

Defence Shipbuilding End-to-end Solutions

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THE COMPANY

Larsen & Toubro is an Indian multinational engaged in technology, engineering, construction, manufacturing, shipbuilding and financial services. It operates in over 30 countries worldwide.

A strong, customer-focused approach and the constant quest for top-class quality have enabled L&T to attain and sustain leadership in its major lines of business for over seven decades.

L&T belongs to a niche aptly described as the 'National Sector'.

The Company has a long history of association with major national missions – supporting India's defence, aerospace and nuclear segments.



Riding the waves

Over 90% of the country's trade by volume and 77% by value is transported over the seas. Over 97% of our energy needs of oil are either imported or produced in offshore fields. India's economic future, therefore, rests on the strength of the maritime security that the Indian Navy and Coast Guard provide. In the future, this could assume even greater significance.

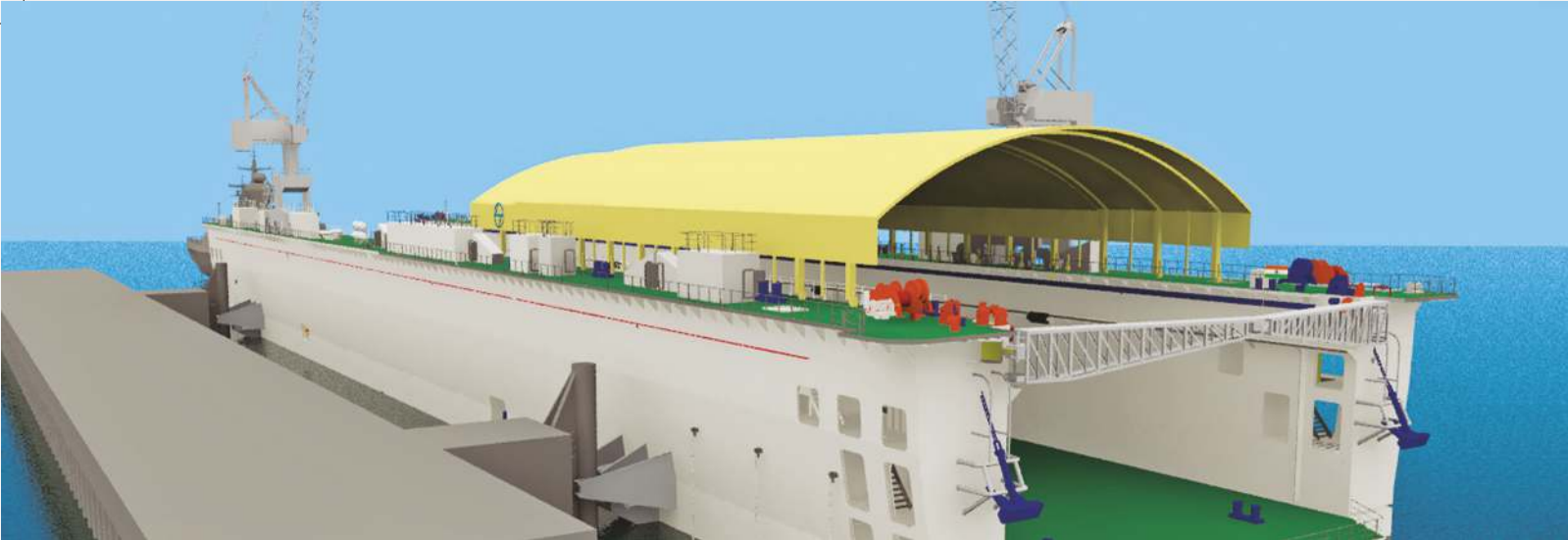
The country's predicted economic ascent will demand a symmetrical strengthening of defence capabilities. Shifting geo-political equations and India's own blue-water ambitions are certain to add new dimensions to the challenge.

The advantage of having a strong naval fleet need not be over emphasized. It is better to be able to handle ocean incursions before they touch the shoreline – and this is possible only with sustained naval power. Moreover, the importance of reliable civil

partners for the maintenance of defence vessels is gaining attention.

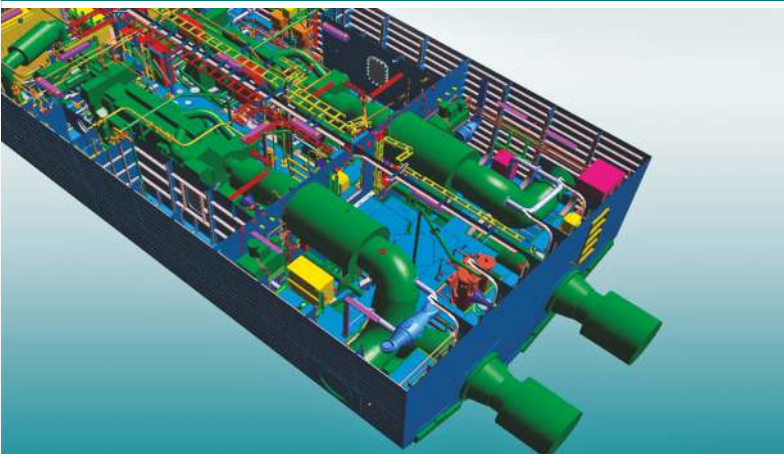
Challenges of this magnitude need an approach that brings 'all hands on deck', empowered with private sector initiatives supplementing the efforts of public sector enterprises.

L&T owns two shipyards, strategically located on India's east and west coasts. These state-of-the-art facilities give L&T the requisite capacity and capabilities to provide total integrated solutions – from design, construction and commissioning to maintenance, repair / refit, providing lifecycle maintenance and upgrades of naval vessels. Offering the Indian Navy and Coast Guard a single-point solution, L&T is, thus, geared to meet the growing challenges of securing India's vast shoreline.



Visual for representational purposes only.

INDIGENOUS DESIGN & ENGINEERING



Self-reliance in defence is a strategic necessity. It enables a country to reduce its dependence on defence imports. Moreover, the IPR remains within the country, the effects of sanctions during war are neutralised and the defence ecosystem is strengthened. The confidentiality that must surround defence designs can be maintained only if the design source is indigenous.

The expansion of the fleets of the Indian Navy and Indian Coast Guard under the 'Make in India' initiative necessitates enhanced indigenous capabilities for design, construction, maintenance and repair of defence vessels.

To help India achieve this strategic objective, L&T has set up state-of-the-art Submarine and Warship Design Centres. The Warship Design Centre has developed concept designs for

Corvettes, Offshore Patrol Vessels, the Floating Dock, Interceptor Boats, Training Ships, etc. Detailed design and production drawings are generated in-house. L&T's strengths in concept design enable the Company to provide customised solutions. The modular approach to design is inherently flexible and can be custom-engineered for role-changing capabilities.

Right from the design stage, the focus is on modular construction. L&T's Kattupalli shipyard is designed to undertake modular construction.

L&T provides digital modelling, virtual reality and PLM capabilities for lifecycle management. Over 80% of pre-outfitting is carried out at the 'block' level to reduce cycle time and improve quality.

NEW CONSTRUCTION



L&T's design and construction capabilities are aligned to India's plans of inducting defence vessels and consolidation of security infrastructure as well as to the requirements of friendly nations. L&T has the capability to construct:

- Frontline Warships: Frigates, Destroyers, Corvettes...
- Submarines

- Special Platforms: Landing Platform Dock
- Diving, Survey and Research Vessels
- Auxiliary Vessels: Offshore Patrol Vessels, Floating Dock
- Interceptor Boats, Fast Speed Boats...

Key Naval and Coast Guard projects executed or under execution by L&T include:

- Construction of India's first nuclear-powered submarine, *INS Arihant*
- Design and construction of 54 high-speed Interceptor Boats for Indian Coast Guard
- Design and construction of 7 Offshore Patrol Vessels for Indian Coast Guard
- Design and construction of a Floating Dock for Indian Navy
- Design and construction of High Speed Patrol Boats for Vietnam Border Guard



REFITS, REPAIRS AND MID-LIFE UPGRADES



L&T's Kattupalli shipyard has the capability and capacity to undertake refit, repair and mid-life upgrade of warships, submarines and auxiliary vessels. In-house design strengths, multiple dry berths and wet berths and dedicated workshops located near dry and wet berths help reduce cycle time and ensure independent management of repair and refit projects with total focus for timely completion.

Key Naval and Coast Guard projects executed or under execution by L&T include:

- Medium refit of Indian Navy's fleet tanker, the second largest naval ship
- Medium refit of Indian Coast Guard offshore patrol vessels
- Refit and repair of various other Indian Navy and Coast Guard vessels

CRITICAL MARINE EQUIPMENT & SYSTEMS



For over two decades, L&T has been a major supplier of marine equipment and systems for defence ships. Major frontline warships constructed in India are fitted with mission-critical equipment and systems made by L&T. The Company undertakes in-house design, development and manufacture of these systems, and integrates them on-board defence vessels.

In-house design and production of marine equipment and systems enable L&T to provide customised solutions to meet the requirements of individual warships. L&T thus has the capability to undertake concurrent engineering during vessel construction as well as provide post-delivery life-cycle support.

KATTUPALLI SHIPYARD

L&T's Kattupalli shipyard is located near Ennore Port, 40 km from Chennai, a major manufacturing and services hub in South India. The facility is designed for modular construction and repair of a wide range of defence ships and submarines.

Total Area: 1225 acres
Waterfront: 2.2 km
Depth: Up to 16m

Simultaneous construction and repair of multiple platforms is facilitated by several large dry and wet berths.

Ship-lift

A unique feature of L&T's Kattupalli shipyard is the ship-lift, designed and manufactured entirely by L&T. It enhances the capability of the shipyard, enabling multiple jobs – both new builds and retrofits – to be handled simultaneously.
Length: 200 m (extendable to 260 m)
Width: 46 m
Lifting capacity: 21050 T (upgradable to 23,000 T)

Workshops

Large, well-ventilated and naturally-lit

workshops cater to weather-independent construction and refit of vessels.

Customer Facilities

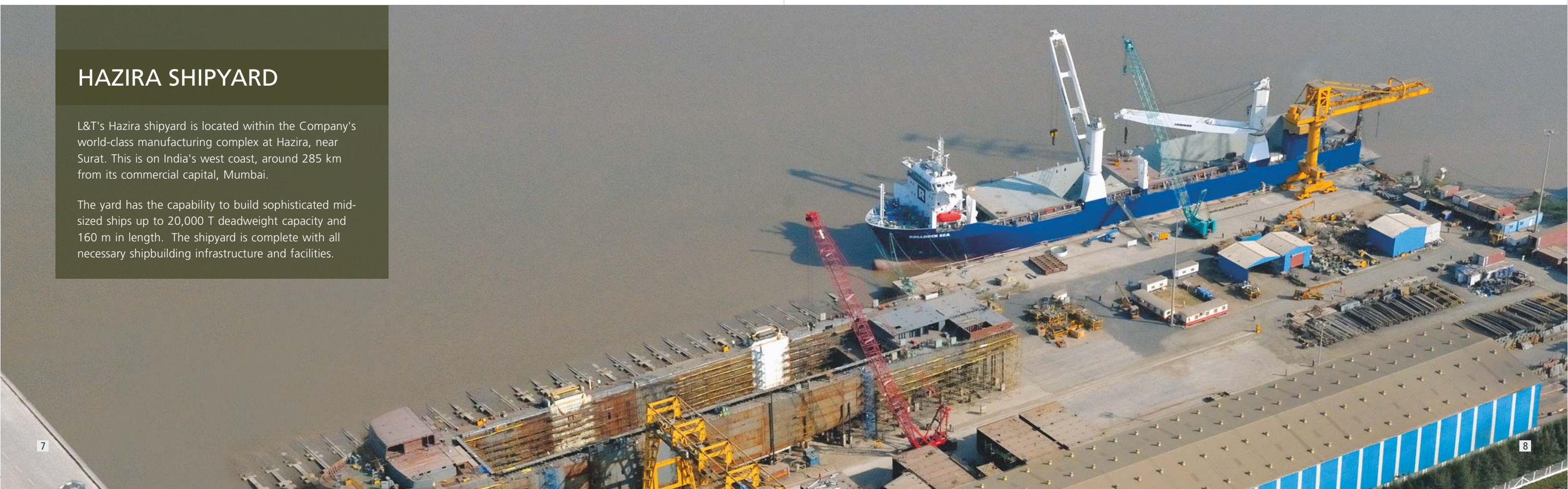
For the convenience of clients monitoring construction and crew awaiting ship refurbishment, L&T has constructed comfortable accommodation facilities, complete with all amenities and recreation facilities. This enables clients to save travel time to the site, and facilitates closer monitoring, resulting in enhanced customer satisfaction.



HAZIRA SHIPYARD

L&T's Hazira shipyard is located within the Company's world-class manufacturing complex at Hazira, near Surat. This is on India's west coast, around 285 km from its commercial capital, Mumbai.

The yard has the capability to build sophisticated mid-sized ships up to 20,000 T deadweight capacity and 160 m in length. The shipyard is complete with all necessary shipbuilding infrastructure and facilities.





HOUSING, AMENITIES AND RECREATION FACILITIES FOR SHIP'S CREW AT KATTUPALLI SHIPYARD



QUALITY, HEALTH, SAFETY & ENVIRONMENT

Quality

L&T's stringent quality policy ensures that its shipyard services equal or exceed the standards required by customers. Precision control of materials, machinery and workmanship, as well as continual improvements in these variables, build quality into L&T-constructed ships.

L&T's shipyards comply with ISO 9001:2015 standards.

Health, Safety and Environment

L&T is firmly committed to the continual improvement of all aspects of Health, Safety and the Environment. L&T shipyards comply with OHSAS 18001:2007 and ISO 14001:2015 standards, affirming its commitment to employee and workmen health and safety, and environmental conservation.



GLOBAL PRESENCE

L&T's worldwide network of offices enables it to cater to the needs of overseas customers in many geographies. These offices facilitate the global procurement activities for shipbuilding and represent L&T as the local point of contact for lifecycle support.

L&T has executed engineering and construction projects in several countries, and has supplied critical equipment and systems to an even wider global base. L&T has manufacturing facilities in several countries. All these affirm L&T's focus on meeting worldwide needs.

