

DEFENCE BUSINESS

Overview:

The defence, aerospace and shipbuilding businesses of the Company have been integrated into a separate vertical, L&T Defence Engineering, for segment reporting. The business has been engaged in conceptual design-to-realisation-to-delivery of equipment, systems, solutions and platforms across chosen defence segments, from surveillance to strike capabilities, this vertical also provides through-life support for the systems supplied by them. The portfolio encompasses engineering equipment and systems ranging from propulsion systems to enable mobility, logistic solutions to naval & land platforms such as warships, submarines and armoured systems. The Company's defence solutions span the value chain from building platforms and systems to through-life support in a unified manner.

L&T has been active in the defence and strategic sector since the mid-80s, by associating with the Defence Research & Development Organisation (DRDO) and naval indigenisation programs - well ahead of the opening up of the sector for private Industry participation. At that time, the defence initiatives focussed partnering DRDO Laboratories in the design and prototype development of complex weapon systems. It also focussed on the design, development, qualification and delivery of special purpose engineering equipment for naval platforms



MRSAM Mobile Launcher System

being built by MoD shipyards and under DRDO programs.

Over the years, the business portfolio grew in scale and maturity to include indigenous design, development, industrialization and serial production of a range of naval and land weapon launch and engineering systems, fire control systems, missiles and space launch vehicle subsystems, radar systems and sensors, military communication systems and avionics. This evolutionary journey has led to the development of capabilities in design, engineering and construction of naval platforms (submarines and warships) and armoured systems.

The operations span across two R&D centres, three Design & Engineering Centres and production centres at nine locations spread across India to serve the defence and aerospace sectors. These include:

- Submarine Hull-building Facility, Hazira
- Armoured Systems Complex at Hazira for manufacturing, integration and testing of armoured systems
- Precision Manufacturing and Systems Complex, Coimbatore for aerospace and missile manufacturing
- Advanced Composites facilities at Vadodara and Coimbatore



Pinaka Guided Launcher System



155mm/52 Cal Tracked Self Propelled Gun K9 VAJRA-T

- Strategic Systems Complex, Talegaon, Pune, for weapon and engineering systems and sensors
- Strategic Electronics Centre at Bangalore
- Marine Switchgear and Control Systems, Navi Mumbai,
- A modern shipyard at Kattupalli, near Chennai
- A facility at Vizag under the Government Owned Contractor Operated (GOCO) model for a Strategic Program
- R&D Centres at Powai and Bangalore for targeted product, systems and technologies
- Design and Engineering Centres at Powai and Chennai for warship, submarine and weapon and engineering equipment

The Defence Business is structured into two business groups:

1. Defence and Aerospace
2. Defence Shipbuilding

1. Defence and Aerospace

Over the years, the Defence and Aerospace (D&A) business has built a portfolio spanning a wide range of indigenous products, systems, solutions, platforms and technologies. This has been achieved through in-house efforts as well as by teaming up with DRDO and participation in the Indian Navy's indigenisation program for realisation of defence systems within the

country. Till date, the D&A strategic business group has indigenously developed more than 250 defence products and over 50 of them have been industrialised and delivered in serial production mode.

The business model is uniquely differentiated with a focus on in-house technology and product development, with innovation at the core of our offerings. This is augmented by our mature and equitable partnerships with global majors, to maintain our market lead position in an environment where the Government is aggressively pursuing an indigenisation agenda while most indigenous players are dependent on ToT model to pursue defence production. The business thus continues investing in R&D to develop new age technologies and products such as unmanned systems (all four segments), robotics, additive manufacturing (3D printing) and artificial intelligence.

The D&A group also has a Joint Venture (JV) with MBDA, a global leader in missiles and missile systems. The JV is well positioned to indigenously offer advanced missile systems to the Indian Armed Forces.

2. Defence Shipbuilding

L&T's Shipbuilding offers end-to-end solutions for design, construction and through-life support for defence platforms. L&T operates two defence shipyards – one at Hazira Manufacturing Complex and another greenfield mega shipyard at Kattupalli,



L&T built Offshore Patrol Vessels help the Indian Coast Guard keep our shores safe

near Chennai. Located across a sprawling 900-acre complex, the Kattupalli Shipyard is India's largest yard, designed in-house and built to globally benchmarked technological practices. Dedicated design centres for warships and submarines are equipped with latest integrated 3D design, analysis, virtual reality and Product Lifecycle Management tools, interfaced with project management and ERP systems on one hand and production machinery in the workshops, in line with global best practices. This is the only yard in India with Industry 4.0 practices in place and pursuing modular construction based on indigenous solutions.

The Shipyard has been largely engaged in New Build and refits / repairs of defence ships of the Indian Navy and Indian Coast Guard. The Shipyard, since 2010, has designed, constructed and delivered 50 Defence Vessels which include a Floating Dock (Navy), Interceptor Boats and Offshore Patrol Vessels (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 itself for the Indian Shipbuilding Industry to emulate.

Business Environment

Over the last five years, the Government of India, in its quest to boost defence manufacturing, has taken substantive steps to ease licensing in defence, promote exports, preferential categorization of acquisition in favour

of indigenisation of defence systems, accelerating process of Acceptance of Necessity and RFPs and encouraging private sector participation in the defence sector. The intent of the Government to achieve higher indigenization and self-reliance is visible in the latest policy measures such as Strategic Partnership, simplified Make II procedure, defence corridors in Tamil Nadu and Uttar Pradesh and the draft Defence Production Policy. Defence procurement policies and procedures continue to evolve with earnest and positive impetus towards 'Make in India'.

While various policy initiatives are in the right direction, the challenge resides in time-bound implementation, convergent and concurrent actions. While the GoI has taken steps to ensure ease of doing business by issuing a series of amendments to DPP under 4 rounds of Business Process Restructuring initiatives and also addressed many issues to grant a level playing field, the concerns of private sector remain unaddressed as Defence PSUs are still being preferred for key programs in the pipeline, based on earlier decisions. With these earnest efforts by the Government, the stage is set to leverage indigenous capabilities and infrastructure created by L&T across domains and segments over years to come.

Major Achievements

- Delivery and commissioning of the 1st Indian Weapon System, for a foreign Navy is a significant breakthrough for L&T



Floating Dock



Modular Bridging Systems built by L&T give our Armed Forces enhanced mobility

- Dedication to the nation of L&T's Armoured Systems Complex at Hazira by the Honourable Prime Minister in presence of Hon. Defence Minister
- Significant weapons systems delivered included K-9 Vajra Howitzers, Pinaka MRLS, BM21, Akash Air Defence Systems – many of which were displayed at the Republic Day Parade
- Delivery of multiple weapon launch systems (land and naval), engineering systems and missile systems to the Indian Armed forces
- Announcement on operationalization of deterrence patrol by INS Arihant by our Honourable Prime Minister – testimony to the platform's build quality
- Handover of three Offshore Patrol Vessels (OPVs) to Indian Coast Guard – all ahead of schedule.
- Benchmark-setting delivery: OPV-1 was the first First-in-Class ship since 1963 to be delivered within the contracted schedule
- Ahead-of-schedule deliveries of Interceptor Boats (IBs) to Indian Coast Guard (8 boats in FY 19)

New Orders

- Supply of 10m short span bridges received from MoD.
- Order from MBDA France for MICA missile rear section and launcher integration.

Significant Initiatives

In addition to the focus on defence manufacturing to serve the Indian Armed Forces, direct exports are being targeted as an additional engine for growth.

L&T has been working closely with DPSUs over the years and the relationship was taken to the next level by signing MoUs with BEL and BEML. This will aid L&T and the partners to target specific programs and explore new opportunities for both domestic and international markets.

Besides having a strong focus on R&D, digitalisation to enhance productivity, building synergy across work centres and business sustainability, the business is also working on strengthening partnerships to explore and target newer markets. During the year, a new facility for production of Armoured Systems was created in L&T's Hazira Complex with 'Industry 4.0' set-up, which has already started rolling out K9 Vajra-T Howitzers. The business, in its association with DRDO in development of indigenous systems made marked contributions to 17 of the 20 systems for which DRDO conducted successful launch trials during the year, by supplying critical systems such as Launchers, Fire Control Systems, Stabilisation Systems, Missile Airframes, etc.

Digitalisation

The digitalisation journey for the business dates back to the late eighties with progressive implementation of Computer



Image for representational purposes only

L&T has made a vital contribution to India's first nuclear -powered submarine

Aided Design, 3D modelling, Walkthroughs, Virtual Reality, Digital Manufacturing techniques, Laser based Metrology, Integration, etc. These techniques have been applied across the value chain from digital design through platform manufacturing and system integration. In recent years, the business embarked upon utilising Industry 4.0 technologies to make operations efficient and stay ahead of delivery schedules all the times. The business has initiated IoT implementation in manufacturing centres to add a new edge to operational efficiencies. While a range of digital initiatives have already been implemented, many more are in the implementation phase.

Environment, Health and Safety

The business has displayed exemplary performance on safety track record across work centres and customer locations and also at Business Partners premises. The awards won by Powai and Kattupalli work centres accentuate the resolve for championing safety as our core value. The business continued to focus on the triple bottom line and green initiatives and achieved significant y-o-y reduction in water and energy consumption, keeping sustainability in mind. The Miyawaki forest development project at Talegaon unit has been a unique success story for many to emulate. This has already become natural habitat for fauna, migratory birds, peacocks, etc.

Human Resources

HR initiatives have been aligned to the overall business strategy by focussing on identifying and grooming high potential talent, critical for having a competitive advantage through various management and leadership programmes. The business has implemented a Technology Leadership Programme to maintain its market leadership position and continue to focus on development of niche technologies. Attention to leadership and talent development continues as a business imperative. Further, with renewed emphasis, the business has embarked on an employee engagement initiative to retain, grow talent and continue to be an employer of choice.

Risks and Concerns

The defence sector as a whole, exhibits a cyclical nature in terms of business growth opportunities. In L&T's case, a bouquet of products across segments, developed through in-house efforts, has ensured that the risk is limited to deferment of orders. The impact of diversion of funds to social spending ahead of the Lok Sabha elections and GST reimbursements to OEMs may impact the project awards and progress.

Outlook

Defence Business

The Defence Production Policy awaiting final clearance by the Government has set clear targets for the quantum of



Tactical Unmanned Aerial Vehicle designed and built by L&T



L&T has provided systems for most of India's space missions - including those to the moon and Mars

defence production, both domestic and exports by 2025. The policy explicitly lists 13 segments for which indigenous capability will be built and imports will be disallowed. This augurs well with the industry to develop capabilities and capacities over a mid to long-term basis. The company has already been working in capability and capacity building in many of these segments and has a proven track record in many of them.

Since 2014, programs worth more than ₹ 4.5 Lakh crores have been cleared for acquisition with 2/3rd of them categorised for Indigenous acquisition. The Private Sector has been allowed to compete for more than 50% of the programs categorised as indigenous acquisition – a major change compared to preceding five years, when it was below 5%.

The defence production market shows promise of significant pick-up in the medium to long term as the Government implements some of the policy initiatives still in the pipeline. The Indian Navy's aggressive fleet expansion plan, combined with the 'Make in India' initiative of the Government provides wider opportunities to Indian shipyards for construction of warships and submarines for defence forces.

Aerospace Business

The Indian Space Research Organization (ISRO) has started working on its ambitious plan of Gaganyaan 2022 and has also initiated actions to involve the industry in Launch Vehicle Integration which is likely to create sizeable opportunities. In-line with this, L&T and HAL have signed a consortium agreement to produce the complete launch vehicle for ISRO.

The strategic partnership policy has been created to bring in private sector participation in addition to the production lines of the DPSUs for manufacturing defence platforms within the country. During the year, two programs have been approved for procurement under SP viz. Naval Utility Helicopters (NUH) and Program 75(I) for construction of Conventional AIP Submarines indigenously. While, the EoI for NUH program has been released for Indian and Foreign OEMs in FY 2018-19, the same is expected for P75(I) in the first quarter of FY 2019-20. L&T, having been a vital contributor for indigenous production with experience across segments, is well placed to be a Strategic Partner to the Government of India and indigenously build platforms that were earlier fully imported or assembled with dominating import content.