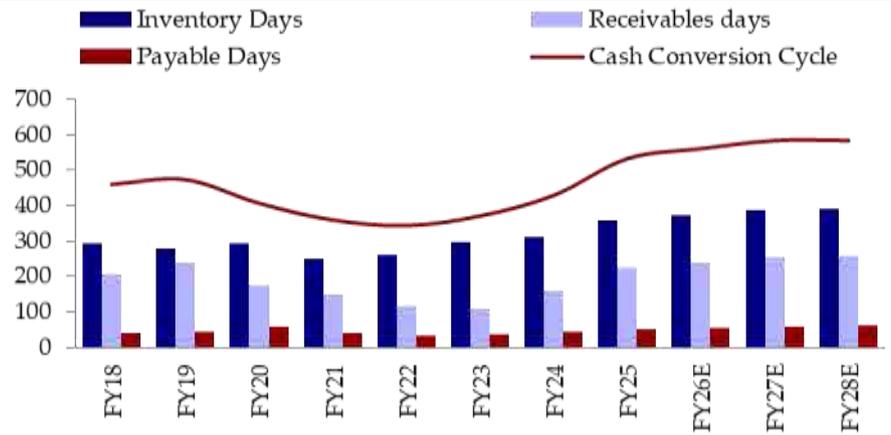


Source: Company, HSIE Research

**Cash Conversion Cycle to peak out in the medium term**

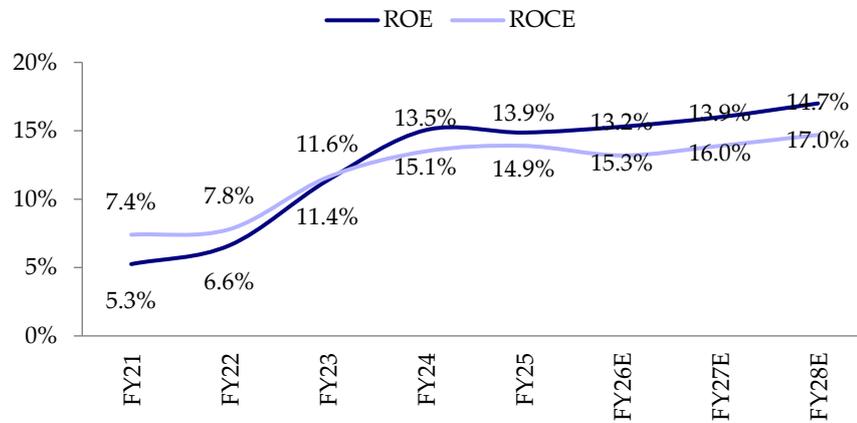
The CCC for Indian defence sector private companies usually stays elevated. We believe this is due to the long development and qualification cycle that these companies need to go through for their products. During this phase, companies must keep the costs of developing products on their balance sheets without being able to book revenue or receive much advances from customers. Hence, it keeps a significant amount of capital tied up in the form of inventory, thus impacting margins and CCC adversely. We see that the company venturing into new segments and taking up orders involving complete product making in the existing segments like radars and space will require working capital flexibility for development and qualification cycles. The big-ticket orders such as Virupaksha radars and QRSAM will keep receivable days elevated in the short term. We expect the working capital days to increase in the short term, then taper out and reduce going forward, as majority of its products get qualified. We estimate CCC to peak out in FY28E at 582.

Cash Conversion Cycle to peak out in medium term



Source: Company, HSIE Research

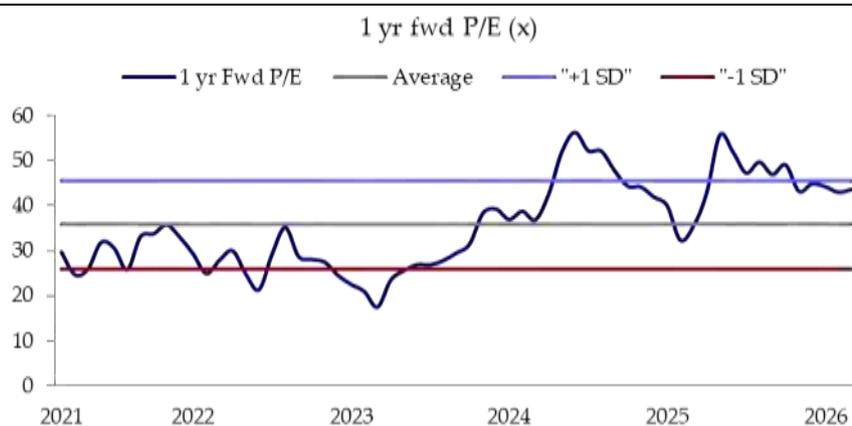
ROE & ROCE to inch up higher over FY25-FY28E



Source: Company, HSIE Research

### View and valuation:

- We believe the revenue growth will be supported by consistent order inflows, aided by disciplined execution of naval projects as well as Virupaksha radar and subsystems for LCA Tejas MK1A. Additionally, product transitioning from development to production phase will enhance the order book and AMPL's revenue. The company's capabilities and product portfolio align well with MoD's objectives and recently released TPCR-25. The guided TAM of ~INR 250bn and a long track record of supplying key subsystems (such as MMICs) to reputed defence clients provides visibility of strong orderbook growth in the medium term. The company's ambition to graduate up the ladder from being a tier 2 supplier to a tier 1 supplier and finally becoming a systems' integrator is well on track, given its high R&D expenditure. We also see the margins increasing gradually over the next few years, with rising domestic and serial production orders and working capital days remaining largely in the current bracket. Given the increase in radar and EW market and company's expertise, we firmly believe in its ability to deliver guided growth in the range of 15-20%.
- Against this backdrop of growth levers, we initiate a ADD rating on the stock with a target of "Rs. 1,130", valuing it at a PE of 40x FY28E EPS of Rs 28.3.



Source: Company, HSIE Research

### Risks and concerns

- **Order Inflow Delay:** While the company's order pipeline is robust, any inordinate delay in receiving the order can derail its estimated financials. Hence, the company's periodic healthy build-up of the orderbook is necessary to maintain earnings estimates and stock multiples.
- **Dependence on government agencies and other companies:** Astra receives a majority of the orders from government agencies such as DRDO and ISRO. It also receives its orders from other companies such as BEL, BDL, and HAL. It supplies modules and sub-systems to these mentioned companies and these components are then assembled by integrators. Any delay among these agencies and companies due to the lumpy nature of the sector projects will lead to revenue streams being delayed for AMPL. For example, the delay in AESA radar for LCA Tejas can adversely impact working capital cycle of the company.
- **Export contribution increment:** The company currently caters to lower-margin exports such as deemed exports, offset exports, and BTP orders. Any substantial increase in such export orders will be detrimental for the overall margins, which will negatively impact the company's earnings.
- **Interest rate risk:** The company has availed a sizable amount of working capital loans to manage its prolonged cash conversion cycle. Any fluctuations in market interest rates will lead to fluctuations in debt obligations. Although the company has low interest-bearing assets, the impact still needs to be monitored.

## Company background

- Astra Microwave Products Ltd (AMPL) is involved in the business of designing, developing, and manufacturing of defence, aerospace and space electronics systems, sub-systems, and various other components. Design, development and manufacturing of radar and electronic warfare (EW) are its key capabilities.
- It has inhouse capabilities of design, engineering, simulation, manufacturing, functional testing, and environmental qualification of defence, microwave and radio frequency-based critical equipment.
- AMPL caters to various sectors namely Defence, Aerospace, Space, Metrology and Telecom. Its ssegmental revenue break-up can be seen in the below table:

Segment	Q1FY25	Q2FY25	Q3FY25	Q4FY25	Q1FY26	Q2FY26
Defence	65.2%	80.1%	85.0%	84.0%	86.4%	77.4%
Space	11.5%	4.9%	3.4%	5.2%	2.4%	2.0%
Exports (including deemed exports)	21.0%	11.7%	8.4%	7.2%	10.0%	14.2%
Meteorological	1.4%	2.5%	2.7%	2.4%	0.4%	5.8%
Others	0.9%	0.8%	0.6%	1.2%	0.8%	0.6%

Source: Company, HSIE Research

The key products are mentioned below:

Segment	Products
Defence	Radars, Electronic warfare, Missile electronics, Telemetry, Counter-drones
Space	Flight model application, Satellite bus, Ground based application, INSAT mobile satellite services terminals
Hydro/metrology	Water level measurement (Bubbler/radar sensor), automatic weather stations, Agro metrology Met stations, Automatic Rain gauge X band Doppler weather radar (DWR)
Others	Antennas, Monolithic microwave integrated circuit (MMIC) used in radar and SATCOMs, Homeland securities, Environmental, electromagnetic interference, and electromagnetic compatibility testing

Source: Company, HSIE Research

Its key clients include various DRDO labs, defence PSUs, various ISRO Centers, Ministry of Defence, ministry of home affairs, and many foreign OEMs.

**Manufacturing facilities:** The company has its manufacturing facilities widely spread across Hyderabad and Bangalore.

Location	Inception year	Land area (acres)	Building area (Sqft)	Facility offerings
Hyderabad unit 1	1999	1.13	18,000	Automatic weather station (AWS), Hydrology & metrology
Hyderabad unit 2	1995	2.0	20,000	Near field test range, Outdoor test range, multi-layer antenna fabrication
Hyderabad unit 3	2003	9.9	77,000	Clean room, Laser welding, Vibration table
Hyderabad unit 4	2009	19.0	180,000	EMI/EMC Halt/Hass Chamber, ESS Chamber
Hyderabad unit 5	2019	0.59	23,000	MIC facility CNC, Drilling Copper plating, gold plating, Etching developing
Bengaluru	2012	5.0	100,000	Near field test range (NFTR), Satellite integration facility

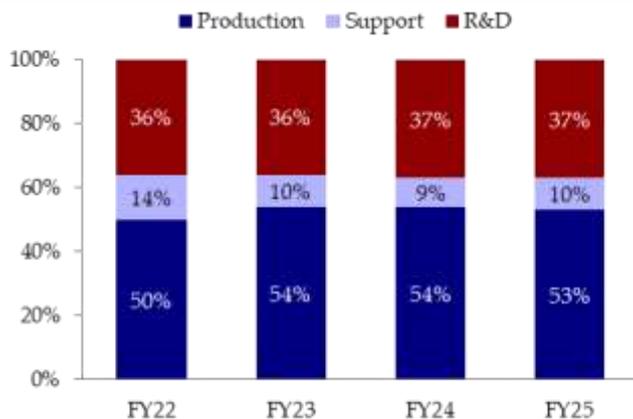
Source: Company, HSIE Research

## Key defence, telemetry, and space projects in which the company has participated over the years are:

- Line replacement units (LRUs) supplied to 3D-central acquisition radar Ashesha and Arudhra
- Supplied transmit/receive (T/R) module and control units for long-range radar of Electronics & Radar Development Establishment (LRDE), a unit of DRDO
- Proto Development & Production of Digital Transmit Receive Units (DTRUs) and Digital Receive Units
- Developed & supplied a land-based 7.3m Ground Telemetry Station (to collect data captured by sensor/software) which is designed to acquire and track airborne targets using five different carriers simultaneously
- **Delivered Shakti Project Sub-modules and Nayan Project Submodules.** Shakti Project of Bharat Electronics (BEL) was manufacturing of Shakti electronic warfare (EW) system, a major defence contract for the Indian Navy awarded to BEL. Also, the Nayan project refers to a military communication intelligence (COMINT) system operating in the ultra-high frequency range. It is designed to provide strategic and tactical information by intercepting and analyzing enemy transmissions.
- The company has developed, supplied, and commissioned 14 Doppler weather radars (DWRs), a key component in weather forecasting for military operations.
- Developed and Supplied Active Array Antenna Unit (AAAU) For Uttam AESA Radar for LCA Mk1A fighter aircraft
- Developed and Supplied X-band AESA Seeker Head
- Developed and Supplied complete AAAU for Ship-borne Radars

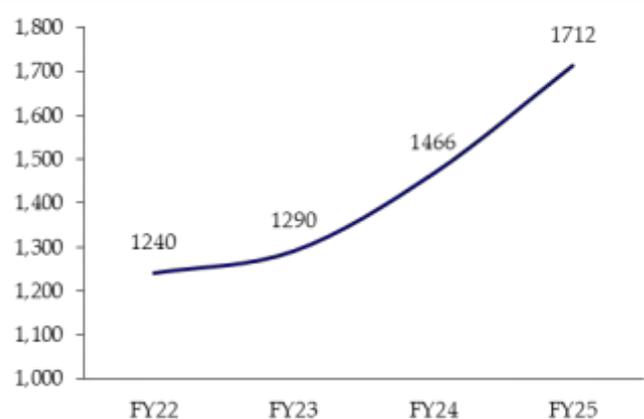
The company has been investing adequately in its employee base to retain talent. As seen in the below charts, the current employee count is 1,712 in FY25, which has gone up from 1,240 in FY22. Further, ~37% of the workforce is involved in R&D, which reflects the company's innovation focus.

**Employee break-up**



Source: Company, HSIE Research

**Total number of employees**



Source: Company, HSIE Research

## Key milestones

The below table highlights the company's important achievements over the years

1991	Company entered Telecom segment
1993	Radar and strategic subsystems
1994	Company went public
2000	EW subsystems
2003	Space electronic sub-systems
2005	Strategic Semi-conductors (MMIC)
2015	Entered radar systems
2018	1st System delivered to defence
2020	Completed radar production order for paramilitary
2021	Completed DWR production order for India Metrology Department
2022	Established Earth station for India Metrology department
2022	Delivered phased array telemetry system, T&E facility for EW Systems
2023	delivered AAAU for air-borne AESA Radar
2024	Delivered pulsed phased array tracking radar to PXE, DRDO
2025	Delivered a precision approach radar to HAL, seekers, and EW modules for defence

Source: Company, HSIE Research

## Annexure I: Management Personnel

Name (designation)	Description
<b>Mr. S. Gurunatha Reddy (Managing director)</b>	<p>Graduate in Science and Mathematics and Fellow Chartered Accountant</p> <p>34 years of private sector experience in accounting, finance, taxation, secretarial, etc.</p>
<b>Dr. Maram Venkateshwar Reddy (Joint managing director)</b>	<p>Graduate in Engineering (Electronics) and a postgraduate in business administration.</p> <p>30 years of experience in handling marketing and business operations in the domain of defence, space, and telecom segment in India and overseas market</p>
<b>Mr. Atim Kabra (Executive Director Strategy &amp; Business Development)</b>	<p>Founder and Managing Director of Frontline Strategy Funds Pte. Ltd., a Singapore registered and licensed venture capital fund manager.</p> <p>Over 27 years of well rounded "equities exposure" including Portfolio Management, Equity Sales, and Equity Research with global institutions like ABN AMRO Bank, ANZ Grindlays Bank</p>
<b>Mr. P. A. Chitrakar (Non-Executive Director and Head of R&amp;D)</b>	<p>Associated with the Defence Electronics Laboratory, Hyderabad, as a scientist for over 22 years before co-founding Astra Microwave</p> <p>An MSc (Physics) from Mysore University and an MTech (Advanced Electronics) from JNTU, Hyderabad</p>
<b>Dr. Avinash Chander (Chairman &amp; Independent Director)</b>	<p>Doctorate from JNTU Hyderabad</p> <p>Retired Secretary, Defence R&amp;D and Director General DRDO</p>
<b>Mr. Venu Raman Kumar (Independent director)</b>	<p>Founder and former Chairman/Vice Chairman//CEO of NASDAQ-listed M*Modal Inc. Also, founded Aeries Technology, a company that provides Technology Services and Solutions</p> <p>He joined the board of T-Hub, India's most successful tech incubators and accelerators and was also appointed as a chairman of Global Entrepreneurship Network India during the GES Summit</p>
<b>Mrs. Anuradha Mookerjee (Independent director)</b>	<p>M.Phil. (Defence and Strategic Studies) and a seasoned bureaucrat with over three decades of experience in Indian Revenue Services. She Joined the Government in 1975, after standing first in the combined merit list for IFS/IAS and opting to serve in the IAS. Mrs. Mookerjee is a topper of the 1986 batch of the Indian Revenue Service.</p>
<b>Mr. Suresh Somani (Non-executive director)</b>	<p>Businessman, investor, and philanthropist with a substantial experience of over 42 years in equity markets</p> <p>He is the director of M/s. Ratnabali Investment Private Ltd</p>

Source: Company, HSIE Research

# Astra Microwave Products: Initiating Coverage

## P&L (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>Net Revenues</b>	<b>6,409</b>	<b>7,505</b>	<b>8,155</b>	<b>9,088</b>	<b>10,512</b>	<b>12,408</b>	<b>14,867</b>	<b>17,808</b>
Growth (%)	37.2	17.1	8.7	11.4	15.7	18.0	19.8	19.8
COGS	4,459	5,272	5,183	5,459	5,774	6,824	8,102	9,830
Employee Expense	714	806	952	1,137	1,418	1,674	1,983	2,278
Other Expenses	447	534	544	576	630	700	824	924
<b>EBITDA</b>	<b>790</b>	<b>892</b>	<b>1,476</b>	<b>1,916</b>	<b>2,690</b>	<b>3,210</b>	<b>3,957</b>	<b>4,776</b>
EBITDA Growth (%)	(4.3)	13.0	65.5	29.8	40.4	19.3	23.3	20.7
<b>EBITDA Margin (%)</b>	<b>12.2</b>	<b>12.3</b>	<b>10.9</b>	<b>7.6</b>	<b>11.6</b>	<b>12.5</b>	<b>12.8</b>	<b>12.9</b>
Depreciation	235	220	237	250	350	364	482	520
<b>EBIT</b>	<b>554</b>	<b>672</b>	<b>1,240</b>	<b>1,666</b>	<b>2,340</b>	<b>2,846</b>	<b>3,475</b>	<b>4,255</b>
Other Income (Including EO Items)	80	41	25	237	269	137	98	90
Interest	249	211	305	313	571	572	678	762
<b>PBT</b>	<b>385</b>	<b>502</b>	<b>959</b>	<b>1,590</b>	<b>2,037</b>	<b>2,411</b>	<b>2,895</b>	<b>3,583</b>
Total Tax	97	123	261	379	502	603	724	896
<b>RPAT</b>	<b>289</b>	<b>379</b>	<b>698</b>	<b>1,211</b>	<b>1,535</b>	<b>1,809</b>	<b>2,172</b>	<b>2,687</b>
Exceptional Gain/(loss)	-	-	-	-	-	-	-	-
<b>Adjusted PAT</b>	<b>289</b>	<b>379</b>	<b>698</b>	<b>1,211</b>	<b>1,535</b>	<b>1,809</b>	<b>2,172</b>	<b>2,687</b>
APAT Growth (%)	(34.5)	31.3	84.4	73.4	26.8	17.8	20.1	23.8
Adjusted EPS (Rs)	3.3	4.4	8.1	12.9	16.2	19.0	22.9	28.3
EPS Growth (%)	(34.4)	31.2	84.4	59.6	25.7	17.8	20.1	23.8

## Balance Sheet (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>SOURCES OF FUNDS</b>								
Share Capital - Equity	173	173	173	190	190	190	190	190
Reserves	5,414	5,683	6,253	9,472	10,795	12,395	14,357	16,836
<b>Total Shareholders Funds</b>	<b>5,587</b>	<b>5,856</b>	<b>6,426</b>	<b>9,662</b>	<b>10,985</b>	<b>12,585</b>	<b>14,547</b>	<b>17,026</b>
Long Term Debt	-	34	33	155	394	394	394	394
Short Term Debt	1,216	670	1,830	2,222	3,841	4,341	4,841	5,341
<b>Total Debt</b>	<b>1,216</b>	<b>704</b>	<b>1,863</b>	<b>2,376</b>	<b>4,235</b>	<b>4,735</b>	<b>5,235</b>	<b>5,735</b>
Net Deferred Taxes	(28)	(69)	(91)	(111)	(114)	(114)	(114)	(114)
Other Non-current Liabilities & Provns	40	439	744	585	689	820	982	1,177
<b>TOTAL SOURCES OF FUNDS</b>	<b>6,815</b>	<b>6,930</b>	<b>8,943</b>	<b>12,512</b>	<b>15,794</b>	<b>18,025</b>	<b>20,650</b>	<b>23,823</b>
<b>APPLICATION OF FUNDS</b>								
Net Block	1,524	1,586	1,661	1,674	2,229	2,799	2,759	2,687
CWIP	-	1	22	130	31	31	31	31
Other Non-current Assets	306	314	291	480	565	603	638	670
<b>Total Non-current Assets</b>	<b>1,830</b>	<b>1,902</b>	<b>1,974</b>	<b>2,284</b>	<b>2,824</b>	<b>3,433</b>	<b>3,428</b>	<b>3,388</b>
Inventories	3,296	4,193	4,191	5,146	6,159	6,962	8,598	10,476
Debtors	2,668	2,051	2,836	5,052	7,861	8,131	10,272	12,441
Other Current Assets	1,205	695	370	840	571	663	782	924
<b>Cash &amp; Equivalents</b>	<b>425</b>	<b>775</b>	<b>1,109</b>	<b>1,309</b>	<b>982</b>	<b>1,963</b>	<b>1,393</b>	<b>1,284</b>
<b>Total Current Assets</b>	<b>7,594</b>	<b>7,714</b>	<b>8,506</b>	<b>12,347</b>	<b>15,573</b>	<b>17,719</b>	<b>21,045</b>	<b>25,126</b>
Creditors	377	554	458	838	767	986	1,282	1,670
Other Current Liabilities & Provns	2,233	2,132	1,078	1,280	1,837	2,140	2,541	3,021
<b>Total Current Liabilities</b>	<b>2,611</b>	<b>2,686</b>	<b>1,536</b>	<b>2,118</b>	<b>2,604</b>	<b>3,126</b>	<b>3,823</b>	<b>4,691</b>
<b>Net Current Assets</b>	<b>4,984</b>	<b>5,028</b>	<b>6,970</b>	<b>10,229</b>	<b>12,970</b>	<b>14,592</b>	<b>17,222</b>	<b>20,435</b>
<b>TOTAL APPLICATION OF FUNDS</b>	<b>6,814</b>	<b>6,930</b>	<b>8,943</b>	<b>12,512</b>	<b>15,794</b>	<b>18,025</b>	<b>20,650</b>	<b>23,823</b>

# Astra Microwave Products: Initiating Coverage

## CASH FLOW (INR Mn)

Year ending March	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Reported PBT	385	502	959	1,590	2,037	2,411	2,895	3,583
Non-operating & EO Items	(27)	39	26	(189)	(337)	(137)	(98)	(90)
Interest Expenses	249	211	305	313	571	572	678	762
Depreciation	235	220	237	250	350	364	482	520
Working Capital Change	(1,012)	383	(1,526)	(3,401)	(3,114)	(542)	(3,079)	(3,178)
Tax Paid	(78)	(208)	(256)	(378)	(410)	(603)	(724)	(896)
<b>OPERATING CASH FLOW ( a )</b>	<b>(246)</b>	<b>1,147</b>	<b>(255)</b>	<b>(1,815)</b>	<b>(901)</b>	<b>2,064</b>	<b>154</b>	<b>702</b>
Capex	(37)	(279)	(339)	(475)	(787)	(940)	(435)	(430)
Free Cash Flow (FCF)	(283)	867	(594)	(2,290)	(1,688)	1,124	(281)	272
Investments	(58)	-	-	-	(0)	-	-	-
Non-operating Income	87	20	57	39	24	137	98	90
<b>INVESTING CASH FLOW ( b )</b>	<b>(8)</b>	<b>(260)</b>	<b>(282)</b>	<b>(436)</b>	<b>(763)</b>	<b>(803)</b>	<b>(337)</b>	<b>(340)</b>
Debt Issuance/(Repaid)	619	(512)	1,076	487	2,016	500	500	500
FCFE	337	356	482	(1,803)	328	1,624	219	772
Share Capital Issuance	-	-	-	2,250	-	-	-	-
Dividend	(104)	(104)	(122)	(153)	(191)	(209)	(209)	(209)
Others	(178)	(172)	(206)	(260)	(412)	(572)	(678)	(762)
<b>FINANCING CASH FLOW ( c )</b>	<b>338</b>	<b>(787)</b>	<b>748</b>	<b>2,324</b>	<b>1,413</b>	<b>(281)</b>	<b>(386)</b>	<b>(471)</b>
<b>NET CASH FLOW (a+b+c)</b>	<b>84</b>	<b>100</b>	<b>211</b>	<b>73</b>	<b>(252)</b>	<b>981</b>	<b>(570)</b>	<b>(109)</b>
EO Items, Others	-	-	-	-	-	-	-	-
Closing Cash & Equivalents	175	168	379	452	201	1,182	612	503

## KEY RATIOS

	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>PROFITABILITY (%)</b>								
GPM	30.4	29.7	36.4	39.9	45.1	45.0	45.5	44.8
EBITDA Margin	12.3	11.9	18.1	21.1	25.6	25.9	26.6	26.8
EBIT Margin	8.6	9.0	15.2	18.3	22.3	22.9	23.4	23.9
APAT Margin	4.5	5.0	8.6	13.3	14.6	14.6	14.6	15.1
RoE	5.3	6.6	11.4	15.1	14.9	15.3	16.0	17.0
RoIC (or Core RoCE)	7.0	8.1	12.9	13.3	13.6	13.8	14.8	15.3
RoCE	7.4	7.8	11.6	13.5	13.9	13.2	13.9	14.7
<b>EFFICIENCY</b>								
Tax Rate (%)	25.2	24.6	27.2	23.9	24.7	25.0	25.0	25.0
Fixed Asset Turnover (x)	2.3	2.5	2.4	2.6	2.4	2.3	2.6	2.9
Inventory (days)	251	259	295	312	357	372	387	389
Debtors (days)	147	115	109	158	224	239	252	255
Other Current Assets (days)	69	34	17	34	20	19	19	19
Payables (days)	40	32	36	43	51	53	58	62
Other Current Liab & Provsns (days)	127	104	48	51	64	63	62	62
Cash Conversion Cycle (days)	357	342	369	427	531	559	582	582
Working Capital (days)	299	272	337	410	487	515	539	539
Net D/E (x)	0.1	(0.0)	0.1	0.1	0.3	0.2	0.3	0.3
Interest Coverage (x)	2.2	3.2	4.1	5.3	4.1	5.0	5.1	5.6
<b>PER SHARE DATA (Rs)</b>								
EPS	3.3	4.4	8.1	12.9	16.2	19.0	22.9	28.3
CEPS	6.0	6.9	10.8	15.5	19.9	22.9	27.9	33.8
Dividend	1.20	1.20	1.41	1.61	2.01	2.20	2.20	2.20
Book Value	64.5	67.6	74.2	101.8	115.7	132.5	153.2	179.3
<b>VALUATION</b>								
P/E (x)	299.0	227.8	123.5	77.4	61.6	52.3	43.5	35.2
P/BV (x)	15.4	14.7	13.4	9.8	8.6	7.5	6.5	5.6
EV/EBITDA (x)	110.2	96.6	58.9	49.9	36.3	30.3	24.9	20.7
EV/Revenues (x)	13.6	11.5	10.7	10.5	9.3	7.8	6.6	5.6
OCF/EV (%)	(0.3)	1.3	(0.3)	(1.9)	(0.9)	2.1	0.2	0.7
FCF/EV (%)	(0.3)	1.0	(0.7)	(2.4)	(1.7)	1.2	(0.3)	0.3
FCFE/Mkt Cap (%)	0.4	0.4	0.6	(1.9)	0.3	1.7	0.2	0.8
Dividend Yield (%)	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2

Source: Company, HSIE Research

# Apollo Micro Systems

## Catapulting into the larger orbit

Apollo Micro Systems Ltd (AMS) is a sub-systems/systems/weapons developer and manufacturer, with a focus on indigenization. The company has been working with DRDO on weapon system platforms for over 40 years and has a presence in all of India's key missile and naval warfare programs. The company with its heavy focus on R&D has built many mission critical sub-systems in-house which are in advanced stages of qualifications and will fuel serial production order inflows. The company is currently in the phase of transitioning from being a sub-system vendor to a complete weapon systems manufacturer. This forward integration and simultaneous acquisition of IDL Explosives Ltd. is providing backward integration enabling AMS to turn into an end-to-end weapon solutions provider. Capitalizing on the opportunities generated by favorable government policies encouraging private participation in the defence sector, AMS is expected to be a key beneficiary. In accordance with our optimistic view on the company, we initiate coverage on the stock with a BUY rating arriving at a target price of Rs. 280, based on a PE multiple of 40x applied to FY28E EPS.

- Venturing into weapon manufacturing:** AMS is in the advanced stages of getting qualifications for its key weapons such as underwater mines, underwater moored mines, anti-submarine warfare rockets, medium-range aerial rockets, Limpet mines and aerial bombs. Once qualified, AMS will get direct orders from ministry of defence for these products, which will elevate it to a tier-1 supplier from existing status of a tier-2 or tier-3 supplier. This will boost the company's revenue potential and margin profile.
- Strong Order Book and a growing pipeline:** AMS's order backlog stood at INR 13bn as of Q3FY26, with a development to production contract ratio at 65:35 respectively. We expect this to shift toward 55:45 by FY28E, providing visibility of revenue growth and margin expansion as the company receives serial production orders. AMS's future order pipeline is anchored by a bouquet of advanced weapon systems and subsystems under development. Order pipeline includes multiple strategically important programs such as MIGM (~INR 10 bn), QRSAM-related electronics, torpedoes across multiple categories, anti-submarine warfare rockets, and grad rockets. We estimate the order book to reach INR 15.1 bn by FY27E.
- IDL acquisition to drive synergies:** The explosives market is expected to reach USD 9.4bn by FY29E at an 8.8% CAGR. The acquisition of IDL Explosives Ltd. will enable AMS to tap the unpenetrated market of explosives, enhance its ability to pursue large-scale and high value projects. Through IDL, AMS wants to venture into R&D of explosives, tapping the lucrative market of TNT & RDX worldwide.
- Financials and valuation:** AMS delivered a 32.2% revenue CAGR over FY22-25. We forecast a revenue/EBITDA/PAT CAGR of 40%/45.2%/56.1% over FY25-FY28E, with EBITDA margin in FY28E at 25.7%.

YE March (INR mn)	FY23	FY24	FY25	FY26E	FY27E	FY28E
Net Sales	2,975	3,716	5,621	8,038	11,413	15,408
EBITDA	720	961	1,516	2,231	3,212	4,423
APAT	330	433	788	1,282	1,902	2,611
Diluted EPS (INR)	9.0	1.2	1.9	3.2	5.0	7.0
P/E (x)	23.5	171.0	114.0	66.9	42.8	30.3
EV/EBITDA (x)	63.0	64.2	44.6	31.1	22.0	16.5
RoCE (%)	9.8	10.1	12.0	14.8	17.1	18.5

Source: Company, HSIE Research

**BUY**

CMP (as on 05 Mar 2026)	INR 215
Target Price	INR 280
NIFTY	24,766

### KEY STOCK DATA

Bloomberg code	APOLLO IN
No. of Shares (mn)	354
MCap (INR bn) / (\$ mn)	76/830
6m avg traded value (INR mn)	1,733
52 Week high / low	INR 355/101

### STOCK PERFORMANCE (%)

	3M	6M	12M
Absolute (%)	(18.1)	(29.6)	89.7
Relative (%)	(11.4)	(28.7)	81.2

### SHAREHOLDING PATTERN (%)

	Sep-25	Dec-25
Promoters	50.3	52.0
FIs & Local MFs	1.5	1.3
FPIs	9.0	5.0
Public & Others	39.3	41.8
Pledged Shares	-	-

Source: BSE

Pledged shares as % of total shares

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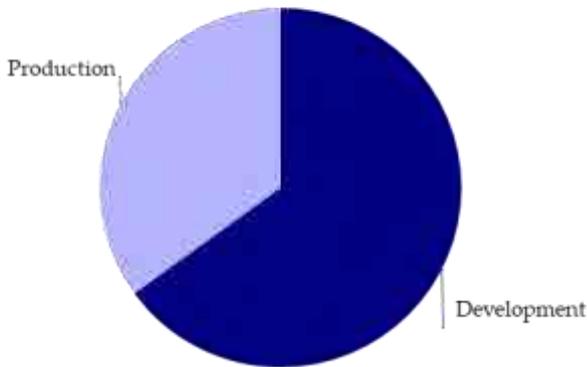
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Focus Charts

Developmental orders at 65%

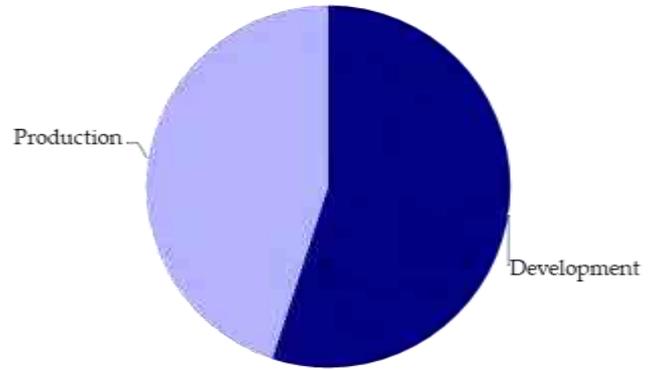
Order Break Up in FY25



Source: Company, HSIE Research

Production orders to shift to 45% in from 35% in FY25

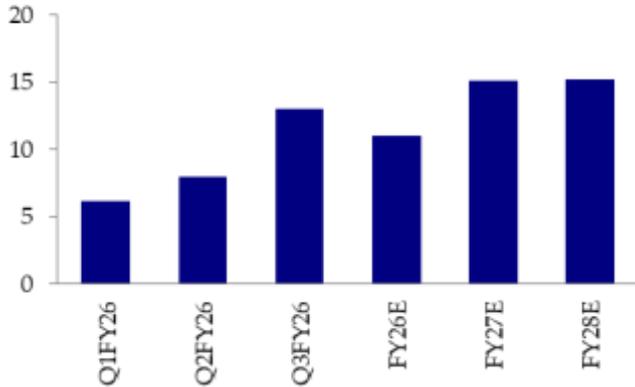
Expected Order Break Up in FY28E



Source: Company, HSIE Research

Order book surge to be led by production orders

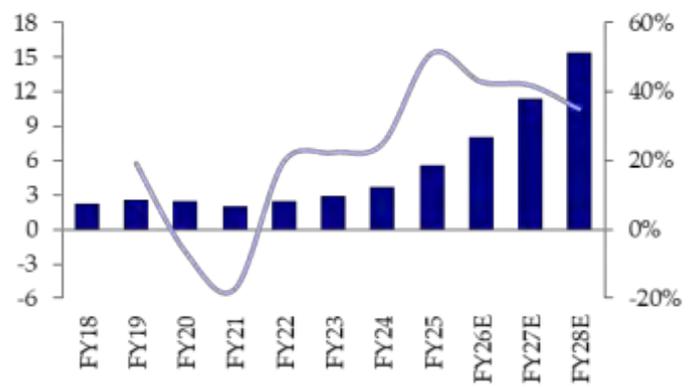
Order Book (INR Bn)



Source: Company, HSIE Research

Revenue to grow at a CAGR of 40% over FY25-FY28E

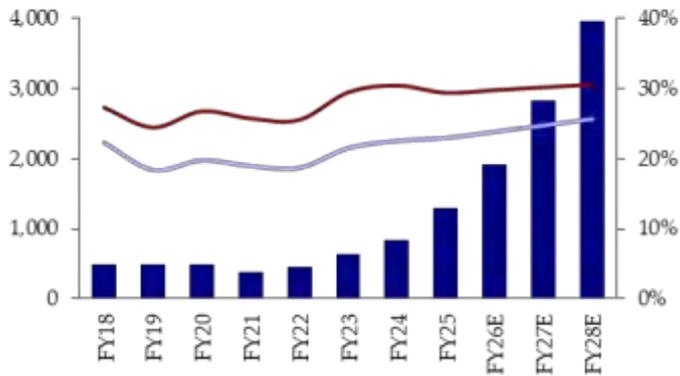
Revenue (LHS) (INR Bn) Growth (RHS)



Source: Company, HSIE Research

Margins set to increase on rising production orders

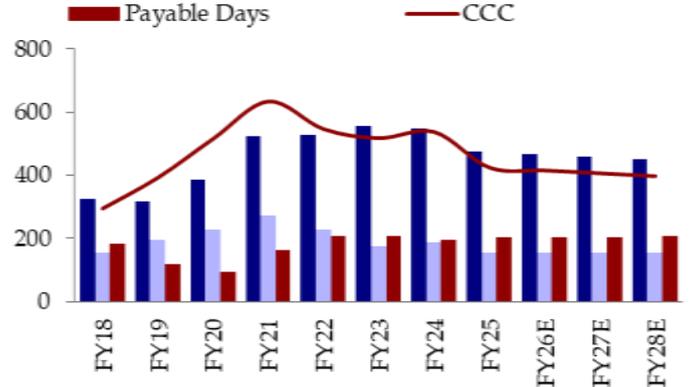
EBITDA (LHS) (INR Mn) EBITDA Margin (RHS)



Source: Company, HSIE Research

CCC to dip in the near term

Inventory Days Payable Days Receivable Days CCC



Source: Company, HSIE Research

## Strong order pipeline to propel revenue, margin

### Transitioning from development to production phase

- Defence contracts are often lumpy and follow long development cycles, so a strong orderbook indicates stable expected revenue and predictable profitability. As of Q3FY26, AMS's order book stood at roughly INR 13bn. This backlog has been building steadily through FY26, up from about INR 5.3bn in Feb'25 and INR 6.2bn by May'25.
- This is worth highlighting that a significant portion of this orderbook is in the development phase, which typically has lower scale and hence lower profitability. For AMS, current development-to-production contract ratio is roughly 65:35. In another words, 65% of the outstanding orders are still in engineering and validation phase with lower immediate revenue recognition. Only 35% of the orders are in the production phase and, hence, are responsible for significant part of the revenue.
- As new subsystems complete trials and enter the production stage, the proportion of high visibility, revenue generating orders will rise. Development programs signed in recent quarters are expected to convert into steady production orders in coming years. This will improve revenue growth and margin visibility.

### Future potential for unparalleled growth

#### Explosives

- The acquisition of IDL Explosives Ltd. will enable AMS to tap the unpenetrated explosives market, enhance its ability to pursue large scale, and high value projects. This will also increase addressable market of AMS via new product portfolio and drive margin expansion through cost efficiencies enabled by vertical integration. Also, through IDL, AMS aims to venture into R&D of explosives, tapping the highly lucrative market of TNT, RDX, etc. worldwide. The explosives market size is expected to see strong growth in the next few years, growing at a CAGR of 8.8% to reach USD 9.4bn by 2029. Rising geo conflicts will be a growth driver for this segment.

#### Complete Weapon Solutions

- The company has several complete weapon solutions under development and at qualification stages. These products include MIGM, underwater moored mines, ASW rockets, Medium Range Aerial Rockets, Aerial Bombs and GRAD rockets. Each product has high potential to receive orders not just domestically but internationally too. These products combined have the potential to increase the company's turnover multifold.

We will be monitoring any development across both spaces for the company.

### Major programs and product pipeline

- AMS's future order pipeline is richly packed with an impressive array of advanced weapon systems and subsystems under development.

#### Key projects include:

- MIGM program (an advanced multi-influence guided mine system, developed with DRDO): this is ~INR 40bn program to be completed by AMS and BDL. In this collaboration, AMS is a designated production partner. As per estimates, share of AMS is expected to be around INR 20bn. This order is expected to be received by Q1FY27 and has the potential of lifting up orderbook of the company significantly.

- QRSAM: The company is also expected to play a role in the large QRSAM order to be placed by MOD by Q1FY27. While BEL will be the main integrator and BDL will get missile related orders in this project, AMS is also expected to get orders for subsystems related to missiles from BDL.
- ALWT and EHWT: AMS is also developing torpedo systems across multiple categories: the Advanced Light Weight Torpedo (ALWT) for ASW (Anti-Submarine Warfare) applications and an Enhanced Heavy Weight Torpedo (EHWT), both of which are nearing production readiness. A new ASWR (Anti-Submarine Warfare Rocket) system is also in late-stage development, with trials slated within next few quarters.
- Other notable items in the pipeline include two variants of an underwater mine – one fully in-house design and another co-developed with DRDO, as well as rocket munitions like GRAD rockets (multi barrel area saturation rockets) and guided rocket warheads.
- AMS also designs novel naval ordnance: miniaturized diver-deployable mines, and specialized land mines with ‘top attack’ and ‘top anti attack’ fusing.
- In total, there are around 12-13 full weapon systems under development. Each of these has the potential to mature into a production contract within 2-4 years if it clears trials and approval process of the ministry of defence. If fructified, these weapon systems have potential to catapult AMS into a full-fledged tier-1 supplier for the weapon requirements of the armed forces. And entering this orbit would mean a long trajectory of strong revenue growth with high profitability for the company. Hence, in our view, development and approval of these weapon systems is a key monitorable.
- This deep R&D pipeline means AMS is not solely reliant on a single product, instead its order inflow is diversified across multiple programs at different stages of the R&D to production lifecycle.

### Licensing and technology expanding the product portfolio

- Beyond weapons, AMS has significantly broadened its addressable market through new manufacturing licenses and collaborations. In Dec’25, the company received a 15-year DPIIT license to produce unmanned defence aircraft equipment, explicitly covering unmanned helicopters and related aerial platforms.
- This license enables AMS to build complete unmanned aerial systems (UAS) including logistics UAVs, delivery drones and even offensive/attack class drones. The company is already working with both domestic and foreign partners to co-develop these UAVs. According to disclosures, the UAV projects are on track: the logistic and attack drone platforms under development are expected to enter field trials over the next two quarters. By adding UAVs to its portfolio, AMS is moving into a rapidly expanding, sticky in nature, high-value segment of the defence market.
- In parallel, AMS is expanding its electronics and avionics capabilities. The DPIIT approval also covers inertial navigation and radar systems. As per industry estimates, size of the radar market in India is ~INR 100bn and growing at 5% per annum. AMS is trying to enter this lucrative space as it has started building full radar assemblies: transmit/receive modules, antennas, signal processors and other subsystems. Capital investments have begun in calibration/test equipment to support these efforts.
- An important strategic driver is the under penetration in Indian Naval defence. This space is highly import dependent and now government is focusing on increasing self-sufficiency through naval modernization program with high level

of indigenization. AMS has a chance to show its production expertise and innovation capabilities by grabbing the opportunities created by these programs. On the same lines, AMS recently signed a tri-party MoU with IIT-Madras and the Indian Navy to co-develop next-gen naval armaments and guidance systems.

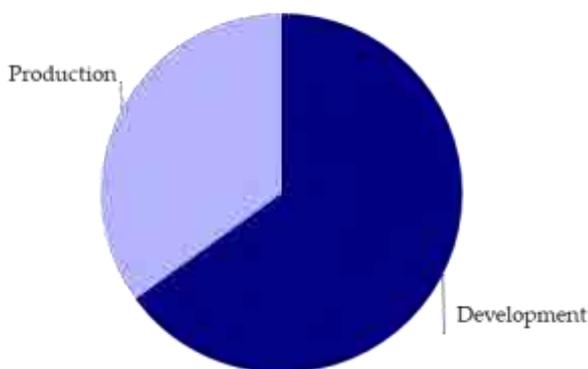
- All in all, AMS is simultaneously pursuing missiles, torpedoes, mines, UAVs, navigation units and radars – diversifying its order inflow streams to mitigate cyclicity of the business.

**Orderbook shift to drive operating leverage**

- We expect the above developments to drive a sharp increase in AMS’s orderbook over the next few quarters. Assuming anticipated wins on large program like MIGM, QRSAM and torpedoes, the order book could potentially reach INR 15bn by FY27E.
- In turn, this backlog expansion should feed through into revenue growth. Currently, only ~35% of the order book is in production phase while the remaining ~65% is under development. As more projects move into production phase, revenues, and cash flows will rise substantially. As per the management guidance, by FY28E, the share of production contracts in the orderbook will reach 45%, from current level of 35%. As this share of production contracts in the orderbook keeps growing, it will keep feeding the revenue stream and will drive operating leverage-led margin expansion.
- Also, as the funding of R&D (which currently is a drag on cash flows) becomes less burdensome once projects mature and move to production phase at scale. Hence, in our view, shifting of more projects from development to the production phase has a potential to improve working capital cycle of the company. This, in turn, will free up more cash for execution of future projects.

**Developmental orders at 65%**

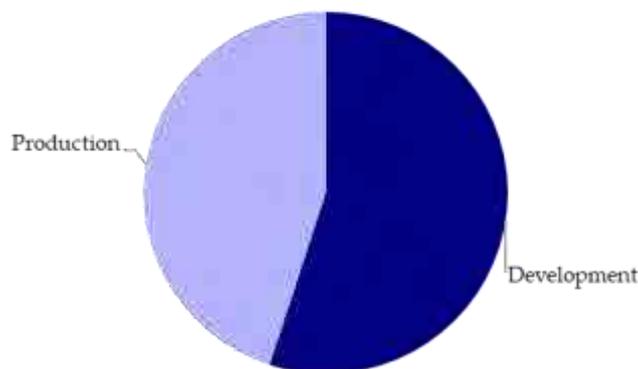
Order Break Up in FY25



Source: Company, HSIE Research

**Production orders to shift to 45% in from 35% in FY25**

Expected Order Break Up in FY28E



Source: Company, HSIE Research

Order book surge to be led by production orders



Source: Company, HSIE Research

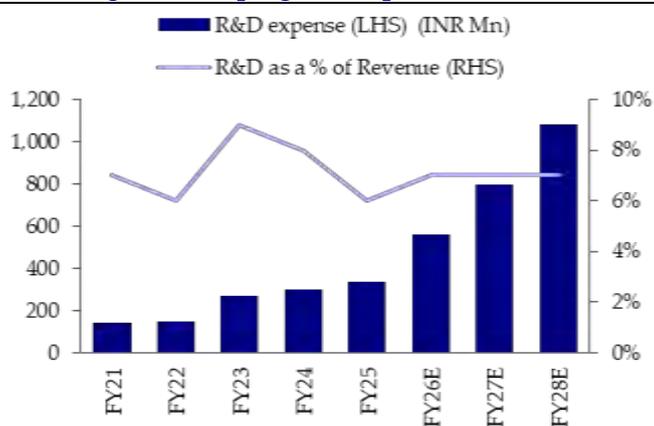
## R&D to steer product development and order prospects

AMS participates in 150+ indigenous defence/space programmes and 60+ Development-cum-Production-Partner (DcPP) projects. It has a presence across missile systems, naval systems, avionics, space satellites, and homeland security segments. This breadth from embedded electronics to complete systems provides AMS a large opportunity to leverage R&D as its competitive edge to drive growth.

### R&D highlights

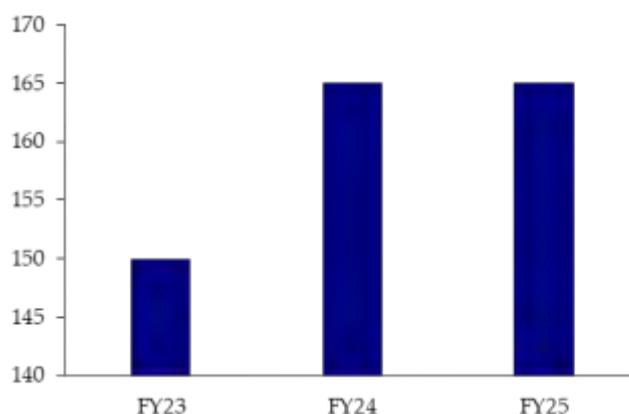
- AMS has historically allocated 7-8% of revenue towards R&D, with a marginal dip to 6% in FY25 with an expenditure of around INR 335mn. AMS plans to scale R&D spends up to INR 1bn in FY26E.
- R&D workforce stands at 165+ employees, which has risen from ~150 in FY23. The company boasts of zero attrition in FY25.
- AMS has secured recognition of being a preferred, authorized, and collaborative R&D partner by BEL due to its expertise in electronic and naval systems.
- Through internal R&D and vertical integration (via its acquisition of IDL explosives) AMS aims to build complete weapons systems and provide end-to-end defence solutions rather than being limited to an electronics subsystems manufacturer. With vertical integration and R&D initiatives, AMS is building a strategic moat which will help it garner rising quantum of defence orders in the years to come. By owning design, manufacturing, integration and full system capability, AMS will be positioned as a front-end defence vendor rather than a subcontractor.
- R&D product portfolio includes aerial bombs, underwater acoustic sensors, critical actuation systems, and secured data links, etc. After the qualification of many other products in pipeline, this R&D segment is expected to receive orders at an accelerated pace.
- AMS's plan on increased R&D, vertical integration and full weapon system delivery is estimated to translate into better margin profile and improved cash flows. A higher value added vertically integrated products would offer better operating margins than plain sub-systems, superior order book visibility and longer duration projects. Programs such as those of DRDO, naval and Airforce are long duration projects that provide stable predictable revenue with reduced cyclicity. This integrated profile will act as a competitive edge for AMS against other subsystem manufacturers which are not vertically integrated.

### Increasing R&D helping developmental orders



Source: Company, HSIE Research

### R&D team standing strong at 165+



Source: Company, HSIE Research

## Leveraging strategic partnerships to capture participation in tier-1 defence mandates

AMS has a long-standing collaboration record with the below-mentioned partners, which helps it grow technologically and participate in key defence programs of India.

- BEL – The approved partnership with BEL supports shared innovation in electronic warfare and defence electronics boosting R&D quality.
- GRSE - Collaborations on weapon systems and electronics to support maritime defence initiatives.
- BDL – Joint efforts with BDL for co-development of naval platforms and naval systems, increased expertise in mission critical subsystems.
- Munitions India Ltd. and TCL – MoUs with these enterprises enable selective engagement in high-potential defence programs.
- AMS has participated in 60+ development cum production partner (DcPP) as a subsystem partner, contributing to a wide range of defence critical projects.

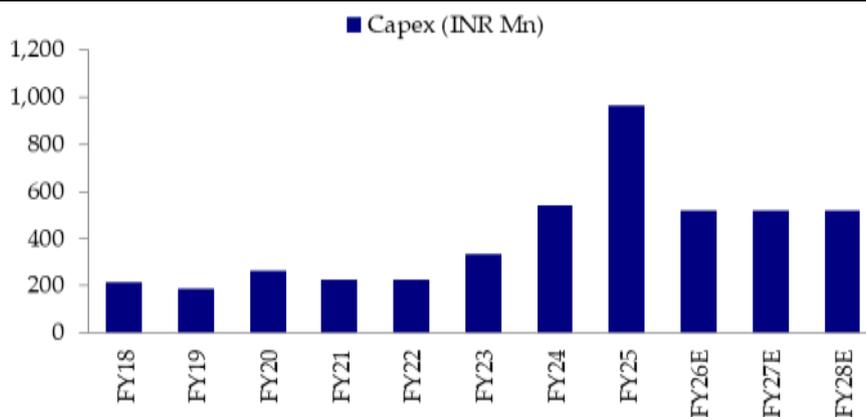
## IDL acquisition to unlock untapped explosives market and drive margin expansion through vertical integration

- Apollo Defence Industries Pvt. Ltd. (ADIPL), a subsidiary of AMS., had entered into a Share Purchase Agreement in May 2025 to acquire 100% equity stake in IDL Explosives Ltd for a total consideration of INR 1.07bn, in an all-cash transaction, which got completed in Nov 2025.
- IDL is engaged in the manufacture of full range packaged and bulk explosives specifically engineered for mining, infrastructure, and defence projects. It also offers an extensive range of cartridge explosives. IDL Explosives Ltd. was established in 2010 as a subsidiary of GOCL Corporation Ltd., part of the Hinduja Group, a diversified transnational conglomerate.
- IDL Explosives Ltd. possesses a substantial land bank of which only around 40% has been utilized. This provides significant potential for brownfield expansion, enabling future capacity enhancement with minimal incremental capital expenditure and considerable scope for defence projects' requirement of AMS.
- The explosives market size is expected to see strong growth in the next few years, growing at a CAGR of 8.8% to reach USD 9.4bn by 2029. The surge in defence spends by countries due to geopolitical instabilities is projected to be a major driver for this growth. Further, global population growth and urbanization is demanding increasing infrastructure development which in turn is fueling growth for commercial explosives for construction activities.
- The acquisition of IDL Explosives Ltd. will enable AMS to tap the unpenetrated market of explosives, enhance its ability to pursue large scale, and high value projects. This will also increase addressable market of AMS via new product portfolio and drive margin expansion through cost efficiencies enabled by vertical integration. Also, through IDL, AMS aims to venture into R&D of explosives, tapping the highly lucrative market of TNT, RDX, etc. worldwide.

## Manufacturing facilities: Unit III capex to enable large orders

- The company currently operates two manufacturing facilities: a 55,000 sq. ft plant in Mallapur (Unit-I) and a 40,000 sq. ft plant in Adibatla (Unit-II), both in Hyderabad. These facilities offer streamlined connectivity of design, manufacturing, and testing operations. To meet the growing demand and support product diversification across high-tech domains, AMS is commissioning a 350,000 sq. ft integrated facility at Hardware Park (Unit-III), Hyderabad. This facility will house high throughput assembly lines, Environmental Stress Screening (ESS) chambers, cleanrooms, and automated testing bays. This will serve as an integrated platform for advanced manufacturing in areas such as missile electronics, Avionics and radio frequency systems.
- Status of Unit-III capex: Phase 1 (single structure) has been completed in Q2FY26, while Phase 2 (civil structure) will be completed by the end of Q4FY26, and full-fledged production is estimated to start in Q1FY27. The total capex for Unit-III is INR 2.5bn, which will increase the total capacity of the company to 8x of the current capacity, enabling AMS to take up larger orders and help in fulfilling export-oriented orders. As we understand, a few of the clients await completion of this capex, so that long-term large orders could be awarded.

### Planned Capex till FY28E to increase capacity for future order flows



Source: Company, HSIE Research

## Diversified engineering solutions cater to varied client demands

AMS offers its products and solutions under below categories, as per the requirement of the clients:

- **Build to spec (BTS):** Under this category, a product is manufactured according to specific, detailed parameters provided by the customer. This essentially means that AMS is responsible for design, development, and manufacturing of electronic systems, including software for aerospace, defence, and space sectors.
- **Build to Print (BTP):** Under BTP, AMS offers electronic manufacturing services and box assembly services. This is a type of contract manufacturing wherein ASML builds a product exactly to a client's pre-made design and specifications, including drawings, material choices, and detailed instructions. Here, AMS isn't allowed to modify designs but is completely responsible for the manufacturing aspect.
- **Engineering designs:** The company provides engineering design and precision machining services with the state-of-the-art high-speed CNC machines.
- **Qualification testing:** AMS offers quality and testing services of various defence and space products as it is equipped with environmental stress screening (ESS) facility.

## Strategic defence program participation driving sustained medium-term orderbook growth

AMS has been a key electromechanical sub-systems/systems provider for various prestigious national defence programs validating its technical capabilities. A few of these programs are explained below. These programs act as orderbook drivers for the company in the medium term.

### Missile programs:

- **Air to surface missile (RUDRAM-I, II and III):** RUDRAM series is a first anti-radiation missile program of India developed by DRDO for the Indian air force. It is designed to destroy enemy radar and other communication systems from a standoff distance. Rudram-I has the capability of firing from ~150km while Rudram-II and Rudram-III has their ranges of 350Km and 550km respectively. First two versions have already been successfully tested while Rudram-III is under development. AMS provides electronic and electro-mechanical systems/subsystems in this program. Guidance, navigation and control systems, avionics mission computers, signal processing, and power electronics etc use components provided by them.
- **Nuclear missile (AGNI):** AGNI program is India's series of nuclear capable ballistic missiles. Its variants have ranges up to 5000Kms and can carry multiple independently targetable re-entry vehicles (MIRVs). AMS has configured and provided the automatic launcher controller which is essential for smooth operation of launch system of Agni missiles. Additionally, it provides advanced avionics, navigation and control systems components that are integral to accuracy and functionality of Agni missiles.
- **Anti-Submarine missile (SMART):** Supersonic missile assisted release of Torpedo is a next generation anti-submarine warfare system developed by DRDO. This missile acts as a carrier of torpedo and can target submarines at distances far beyond the conventional range of light weight torpedoes. It can be launched from both coastal batteries and warships. AMS provides electromechanical components for control system and sensors to this SMART program. It also provides technology for the SMART missile's lightweight torpedo payload.
- **Ballistic missile:**
  - **K4:** K-4 is an Indian Nuclear capable submarine launched ballistic missile (SLBM) developed by DRDO which has a range of 3500Kms and can carry a payload of up to 2 tonnes. In this program, AMS has supplied critical actuation systems, which are essential for controlling the movement and trajectory of the missile. Company was also involved in developing the launcher systems for the K4 missile.
  - **PRALAY:** It is an indigenously developed solid propellant surface to surface ballistic missile system of India, which has a capability of carrying up to 1000kg over a range of up to 500km. It is designed to strike targets such as air bases, command centres with precision. AMS is a key partner for supplying components for guidance, navigation, and control (GNC) systems, launcher controller, warhead and propulsion systems interfaces which are used in PRALAY missile system.
- **Cruise missile:**
  - **NIRBHAY:** Nirbhay missile is India's first long range all weather subsonic cruise missile, developed by DRDO. It has a range of 1000Km and can be launched from multiple platforms such as ground launchers, submarines, and aircrafts. It can carry a warhead weighing up to 300Kg and can be armed with

both conventional and nuclear warheads. AMS provides guidance and navigation interfaces for course correction, target accuracy and power electronics apart from system for collecting and processing real time flight data. It also provides missile fin actuators which are responsible for controlling the fins for manoeuvring during flight.

- Submarine launched cruise missile (SLCM): SLCM is a compact version of Nirbhay missiles, which serves two purposes: land attack with a 500Km range and another ship launched version with a 250Km range for precision strike against enemy vessels. AMS provides custom built power distribution system and warhead technology for SLCM.

- **Anti-ship missile:**

- Naval anti-ship missile (NASM): This is naval anti-ship missile-short range which is an air launched anti-ship missile developed by DRDO for the Indian Navy. AMS has an agreement with DRDO to transfer technology for the omnidirectional multi EFP (explosive formed penetrators) warhead. Accordingly, AMS has been approved by the DRDO to be the production agency for this crucial warhead for NASM.
- Long range anti-ship missile (LRAHSM): This is an anti-ship ballistic missile developed by DRDO, which can hit moving warships at the range of ~1000Km. It can be launched both from the land based coastal defence batteries and naval warships. Further, it uses a hypersonic glide vehicle that can manoeuvre and adjust its course to evade counter attacks and strike with pinpoint accuracy. AMS provides key electromechanical subsystems for navigation of LRAHSM.

- **Surface to air missile:**

- Akash: Akash is an indigenous short-range surface to air missile system developed by DRDO to defend against aerial threats. It comes equipped with radar, control system and multiple missile launchers. It can engage multiple targets simultaneously and is deployable by road, rail, or air. It is in service with Indian army and Indian air force. AMS has provided several key components to Akash missile program related to actuation system, fuzing systems, power supply systems, digital computer, and processing boards.
- VLSRSAM: Vertically launched short range surface to air missile is a quick reaction indigenously missile developed by DRDO for aerial defence. It neutralises threats such as sea skimming targets and anti-ship missiles etc. AMS has supplied critical electronics and mechanical modules for components like RF seeker, multi-function radar and weapon control system.
- QRSAM: Quick reaction surface to air missile is developed by DRDO to counter a wide range of aerial threats such as drones, loitering munitions, and aircrafts while it is mounted on high mobility vehicles. This is designed to operate on the move. AMS supplies complete navigation system to QRSAM, which is part of integrated avionic unit (IAU). The company also contributes to QRSAM by supplying power distribution system and specific actuation system.

- **Anti-tank missile:**

- Amogha 2: This is a second-generation anti-tank guided missile (ATGM) with a range up to 2.8Km. It has a fire and forget capability and uses a tandem high explosive anti-tank warhead (HEAT), used by infantry to destroy tanks and other armoured targets. AMS provides critical electromechanical subsystems for Amogha 2.

- **Helina:** Helina is a helicopter launched anti-tank guided missile system with a fire and forget capability. It can fire a target up to 7 Kms and is primarily launched from the Advanced Light Helicopter (ALH). Helina is an Indian army version while on the same core technology, its Airforce variant is called Dhruvastra. AMS supplies missile launcher subsystems, guidance and navigation interfaces and ruggedized power panels.
- **Nag:** The Nag missile is a third generation, fire and forget anti-tank guided missile that uses an imaging infrared seeker and a tandem warhead to destroy tanks with explosive reactor armour. AMS supplies communication sub-modules and radar component interfaces for Nag.
- **MPATGM:** Man-portable anti-tank guided missile is a lightweight, fire and forget missile, which is designed to be light enough for a single soldier to carry and operate. It is a fire and forget missile and, hence, once launched, the missile guides itself to the target using infrared imaging seeker for targeting. AMS provides ruggedized hardware, integrated avionics and subsystems for launcher and fire control unit for this missile.

#### **NAVAL programs:**

- **Nuclear submarine:**

- **ARIHANT and ARIDHMAN:** These are India's nuclear powered ballistic missile submarines (SSBNs) with Arihant being the first of the class and Aridhman being a larger, upgraded follow on submarine. They impart retaliatory nuclear strike capability to Indian Navy. It can carry either 12x K15 missiles with 750Km range or 4xK4 missiles with a 3500Km range. AMS supplies software defined universal homing system for heavy weight torpedoes, deployed as part of mentioned submarines. Additionally, it supplies underwater communication system and interfaces for indigenous sonar suites.

- **Underwater mines:**

- **Multi-influence ground mine (MIGM):** This is an advanced naval mine that uses multiple sensors to detect a target's acoustic, pressure and magnetic signatures. It is laid on the seabed and remains inactive until it identifies a specific target characteristic and captures its signatures. It is equipped with built-in electronics to initiate a desired action. AMS has been approved as an agency for complete manufacturing of MIGM.
- **Moored mine:** This is a naval mine, which is anchored to the seabed and floats at a specific depth. It uses sensors to capture acoustic, magnetic, or pressure signatures of a target and detonates in case of specific triggers causing damage to the target. AMS supplies key mission critical electronic systems such as acoustic sensors, fuzes, advanced naval electronics, underwater acoustic modems, and moored mine test panels.

- **Torpedoes:**

- **TAL:** Torpedo Advanced Light (TAL) is an anti-submarine self-homing torpedo that can be launched from a ship or helicopter. It is used for targeting submarines at various depths. AMS contributes to TAL in the form of its expertise in developing and supplying advanced homing system, which it supplies to the lead integrator Bharat Dynamics Ltd.
- **ALWT:** Advanced Light Weight Torpedo, developed by DRDO, has a range of up to 25 KMs. This can be launched from a ship or a helicopter to destroy enemy submarines. AMS supplies critical electronics and homing system for ALWT.

- Varunastra: This is the main anti-submarine torpedo for the Indian Navy, which is expected to replace older torpedoes. It is capable of targeting and destroying quiet submarines in both shallow and deep waters. It possesses low drift navigational system for long endurance and can travel a range of up to 20Kms. AMS supplies software defined universal homing system for navigation of Varunastra.
- **Expendable decoys:**
  - Mareech: This is an advanced Torpedo Decoy system (ATDS) designed for protecting warships from the attacks of enemy torpedoes. It uses an onboard Sonar to detect an incoming torpedo, then deploys expendable decoys to confuse the homing system of the incoming torpedoes. Additionally, the decoys lure the torpedo away from the warship making it follow a long circuitous route to exhaust its energy and make it harmless. AMS supplies power amplifier card (PAC) module for the expendable decoy, which acts as a transmitter and carries out work of detecting, confusing, and diverting torpedoes.
  - Mohini (C-303S): This is a submarine fired decoy system designed to protect submarines from incoming enemy torpedoes. It functions by creating a false acoustic signature like the noise created by the submarine forcing the homing system of torpedo to follow the decoy instead of the submarine. AMS provides expendable electronic decoys for Mohini system.

**Well-diversified product portfolio of DRDO/MoD approved electronic subsystems provide strong orderbook visibility**

While AMS offers more than 150 SKUs to its clients including key sub-systems/systems that are used in production of defence products and find applications in various defence programs. For development of most of these products, AMS has closely collaborated with DRDO, which has imparted it technical expertise. Listed below are products that are either manufactured by AMS or contains key subsystems manufactured by AMS:

Key products	2-D appearance
<p><b>Avionics</b></p> <p><b>Aircraft Fire Control System (AFCS):</b> AFCS is designed to support air launch trials of torpedoes from aircraft. Through its torpedo control panel, it insures safe and accurate release of torpedoes. Additionally, it takes care of accurate target information processing.</p>	
<p><b>IAU-AKASH NG:</b> The integrated avionic unit (IAU) for new generation surface to air missile AKASH, is responsible for navigation control and guidance for the missile until the target is hit. Development, testing, and validation of the on-board computer and missile navigation is done by AMS.</p>	
<p><b>MLP (Missile Launch Processor) Rudram:</b> This is a sophisticated computer network required for efficiently controlling the operations required for preparing, aiming, and launching the missile. It receives and processes data from external sources such as radars and command centres involving target acquisition and tracking, flight path computation and mid-course updates. It has built in safety checks and abort protocols to prevent accidental launches or system malfunctions.</p>	
<p><b>Seeker Processing Module – Glide Bomb (SPM-GB):</b> It is the core avionics unit that interprets data from onboard sensors and the navigation system to guide the unpowered munition to its target with high precision. Its primary function is to convert a standard unguided bomb into a precision guided weapon by integrating guidance technology with an aerodynamic kit.</p>	
<p><b>Actuation systems</b></p> <p><b>Quad Digital Actuator Controller (QDAC):</b> A QDAC is a device that controls four actuators built in a missile flight system to manage its precise motion and orientation. Its primary role is to take digital commands and convert them into signals that drive each of the four actuators, which are electromechanical devices designed to perform specific mechanical actions. This allows for flight path adjustments of a missile such as pitch (up-down movement), yaw (left-right movement) and roll (rotation around an axis) controls.</p>	
<p><b>Kusha Actuator:</b> This is a missile fin actuator developed and manufactured by AMS. It is an electromechanical subsystem designed for use in various missile platforms providing them aerodynamic control and guidance. It controls the missile fins which in turn guides the missile's flight trajectory.</p>	

Key products	2-D appearance
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<p><b>Ground Support Equipment</b></p> <p><b>Agni-IV Launcher Control Systems:</b> This control system manages the movement of the 8x8 wheeled Transporter-Erector-Launcher (TEL) platform, and the hydraulic or pneumatic system required to elevate and prepare the missile for launch.</p>	
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<p><b>RF Systems</b></p> <p><b>Digital Signal Processor (DSP) – RF:</b> DSPs are critical components in the radio frequency systems of missiles where they digitize real world analog signals, process them with mathematical algorithms and provide necessary data in usable form to missile guidance systems. They contribute to target detection and tracking, beamforming, guidance, navigation, proximity sensing and detonation.</p>	
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<p><b>Power Supply Systems</b></p> <p><b>Varunastra – Power Supply Unit:</b> This is a power homing system for underwater applications. It enhances performance and amplifies power output in underwater conditions, as required by Varunastra.</p>	
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<p><b>Automated Test Equipment</b></p> <p><b>Portable Underwater Vehicle Simulator:</b> This is a processor based real time embedded system loaded with algorithms to execute a pre-defined simulation vehicle run. Its military applications include tactical deception, anti-submarine warfare training, missile, and torpedo simulations.</p>	
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<p><b>Missile defence/Aerospace</b></p> <p><b>Seeker signal processor:</b> This receives raw signals from the seeker’s sensor and filters out noise. Further, it extracts the key information from the signal such as range and coordinates of the target to continuously track it. Accordingly, it guides missile to correct the course to follow the target accurately.</p>	
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<p><b>Guidance, navigation, and control (GNC) kit:</b> The GNC kit developed by DRDO for Pinaka has transformed the unguided rocket into a precision weapon. It combines laser gyro-based navigation systems with GPS to allow for mid-air path correction, enhancing accuracy and increasing range up to 75Kms. GNC kit imparts a high degree of accuracy to Guided Pinaka.</p>	
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<p><b>Radio proximity fuze signal processor:</b> Key function of this processor is to analyse reflected radio signals to extract range, velocity, and other characteristics of the target. This also uses the processed data to decide when to detonate the explosive charge.</p>	
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Key products	2-D appearance
<p><b>Drone Delivery Systems:</b> This logistics/attack class drones are designed for efficient last mile logistical operations. It can carry payloads (material or aerial bombs) of up to 50 kg. Power by electric propulsion system, it operates at a maximum speed of 60 Km/h and can remain airborne for 30 mins covering around 20Kms. These drones are equipped with optical and infrared cameras supported by modern tracking technology for efficient target detection and delivery.</p>	
<p><b>VMCSDS (Vehicle Mounted Clustered Smart Dispensing System):</b> VMCSDS, also called as Bhargavastra is an indigenously developed mobile counter drone defence system. It is designed to detect and eliminate multiple small UAVs, especially in large groups. It uses electro-optical and infrared sensors apart from multiple radars to get a 360 degrees view.</p>	
<p><b>Mini Torpedo (Candiru):</b> Candiru is a mini torpedo with a diameter of 5". It can be launched from unmanned surface vessels (USVs), UAVs, patrol boats, helicopters, drones, and unmanned underwater vessels (UUVs). Customized torpedoes are manufactured as per the requirements of launchers and operational depths.</p>	
<p><b>Rocket RGB 60:</b> Rocket guided bomb model 60 is used as an anti-submarine weapon with a range of approx. 5-6Km and a maximum depth of 500 meters. This is used against submarines and torpedoes. This is typically fired from Russian rocket launcher RBU-6000 and other domestic launchers.</p>	
<p><b>Kamikaze Boat:</b> This is a remotely operated uncrewed surface vehicle (USV) which is equipped with optical and infrared cameras, designed to act as a weapon. This disguises itself as a civilian boat and attacks an enemy target by crashing itself into it and detonating the explosive payload.</p>	
<p><b>Handheld Anti-Drone System:</b> This handheld portable anti drone device integrates detection, countermeasure, display, control, and power supply into a single compact device. Traditional jammers depend upon manual monitoring and hence are less effective, while this handheld device uses an integrated electromechanical detector which makes it more reliable.</p>	
<p><b>UAV Detecting and Jamming System:</b> This drone (UAV) detecting and jamming system employs 3D active phased array radars, jamming and camera systems to locate and disable unauthorized drones in an area under surveillance. Radar detects UAVs at long distances, jamming system uses antenna to get a long enough jamming distance and forces UAV to land or return by use of remote-control signals. camera captures the trajectory of UAV.</p>	
<p><b>Portable Bomb Jammer:</b> It is a specialized electronic countermeasures device designed to prevent the remote detonation of improvised explosive devices (IEDs). It works by sending a wide range of radio frequency signals effectively disrupting the communication link between explosive device and remote control. It is widely used by counter terrorism forces.</p>	
<p><b>SAM-QRSAM:</b> This is an electromechanical safety and arming mechanism designed for QRSAM missile airborne applications. It ensures secure arming and reliable detonation upon receipt of a valid command.</p>	

Source: Company, HSIE Research

## Developing weapon systems; revenue growth at inflection point

In addition to supplying above key sub-systems/systems, AMS has been assiduously working on developing complete weapon systems in house. The existing product portfolio includes complete weapon systems that have either achieved qualification or are in advanced stages of the qualification process. These weapons systems have been indigenously developed and produced entirely in-house. This set of products have the potential of catapulting AMS in the big league and push it to become a tier-1 supplier enabling it to take direct orders from ministry of defence. This will have strong positive impact on orderbook, revenue growth and margin expansion of the company.

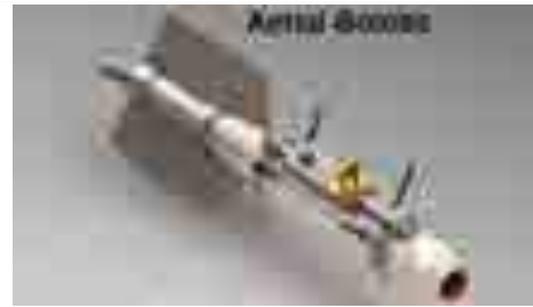
### The key weapon systems are:

Key products	2-D appearance
<p><b>Underwater mines:</b> An underwater or a naval mine is an explosive weapon which is placed in water to damage or destroy enemy ships or submarines. These mines are deployed in water and wait to be triggered by contact or presence of an enemy vessel. These are activated by magnetic, acoustic or pressure sensors when a predetermined specific threshold parameter is reached.</p>	
<p><b>Underwater moored mines:</b> These underwater mines are explosive weapons anchored to the seabed with the help of a cable at a pre-determined depth. The mine detonates when it encounters a vessel or when its sensors detect a specific signature of a ship such as acoustic or magnetic field. These mines can be deployed from various vessels or aircrafts. They are used in military contexts to control enemy shipping movements in waters that are too deep for bottom sitting mines.</p>	
<p><b>Underwater limpet mines:</b> This is a naval mine that is magnetically attached to the hull of a ship typically by a diver. The explosive of these mines is detonated at a preset time by an electromechanical time delay fuze. They are used to disable or cripple the ship by causing significant damage to its hull. They aren't designed to sink the ship.</p>	
<p><b>Anti-submarine warfare rockets:</b> These are weapons launched from a warship to destroy or neutralise enemy submarines. They are fired from a specific launcher on a warship into the water and can be guided to detonate at a pre-decided depth. This is a key component of Navy's anti-submarine defence strategy.</p>	
<p><b>Medium range aerial rockets:</b> These rockets are developed for launching from ground to air. These are instrumental in attacking drones or swarm of drones. These systems use a command-and-control system, a multifunction radar, and a mobile launcher.</p>	

### Key products

**Aerial Bombs:** Aerial bomb is composed of various warhead systems that include explosives, electronic hardware, and fuze assembly. These aerial bombs are mounted on UAVs to be used as loitering munitions. Every aerial bomb is equipped with a fuzing module which triggers the warhead if external environmental conditions are met. Also, this module ensures safety of the warhead during storage, transportation, and handling. AMS has developed nine variants of aerial drop bombs for dropping from drones.

### 2-D appearance



Source: Company, HSIE Research

Furthermore, DRDO has awarded transfer of technology (ToT) in explosives for below mentioned products:

- Warheads for ULPGM- V2 (UAV Launched Precision Guided Missile V2)
- Exploder Mechanism for Naval Warheads
- Prachand Munition Hardware
- ESAD based Fuze for Mini Depth Charge (MDC)

## Financial performance

### Revenue to grow at a CAGR of 40% over FY25 to FY28

We forecast AMS to deliver a robust topline growth over the next three financial years, with revenue rising from INR 8,038mn in FY26E to INR 15,408mn in FY28E (a 40% CAGR). The strong 40%+ growth projected in FY27E over FY26E will be driven by a large orderbook of INR 11.0bn by FY26E end and order wins of big-ticket projects like MIGM mines (estimated order inflow: INR 10bn). We project the growth to stay intact in FY28E over FY27E at 35%, based on large projects like QRSAM, torpedoes, and grad rockets. We also estimate that IDL will provide significant topline contribution starting FY28E, which will allow it to deliver sustained revenue growth beyond FY27E. In the coming years starting FY27E, order lumpiness is expected to reduce due to the Indian Navy armament servicing/upgradation and torpedo production orders.

#### Revenue to grow at a CAGR of 40% over FY25-FY28E

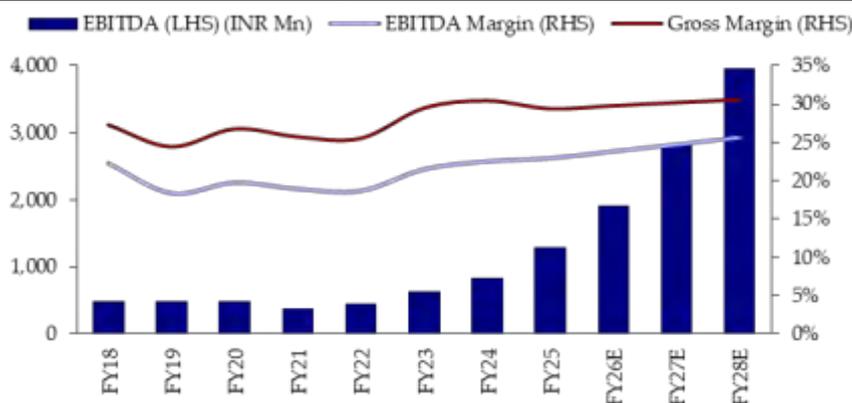


Source: Company, HSIE Research

### Margin to expand as development to production ratio reduces

- We expect margins to continue expanding during FY25-FY28E (similar to the trend witnessed during FY22-FY25), led by declining development to production ratio and transition to complete delivery of high-margin weapon systems rather than supplying only subsystems.
- EBITDA is estimated to increase from INR 1,920 mn in FY26E to INR 2,829 mn in FY27E (+47.4% YoY) and further to INR 3,958 mn in FY28E (+40%YoY). We anticipate EBITDA margin to steadily improve further from 23.0% in FY25 to 25.7% in FY28E. The IDL acquisition may exert pressure on margins in the short run, once integrated. However, we have not considered IDL financials yet as it is expected to integrate FY27E onwards. It will be a monitorable.

#### Margins set to increase on rising production orders

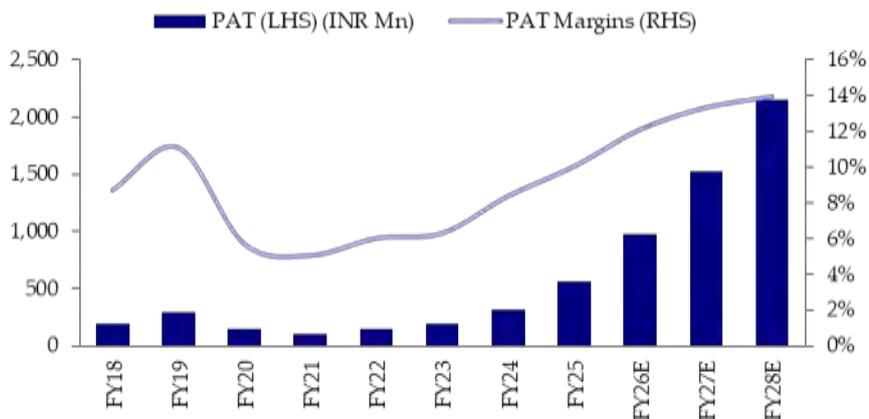


Source: Company, HSIE Research

### PAT growth to outpace EBITDA growth

PAT is estimated to rise from INR 564mn in FY25 to INR 2,958mn in FY28E (a 56.1% CAGR). The operating leverage underpins this rapid growth in net income, supporting reinvestment in R&D.

#### PAT growth to outpace EBITDA

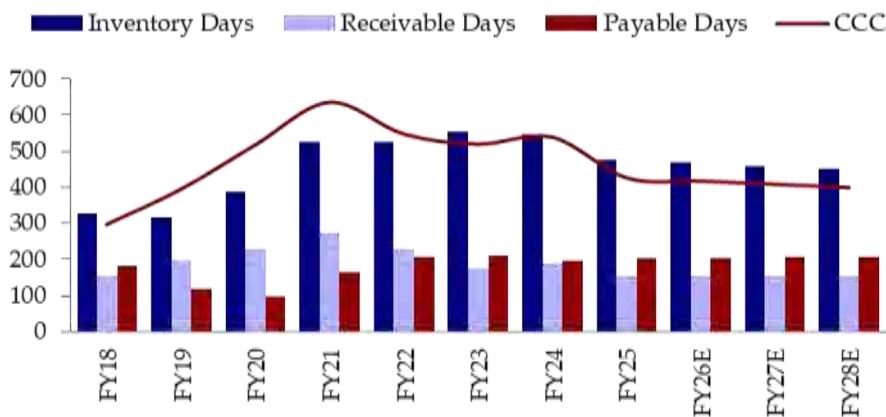


Source: Company, HSIE Research

### Cash conversion cycle to dip in near term before gaining pace

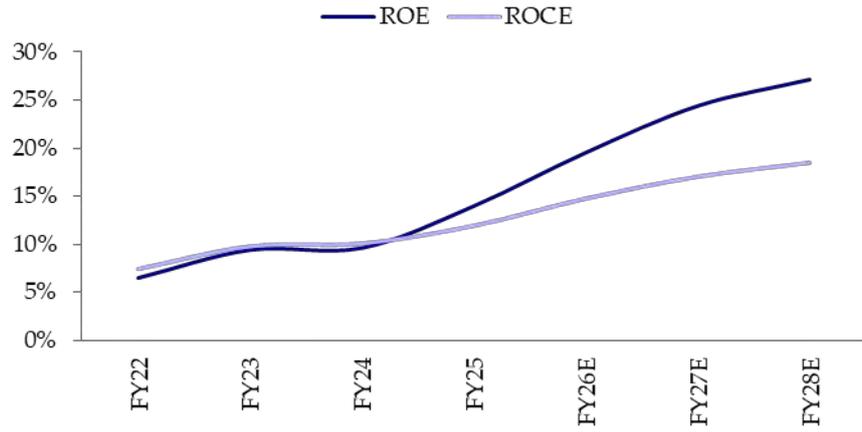
The company has an elevated cash conversion cycle of 426 days in FY25. The elevated CCC is in line with the industry practice, as longer developmental cycle necessitates inventory accumulation on the balance sheet without flexibility to book the entire revenue, which hampers the profitability. We have witnessed a steady decline in CCC from 635 days to 426 days during FY21-FY25 indicating efficient inventory management. The management has guided to reduce working capital Days by 150 FY27E onwards, however we believe the more realistic assumptions will bring down CCC to ~400 days by FY28E. We observe that there is a need for financing till FY28E for working capital and capex, as company aims to grow its revenue at a rapid pace of 40% CAGR during FY25-FY28E. As per our calculations, the company can sustain a revenue CAGR up to 28% in the mentioned period without requiring external funds. So, the anticipated external borrowing of INR 500 mn each year till FY28 is to achieve higher revenue CAGR of 40%.

#### CCC to dip in the near term



Source: Company, HSIE Research

ROE and ROCE to rise up substantially with rising profitability



Source: Company, HSIE Research

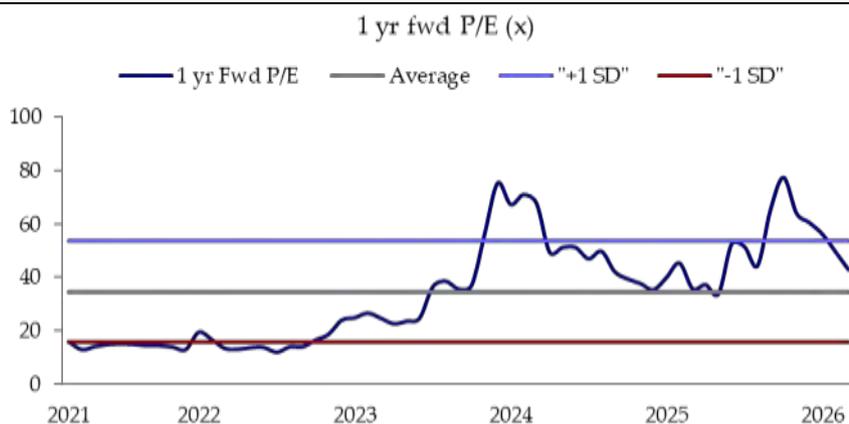
## View and valuation

**EPS trajectory:** We forecast that EPS will grow from INR 1.86 in FY25 to INR 7.0 in FY28E. An expanding EBITDA margin with rising revenue and conservative leverage, the growing EPS reinforces AMS's capacity to generate organic cash flows for capex, repayment of debt, and fuel inorganic expansion for synergy. This combination of topline resilience sustained mid-20s EBITDA margin and higher double-digit EPS growth pictures an attractive risk-reward profile in the domestic defence electronics and weapons sector.

**Valuation to stay elevated:** AMS's diverse product portfolio under development, expertise in electronics segment, increasing R&D spends, and capability to manufacture complete weapon solutions provide long-term visibility of strong order inflows. Capitalizing on the opportunities generated by favorable government policies encouraging private participation in the defence sector, AMS is expected to be a key beneficiary. The company's transition from a sub systems manufacturer to an end-to-end weapon systems provider with vertical integration of explosives makes it a suitable defence electronics play.

Looking at the higher than industry EPS growth and the large opportunity funnel, AMS is expected to sustain its premium valuations.

In accordance with our optimistic view on the company, we initiate coverage on the stock with a BUY rating, arriving at a target price of Rs. 280, based on a PE multiple of 40x applied to FY28E EPS of INR 7.



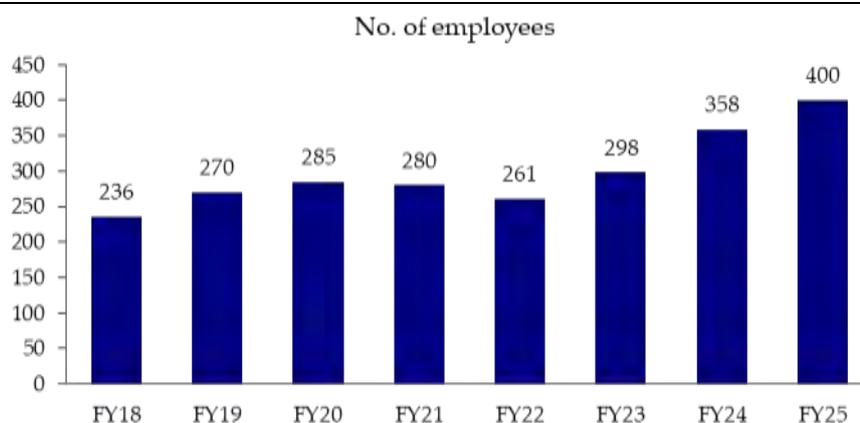
Source: HSIE Research

## Risks and Concerns

- **High dependency on orders from government of India:** The bulk of AMS's order book is made up of orders from the GoI and DPSUs, as well as from government organizations involved in space research. High regulatory requirements of government entities can increase the company's compliance costs. Winning tenders from GoI entities poses a huge challenge as the contracts are awarded to the lowest bidder that satisfies all the technical requirements. Moreover, lower priced contracts can exert pressure on the company's margins.
- **Capital intensive and time-consuming development contracts:** Development contracts demand high investment and extended execution timelines. AMS self-funds the design and testing of critical building blocks and subsystems, often bearing significant upfront costs. With such projects spanning 12-18 months, substantial working capital is required, not to mention navigating extended delivery schedules and final field trials that can delay completion.
- **Working capital management:** Given AMS's business entails long product development periods and production cycles, maintaining a high level of working capital is inescapable. Payment delays for ongoing contracts decreased advance payments due to lower order inflows and higher inventories or accelerated payments to suppliers may adversely impact the company's cash flow and working capital. AMS might face working capital challenges, as it plans to grow at a pace greater than the industry.
- **Challenges in winning large ticket-sized projects:** AMS is focused on building full systems in the coming years and would hence bid for large ticket projects. The bidding and selection process will involve multiple aspects such as pricing, technological & technical expertise, and quality control. Accordingly, the company may face intense competition in certain categories from companies such as BDL, Adani Defence, and others.

## Company background

- Apollo Microsystems Ltd (AMS) is a systems/subsystems/weapons manufacturer with a clear focus on Indigenization. It has presence in majority of the missile and Naval warfare programs of India.
- Headquartered in Hyderabad, AMS was established in 1985. It is a leading subsystems provider for mission critical solutions for the defence sector. The company specializes in electronic, electromechanical, and engineering design along with manufacturing and supply of advanced weapon systems.
- It serves clients of various strategic domains such as missile systems, satellite and space systems, Naval systems, Avionics and Homeland security. It provides end to end integrated services encompassing R&D, design, development, assembly, testing facilities and mass manufacturing, customised as per the requirements of the client. In addition to the hardware and engineering portfolio, AMS also offers integrated technology driven solutions across secure communications, underwater electronic warfare, and air defence.
- AMS has an expertise over 700+ onboard technologies which finds their applications in manufacturing of weapon electronic systems for ground, missile, and naval defence. It has participated in 150+ indigenous defence programs, proving its acceptability by DRDO and other DPSUs.
- **Key clients:** ASML caters to a wide variety of esteemed clients including DRDO, Hindustan Aeronautics Ltd (HAL), Bharat Dynamics Ltd (BDL), Bharat Electronics Ltd (BEL), Brahmos, Garden Reach Ship Builders (GRSE), Indian Airforce, Tata Advanced Systems, Solar Industries, ISRO, L&T, Bharat Forge (Kalyani), etc.
- AMS is ISO 9001:2015 & CEMILAC (Centre for Military Airworthiness & Certification) certified organisation which makes it a suitable candidate for various defence tenders.
- AMS has entered a tri-party alliance with IIT-Chennai and Indian Navy to accelerate indigenous defence technology Development. The purpose of the alliance is to catalogue, service and upgrade the existing armament of the Indian Navy, and to increase R&D through scientific collaboration.
- Commensurate with growth of its operations, company has been investing in its employee base which is reflected in a rising no. of employees, as shown below. A significant proportion of this i.e., 42% (165 employees) are involved in the R&D segment as on FY25, reflecting company's innovation led focus.



Source: Company, HSIE Research

## Company Milestones

1985	Incorporated AMS Proprietary Company offering Electronic CAD Design services.
1990	Started Offering On-Board Systems for Defence
1992	Started Offering Indigenous processor boards for defence applications
1997	Converted to Private Limited
2000	First Indigenous pay-load checkout system is supplied to ISRO replacing legacy imported systems
2004	First Private company in defence electronics to be ISO certified
2005	Launched telemetry products for ISRO applications
2007	First developmental model of expendable decoy supplied for Indian navy & delivered fully indigenous integrated mine management system for coal & iron ore mines
2010	Successfully configured Indigenous Automatic Launcher Controller for AGNI range Missiles
2015	Reached Milestone of over INR 1 bn turnover & installed state of the art facility for defence systems manufacturing facility.
2017	Reached a milestone of INR 2 bn turnover
2018	Listed on NSE and BSE
2021	Entered Rf & Microwave designs through acquisition of an established RF company
2022	Facilitated by URSC
2023	Acquired 2.5 acres of land from Telangana State Industrial Corp Ltd.
2024	Inaugurated unit II
2025	Acquired IDL Explosives Ltd.

Source: Company, HSIE Research

## Annexure I: Management Personnel

Name (designation)	Description
Mr. Baddam Karunakar Reddy (Founder and Managing Director)	<ul style="list-style-type: none"> <li>➤ He founded Apollo Micro Systems in 1985 and has been instrumental in driving innovation in defence electronics.</li> <li>➤ Renowned for his expertise in engineering and miniaturization techniques, he has significantly enhanced the performance of various weapon systems.</li> <li>➤ Under his visionary leadership, the company has emerged as a key supplier of weapon system electronics in India. His long-term vision is to establish Apollo as a world-class defence systems provider.</li> </ul>
Mr. Chandrapati Venkata Siva Prasad (Whole-time Director - Technical)	<ul style="list-style-type: none"> <li>➤ He is a postgraduate in electronics. He handles Design &amp; Development with 28 years of experience working on variety of technologies. He has been serving AMS for past 24 years.</li> <li>➤ His design expertise and product development capabilities are among the best available in the industry.</li> <li>➤ He is a core design architect for complex weapon system electronics of major Indigenous Defence programs.</li> </ul>
Mr. Addepalli Krishna Sai Kumar (Whole-time Director-Operations)	<ul style="list-style-type: none"> <li>➤ He is an Engineer with 24 years of experience in Sales &amp; Marketing, Administration &amp; Finance, serving Apollo Micro Systems Ltd for past 22 years.</li> <li>➤ He has strong expertise in financial engineering and cash flow optimization, contributing to the company's financial robustness and strategic initiatives.</li> <li>➤ As Director (Operations), he manages day-to-day operations, business acquisition, new vertical development, and investor relations, driving the company's growth and market leadership.</li> </ul>
Mr. Raghupathy Goud Theegala (Chairman and Independent Director)	<ul style="list-style-type: none"> <li>➤ He holds a Bachelor's degree in Commerce from Osmania University and a bachelor's degree in Law from Bangalore University. He has been part of Apollo Micro system since August 21, 2017.</li> <li>➤ Before joining AMS, he served with the Andhra Pradesh Lokayukta and Upa-Lokayukta, where he gained extensive experience in addressing financial irregularities.</li> </ul>
Mrs. Karunasree Samudrala (Independent Director)	<ul style="list-style-type: none"> <li>➤ She is a fellow of the Institute of Chartered Accountants of India, holding a Commerce degree from Kakatiya University, Telangana.</li> <li>➤ With her career spanning over 22 years, she brings a wealth of expertise in accounting, auditing and taxation.</li> </ul>
Mrs. Kavya Gorla (Independent Director)	<ul style="list-style-type: none"> <li>➤ She holds a graduate degree in Electronics and Communication Engineering, she also pursued flight training in Florida, USA and has been a licensed pilot since 2007.</li> <li>➤ She has an expertise in areas such as airplane aerodynamics, Engines, Avionics and Radio Navigation Systems.</li> </ul>
Dr. Chandrashekar Matham (Non-Executive Independent Director)	<ul style="list-style-type: none"> <li>➤ He has earned his Ph.D. in VLSI and Embedded Systems from SK University, Anantapur, in 2009. He holds a MTech in Electronics and Instrumentation Engineering from IISc Bangalore, an MSc (tech.) in Applied Electronics from Osmania University in 1986.</li> </ul>

Source: Company, HSIE Research

**P&L (INR Mn)**

Year-End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>Net Revenues</b>	2,031	2,432	2,975	3,716	5,621	8,038	11,413	15,408
Growth (%)		19.8	22.3	24.9	51.2	43.0	42.0	35.0
COGS	1,508	1,811	2,098	2,584	3,967	5,641	7,965	10,691
Employee Expense	61	64	70	76	85	98	125	169
Other Expenses	29	46	88	95	52	68	112	125
<b>EBITDA</b>	433	511	720	961	1,516	2,231	3,212	4,423
EBITDA Growth (%)		18.1	40.8	33.5	57.8	47.1	44.0	37.7
EBITDA Margin (%)	21.3	21.0	24.2	25.9	27.0	27.8	28.1	28.7
Depreciation	87	90	104	113	153	156	182	208
<b>EBIT</b>	346	421	616	848	1,363	2,075	3,030	4,215
Other Income (Including EO Items)	6	8	8	18	29	42	39	27
Interest	160	170	224	303	342	466	590	818
<b>PBT</b>	192	258	400	563	1,049	1,651	2,479	3,424
Total Tax	42	56	102	130	262	368	576	814
<b>RPAT</b>	150	202	298	433	788	1,282	1,902	2,611
Exceptional Gain/(loss)	-	-	(32)	-	-	-	-	-
<b>Adjusted PAT</b>	150	202	330	433	788	1,282	1,902	2,611
APAT Growth (%)		34.8	63.5	31.1	81.7	62.8	48.4	37.2
Adjusted EPS (Rs)	4.9	7.0	9.0	1.2	1.9	3.2	5.0	7.0
EPS Growth (%)		42.5	28.1	(86.3)	50.0	70.4	56.5	41.2

**Balance Sheet (INR Mn)**

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>SOURCES OF FUNDS</b>								
Share Capital - Equity	208	208	208	282	306	306	306	306
Reserves	2,852	2,993	3,634	4,910	5,769	6,725	8,230	10,360
<b>Total Shareholders' Funds</b>	3,059	3,200	3,842	5,192	6,076	7,032	8,536	10,666
Long Term Debt	3	7	19	96	701	861	991	1,231
Short Term Debt	1,161	1,151	1,406	1,967	2,606	4,046	5,216	7,376
<b>Total Debt</b>	1,163	1,158	1,425	2,063	3,308	4,908	6,208	8,608
Net Deferred Taxes	162	198	265	337	408	408	408	408
Other Non-current Liabilities & Provns	8	9	11	22	43	56	69	83
<b>TOTAL SOURCES OF FUNDS</b>	4,393	4,565	5,543	7,613	9,834	12,403	15,220	19,764
<b>APPLICATION OF FUNDS</b>								
Net Block	491	859	1,060	1,425	1,769	2,118	2,442	2,741
CWIP	522	296	316	348	723	723	723	723
Other Non-current Assets	15	7	19	49	210	226	240	253
<b>Total Non-current Assets</b>	1,028	1,162	1,395	1,822	2,702	3,066	3,405	3,717
Inventories	2,257	2,962	3,415	4,336	6,006	7,229	10,032	13,231
Debtors	1,695	1,364	1,466	2,353	2,383	4,389	5,228	7,755
Other Current Assets	204	342	509	844	1,278	958	1,360	1,836
<b>Cash &amp; Equivalents</b>	134	162	141	207	625	612	566	392
<b>Total Current Assets</b>	4,290	4,830	5,531	7,740	10,293	13,188	17,187	23,215
Creditors	783	1,281	1,123	1,657	2,772	3,164	4,490	6,056
Other Current Liabilities & Provns	142	147	260	292	389	687	882	1,112
<b>Total Current Liabilities</b>	925	1,427	1,383	1,949	3,161	3,852	5,371	7,167
<b>Net Current Assets</b>	3,365	3,402	4,148	5,791	7,132	9,337	11,815	16,048
<b>TOTAL APPLICATION OF FUNDS</b>	4,393	4,565	5,543	7,613	9,834	12,403	15,220	19,764

**Cash Flow (INR Mn)**

Year ending March	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Reported PBT	145	203	290	441	825	1,340	2,096	2,959
Non-operating & EO Items	(5)	(8)	(8)	(15)	(27)	(42)	(39)	(27)
Interest Expenses	160	170	224	303	342	466	590	818
Depreciation	87	90	104	113	153	156	182	208
Working Capital Change	(293)	(9)	(741)	(1,602)	(1,111)	(2,204)	(2,512)	(4,392)
Tax Paid	(32)	(15)	(31)	(25)	(70)	(368)	(576)	(814)
<b>OPERATING CASH FLOW ( a )</b>	<b>62</b>	<b>432</b>	<b>(163)</b>	<b>(785)</b>	<b>113</b>	<b>(653)</b>	<b>(259)</b>	<b>(1,248)</b>
Capex	(224)	(227)	(334)	(540)	(963)	(520)	(520)	(520)
Free Cash Flow (FCF)	(162)	204	(497)	(1,325)	(850)	(1,173)	(779)	(1,768)
Investments	(9)	(26)	(22)	(67)	(17)	-	-	-
Non-operating Income	6	11	8	18	27	42	39	27
<b>INVESTING CASH FLOW ( b )</b>	<b>(227)</b>	<b>(243)</b>	<b>(348)</b>	<b>(589)</b>	<b>(952)</b>	<b>(478)</b>	<b>(481)</b>	<b>(493)</b>
Debt Issuance/(Repaid)	335	(11)	279	640	1,261	1,600	1,300	2,400
FCFE	173	193	(218)	(685)	411	427	521	632
Share Capital Issuance	1	-	-	0	0	-	-	-
Dividend	(10)	(5)	(5)	(6)	(15)	(15)	(15)	(15)
Others	(160)	(170)	244	741	(15)	(466)	(590)	(818)
<b>FINANCING CASH FLOW ( c )</b>	<b>165</b>	<b>(187)</b>	<b>518</b>	<b>1,375</b>	<b>1,231</b>	<b>1,118</b>	<b>695</b>	<b>1,567</b>
<b>NET CASH FLOW (a+b+c)</b>	<b>0</b>	<b>2</b>	<b>8</b>	<b>2</b>	<b>391</b>	<b>(13)</b>	<b>(46)</b>	<b>(174)</b>
EO Items, Others	-	-	-	-	-	-	-	-
Closing Cash & Equivalents	1	3	2	2	403	390	344	170

**Key Ratios**

	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>PROFITABILITY (%)</b>								
GPM	25.7	25.5	29.5	30.5	29.4	29.8	30.2	30.6
EBITDA Margin	21.3	21.0	24.2	25.9	27.0	27.8	28.1	28.7
EBIT Margin	17.0	17.3	20.7	22.8	24.2	25.8	26.5	27.4
APAT Margin	7.4	8.3	11.1	11.7	14.0	16.0	16.7	16.9
RoE	6.5	9.4	9.6	14.0	19.6	24.4	27.2	
RoIC (or Core RoCE)	7.6	9.4	10.2	12.3	15.4	17.6	18.9	
RoCE	7.5	9.8	10.1	12.0	14.8	17.1	18.5	
<b>EFFICIENCY</b>								
Tax Rate (%)	21.9	21.8	25.5	23.1	25.0	22.3	23.3	23.8
Fixed Asset Turnover (x)	2.4	1.9	1.9	1.8	2.2	2.7	3.2	3.8
Inventory (days)	525	526	555	547	476	468	460	452
Debtors (days)	274	230	174	188	154	154	154	154
Other Current Assets (days)	37	51	62	83	83	44	44	44
Payables (days)	164	208	209	196	204	205	206	207
Other Current Liab & Provns (days)	25	22	32	29	25	31	28	26
Cash Conversion Cycle (days)	635	547	519	539	426	417	408	399
Working Capital (days)	646	577	550	593	484	429	423	416
Net D/E (x)	0.3	0.3	0.3	0.4	0.4	0.6	0.7	0.8
Interest Coverage (x)	2.2	2.5	2.8	2.8	4.0	4.5	5.1	5.2
<b>PER SHARE DATA (Rs)</b>								
EPS	4.9	7.0	9.0	1.2	1.9	3.2	5.0	7.0
CEPS	5.4	7.5	9.5	1.6	2.4	3.7	5.6	7.7
Dividend	0.05	0.03	0.03	0.02	0.05	0.05	0.05	0.05
Book Value	14.7	15.4	18.5	18.4	19.8	22.9	27.9	34.8
<b>VALUATION</b>								
P/E (x)	42.9	30.1	23.5	171.0	114.0	66.9	42.8	30.3
P/BV (x)	14.4	13.8	11.5	11.5	10.7	9.2	7.6	6.1
EV/EBITDA (x)	104.1	88.1	63.0	64.2	44.6	31.1	22.0	16.5
EV/Revenues (x)	22.2	18.5	15.2	16.6	12.0	8.6	6.2	4.8
OCF/EV (%)	0.1	1.0	(0.4)	(1.3)	0.2	(0.9)	(0.4)	(1.7)
FCF/EV (%)	(0.4)	0.5	(1.1)	(2.1)	(1.3)	(1.7)	(1.1)	(2.4)
FCFE/Mkt Cap (%)	0.4	0.4	(0.5)	(1.1)	0.6	0.7	0.8	1.0
Dividend Yield (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Company, HSIE Research

# Paras Defence and Space Technologies

## Unlocking multi-year growth opportunities through R&D

Paras Defence and Space Technologies Ltd (PDSL) is a R&D focused company serving defence and space sectors. Operating under two business verticals “optics & optronic systems” and “defence engineering,” its indigenous approach of manufacturing aligns it with Make in India strategy of the central government. The company supplies critical optical systems for various platforms such as armored vehicles, naval vessels, UAVs & drones, and space missions. PDSL is the only company in the whole of Asia Pacific to develop and manufacture submarine periscopes. Further, it is only Indian private company to have developed and manufactured a hyper spectral camera, in collaboration with ISRO and DRDO for applications in the domains of defence, space, and agriculture. Its products are well accepted by reputed clients such as HAL, BEL, Brahmos, BDL, L&T, Mazagaon dock, and solar industries. The large opportunity funnel of INR 140bn for its products over the next five years, the anticipated increase in periscope orders for submarines, and projected rise in export revenues make us constructive on the stock. Despite long term growth drivers, elevated valuation of the stock makes us watchful on orderbook accrual of company. Hence, we initiate coverage on PDSL with a REDUCE rating and a target price of Rs. 665, valuing it at 40x P/E for FY28E.

- R&D aiding product development:** PDSL’s success on the iDEX (innovations for defence excellence) platform validates its ability of developing R&D-driven mission critical systems. Through victories in four iDEX challenges with design of SAR radar (TAM: USD 26.5 bn), smart anti-jamming systems (TAM: USD 4.3 bn), and mobile ground satellite stations (TAM: USD 60.7 bn), the company has unlocked new opportunities to serve both domestic and global markets.
- Segmental opportunity funnel:** The company has guided an opportunity funnel of more than INR 30bn for FY27E consisting of laser systems, optical telescopes, advanced electronics, avionics suites, and electromagnetic protection. Furthermore, over the next five years, this opportunity space is expected to be much larger at ~INR 140bn. This rising opportunity along with company’s track record of successfully executing projects for a reputable client base would ensure a long trajectory of strong incremental order inflows.
- Growing order pipeline with a stable order book:** The order backlog of PDSL stood at INR 9.28bn in FY25 (book-to-bill 2.54x). The order inflow for FY25 was INR 6.6bn compared to INR 2.6bn in FY22, reflecting growing acceptance of its products. PDSL on an average delivers a periscope every quarter and the additional order inflow for the same is expected to come from the P-75 and P-75(I) submarine projects. Further, it is involved in prestigious defence programs of India such as main battle tank, missile programs (Brahmos, Akash, Astra, Agni), avionics for Saras MK-2, and anti-drone surveillance. This provides medium-term visibility for strong order inflows.
- Financials and valuation:** PDSL delivered a 26% CAGR revenue over FY22-25. Supported by strong order book and expected disciplined execution, we forecast a revenue/EBITDA/PAT CAGR of 22%/24%/29% over FY25-FY28E, with EBITDA margins at 28.2% in FY28E.

YE March (INR mn)	FY23	FY24	FY25	FY26E	FY27E	FY28E
Net Sales	2,224	2,535	3,647	4,454	5,502	6,607
EBITDA	567	511	972	1,225	1,543	1,864
APAT	359	300	615	862	1,093	1,337
Diluted EPS (INR)	4.6	4.1	7.6	10.7	13.6	16.6
P/E (x)	155.9	175.4	94.5	67.4	53.2	43.5
EV/EBITDA (x)	49.1	56.1	29.0	46.1	36.5	30.0
RoCE (%)	9.3	6.9	10.9	12.4	13.8	14.6

Source: Company, HSIE Research

## REDUCE

CMP (as on 05 Mar 2026)	INR 717
Target Price	INR 665
NIFTY	24,766

### KEY STOCK DATA

Bloomberg code	PARAS IN
No. of Shares (mn)	81
MCap (INR bn) / (\$ mn)	58/631
6m avg traded value (INR mn)	766
52 Week high / low	INR 973/401

### STOCK PERFORMANCE (%)

	3M	6M	12M
Absolute (%)	3.9	8.5	62.1
Relative (%)	10.6	9.4	53.6

### SHAREHOLDING PATTERN (%)

	Sep-25	Dec-25
Promoters	53.2	53.2
FIs & Local MFs	1.5	1.3
FPIs	5.7	4.9
Public & Others	39.6	40.6
Pledged Shares	-	-

Source: BSE

Pledged shares as % of total shares

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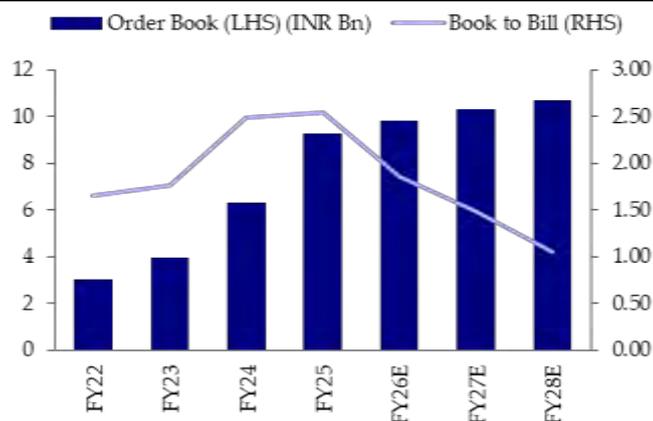
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# Paras Defence and Space Technologies: Initiating Coverage

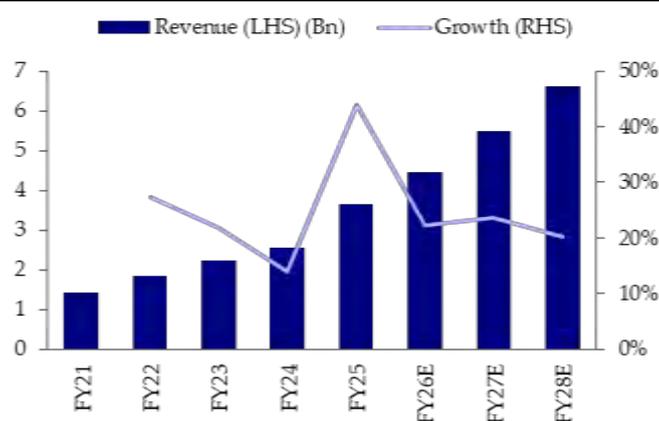
## Focus charts

### Order book steadily increasing



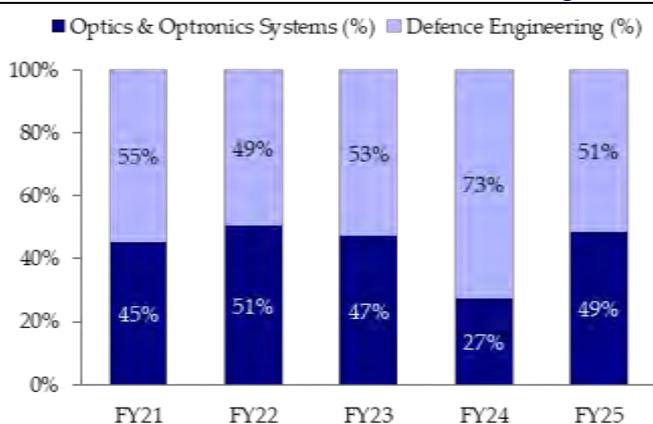
Source: Company, HSIE Research

### Revenue Growth at 22% CAGR over FY25-FY28E



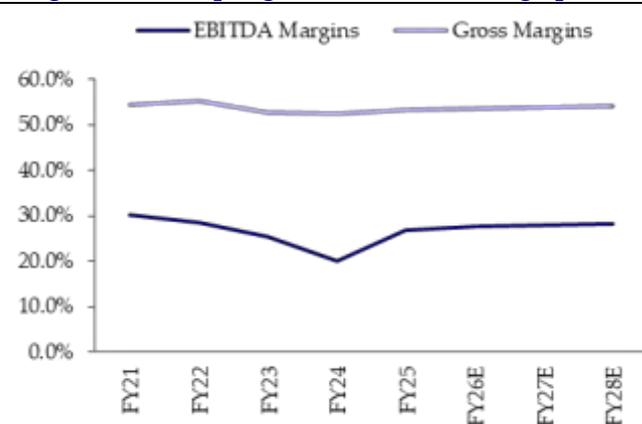
Source: Company, HSIE Research

### Balanced contribution to revenue from both segments



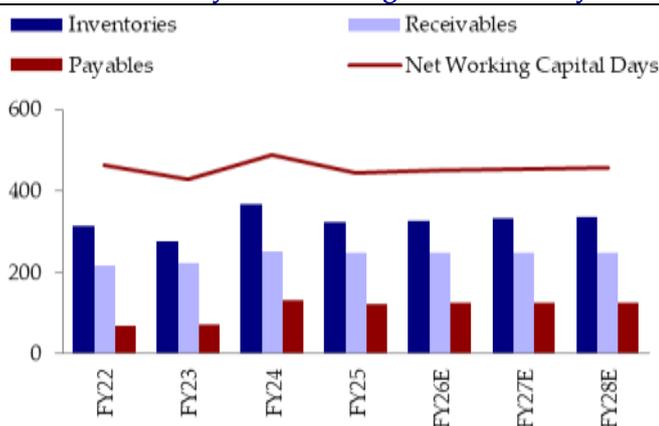
Source: Company, HSIE Research

### Margins to inch up higher due to increasing optronics



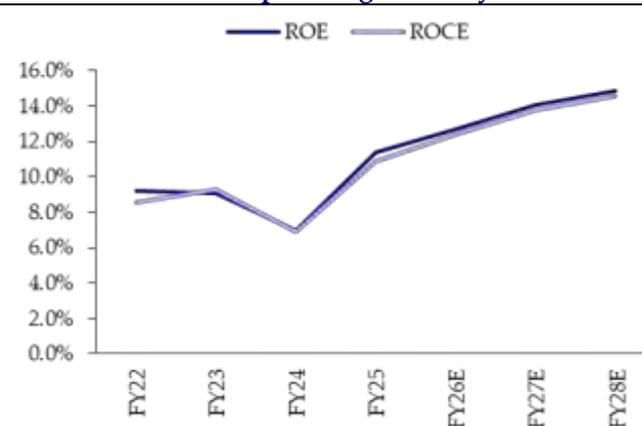
Source: Company, HSIE Research

### Cash conversion cycle stabilising around 450 days



Source: Company, HSIE Research

### ROE and ROCE to improve significantly



Source: Company, HSIE Research

## Order inflows driven by upcoming naval projects

- The order book of Paras Defence and Space Technologies Ltd (PDSL) closed at INR 9.3bn in FY25. Within this aggregate orderbook, 60% was contributed by the optics and optronics vertical while the remaining 40% belonged to defence engineering. The book to bill figure at FY25-end closing was 2.54, providing visibility for revenue and growth in the immediate years. The order inflows for various years in the past have been steadily rising as it can be seen that it grew from INR 2.6bn in FY22 to INR 6.6bn in FY25.
- PDSL dominates in the segment of submarine periscopes. This is the only specialized manufacturer of indigenously developed optronic periscopes in Asia Pacific. In normal course, company delivers one periscope every three months; however, it is aiming to accelerate this pace. This is noteworthy that each periscope is priced around INR 300mn, and it is a crucial equipment for every submarine. Hence, periscope alone has the potential to increase the orderbook size. Apart from manufacturing a periscope for a new platform, the order book of this segment also builds up through orders for upgradation, overhaul, and servicing of existing platforms. The government has planned to build new platforms such as P75 and P75(I) submarines for advancement of Indian Navy. PDSL will be a direct beneficiary of these mentioned programs, as it provides critical equipment for these modern platforms. This provides a trajectory for sustained order inflows for PDSL in the coming years.
- The company has also ventured into drone cameras through its collaboration with Israeli firm MicroCon Vision Limited. Under this program, PDSL will become the exclusive supplier of advanced drone camera technology in India offering these systems at significantly lower costs. This will increase indigenous content in drone camera systems which is crucial for surveillance. Broadly, this segment is also expected to contribute to the orderbook in a consistent manner.
- Another segment which provides visibility for orders is the space sector. PDSL has expertise in space imaging and space electronics. It is the only private sector Indian player to have developed and manufactured a hyper spectral camera for defence and space. The government has taken steps to put India on the map in the space sector with many favorable policies such as IN-SPACE, Indian space policy 2023, etc. Space orders are also a recurring stream of orders for the company as it supplies many critical subsystems such as optical domes, infrared lenses, diffractive gratings, and deployable space antenna to ISRO for space programs.

### High value opportunities

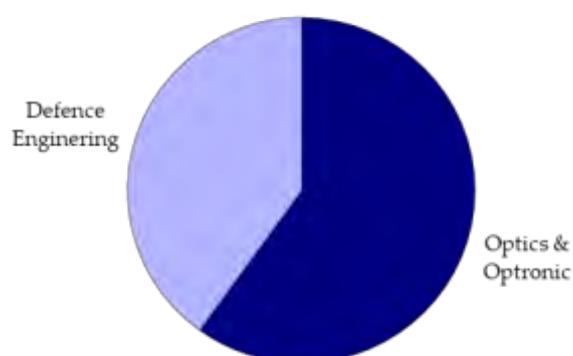
The product segments in which the company works promise long-term trajectory of large growth opportunities. As per the management estimates, the opportunity space in various product segments for the next five years includes (see table below):

Product segment	Market size (INR Bn)
Laser systems	INR 30bn
Optical telescopes	INR 30bn
Optical Systems (for Controp & Paras) products such as optical systems, drone cameras, periscopes, and development projects	INR 60bn
Existing business including advanced electronics, optics, electromagnetic protection, mechanics, and avionic suites	INR 20bn
<b>Total</b>	<b>INR 140bn</b>

Source: Company, HSIE Research

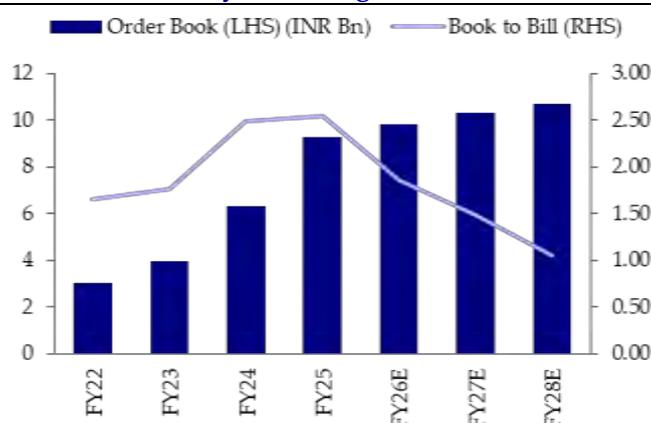
### Optronics heavy order book

FY 25 Order Bifurcation



Source: Company, HSIE Research

### Order book steadily increasing

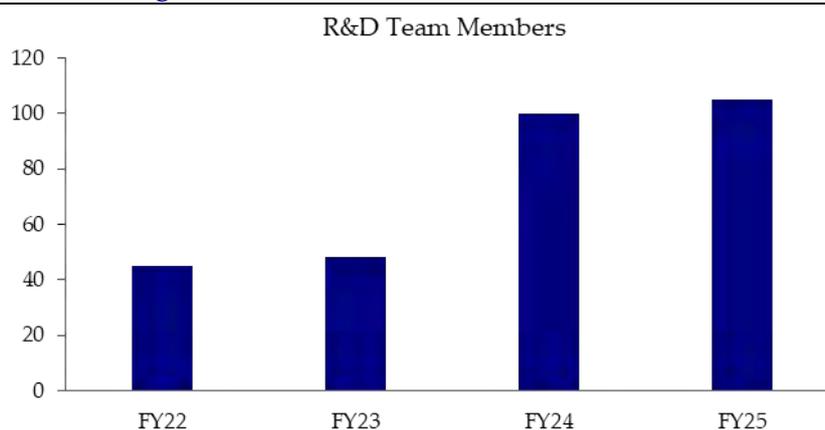


Source: Company, HSIE Research

### R&D diversifying product portfolio

- In FY25, PDSL focused toward developing and upgrading next-gen systems including hyperspectral imaging payloads, rugged control electronics, periscopes, and electro optical/infrared (EO/IR) platforms.
- The company expanded its scope for R&D and product development through collaborations with their subsidiaries in drone technology, anti-drone systems, and radar linked electronics.
- Recently, the company secured patents for EMP protected rugged display, shock/vibration proof heavy duty console and electromagnetic pulse protected rack.
- The company’s success on the Innovations for Defence Excellence (iDEX) platform provides an insight into their R&D prowess and ability to co-develop mission critical systems. They have been selected as winners for four iDEX challenges, each aligned with future forward technologies across defence and space. These projects unlock new opportunities to serve both domestic and global markets. Products developed under these projects are mentioned below:
  - Synthetic Aperture Radar (SAR) for Indian Airforce
  - Smart anti-jamming system – compact variant
  - Smart anti-jamming system – high performance variant
  - Mobile ground station for satellite communications
- The company runs its R&D division with a team of more than 100 members, developing cutting edge technology for high-impact domains. Its exclusive R&D facilities in Nerul (Navi Mumbai) and Bengaluru have specialized engineering teams for technologies related to optics, optical systems, defence electronic systems, mechanical systems, electromagnetics, radio frequency (RF), microwave, etc.

#### R&D team standing at more than 100



Source: Company, HSIE Research

## Strategic partnerships to increase market scope

- PDSL has formed a JV with Controp Precision Technologies Ltd., Israel, called Controp Paras Technologies Pvt Ltd. Controp is one of the world's leading providers of electro-optical/infrared (EO/IR) systems. The JV will manufacture EO/IR systems in India (under the Make in India initiative) for various platforms including drones.
- PDSL is in the process of forming a JV with Heven Drones, Israel, world's leading company for hydrogen powered drones. The JV will manufacture logistics and cargo drones in India.
  - The company will indigenously manufacture India's first ready to fly hydrogen powered drone. With very high indigenous content, the flagship drone will have over 12+ hours of flight time with over 22 kgs of payload.
  - The hydrogen drones offer exceptional advantages such as high energy density, fast refueling, and quiet operation, etc.
  - It has high business potential as the market for high altitude long endurance and heavy payload drones has a strong rising demand in the country.
- In Nov'25, the company signed an MoU with Inter-University Accelerator Centre (IUAC), New Delhi, to develop commercial grade MRI Magnet system for indigenous manufacturing in the country. This is the core component of the magnetic resonance imaging (MRI) scanner, a versatile tool used in the modern medicine.
- Further, the company signed an MoU with Cielo Inertial Solutions Ltd. (CIELO), Israel, to promote and pursue opportunities in India for the adaptation, marketing, sale, and production of inertial sensors (accelerometer and gyroscopes) apart from closed loop fiber optic gyroscopes-based inertial solutions. These products find their applications in navigation systems in marine vessels, missile guidance, drone, and robotics.
- The company has signed a teaming agreement with high-performance space structure systems GmbH, Germany (HPS) to collaborate exclusively for the manufacturing of cutting-edge products such as deployable antenna reflector subsystems (including reflector and arm assembly), thermal hardware, and deployment electronics.

## Presence in various defence programs of India (orderbook drivers)

Paras participates in various critical domestic and international defence programs, as a key supplier of component and subsystems. A few of these military programs of significant importance are listed below:

- **Submarine modernization and project 75(I):** Key submarine programs of India include modernization of existing marine fleet of Indian Navy as well as retrofitting of existing vessels. Additionally, currently under the contract negotiation stage, Project 75(I) is the Indian Navy's major transformative program. It aims to indigenously build six advanced non-nuclear diesel-electric attack submarines with enhanced underwater endurance. Paras supplies optronic submarine periscopes, submarine specific winch systems (machines used to lift heavy objects with help of a thick chain), shipboard electronics such as 'command and control' consoles, display systems and rugged wire cabinets for naval vessels. Also, it provides acoustic and magnetic sensing products for underwater surveillance and monitoring.
- **Main battle tank (Arjun and T-90):** India's main battle tank (MBT) program involves developing future ready next generation armoured tanks to replace ageing fleets like the T-72s. DRDO is a leading design of homegrown MBT Arjun Mk-1A with superior firepower, protection, and all terrain mobility. In addition to this, India is heavily investing toward upgradation of T-90s Bhishma, which is a potent MBT of Russian origin. Arjun and Bhishma both are India's main battle tanks, but they differ significantly. Arjun is heavier and is equipped with superior armour and advanced fire power with greater protection and accuracy but struggles with its weight for mobility. On the other hand, T-90 Bhishma is battle-proven and agile but vulnerable ammunition storage offering less protection against explosions. Paras is a key indigenous contributor for above programs. It supplies Driver Night Sight (DNS) systems to navigate low light and night-time conditions and specialized infrared (IR) lenses and imaging components for upgraded sighting system of the MBT. Apart from this, it supplies critical electronic components for thermal imaging fire control systems (TIFCS), components for turret stabilization systems, gun positioning systems, and ballistic computers for precise fire calculations.
- **Strategic missile programs:** Paras Defence participates in Indian strategic missile programs by supplying critical components and subsystems for platforms like Brahmos, Akash, Astra, and Agni. It supplies high precision optical systems (gyros, optical domes, IR lenses etc), electro-optics (cameras and protection gears for drones), solutions for electromagnetic pulse protection, and electronic components for military surveillance system C4I (Command, Control, Communications, Computer, and Intelligence). It also provides heavy structures and materials such as flow formed tubes, and specialized titanium products for strong yet lightweight structure for missile bodies. Paras is also developing advanced high-power laser (HPL) systems for India's missile and anti-drone defence systems. HPL system is a rapid response laser weapon system to counter aerial threats which integrates a laser source module with a beam control system on a mobile platform.
- **Electronic warfare (EW) and communication:** Paras participates in various EW programs of Indian defence. A few of the noteworthy programs include Samyukta EW system, which is a mobile ground-based system for Indian Army providing comprehensive signal intelligence and electronic attack capabilities by detecting and jamming enemy radar signals. Additionally, Paras is involved in naval electronic warfare program Shakti, which is an

electronic warfare suite for Indian warships. It detects, intercepts, classifies, and jams enemy radars/missile systems providing strong electronic defence capabilities to Naval warships in the sea. Apart from these, Paras is also involved in various counter drone programs. For various EW programs, Paras supplies several key products such as ruggedised networking and computing tools, advanced cooling assemblies for high-heat radar subsystems, electromagnetic protected racks for safeguarding sensitive electronics, optonics (periscopes), heavy duty antenna mechanical structures, specialised sensors, and fuses etc.

- **Anti-drone and surveillance programs:** Through its subsidiary Paras Anti-Drone Technologies, it actively participates in various strategic anti-drone programs of India. It has secured orders from ministry of defence (MoD) for supplying portable counter drone systems (PCDS) for detecting, intercepting, and neutralising hostile drones. Additionally, it has contracted to supply RF jammers and drone detection system to counter unwanted enemy UAVs. Further, it supplies high powered laser systems, which act as directed energy weapons for anti-drone and anti-missile applications. It also produces phased array, antenna, and software defined radios for advanced electronic surveillance.
- **Aerospace and avionics programs:** Paras participates in key Indian aerospace/avionics programs of India such as Saras MK-2 civilian aircraft, which is an indigenously designed, 19-seater multipurpose light transport aircraft for regional connectivity. Paras supplies EW/surveillance gears, avionics suite, control systems, communication, navigation, and auto-pilot systems for Saras MK-2. Further, it collaborates with ISRO and DRDO for hyperspectral imaging systems for satellite-based orbital monitoring of hostile zones. It also provides advanced optomechanical systems, high accuracy sensors and specialized equipment for space research done by the ISRO. The key subsystems supplied by Paras for various space research programs are large-sized space mirrors, diffractive grating, space grade lenses and optical imaging systems. They help in imaging for visible and infrared applications. Further, Paras provides satellite and spacecraft subsystems such as deployable antenna reflector subsystems. This also provides multi-layer insulation (MLI) and radiators to manage satellite temperature.
- **Individual soldier equipment (F-INSAS) program:** Future Infantry Soldier as a System or F-INSAS is Indian army's initiative to equip the Indian infantry with advanced weaponry, communication network, and quick information access in the battlefield. This involves two components: one, to arm future infantry soldiers with the best possible assault rifle, carbines, helmets, and bulletproof vests. Second, it aims to provide battlefield management system (BMS), which is real-time access of comprehensive situation awareness provided to the soldier in the battlefield by analyzing data received from deployed sensors, antennas, and radars. Paras participates in this program by supplying Red Dot Reflex Sight, an individual weapon accessory which is fitted to rifles for rapid target acquisition and simplified aiming for infantry personnel. Additionally, it supplies thermal and night vision components which are integrated into various weapons and surveillance systems of infantry.

## Expansive product portfolio to capture growing TAM

The key systems/sub-systems designed and developed by the company under various military/ research programs are mentioned below:

### Rocket/Missile programs:

Key products	2-D appearance
<p><b>Avionic Suites:</b> It includes integrated electronic systems for an aircraft including complete flight control systems, cockpit systems such as flight displays, controls, communication system and mission management modules.</p>	
<p><b>Rugged command and control systems:</b> It comprises of integrated Computer Consoles and has been deployed for firing control, command, and communication control and radar operation control.</p>	
<p><b>Flow formed tubes:</b> Company offers an integrated manufacturing of complex flow formed tubes with precise dimensions. These tubes find their applications in high pressure ballistic missile operations. End users include military, aerospace, nuclear and industrial markets.</p>	

### Naval Systems:

Key products	2-D appearance
<p><b>Optical submarine periscope:</b> This indigenously developed and manufactured optronic periscope offers visibility in both day and night conditions. Additionally, it offers superior situational awareness and accurate target tracking in the underwater environment.</p>	
<p><b>Naval Electronic Time Fuse:</b> This Fuse is an Electromechanical event recorder and analyser for underwater operations. This has a microcontroller-based circuit that receives depth setting pulses and issues a firing command to ignite at the appropriate time. Applications include as a part of artillery shells.</p>	
<p><b>Submarine Winches:</b> Winches (machines used to lift heavy objects with help of a thick chain) manufactured by PDSL find their applications as key systems for ships, submarines, land &amp; armoured vehicles, and air force.</p>	

## Paras Defence and Space Technologies: Initiating Coverage

Key products	2-D appearance
<p><b>Custom-built rugged wire cabinets:</b> These cabinets form critical operating environment in any naval ship. PDSL builds customised cabinets as per the requirements of the clients.</p>	
<p><b>Optical reflectors:</b> These custom designed optical components offer high reflectivity and sharp beam control. Hence, they find their applications in missile and payload assemblies.</p>	
<p><b>Complex titanium assemblies:</b> PDSL fabricates, machines, and assembles complex titanium hardware used by Indian Navy in the underwater atmosphere. It boasts of being one of the key suppliers for Indian Navy for these products. Titanium due to its saltwater corrosion resistance and high strength to weight ratio is a preferred material for deep sea applications.</p>	
<p><b>Border surveillance systems:</b> These are multi-sensor surveillance systems deployed for long range detection, surveillance and monitoring of potential threats across land and coastal borders.</p>	

### Space research:

Key products	2-D appearance
<p><b>Large sized space mirrors:</b> These mirrors with diameters ranging from 0.5 to 1.2 meters are used in space telescopes for high-precision imaging tasks carried out by earth observation satellite systems.</p>	
<p><b>Optical domes:</b> This is an advanced optical component, which once integrated with missiles ensures precise target acquisition in complex military operating environment.</p>	
<p><b>CFRP structures for space applications:</b> PDSL offers comprehensive camera/optical assembly for space applications where quality, strength and weight requirements are vital.</p>	

## Paras Defence and Space Technologies: Initiating Coverage

### Battle tank & armoured vehicles:

Key products	2-D appearance
<p><b>Tank imaging components and sub-assemblies:</b> DPSL has the capability of producing IR optics and cater to a wide range of OEMs which build EO-IR systems for tanks, armoured vehicles, and handheld imaging systems. The company has exclusive capability of designing and manufacturing opto-mechanical subsystems.</p>	
<p><b>Red dot reflex sight (RDRS):</b> The company has IP of designing and manufacturing red dot reflex sight. In military domain, it is used to shoot a target accurately using various weapons. It offers accuracy, rugged design, and night vision mode.</p>	
<p><b>Infrared lenses for night vision thermal imaging:</b> These are critical optical components used for manufacturing thermal imaging camera and night vision equipment used by border security forces and armed forces.</p>	

### Electronic warfare and surveillance:

Key products	2-D appearance
<p><b>Data/video/image processing:</b> These are systems equipped with high-speed processing capabilities that are used for converting incoming signal feeds into high-quality actionable visuals in the military environment.</p>	
<p><b>Remotely controlled weaponised station (RCWS):</b> It is a remote-controlled platform that integrates weapon systems with electro-optical sights and control interfaces guiding weapons deployment on combat vehicles and naval vessels.</p>	
<p><b>Heavy-duty antenna mechanical structures:</b> PDSL manufactures mechanical structures which are integrated with multiple radar subsystems cooled by the cold plates. These structures ensure to keep radar subsystems static in the condition of turbulence by absorbing vibrations.</p>	
<p><b>Electro-optical/Infrared (EO/IR) systems:</b> Through a JV with Controp Precision Technologies Ltd, Israel' world leading exclusive provider of EO/IR systems, PDSL aims to manufacture these systems under Make in India initiative. This JV is expected to deliver critical surveillance, reconnaissance (military study of a locality) and targeting solutions for defence and space applications.</p>	

## Electromagnetic Shielding:

Key products	2-D appearance
<p><b>EMP shielded rooms and control centres:</b> These have fully enclosed shielded environments, which ensures uninterrupted operations of electronic systems/sub-systems during high-intensity electromagnetic events. This is employed for functional testing of various critical instruments.</p>	
<p><b>Shielded air vents and windows:</b> These shielded passive components such as waveguide panels and air vents allow airflow and cable access without compromising Electromagnetic pulse (EMP) protection.</p>	

Source: Company, HSIE Research

**Successful products selected for iDEX:** So far, PDSL has been the winner of four iDEX challenges. This is a defence India startup challenge initiated by ministry of defence aimed at supporting startups/MSME/innovators to create prototypes and commercial products/solutions for defence in India. These product/design acceptances by ministry of defence validate indigenous design and manufacturing capabilities of PDSL. The four key products selected as winners in the iDEX are:

Key products	2-D appearance
<p><b>Synthetic aperture radar for Indian Airforce:</b> Development of a space-based synthetic aperture radar (SAR) system for an all-weather surveillance. Instrumental in military surveillance of an area and disaster response capabilities from space. Total addressable market (TAM): USD 26Bn.</p>	
<p><b>Smart anti-jamming system (Compact variant):</b> Selected by Indian Army, this system is portable, compact, versatile across platforms and comes with anti-jamming property capable of countering interference in global navigation satellite system. TAM: USD 5Bn</p>	
<p><b>Smart anti-jamming system (high performance variant):</b> This high-performance version anti-jamming system is targeted for high threat and high precision applications. It involves enhanced signal processing to serve in more complex operational environment. TAM: USD 5Bn</p>	
<p><b>Mobile ground station for satellite communication:</b> Awarded by defence space academy, this project involved development of a mobile ground station for high throughput satellite communication. It is primarily used in C4ISR applications to collect, process, and disseminate information to support critical military operations. TAM: USD 60Bn</p>	

Source: Company, HSIE Research

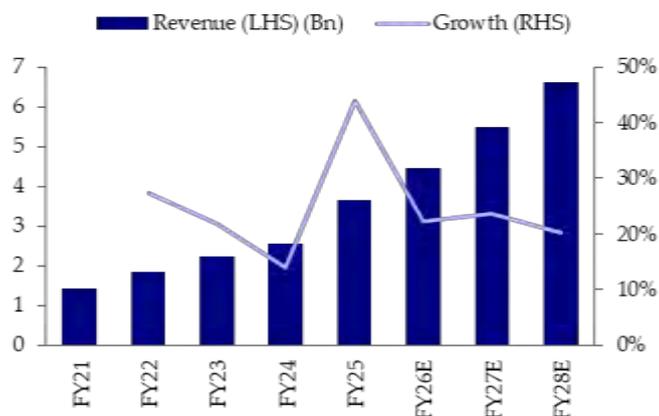
## Financial performance

### Revenue to grow with accelerated delivery

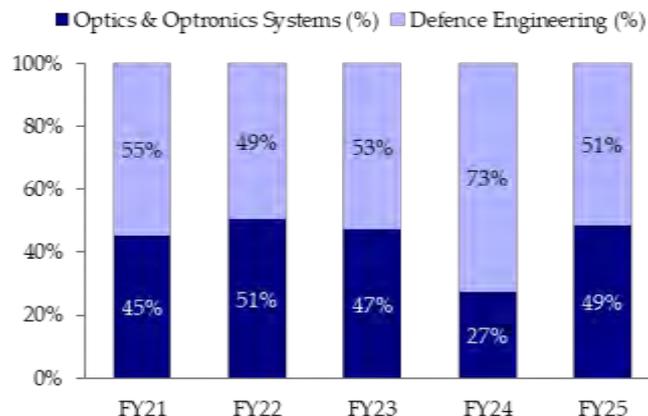
- We estimate a topline CAGR of 22% from FY25 to FY28E. While management has guided a growth of 40% to 45% for FY26E and FY27E each, analyzing current execution till 9MFY26 (+18.7% YoY), we pencil in a growth of 22.2% for FY26E and 23.5% for FY27E. This growth will be driven by increase in order inflow for periscopes, anticipated increase in its per-unit price along with enhanced execution pace. As per management estimates, the opportunity size for the company’s products stands at INR 140bn in the next five years. This provides a visible runway for incremental order inflows for the company over the medium term. Additionally, the long-term potential of the company is bolstered by expected developments in multiple segments:
- The company’s foray into the growing anti-drone and drone sector through multiple collaborations.
- The increased spending by the government in naval projects (ex: project P75I).
- The defence engineering segment of PDSL has built an avionic suite for Saras-MK-II. This has a potential demand of more than 130 aircrafts in the next 5-7 years, which can meaningfully uplift the company’s orderbook.
- Given the company’s expertise in optical payload manufacturing, it is well positioned to be a beneficiary of growing number of space programs in India.

Revenue to grow at 22% CAGR over FY25-FY28E

Balanced contribution to revenue from both segments



Source: Company, HSIE Research

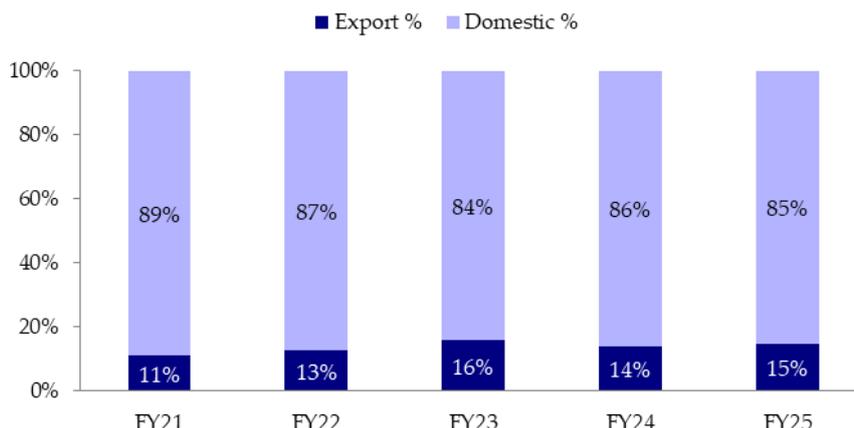


Source: Company, HSIE Research

### Exports to fuel topline growth

- As currently domestic segment is relatively more profitable, the management is focusing more on increasing domestic revenue streams as of now. However, the potential to export complete products to overseas markets is much more significant and, hence, the company is simultaneously planning to expand its presence in the global markets.
- Exports constituted ~15% of revenues for PDSL in FY25, which has risen from ~11% in FY21. The company is actively looking to form joint ventures to expand its product portfolio and leverage the collaboration to export their products to global markets.
- These export orders can also turn out to be margin accretive at the aggregate levels if company is successful in delivering precise customer specifications and complying with the evolving international defence standards.

Revenue break-up export vs domestic

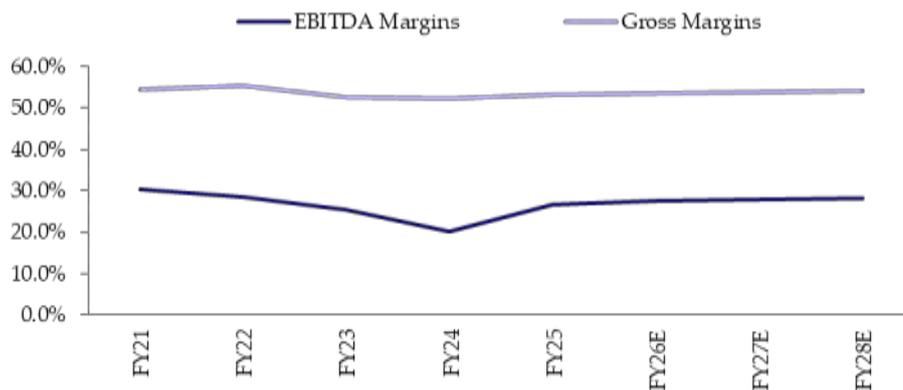


Source: Company, HSIE Research

Profitability to increase with operating leverage

- The company posted an EBITDA margin of ~26.7% for FY25, which rose from 20.1% in FY24. EBITDA margin is mainly driven by the revenue mix. In FY24, higher proportion of defence engineering (73%) orders pushed margins down, but they were lifted back up by relatively higher proportion (49%) of high-margin optics and optronic segment revenue in FY25.
- The optics segment has much higher margins than the defence engineering segment and the current revenue mix for FY25 was 49% and 51% respectively. The company is aiming to improve defence engineering operating margins through innovations; however, currently there is a large gap between margins of the two segments in favor of optics. Hence, to achieve margin reflation, the company intends to execute relatively higher optics segment orders in the coming years. An expected increase in prices of periscopes is expected to reflate margins of optics segment further.
- The company’s current order mix has 60% proportion of optics while the remaining 40% is defence engineering. Going forward, until FY29, we anticipate the optics revenue share to increase to 65%. Also, margins of defence engineering are also expected to increase with management’s focus on innovation-led increased value addition. Accordingly, we expect aggregate operating margins of the company to expand in the coming years. Hence, we estimate a gradual increase in EBITDA margin from 26.7% in FY25 to 27.5%, 28% and 28.2% in FY26E, FY27E and FY28E respectively. We forecast EBITDA CAGR of 24.3% over FY25 to FY28.

EBITDA margins to inch up higher due to increasing optronics

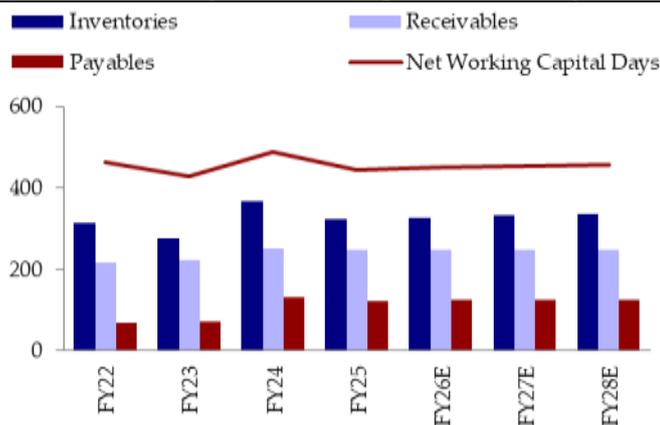


Source: Company, HSIE Research

### Cash Conversion Cycle to remain stable

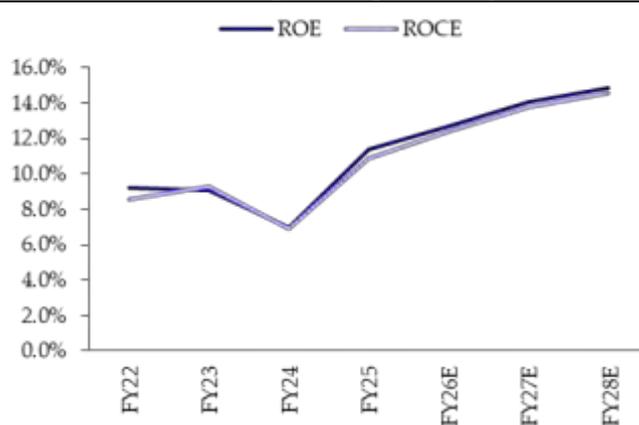
- In line with the norms of the defence industry, the working capital days of PDSL are quite high and smooth operations need efficient management of capital. We observe that historically, the company has been able to manage its working capital efficiently as it maintains a “net cash” balance sheet, as of FY25. We estimate the company will generate sufficient cash flows in the coming years to maintain its negligible leverage status.
- In our assessment, the company has priced its products suitably to compensate for the elevated inventory and receivables days and hence has an inflated cash conversion cycle. Thus, aided by its strong operating margins and healthy balance sheet, company is managing its amplified cash conversion cycle without resorting to the use of leverage.
- The orders in the defence engineering segment have a faster execution timeline compared to optical programs which generally have longer cycles. As the revenue and order book mix is skewed towards optics for the coming years, we expect the cash conversion cycle to remain elevated in the medium term. We expect cash conversion cycle to gradually increase to 458 days in FY28E from 446 days in FY25. Despite this, we don’t expect any stress with respect to the cash flows. Hence, leverage is estimated to remain benign.

Cash conversion cycle stabilising around 450 days



Source: Company, HSIE Research

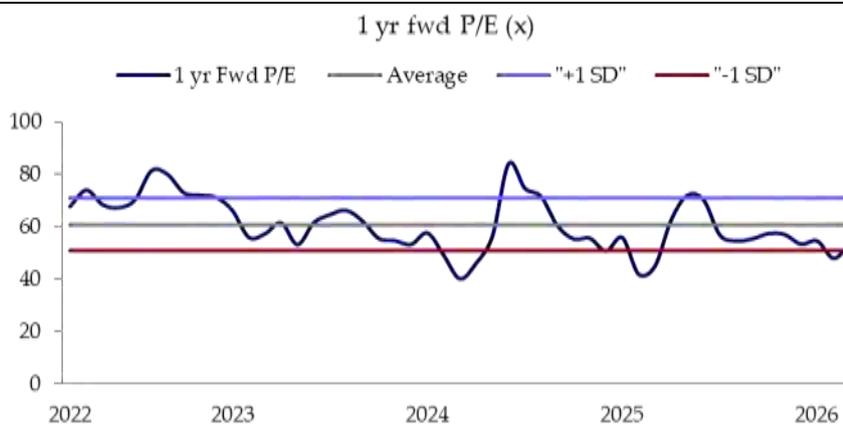
ROE and ROCE to improve significantly



Source: Company, HSIE Research

## View and valuation

- Our expectation of a gradual EBITDA margin increase, coupled with sustained growth in revenue and minimal leverage will pave the way for increasing internal accruals. This will help the company fund its product development and future capex, if any, apart from managing working capital efficiently.
- While high-value opportunity funnel of INR 140bn for company's products provides visibility for consistent growth in the medium term, an expected increase in orders for supplying periscopes for submarine programs offer short-term growth visibility as well. With the company increasing collaborations and R&D for building export ready product portfolio, overseas business progress is also expected to contribute meaningfully to future growth.
- While above-mentioned growth drivers will drive earnings in the medium term, the elevated valuations and moderate capital efficiency makes us watchful on its orderbook accrual capability. Accordingly, we initiate coverage with a REDUCE rating and a target price of INR 665. We value the stock at 40x FY28E EPS of Rs. 16.6.



Source: HSIE Research

## Risks and concerns

- **Concentration of customers:** The company is dependent on a few major customers, specifically BEL and government entities such as DRDO and ISRO for incremental orders. As a result, any reduction in the budget of these institutions will directly impact the company's orderbook.
- **R&D not translating to revenue:** The inherent risks of R&D activities and developing customized products are potential time delays and failure to pass qualification tests. Any material impact on the development cycle or qualification process will result in significant cost increase.
- **Regulatory nature of the industry:** The specific characteristics of the defence industry includes strict adherence to the government regulations as well as maintenance of the desired quality standards. Any violation of the compliance can have an adverse impact on the company. The failure to obtain, maintain or renew statutory and regulatory licenses, permits and approvals may hamper the company's eligibility to win new orders.
- **Long Cash Conversion Cycle:** Long cash conversion cycle is the nature of the defence industry. Furthermore, long gestation developmental projects aggravate the cash realization situation. In this working environment, the company needs to adequately manage working capital by proper forecasting of inventory requirement and balancing it with debtor and supplier payments. Any imbalance in managing the working capital will lead to borrowing requirements, which can potentially impact the company's bottom line.

## Company background

Paras Defence and Space Technologies Ltd (PDSL) is a R&D focused company that offers a wide range of products and solutions for Defence and Space applications. Due to its indigenous focus, it is considered as an IDDM (Indigenously Designed, Developed and Manufactured) products supplier for the defence sector.

Operations of the company are structured across two key verticals:

- **Optics and optronics systems:** Company has comprehensive capability to design and manufacture submarine optronic periscopes, electro-optical and infrared systems for surveillance of military targets, large format space optics and hyperspectral imaging systems for space applications.
- **Defense engineering:** Under this vertical, company designs and manufactures defense electronics systems, critical mechanical systems used for military, electromagnetic pulse protection (EMP) solutions and heavy engineering. EMP solutions are used to protect critical military and government infrastructure such as radars, aerospace control centers and research laboratories, etc.
- In FY25, the defence engineering division constituted 40% of the orders but 51% of the consolidated revenue signifying higher order values. Further, optics and optronic systems accounted for 60% of the orders but 49% of the revenue in FY25.
  - With an expertise of over forty years, PDSL is involved in subsystem development and manufacturing for rockets & missiles, space, naval systems, land & armoured vehicles, electronic warfare, surveillance, and electromagnetic shielding. additionally, through well-equipped subsidiaries, company is involved in technologies such as drones, radio frequency (RF), microwave, anti-drone systems, electro-optic/Infrared (EO/IR) systems for avionic platforms and quantum communications.
  - **Key clients:** PDSL boasts of serving reputed government and private customers. Within government sector, key clients include DRDO, Bharat Electronics, ISRO, Brahmos Aerospace, Bharat Dynamics, Hindustan Aeronautics, Mazagaon Dock Ltd, Garden Reach Shipbuilders, Cochin shipyard and Hindustan Shipyard among others. Private sector clients include names like L&T, Tata Power, Godrej & Boyce manufacturing, Solar industries, Premier explosives, and Astra Rafael Comsys Pvt Ltd. PDSL also serves prestigious international clients such as Rafael Advanced Defence Systems, Israel Aerospace industries, Elbit systems and Tae Young Optics Co. Ltd etc.
  - As of FY25, the company has a total employee base of 537 people with permanent and contractual employees having a split of 309 and 228 respectively.

**Total employees on a growing trajectory**



Source: Company, HSIE Research

**Company milestones:**

Timeline	Milestones
1971-2012	Precision mechanical manufacturing, focus on defence sector
2012-2013	Foray into optics for defence and defence electronics
2018-2019	Started journey into optics for space
2021-2022	Set up subsidiaries for drone and anti-drone technologies
2023-2024	Formed a joint venture with CONTROP, started heavy R&D in quantum technologies

Source: Company, HSIE Research

- Manufacturing facilities:** Company has its manufacturing facilities spread across various locations such as Mumbai, Bengaluru, and Hyderabad. Details of the operations being carried out in various locations are listed below:

Location	Facility offerings
Ambernath	Heavy Engineering Mfg., Mechanical System Integration, Test Facilities
Navi Mumbai	Optics Mfg., Opto-Mech Integration, Electronics D&E, System Integration
Bengaluru	Optics Design, Advanced Electronics System Design, After sales support
Hyderabad	Sales & Marketing, Customer Interface, Post sales Support
New Delhi	Sales & Marketing, Customer, Interface, Post Sales Co-ordination

Source: Company, HSIE Research

**Subsidiaries:**

- Paras Anti-drone Technologies Pvt Ltd:** This subsidiary develops cutting edge technologies in the domains of radars, phased array antennas, software defined radios and anti-drone systems. Its offerings are designed to address emerging aerial threats and strengthen perimeter security through innovative, indigenous solutions. PDSL has a holding of 55% in this subsidiary.
- Opel Technologies Pvt Ltd:** Serving as the supply chain backbone for PDSL and its subsidiaries, this wholly owned subsidiary ensures seamless material and logistics support. It plays a crucial role in enhancing execution speed and vendor integration. PDSL holds 100% in this subsidiary.
- Quantico Technologies Pvt Ltd:** Quantico is at the forefront of quantum technology development, with capabilities in quantum communication, quantum sensing and quantum computing. This subsidiary provides PDSL with the competitive edge of next generation defence technology. This is also a wholly-owned subsidiary of PDSL.
- MechTech Thermal Pvt Ltd:** This subsidiary focuses on developing thermal management solutions for defence and space platforms. Its offerings are integral

## Paras Defence and Space Technologies: Initiating Coverage

to managing heat loads in high-power systems such as radars, satellites, and tactical electronics. PDSL has a holding of 70% in this subsidiary.

- **Ayatti Innovative Pvt Ltd:** This is an innovation-focused entity contributing to technological R&D across software, electronics, and system design. It supports niche development programs across company's verticals. PDSL holds 58.02% in this subsidiary.
- **Paras Aerospace Pvt Ltd:** Focused on delivering drone-based solutions for military, industrial and agricultural applications, this subsidiary develops platforms tailored to aerial surveillance, payload delivery and precision farming. It marks PDSL's strategic entry into the growing UAV segment and supporting indigenous development. PDSL has a 60% holding in this subsidiary.

## Annexure I: Board of directors/management team

Name (designation)	Description
Mr. Sharad Virji Shah (Chairman and non-executive director):	Mr Sharad Shah currently serves as the chairman and non-executive director of the company. He is the key promoter of the company and in his capacity as chairman, provides strategic oversight to the company apart from taking care of the corporate governance. With his four decades of industry experience, he has played an important role in transition of company from a family-owned business to a public listed entity in the Indian stock market.
Munjal Sharad shah (Managing Director):	Mr. Munjal Shah is the managing director of the company since Sep'18. He joined the firm of his father Mr. Sharad Shah in 1997. He has been instrumental in transforming the company from a precision manufacturing unit into a multifaceted organization with a diverse portfolio of defence and engineering products.
Shilpa Mahajan (Whole time director):	Ms. Shilpa brings her twenty-two years of experience to the leadership team of the company. Leveraging her passion for building products, she plays a critical role in overseeing the company's end-to-end operations, from initial product design to final delivery.
Anish Mehta (Director- business development)	Mr. Anish holds an experience of twenty-one years, specifically in the fields of defence and space. He is instrumental in identifying new business opportunities, developing global partnerships, and driving the company's mission of indigenization (IDDM). His expertise covers new business development, strategic planning, and negotiation.
Harsh Bhansali (CFO):	Mr. Harsh Bhansali joined the company in 2020 as the CFO. He is responsible for financial reporting, treasury management, and ensuring regulatory compliance with SEBI and other statutory bodies. He plays a central role in the company's financial governance, along with management of its fiscal policies and capital structure.

Source: Company, HSIE Research

## Paras Defence and Space Technologies: Initiating Coverage

### P&L (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>Net Revenues</b>	1,433	1,826	2,224	2,535	3,647	4,454	5,502	6,607
Growth (%)		27.4	21.8	14.0	43.9	22.2	23.5	20.1
COGS	653	818	1,054	1,206	1,702	2,067	2,542	3,039
Employee Expense	117	148	219	309	375	433	517	608
Other Expenses	229	341	385	510	597	729	901	1,097
<b>EBITDA</b>	434	519	567	511	972	1,225	1,543	1,864
EBITDA Growth (%)		19.5	9.4	(10.0)	90.4	26.1	25.9	20.8
EBITDA Margin (%)	30.3	28.4	25.5	20.1	26.7	27.5	28.0	28.2
Depreciation	97	104	113	134	149	172	188	204
<b>EBIT</b>	337	414	455	377	823	1,054	1,354	1,659
Other Income (Including EO Items)	13	30	82	83	79	145	150	171
Interest	124	78	67	54	66	48	48	48
<b>PBT</b>	226	366	470	405	836	1,150	1,457	1,782
Total Tax	68	95	109	104	221	287	364	446
<b>RPAT</b>	158	271	361	301	615	862	1,093	1,337
Share of Net Profit/(loss) of associate	-	0	1	1	(0)	-	-	-
<b>Adjusted PAT</b>	158	271	359	300	615	862	1,093	1,337
APAT Growth (%)		71.5	32.7	(16.4)	104.7	40.3	26.7	22.3
Adjusted EPS (Rs)	2.8	3.9	4.6	4.1	7.6	10.7	13.6	16.6
EPS Growth (%)		40.2	18.9	(11.1)	85.7	40.3	26.7	22.3

### Balance Sheet (INR Mn)

Year End (March)	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>SOURCES OF FUNDS</b>								
Share Capital - Equity	299	390	390	390	403	403	403	403
Reserves	1,769	3,395	3,745	4,043	5,963	6,826	7,918	9,255
<b>Total Shareholders' Funds</b>	2,067	3,785	4,135	4,433	6,366	7,229	8,321	9,658
Long Term Debt	255	-	9	14	9	9	9	9
Short Term Debt	805	311	137	632	222	222	222	222
<b>Total Debt</b>	1,060	311	146	646	231	231	231	231
Net Deferred Taxes	231	211	211	203	189	189	189	189
Other Non-current Liabilities & Provns	13	16	20	39	45	4	4	4
<b>TOTAL SOURCES OF FUNDS</b>	3,371	4,323	4,512	5,321	6,832	7,653	8,745	10,082
<b>APPLICATION OF FUNDS</b>								
Net Block	1,551	1,349	1,452	1,782	1,795	1,860	1,911	1,949
CWIP	5	5	45	45	78	78	78	78
Other Non-current Assets	50	249	552	555	653	598	618	636
<b>Total Non-current Assets</b>	1,607	1,603	2,050	2,381	2,526	2,536	2,608	2,663
Inventories	747	666	934	1,502	1,509	1,856	2,317	2,812
Debtors	949	1,230	1,503	1,985	2,957	3,018	3,728	4,476
Other Current Assets	242	319	315	415	420	575	683	787
<b>Cash &amp; Equivalents</b>	83	759	403	114	1,108	1,789	2,010	2,453
<b>Total Current Assets</b>	2,021	2,974	3,155	4,015	5,993	7,238	8,737	10,528
Creditors	153	153	261	610	546	707	877	1,056
Other Current Liabilities & Provns	103	101	432	466	1,142	1,413	1,723	2,053
<b>Total Current Liabilities</b>	256	254	693	1,076	1,688	2,121	2,600	3,110
<b>Net Current Assets</b>	1,765	2,720	2,462	2,940	4,305	5,117	6,138	7,419
<b>TOTAL APPLICATION OF FUNDS</b>	3,371	4,323	4,512	5,321	6,832	7,653	8,745	10,082

## Paras Defence and Space Technologies: Initiating Coverage

### CASH FLOW (INR Mn)

Year ending March	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Reported PBT	226	366	468	405	836	1,150	1,457	1,782
Non-operating & EO Items	5	27	(48)	(5)	(3)	(145)	(150)	(171)
Interest Expenses	124	78	67	54	66	48	48	48
Depreciation	97	104	113	134	149	172	188	204
Working Capital Change	(340)	(342)	(49)	(927)	(417)	(94)	(800)	(837)
Tax Paid	(69)	(118)	(95)	(116)	(183)	(287)	(364)	(446)
<b>OPERATING CASH FLOW ( a )</b>	<b>43</b>	<b>115</b>	<b>457</b>	<b>(455)</b>	<b>448</b>	<b>844</b>	<b>378</b>	<b>581</b>
Capex	(53)	(86)	(253)	(260)	(352)	(260)	(260)	(260)
Free Cash Flow (FCF)	(10)	29	204	(715)	96	584	118	321
Investments	(11)	(19)	(227)	(14)	(79)	-	-	-
Non-operating Income	1	(666)	577	258	(439)	145	150	171
<b>INVESTING CASH FLOW ( b )</b>	<b>(63)</b>	<b>(771)</b>	<b>96</b>	<b>(17)</b>	<b>(870)</b>	<b>(115)</b>	<b>(110)</b>	<b>(89)</b>
Debt Issuance/(Repaid)	(145)	(590)	(343)	372	(523)	-	-	-
FCFE	(156)	(561)	(139)	(343)	(427)	584	118	321
Share Capital Issuance	180	1,574	-	5	1,315	-	-	-
Dividend	-	-	-	-	-	-	-	-
Others	19	(353)	(63)	(46)	(55)	(48)	(48)	(48)
<b>FINANCING CASH FLOW ( c )</b>	<b>54</b>	<b>631</b>	<b>(407)</b>	<b>331</b>	<b>737</b>	<b>(48)</b>	<b>(48)</b>	<b>(48)</b>
<b>NET CASH FLOW (a+b+c)</b>	<b>34</b>	<b>(25)</b>	<b>147</b>	<b>(141)</b>	<b>315</b>	<b>681</b>	<b>221</b>	<b>444</b>
EO Items, Others	-	-	-	-	-	-	-	-
Closing Cash & Equivalents	47	22	171	30	345	1,025	1,246	1,690

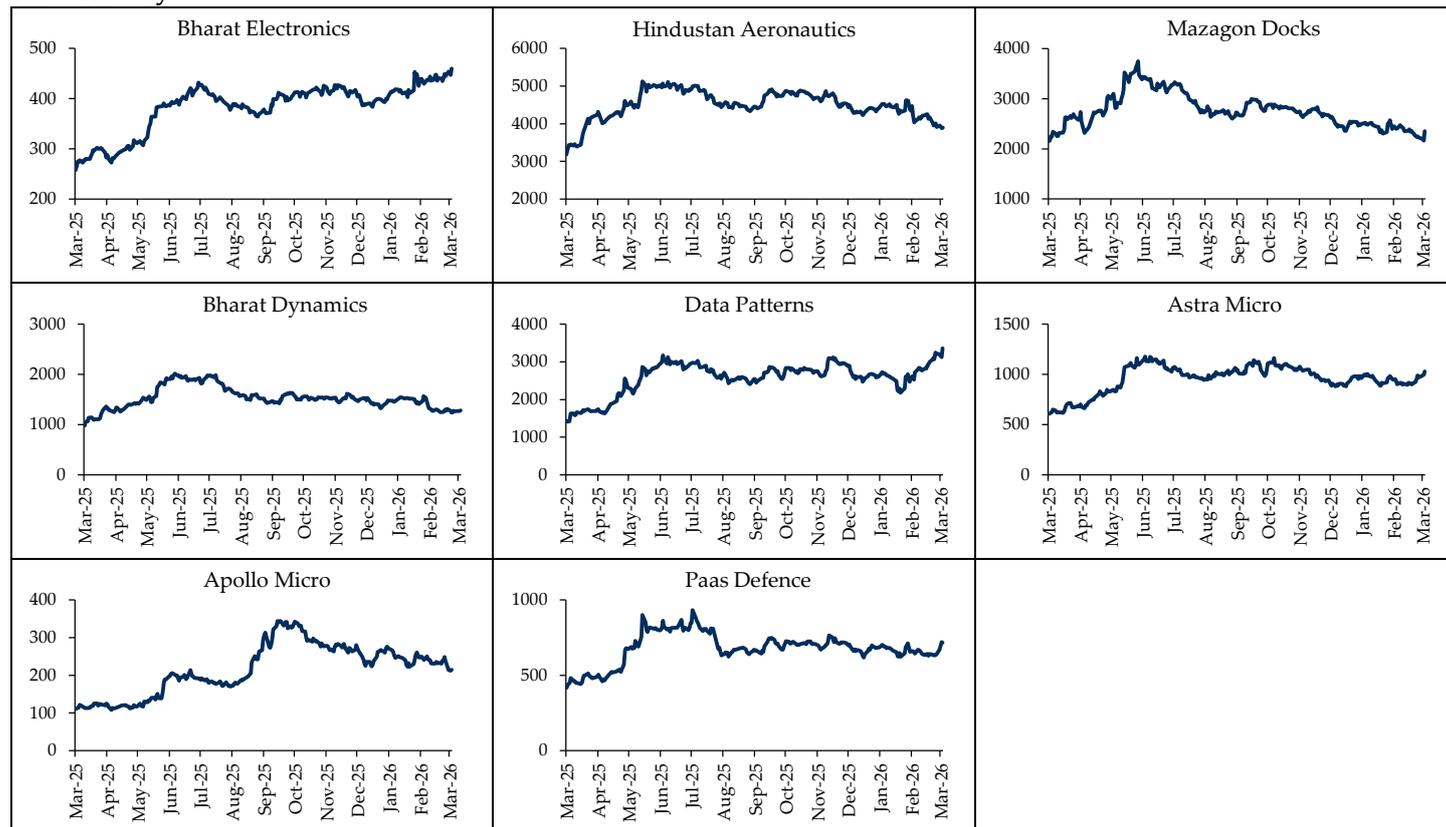
### KEY RATIOS

	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
<b>PROFITABILITY (%)</b>								
GPM	54.4	55.2	52.6	52.4	53.3	53.6	53.8	54.0
EBITDA Margin	30.3	28.4	25.5	20.1	26.7	27.5	28.0	28.2
EBIT Margin	23.5	22.7	20.4	14.9	22.6	23.7	24.6	25.1
APAT Margin	11.0	14.8	16.2	11.8	16.9	19.4	19.9	20.2
RoE		9.3	9.1	7.0	11.4	12.7	14.1	14.9
RoIC (or Core RoCE)		9.0	9.1	6.0	11.1	13.6	16.1	17.3
RoCE		8.5	9.3	6.9	10.9	12.4	13.8	14.6
<b>EFFICIENCY</b>								
Tax Rate (%)	30.2	26.0	23.2	25.7	26.5	25.0	25.0	25.0
Fixed Asset Turnover (x)	0.7	1.0	1.1	1.0	1.4	1.6	1.8	2.0
Inventory (days)	418	316	277	369	323	328	333	338
Debtors (days)	242	218	224	251	247	247	247	247
Other Current Assets (days)	62	64	52	60	42	47	45	43
Payables (days)	86	68	72	132	124	125	126	127
Other Current Liab & Provns (days)	26	20	71	67	114	116	114	113
Cash Conversion Cycle (days)	573	465	430	488	446	450	454	458
Working Capital (days)	609	508	411	481	374	381	385	388
Net D/E (x)	0.5	(0.1)	(0.1)	0.1	(0.1)	(0.2)	(0.2)	(0.2)
Interest Coverage (x)	2.7	5.3	6.8	6.9	12.4	21.9	28.2	34.5
<b>PER SHARE DATA (Rs)</b>								
EPS	2.8	3.9	4.6	4.1	7.6	10.7	13.6	16.6
CEPS	6.0	6.6	7.5	7.5	11.3	12.8	15.9	19.1
Dividend	-	-	-	-	-	-	-	-
Book Value	69.2	97.1	106.0	113.7	158.0	89.7	103.3	119.8
<b>VALUATION</b>								
P/E (x)	259.8	185.4	155.9	175.4	94.5	67.4	53.2	43.5
P/BV (x)	10.4	7.4	6.8	6.3	4.6	8.0	7.0	6.0
EV/EBITDA (x)	51.9	53.4	49.1	56.1	29.0	46.1	36.5	30.0
EV/Revenues (x)	15.7	15.2	12.5	11.3	7.7	12.7	10.2	8.5
OCF/EV (%)	0.2	0.4	1.6	(1.6)	1.6	1.5	0.7	1.0
FCF/EV (%)	(0.0)	0.1	0.7	(2.5)	0.3	1.0	0.2	0.6
FCFE/Mkt Cap (%)	(0.7)	(2.0)	(0.5)	(1.2)	(1.5)	1.0	0.2	0.6
Dividend Yield (%)	-	-	-	-	-	-	-	-

Source: Company, HSIE Research

## Sector Thematic: Defence

### Price History



### Rating Criteria

**BUY:** >+15% return potential

**ADD:** +5% to +15% return potential

**REDUCE:** -10% to +5% return potential

**SELL:** >10% Downside return potential

**Disclosure:**

We, **Amit Kumar, CFA, Nikunj Khetan, PGDM & Aryan Singh Dalal, BCom(H)** authors and the names subscribed to this report, hereby certify that all of the views expressed in this research report accurately reflect our views about the subject issuer(s) or securities. SEBI conducted the inspection and based on their observations have issued advise/warning. The said observations have been complied with. We also certify that no part of our compensation was, is, or will be directly or indirectly related to the specific recommendation(s) or view(s) in this report.

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