

DEFENCE ENGINEERING BUSINESS

Overview:

L&T has been active in the Defence sector since the mid-80s, well ahead of the opening up of the sector for private industry participation, by associating with the Defence Research & Development Organisation (DRDO) and naval indigenisation programmes. Having built a portfolio of technologies, products, systems, platforms and solutions, the business provides design-to-delivery solutions across chosen defence segments with a focus on indigenous design, development and production of naval (submarines and warships) and land platforms (armoured systems, howitzers), weapon systems, engineering systems, missile & space launch vehicle subsystems, sensors, radar systems and avionics. These are complemented by R&D and Design & Engineering Centres for targeted platforms, systems and solutions development.



K9 Vajra-T self-propelled howitzer at Republic Day Parade rehearsal in New Delhi

The Defence Engineering operations extends across two R&D centres, three Design & Engineering Centres, and six production centres across India:

- Submarine hull-building facility and an armoured systems manufacturing, integration & testing facility at L&T's Hazira Complex (near Surat)
- Strategic Systems Complex for weapon and engineering systems and sensors at Talegaon near Pune
- Aerospace manufacturing shops for India's space launch vehicle subsystems at Powai (Mumbai) and Coimbatore
- Aerospace and missile subsystems manufacturing at the Precision Manufacturing & Systems Complex and Centre of Excellence for Advanced Composites at Coimbatore
- Strategic Electronics Centre at Bengaluru
- Modern shipyard at Kattupalli (near Chennai)

Besides these dedicated facilities, the business also operates a facility at Visakhapatnam under the Government Owned Contractor Operated (GOCO) model. These Work Centres are complemented by R&D Centres at Powai and Bengaluru, and Design & Engineering Centres for submarines and warships at Powai and Chennai, respectively, and a Design & Engineering Centre for weapon and engineering equipment at Powai.

The business is structured into two strategic business groups (SBGs):

1. Defence & Aerospace
2. Defence Shipbuilding



L&T has provided critical subsystems for most of India's space missions

Defence & Aerospace

Over the years, the Defence and Aerospace (D&A) business has built a wide range of indigenous products, systems, solutions, platforms and technologies through in-house efforts as well as by teaming up with the DRDO, and has participated in the Indian Navy's indigenisation programme for the development of a range of engineering systems and weapon systems within the country. To date, the SBG has indigenously developed more than 250 defence products, and more than 50 of them have been delivered in serial production mode. The business model is uniquely differentiated through its focus on in-house technology and product development, innovation for serial production, mature and equated partnerships with global majors and through-life support offerings. These enable the business to maintain its market leadership position (in the private sector) in an environment where the Government is aggressively pursuing the indigenisation agenda through 'Atmanirbhar Bharat Abhiyan'.

The SBG also has a Joint Venture (JV) with MBDA, is well positioned to indigenously offer advanced missile systems to the Indian Armed Forces.

Defence Shipbuilding

L&T's Shipbuilding business offers end-to-end solutions for design, construction of defence ships and refit services. The business owns and operates a greenfield mega defence shipyard at Kattupalli, near Chennai,

located across a sprawling 980-acre complex. The Kattupalli Shipyard is India's largest shipyard, considering just the first phase spread across 150 acres that has been operational for nearly a decade. The design and construction of the yard is modelled to adapt global best practices, such as modular construction, construction under covered shops, use of a ship-lift with dry and wet berths, etc., to enable simultaneous construction of different classes of vessels until near completion on land, and then launching them through the ship-lift. It is the only Indian shipyard with Industry 4.0 practices embedded, enhancing construction efficiency, cycle time and build quality.

A dedicated Warship Design Centre at Chennai is equipped with the latest integrated 3D design, analysis and Product Lifecycle Management tools, and interfaced with project management and ERP systems, in line with global best practices.

The Kattupalli Shipyard has been largely engaged in new builds and refits / repairs of defence ships of the Indian Navy and Indian Coast Guard. Since 2010, the Shipbuilding business has designed and constructed 62 defence vessels and delivered 61 of them, which include a floating dock for Indian Navy, interceptor boats and offshore patrol vessels for the Coast Guard in record time. The unique capability of the business to achieve on-time or ahead of contractual delivery performance in all the contracts for defence vessels is a benchmark in the Indian shipbuilding industry. The shipyard has a



Modular Bridging System

track record of delivering first-of-class vessels on / ahead of schedule and with design and construction maturity and in-built quality. A global benchmark was attained by the Yard in the sea acceptance trials of a 2130 MT class offshore patrol vessel by completing the entire acceptance trials in the maiden sea sortie of the vessel to affirm its design and build quality.

The business does not manufacture any explosives or ammunition of any kind, including cluster munitions or anti-personnel landmines or nuclear weapons or components for such munitions. The business also does not customise any delivery systems for such munitions.

Business Environment

FY 2020-21 started on a challenging note, with Covid-19 pandemic triggering a series of nation-wide lockdowns. The Government's focus on health care and social spending coupled with complete / partial closure of customer offices / operations resulted in disruption in business during the early part of the year. However, in order to minimise the Covid-19 impact on the defence sector, the MoD took several proactive steps, such as provision for contract extension under the *force majeure* clause, additional time for submission of responses to EoI / RFI / RFP, relaxation in performance BGs, etc. The macro picture has been a mixed bag over the recent years. On the one hand, the Government of India is taking substantive steps to promote indigenous production by building a robust acquisition pipeline with preferential categorisation in

favour of indigenous procurement of defence systems and accelerating it from the grant of AoNs to RFPs, while, on the other hand, budget constraints have seen order deferrals. While there is a significant increase (~10% YoY) in the Defence Services Capital budget in past two years and the same has been enhanced by 19% for FY 2021-22, there is still a substantial gap between the Capital budget demanded by the Armed Forces and the amount allocated. To bridge this gap, a non-lapsable Modernisation Fund for Defence and Internal Security (MFDIS) has been given *prima facie* approval by the MoF. Also, the MoD has started to demarcate funds for domestic capital procurement from FY 2020-21 onwards (₹ 52,000 crore in FY 2020-21 going up to ₹ 71,000 crore in FY 2021-22).

Major Achievements

During the year, the business has achieved multiple successes and proud moments, uniquely reaffirming L&T's positioning as a 'nation-builder' through a series of Make-in-India successes. These include:

- New benchmarks set up by work centres in terms of deliveries of OPVs, K9 Vajra-T, Combat Engineering Systems, to name few, and maintenance of safety operations aided by digitalisation and automation.
- Delivery of 45 Nos. K9 Vajra-T self-propelled howitzers during the year and completing the contract for 100 Nos. All the howitzers were delivered ahead of schedule with zero non-conformities.



Offshore Patrol Vessel for Indian Coast Guard

- Successful delivery of multiple land and naval weapon launch systems, engineering systems and missile systems to the Indian Armed forces
- Delivery of 3 interceptor boats to the Indian Coast Guard, all ahead of contracted schedule, completing the contract of 54 Nos. Delivered OPV-6 to the Indian Coast Guard. With this, L&T-built Coast Guard Vessels account for ~40% of Indian Coast Guard's operational fleet.
- The R&D and Design & Engineering teams have developed a range of new technologies, products and solutions with a focus on emerging technologies, such as unmanned systems across domains, Augmented Reality (AR) and Virtual Reality (VR), emphasising on the uniqueness of offerings, innovation and presence across the value chain.

Significant Initiatives

The business has identified and signed MoUs / agreements with strategic partners to enhance business opportunities both in domestic and international markets. R&D and innovation have been the backbone of the defence business since its inception, and the business continues to invest in R&D to develop new-age technologies and products such as unmanned systems (all four domains), robotics, additive manufacturing and Artificial Intelligence.

The business has been building a strong position in digital design since the mid-90s and has attained proficiency in the elements of Industry 4.0 in its multiple R&D, Design & Engineering Centres and Production work centres that

extend from equipment and systems to the building of complete platforms, such as warships and submarines.

The major disruption caused due to the Covid-19 pandemic-imposed restrictions was the movement of customer and third-party inspectors at factory premises. This challenge was overcome by resorting to digital inspection for the first time and institutionalising the same in the Indian defence industry. To achieve business continuity and meet key deadlines, innovative digital technologies and processes were adopted to provide through life support, training, digital Quality Assurance, trial evaluation and acceptance.

Environment, Health and Safety

The safety track record across work centres, customer locations, and business partners' premises continued to be exemplary. The business has also implemented digital workmen safety systems, such as RFID-based tracking especially in confined spaces e.g. submarines and warships, as well as tagging of assets for online tracking.

The business continues to focus on the triple bottom line and green initiatives. It has achieved significant y-o-y reduction in water and energy consumption, in line with L&T's sustainability focus.

The Shipbuilding team has received the prestigious Award of Honour 2021 from National Safety Council of India, Tamil Nadu Chapter. The Coimbatore facility excelled in very high percentage usage (>80%) of green energy in operations.



Anti-Submarine Rocket-launcher

Human Resources

HR initiatives have been aligned to the overall business strategy by focussing on identifying and grooming high-potential talent, critical for maintaining a competitive advantage, through various management and technology leadership programmes. The business has implemented unique initiatives, such as Lead Next & D-mentors, for the young talent at the middle management level. Attention to leadership and talent development continues as a business imperative.

The business has also received the HR SCORE Award 2021 conferred by FICCI in association with IIM, Trichy. Further, with renewed emphasis, the business has embarked upon employee engagement initiatives to retain and grow talent and continue to be an employer of choice.

Risks and Concerns

The cyclical nature of the business affects the entire defence sector. To mitigate this risk, L&T has developed a bouquet of products across the segment through in-house efforts.

The primarily risk for the business is ordering delays / deferment of orders due to complex MoD processes.

The second wave of Covid-19, which seems to be rapidly affecting the major industrialised states, may once again disrupt operations. To mitigate this business risk, the business has chalked out strategies such as concurrent



Lightweight Torpedo-launcher

execution at multiple work-centres, in-house manufacturing of critical sub-systems and vendor consolidation into dedicated feeder shops to address supply chain disruptions, etc.

Outlook

While the Covid-19 pandemic could impact business in the short term, the disruption it created in the global supply chain has further reinforced the importance of self-reliance in a strategic sector like defence. The Government's series of reforms in the defence sector to enhance indigenisation has been given a further fillip through the 'Atmanirbhar Bharat' initiative. A separate budget for domestic procurement and a time-bound Positive Indigenisation Initiative (import ban) for weapons / platforms is expected to open up huge opportunities to the competent Indian industry in the medium term. The prevailing situation at the Line of Control has catalysed the innovative adaption of existing weapons / platforms for high-altitude operations as well as development of indigenous weapons / platforms and has brought renewed focus on completion of trials and accelerated induction into service. The MoD has also announced an outlay of @ 15% or ~₹ 10,500 crore (minimum) for capital purchases directly from the private sector in FY 2021-22 with an assurance of YoY increase.

The MoD has announced significant reforms at different levels as a part of the 'Atmanirbhar Bharat' and Make-in-India visions. At the strategic level, the Draft Defence Production & Export Promotion Policy (DPEPP) has been



Floating Dock for Indian Navy

published, which clearly outlines the vision and roadmap towards achieving significant self-reliance in the defence sector by 2025. Defence Acquisition Procedure 2020 (DAP 2020) was released by the Indian MoD on 30th Sep. 2020. The DAP 2020 aims to accomplish industry friendly, simplified acquisition procedures to maximise indigenisation within the acquisition timelines. Also, the MoD will grant a level playing field in naval shipbuilding and grant escalation on long-term contracts of tenure beyond 5 years.

Strengthening the vision of 'Atmanirbhar Bharat', the Indian MoD has notified a Positive Indigenisation List of 101 weapons / platforms that are banned from being imported. The embargo on import of the listed weapons / platforms will come into effect gradually between December 2020 and December 2025.

Contracts worth ₹ 4,00,000 crore are expected to be placed on Indian industry within the next five to seven years for the procurement of such systems / platforms covered in the first Indigenisation list. A second Indigenisation list of 101 platforms / equipment and systems has been drafted and put up for Government clearance to be issued in the near future.

The Government has announced several reforms towards commercial exploitation of opportunities in the space sector. An autonomous regulatory body, IN-SPACe (Indian National Space Promotion and Authorisation), has been created to hand-hold and promote private industry in the space sector.

The role of NSIL (New Space India Limited), a PSU under the Department of Space (DoS), has been redefined and empowered to offload the operational activities of ISRO in the areas of launch vehicles and satellite production as well as services through private consortiums.

L&T has been a trusted industry partner to ISRO and the Indian space sector for nearly five decades and has been involved in the production of a range of hardware for all the launch systems of ISRO, besides partnering it to develop a host of test / simulation facilities, instrument grade sensors, as well as strategic raw material independence. The reforms announced in the space sector will enable private sector companies – like L&T, which has built, and enhanced their capabilities over the last few decades – to take on the complete manufacture and integration of launch vehicles as well as satellite bus manufacturing and associated services.

Overall, with increased focus of Government on indigenisation and impetus provided to 'Atmanirbhar Bharat' initiative, business opportunities are likely to enhance in the coming years.

Change in Segment Reporting

The Military Communication Business of Defence Engineering Segment has been transferred with effect from April 1, 2020 to Smart World and Communication business and reclassified to the 'Others Segment'.