



## Annual Review



**LARSEN & TOUBRO**

It's all about Imagineering

## VISION

L&T shall be a professionally-managed Indian multinational, committed to total customer satisfaction and enhancing shareholder value.

L&T-ites shall be an innovative, entrepreneurial and empowered team constantly creating value and attaining global benchmarks.

L&T shall foster a culture of caring, trust and continuous learning while meeting expectations of employees, stakeholders and society.



Mr. A. M. Naik, Group Executive Chairman, was conferred the Order of the Dannebrog as Knight First Class by Her Majesty, Queen Margrethe of Denmark. The knighthood is royal acknowledgement of Mr. Naik's role in fostering Indo-Danish ties in the fields of business, commerce and culture.

## Corporate Social Responsibility Policy

We are committed to fulfilling our Social, Environmental and Economic responsibilities for Sustainable Development. Towards this, we shall:

- Continue to ensure ethics and transparency in our engagements with stakeholders, and advocate responsible business practices
- Incorporate social and environmental considerations in our business operations
- Foster a culture of trust and caring to enhance the well-being of employees and communities
- Promote social equity and partner with communities in health care, education and skill building
- Conserve natural resources, reduce the adverse impact of climate change and enhance energy efficiency
- Adopt sustainable and resource-efficient processes and provide value-added products and services

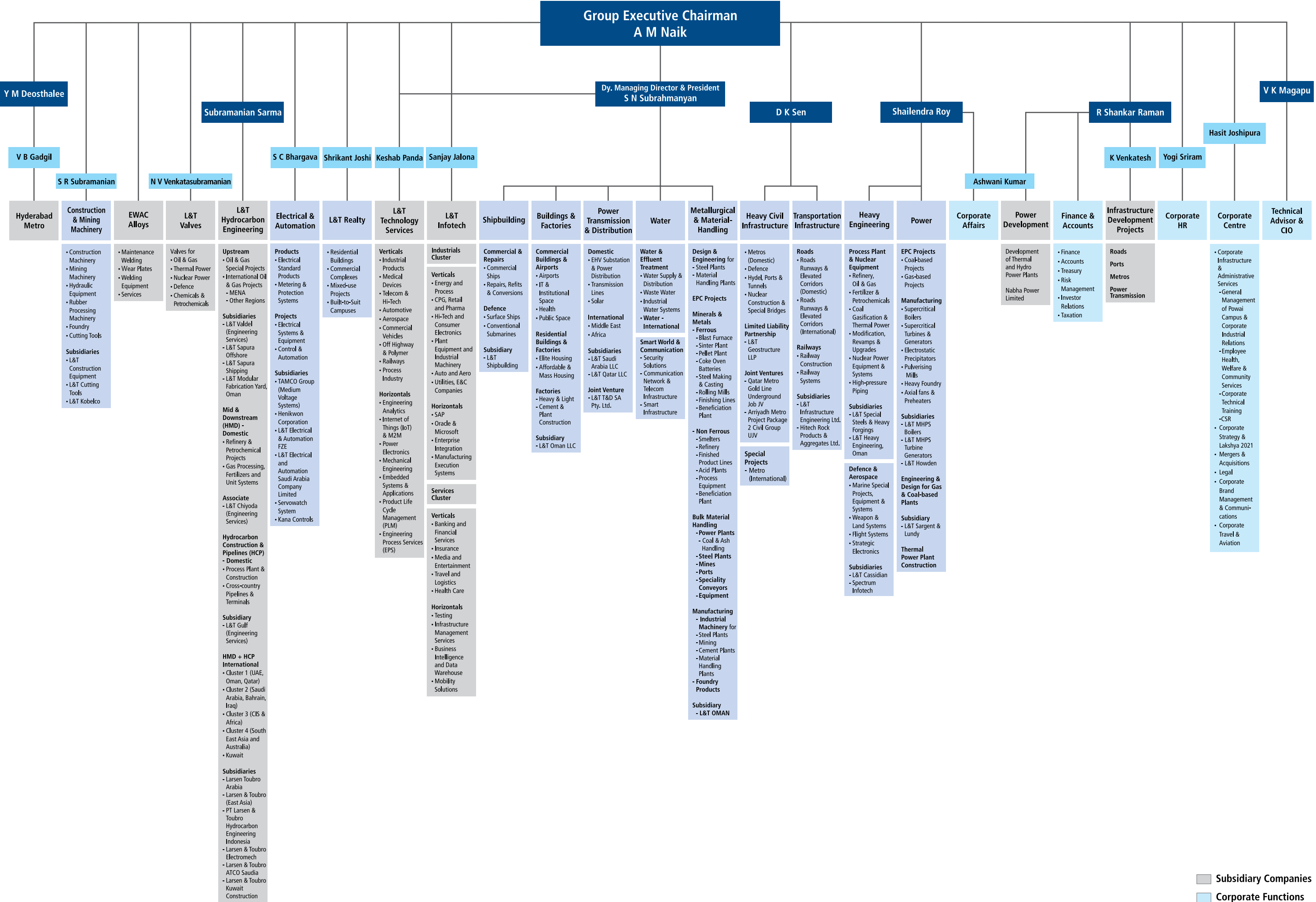
**A M NAIK**  
Group Executive Chairman

11th June, 2013



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## Leadership Team



**A. M. Naik**  
Group Executive Chairman



**S. N. Subrahmanyam**  
Dy. Managing Director &  
President



**R. Shankar Raman**  
Chief Financial  
Officer



**S. N. Roy**  
Sr. Executive  
Vice President  
(Power, Heavy Engineering  
& Defence)



**Subramanian Sarma**  
CEO & Managing Director  
L&T Hydrocarbon Engineering



**D. K. Sen**  
Sr. Executive  
Vice President (Infrastructure)



**S. C. Bhargava**  
Sr. Vice President  
(Electrical &  
Automation)



**Hasit Joshipura**  
Head - Corporate Centre



Larsen & Toubro is a USD 15 billion technology, engineering, construction, projects, manufacturing and financial services conglomerate, with global operations.

The company is engaged in core, high-impact sectors – infrastructure, construction, defence, hydrocarbon, heavy engineering, power, aerospace, shipbuilding, electrical & automation, mining and metallurgy. Its integrated capabilities span the entire spectrum of ‘design-to-deliver’, and it offers turnkey EPC solutions in its major business lines. Its track record covers products, projects and processes executed to international benchmarks.

Every aspect of L&T’s businesses is characterized by professionalism and high standards of corporate governance. Sustainability is embedded into its long-term strategy for growth.

The Company’s manufacturing footprint extends across multiple countries in addition to India. L&T has several international offices and a supply chain that extends around the globe.

Highlights

- Airports in India and the Middle East
- Metro rail systems for Riyadh, Qatar and major Indian cities
- Large infrastructure projects, including bridges and highways - from Jordan to Malaysia
- Technological contribution to key missions like the building of India’s first nuclear-powered submarine, maiden missions to the moon and Mars
- Hydrocarbon projects in the Middle East, Africa, South East Asia and India
- The world’s longest heated and insulated oil pipeline
- The world’s largest coal gasifier made in India and exported to China
- The world’s biggest Ethylene Oxide reactor for a petrochemical complex in the Middle East
- Shipyards on the west and east coast of India
- World’s most modern heavy forging facilities for nuclear grade forgings
- A wide range of switchgear

The following pages highlight the capabilities and review the operations (2014-15) of the Company’s multiple businesses. Sections of the text are an abstract of L&T’s Annual Report. For complete information, please refer to the Annual Report.

Year 2014-15 at a Glance

L&T Standalone

- Order Book as at March 31, 2015: ₹ 1912518 million as against ₹ 1476977 million as at March 31, 2014: 29% growth y-on-y
- Gross Revenue from operations at ₹ 575581 million in CY as against ₹ 571639 million in PY: 1% growth over 13-14
- Segment-wise composition of gross revenue:-
  - Infrastructure Segment: 69.29% in CY as against 60.21% in PY
  - Power Segment: 7.60% in CY as against 8.81% in PY
  - Metallurgical and Material Handling Segment: 5.63% in CY as against 9.51% in PY
  - Heavy Engineering Segment: 5.62% in CY as against 7.41% in PY
  - Electrical and Automation Segment: 7.04% in CY as against 6.70% in PY



- Others Segment: 4.82% in CY as against 7.36% in PY
- PBDIT before exceptional and extraordinary items at ₹ 87712 million in CY as against ₹ 85479 million in PY - up by 2.61%
- PAT including exceptional and extraordinary items ₹ 50562 million in CY as against ₹ 54931 million in PY - down by 7.95 %
- Gross Debt:Equity ratio of 0.35:1 (previous year: 0.34:1)

L&T Group

- Gross Revenue from operations at ₹ 927617 million in CY as against ₹ 858890 million in PY, viz., 8% growth over 13-14
- PAT excluding extraordinary and exceptional items at ₹ 44701 million in CY as against ₹ 45468 million in PY

BALANCE SHEET AS AT MARCH 31, 2015

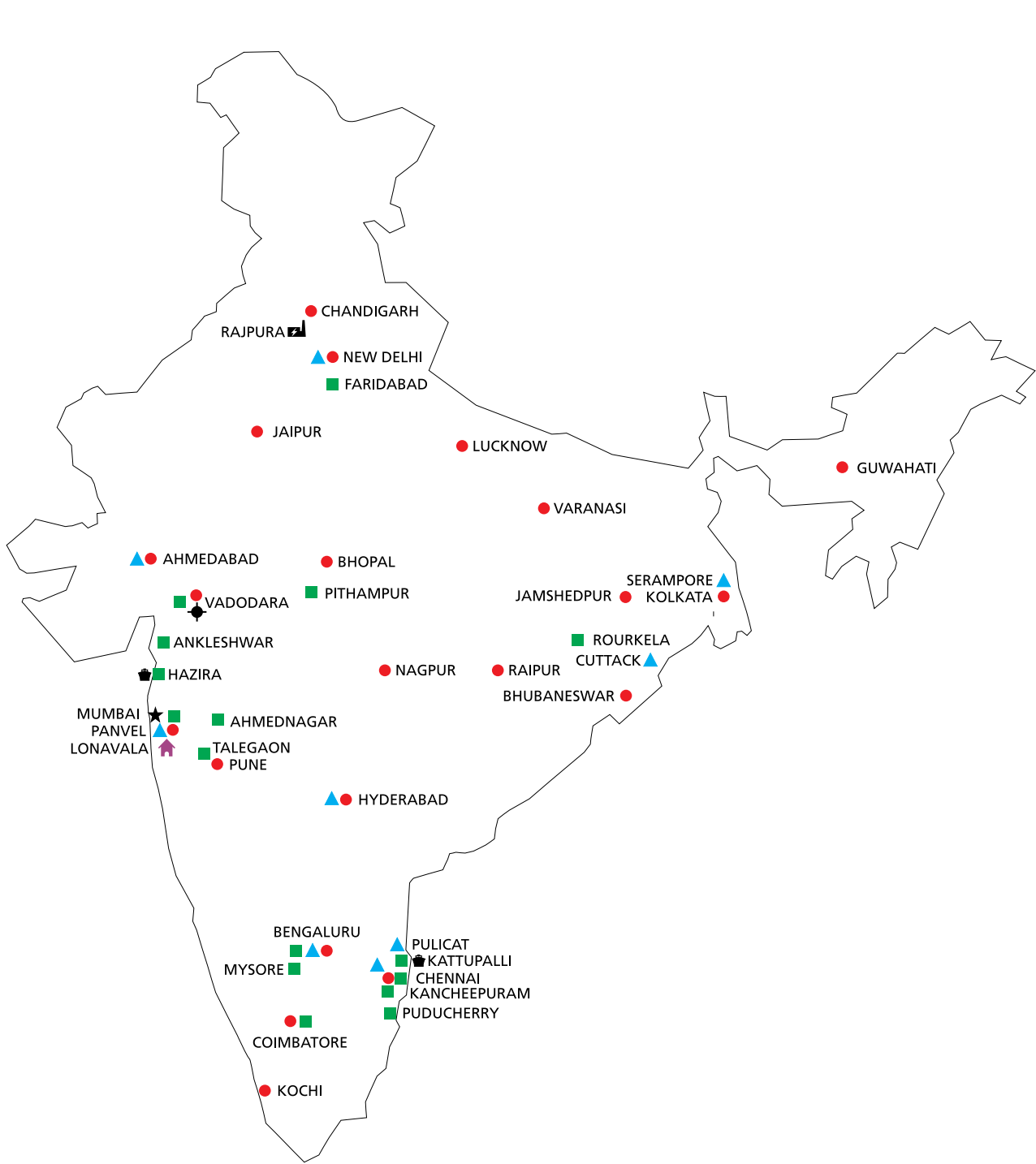
	₹ MILLION	
	As at 31-3-2015	As at 31-3-2014
EQUITY AND LIABILITIES:		
Shareholders' funds	370846	336618
Non-current liabilities	93417	62813
Current liabilities	404775	383615
TOTAL	869038	783046
ASSETS:		
Non-current assets		
Fixed assets	79814	82372
Non-current investments	176728	151684
Other non-current assets	28487	37844
	285029	271900
Current assets	584009	511146
TOTAL	869038	783046

STATEMENT OF PROFIT AND LOSS FOR THE YEAR ENDED MARCH 31, 2015

	₹ MILLION	
	2014-15	2013-14
Revenue from operations (net)	570174	565989
Other income	22834	18809
Total revenue	593008	584798
Less: Expenses:		
Manufacturing, construction and operating expenses	443966	433515
Employee benefits expense	41508	46569
Sales, administration and other expenses	19822	19235
Finance costs	14190	10761
Depreciation, amortisation, impairment and obsolescence	10082	7924
	529568	518004
Profit before exceptional and extraordinary items and tax	63440	66794
Exceptional items	3572	5885
Profit before extraordinary items and tax	67012	72679
Extraordinary items	-	-
Profit before tax	67012	72679
Tax expenses	16450	17748
Profit for the period carried to balance sheet	50562	54931
Basic earnings per equity share before extraordinary items (₹)	54.46	59.36
Diluted earnings per equity share before extraordinary items (₹)	54.10	59.00
Basic earnings per equity share after extraordinary items (₹)	54.46	59.36
Diluted earnings per equity share after extraordinary items (₹)	54.10	59.00
Face value per equity share (₹)	2.00	2.00

This publication does not purport to be the statutory Annual Report of the Company. It contains data excerpted from the Annual Report. It describes business prospects and makes forward looking statements with regard to selected businesses. For an electronic version of the complete Annual Report, please visit 'Corporate Publications' at [www.Larsentoubro.com](http://www.Larsentoubro.com)

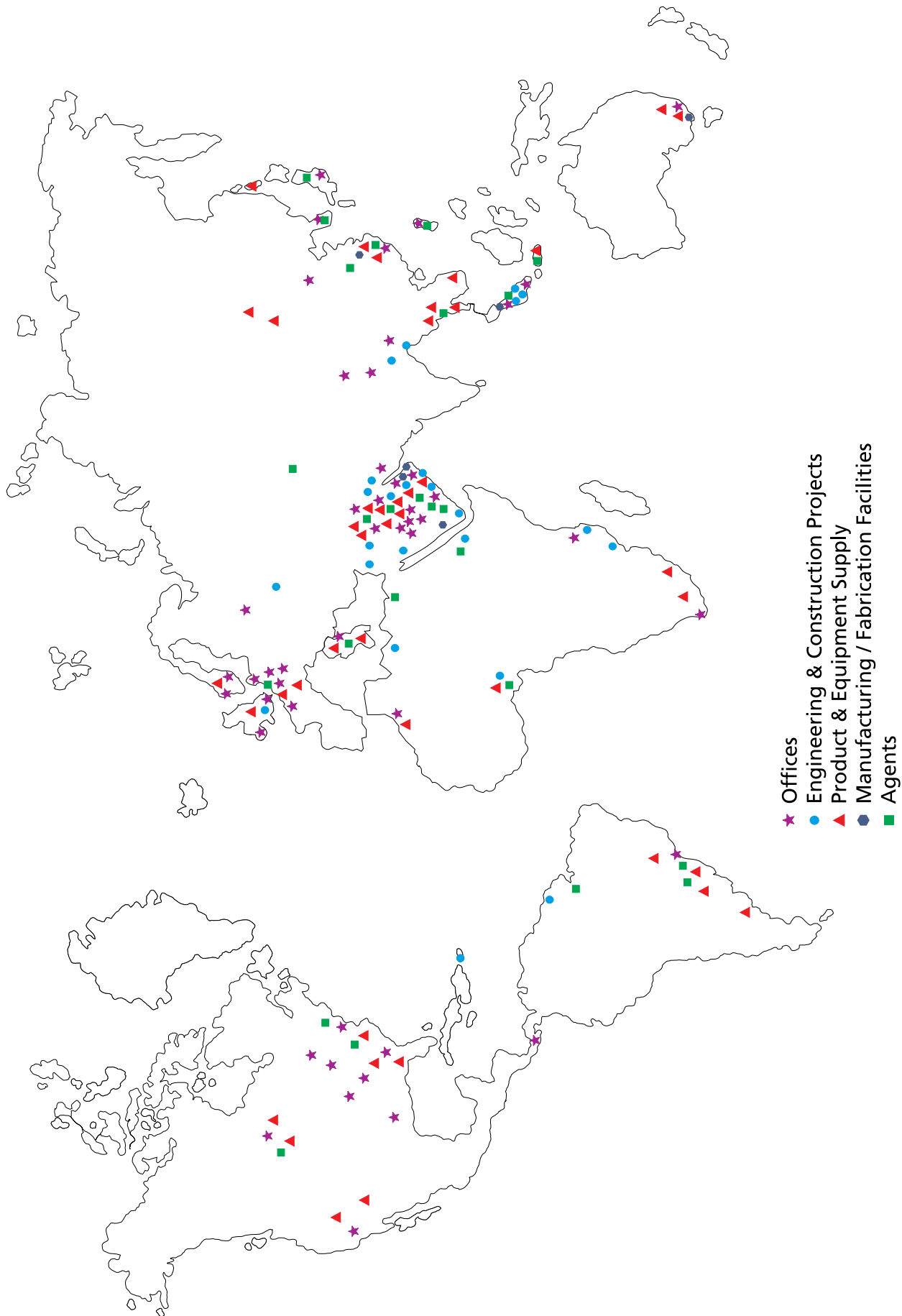
Nationwide Network



- ★ Registered Office
- Campus\*
- ⚡ Power Plant
- 🚢 Shipyards
- Offices
- ◆ Knowledge City
- 🏠 Leadership Development Academy
- ▲ Construction Skills Training Institutes\*

\* 'Campus' denotes facilities for design and manufacture  
\* Part of L&T's Corporate Social Initiatives

Global Presence



Note: Map is broadly representative of L&T's presence in markets worldwide. For details of establishments within India, please refer to 'Nationwide Network'.





*L&T is helping cities soar skywards. It builds a wide range of residential projects from elite towers to mass housing complexes on a concept-to-commissioning basis.*

## L&T CONSTRUCTION

L&T Construction ranks among the world's top 30 contractors, contributing significantly to building L&T's image and stature across geographies. Within India, it drives L&T's reputation as 'the builder of the India of the 21st Century'.

Many landmark projects of national importance in India – and increasingly overseas – bear the L&T Construction stamp of excellence, reflecting a track record of over seven decades.

L&T Construction encompasses multiple businesses, with distinct but complementary capabilities, that address different segments of infrastructure and industry.

Assuming single source responsibility for all aspects of a project, L&T Construction adopts innovative design engineering and has access to a global supply chain. Mechanised construction and the ability to mobilize large, highly trained crews enable the Company to meet stringent deadlines and rigorous standards.

At every project site and establishment, EHS (Environment, Health and Safety) is accorded the highest priority. A safe work culture is propagated so as to conform to and even surpass international norms.



*A large residential complex in Ahmedabad. L&T builds residential projects for all segments of society.*





*All India Institute of Medical Sciences Hospital in Bhubaneswar. Our long track record in India and the Middle East - from super-specialty centres to medical and nursing colleges makes us a leading provider of health care infrastructure.*

## BUILDINGS & FACTORIES

This business undertakes EPC projects for:

- Airports
- IT parks
- High-rise structures
- Office spaces
- Educational institutions
- Super-specialty hospitals
- Hotels and mixed-use developments
- Sports & other urban infrastructure
- Residential buildings & townships
- Manufacturing facilities and cement plants

The thrust is on providing world-class 'Design and Build – Concept to Commissioning' solutions to customers across various business segments.

Advanced construction capabilities - coupled with leading edge technology, experience and expertise gained over several decades – has helped the business to establish itself as one of the premier EPC contractors in the country and in targeted overseas markets.

## New Orders

A prestigious national order for the 'Statue of Unity Project' on the river Narmada; super-specialty hospitals and medical colleges in Delhi, Bihar, Odisha and West Bengal; greenfield airports at Kannur and Kochi; repeat orders in the IT space; major high-rise residential towers across the country; automotive test tracks in Chennai and Indore; cement plants in Chhattisgarh, Rajasthan and Karnataka were secured during the financial year.



*A mall in Kolkata.*





Salalah International Airport, Oman - L&T has constructed a swanky Passenger Terminal Building (PTB), Runway, Air Traffic Control Tower and Management Complex, Utility & Ancillary Buildings and infrastructure with car park facilities.

#### Marquee Projects Commissioned

- Commercial complexes for IT giants like Cognizant, TCS, HCL and iGate
- Boeing MRD facility at Nagpur
- AIIMS Bhubaneswar and Jaipur
- High-rise residential towers for DLF, Godrej, IREO and Olympia
- Cement plants for Rajashree and Century Cements
- Factory establishments for JCB, Maruti Suzuki, North Central Railway and VSF Grasim

#### Subsidiary

Larsen & Toubro Oman LLC (LTO) – a JV with Muscat Trading Company LLC (Zubair Corporation Group) – has an extensive track record of construction in the Sultanate of Oman, successfully handling a variety of complex structures across sectors on EPC basis for more than two decades.

Against stiff competition with international players, L&T Oman has successfully secured major orders for the construction of an airport, air bases and hotel projects.



Terminal 2, Mumbai International Airport. L&T successfully overcame the challenges of modernizing and expanding a brownfield airport on turnkey basis in this busy metropolis without disrupting air schedules.





*L&T has built over 150 IT parks and commercial complexes in India and neighbouring countries. Total design and construction services enable software companies to just 'plug & play'.*

### Significant Initiatives

The Buildings & Factories business is committed to remaining on the frontlines of rapidly evolving construction technology. It adopts a number of innovative techniques like 'Lean Construction' to improve cycle time. 3D studios set up at the Engineering Design and Research Centre (EDRC), Chennai, and in Mumbai are the first of their kind in the Indian construction industry and offer clients an immersive walk-through of projects.

### Track Record

- 11 International airports
- 150+ Office complexes
- 45+ Hospitals
- 30+ Institutions and 5 IITs
- 400+ High-rise Towers
- 50+ Manufacturing facilities



*Mohammed Al Amen Mosque, Muscat, Oman; The exquisite interiors demonstrate L&T's expertise in high-quality finishes.*





*The Sheikh Khalifa Interchange linking the Emirates of Abu Dhabi and Dubai. One of the many infrastructure projects constructed by L&T in the GCC region.*

## TRANSPORTATION INFRASTRUCTURE

### Roads, Runways and Elevated Corridors

Infrastructure - especially transport infrastructure - meets a critical economic need as a value multiplier. It also meets a social need by facilitating transport, connecting people and bridging distances. L&T Construction builds a wide range of critical projects that enable and accelerate transport by road, rail and air.

On offer are EPC services for highways, expressways and runways. Services are provided for strengthening and widening road networks, constructing race tracks/test tracks for high-speed motor sports calling for high precision and specialized surface treatment. World-class runways are built to international specifications including those with CAT IIIB Instrument Landing Systems.

### Railways

L&T has been at the forefront of building railway infrastructure. The track record covers passenger transportation and dedicated freight corridors. Total infrastructure solutions include electrification, system integration and dedicated rail connectivity projects.

The range of services include integrated/composite railway projects, internal yards and merry-go-round systems for core sector developers including port connectivity; Urban Mass Rail Transit systems (Metro/Mono Rail); conventional and ballast-less tracks; Electrification, signaling and telecommunication systems; bridges, tunnels and stations including underground stations; dedicated freight corridors.

### New Orders

- DFCC's EMP 4 – the largest electrification package from the Indian Railways
- Construction of Railway line from OPGCL
- Rewa-Katni-Jabalpur Road Projects in Madhya Pradesh from NHAI - 4 packages
- Bijapur-Gulbarga-Homnabad Road Project in Karnataka from NHAI
- Doha Industrial Package 6 (LRDP) in Qatar
- Advanced People Mover Tunnel from Abu Dhabi Airports Company in UAE



*Automated track-laying machine deployed at the prestigious Dedicated Freight Corridor project.*





*The Hyderabad Metro Rail Project is the world's largest public-private project in the urban transportation sector. Extending 72 km across three corridors, this project is poised to transform life in the metropolis.*

#### **Marquee Projects Commissioned**

- Beawar-Pali-Pindwara Road Project (244 km in Rajasthan)
- Samkhiali-Ghandhidham Road Project (56 km in Gujarat)
- VIP Flyover in Kolkata

#### **Subsidiary**

Through Larsen & Toubro Oman LLC (LTO), the Company targets large-value road and expressway contracts from upcoming projects in Oman. It has expanded its plant and machinery base to meet and overcome new challenges.

Through its wholly-owned subsidiary L&T Infrastructure Engineering Limited, the Company offers single point 'concept to

commissioning' consultancy services for infrastructure projects like airports, roads, bridges, ports and maritime structures including environment, transport planning and other related services.

Larsen & Toubro Ready-Mix Concrete Industries LLC in Dubai complement project sites in UAE with complete design solutions for all the grades of concrete including specialized concrete such as HPC, SCC and Coloured Concrete.

#### **Track Record**

- 13,500 lane km of roads in India and the Gulf
- 7.49 million sq.m of airport runways
- 220 km of bridges and viaducts
- 30 km of tunneling
- 3250 km of tracks
- Signaling and telecommunication at 85 stations
- 30 traction substations
- 12,500 km of railway electrification
- 626 km of dedicated freight corridor



*Rigid Overhead Contact System of Delhi Metro Rail Corporation.*





L&T's construction expertise has been offered for the elevated and underground sections of Chennai Metro including ballastless track work and a massive depot. The Company has been engaged in creating robust portals of connectivity for mass rapid transit systems in most of India's major cities - Delhi, Mumbai, Kolkata, Hyderabad, Bengaluru - and soon in Kochi and Lucknow.

## HEAVY CIVIL INFRASTRUCTURE

Heavy civil projects call for a massive combination of strength, skill and sophisticated technology. L&T Construction has undertaken a number of heavy civil projects that answer challenging requirements and meet international standards. In-house design strengths and a unique Construction Methodology Cell facilitate concept-to-commissioning solutions.

### Nuclear Power

L&T has been playing a significant role in building nuclear power facilities in India since the inception of India's nuclear power programme. Over the past five decades, L&T has developed expertise on both Pressurised Heavy Water (PHWR) and Light Water (LWR) technologies.

Our expertise covers:

- Civil construction of nuclear structures, conventional power plant structures, auxiliary buildings and associated structures
- Erection and pre-commissioning of critical nuclear components, nuclear piping and turbine generators
- Mechanical works, piping systems & associated detailed engineering, procurement and other related works
- Design, consultancy including seismic qualification, procurement and construction services for pump houses, cooling towers and head-end facilities
- Engineering, Procurement and Construction for electrical and instrumentation works

### Hydroelectric Power Plants

L&T's hydroelectric business offers a comprehensive 'Water to Wire' range of services that facilitate the execution of hydroelectric power projects on an Engineer-Procure-Construct basis in tough mountainous terrains. Areas of expertise cover:

- Diversion weirs, barrages, concrete / earthen / rockfill dams including roller compacted concrete dams
- Underground tunnels of various geometry (both concrete-lined and steel-lined), pressure shafts, surge and de-silting chambers
- Large underground power houses and surface power houses
- Hydro-mechanical components such as gates, penstocks, etc., including erection of electro-mechanical equipment



Major international metro systems being built by L&T include the Riyadh Metro (above) and the Doha Metro.





*Perspective of the bridge over the Narmada, Gujarat - India's longest extra-dosed, cable stay bridge. L&T's capabilities include design and construction of many types of bridges of different spans using innovative techniques.*

## Ports

L&T has designed and executed docks, container terminals, ports, harbours, jetties, berths, breakwaters and shipyards.

## Special Bridges

L&T has built some of the finest bridges in the world on challenging terrain and incorporating some of the most complex design features. In India, L&T pioneered several new technologies far ahead of the curve. In addition to a pan-India presence, the business has executed multiple projects in Malaysia, Dubai, Oman and Jordan.

Our expertise covers:

- Steel bridges
- Long span concrete bridges
- Steel-Concrete composite bridges
- Precast pre-stressed segmental bridges
- Extra-dosed and cable-stayed bridges

## Metros

L&T ventured into metro rail construction in 2001 with the prestigious Delhi Metro in India's capital. Since then, it has been engaged in projects in all the major cities across the country. L&T offers a comprehensive range of design, engineering, procurement and construction expertise for Metro Rail projects.

Areas of expertise cover:

- Elevated viaduct construction in segmental, U-girder and I-girder methods
- Underground tunnel construction using NATM, cut & cover methods and TBMs
- Underground station construction using top-down and bottom-up approach
- Elevated metro station construction and balanced cantilever construction



*Perspective of cable stay bridge over the Mandovi river in Goa.*





Massive construction work in progress at Kakrapar Nuclear Power Project in Gujarat. L&T has been entrusted by the Nuclear Power Corporation with critical structures for most of India's nuclear power plants.

#### Defence

L&T works closely with the country's defence establishment, and offers a range of Engineer-Procure-Construct services for defence installations. Specialized hybrid technology has been developed to meet the specific needs of the defence sector.

#### New Orders

- Mandovi Cable Stay Bridge
- Barapulla Extra-dosed Bridge
- Lucknow Metro
- Delhi Metro Rail CC77
- Khulna Mongla Bridge, Bangladesh
- Modifications to existing structures in Bhutan, Riyadh & Qatar

#### Marquee Projects Commissioned/Completed

- Delhi Metro Rail CC 06
- HMRL Stage 1
- Srinagar HEP

#### Subsidiary

The Company is executing two prestigious metro projects - the 41-km Riyadh Metro in Saudi Arabia; design and construction of 11 km twin tunnels and nine underground metro stations for the Qatar Metro.

L&T GeoStructure has specialized skills to offer solutions in foundation and ground improvement related businesses -

piling, embedded retaining structures, marine and river-front development, micro-tunneling, soil investigation and anchors.

#### Track Record

- Commissioned India's first 1000 MWe nuclear power plant
- 8080 MW of reactor containment structures
- 243 km of metro (including ongoing projects)
- 8315 MW of clean and green power
- 90 km of tunneling in difficult Himalayan terrain
- 12 dams/barrages/weirs
- LPG underground storage cavern 200m below ground level - one of the largest and first in its kind in South Asia



Hydroelectric power plant at the foothills of the Himalayas.





172 MLD Lift Water Supply Project, Jaisalmer, Rajasthan. L&T has designed and constructed water reservoirs, pumping stations, pipeline networks and distribution systems for the water sector.

## WATER, SMART WORLD & COMMUNICATION

The future of communities, societies and nations hinges on sustainability. With increasing and alarming clarity, it is being widely recognized that man needs to conserve precious resources and find new ways to live smarter. L&T's Water, Smart World & Communication business enables the transformation of the concept of sustainability into reality.

### Water & Effluent Treatment

Today's environment and economic scenario calls for comprehensive water infrastructure solutions. L&T Construction's Water Business provides end-to-end solutions through its concept to commissioning capability covering design, detail engineering, procurement, project management and execution.

L&T builds world-class water infrastructure on an Engineering-Procurement-Construction basis. The range covers: Urban & rural water supply, water treatment plants, waste water treatment & network, industrial water & effluent treatment, desalination plants, lift irrigation projects, canal relining and unaccounted for water.

### New Orders

- Lift irrigation schemes in Odisha and Madhya Pradesh for Water Resource Department
- Plant water systems for NMDC, Chhattisgarh and Bakreshwar Thermal power plant, West Bengal
- Agra water supply project and Allahabad waste water scheme for Uttar Pradesh Jal Nigam

- Dindigul Water supply scheme for Tamil Nadu Water Supply & Drainage Board
- Ranchi Water supply scheme for PHED, Jharkhand
- Waste Water treatment at Al Shamal, Qatar (SBR technology)

### Marquee Projects Commissioned

- Melur and Attur Combined Water Supply Schemes for Tamil Nadu Water Supply & Drainage Board. These schemes have the potential of benefiting over 2700 rural habitations in the districts of Madurai and Salem.
- Water supply project for over 100 habitations of the temple town of Puttaparthi, Andhra Pradesh.

For details of Smart World & Communication, please see Page 28



Desalination is helping the world supplement a vital resource. L&T's capabilities in the water sector include setting up of thermal desalination plants.





180 MLD waste water treatment plant at Doha, Qatar, deploying SBR technology to boost water sustainability - one of multiple projects that affirm L&T's broad spectrum capabilities in the water sector.

- 25 MGD Dahej Water Supply Project for Gujarat Industrial Development Corporation
- Rajanahalli and Shiggaon Lift Irrigation Schemes executed by L&T for Karnataka Neeravari Nigam Limited (Government of Karnataka)
- Botad Branch Canal Lift Irrigation Project for Narmada Water Resources, Water Supply & Kalpsar Department (Government of Gujarat)

#### Subsidiary

Through L&T Oman LLC, the Company has bagged orders for water infrastructure works at Sumail and Salalah from Public Establishment of Industrial Estates and Salalah Free Zone Company.

#### Significant Initiatives

With huge opportunities in the water and effluent treatment space, significant initiatives have been taken to ensure that L&T continues to offer the advantages of leadership. These include:

- Participation in water management tenders, which include reduction in unaccounted-for-water and water metering

- Strategic tie-ups with technology partners for upcoming desalination projects and for large-scale waste water treatment plants
- Focus on prospective segments such as water re-use and canal modernization.

#### Track Record

- Channelized water and waste water network across 40,000 km
- Constructed and commissioned 3,400 MLD of water and waste water treatment plant



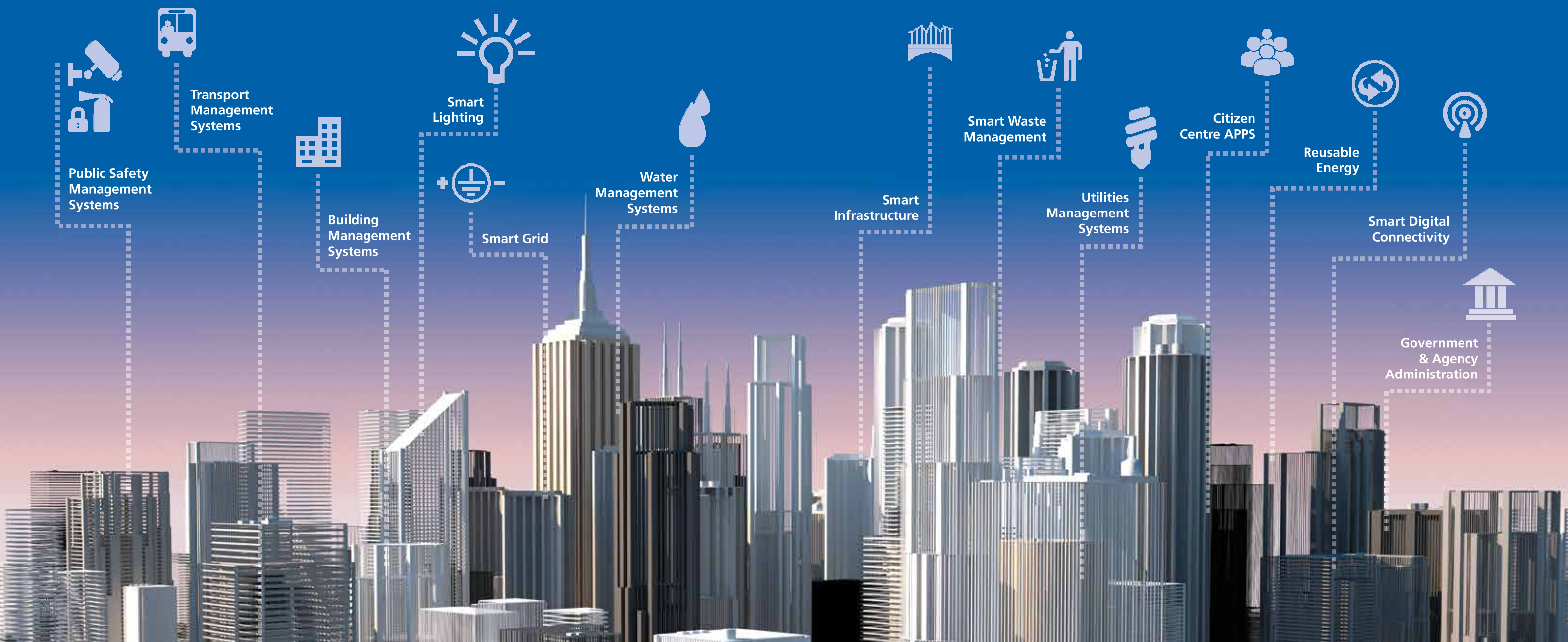
Water pre-treatment plant at Sagardighi, West Bengal.



## SECURITY SOLUTIONS

## SMART CITIES

## COMMUNICATION



L&T offers integrated capabilities drawn from L&T Construction,

L&T Electrical & Automation, L&T Infotech and L&T Technology Services

## SMART WORLD & COMMUNICATION

L&T Construction's dedicated Smart World & Communication Business Unit offers end-to-end solutions comprising Security Solutions, Communication Network and Telecom Infrastructure and Smart Infrastructure as a Master Systems Integrator.

Security Solutions feature City Surveillance Systems; Intelligent Traffic Management Systems (ITMS); Border Security Systems; Security and Management Systems for Critical Infrastructure - ports, airports, metros, IT parks and public buildings. Communication Network and Telecom Infrastructure involves Wired & Wireless Networks including OFC; IP-based DWDM Communication Network; GSM services; Wi-Fi; Fixed Broad Band; Satellite and Microwave RF Links; ICT / Data Centre Infrastructure;

Multimedia Services & Gateways. Smart Infrastructure includes Smart Buildings, Smart Water and Energy; Emergency Response Systems; Real-Time Information Systems and Smart Cities.

### Track Record

Several security systems have been executed by L&T Construction in projects across India like the City Surveillance & Intelligent Traffic Management Systems project for the Government of Gujarat in Ahmedabad, Gandhinagar and Vadodara. A unique project facilitating better surveillance and management of critical infrastructure at Sabarmati Jail, Ahmedabad was completed in 2014-15. The business is also executing India's largest surveillance project comprising 6,000 cameras across 1500+ locations in

Mumbai for the Government of Maharashtra.

L&T Construction has laid over 20,000 km of ground level optical fiber cables across India and the Middle East. This includes hot line stringing of over 10,000 km of optical ground wire on transmission line towers. It has provided IT & communication systems for airports, metros, power plants and factories including the ongoing TETRA communication system for Delhi Metro and Dubai Concourse 4 Special Airport Systems Package.



High-tech surveillance systems ensure 24 x 7 security.





400 kV Bab Asab - Habshan Transmission Line in Abu Dhabi. L&T is one of the industry leaders in turnkey construction of power transmission and distribution systems in the Middle East.

## POWER TRANSMISSION & DISTRIBUTION

L&T is a leading EPC player in power transmission and distribution in UAE, Qatar, Kuwait, Oman, Saudi Arabia, Algeria, Kenya and India. It has a long track record in providing EPC solutions for solar projects.

Wide range of offerings:

- Substations
- Transmission Lines
- Utility Power Distribution
- Solar Energy
- Infrastructure and Industrial Electrification

### Facilities

Tower manufacturing facilities (Capacity:100,000 mtpa) are at Puducherry and Pithampur. L&T's Transmission Line Testing & Research Station is one of the world's largest.

### New Orders\*

- Mega network of OFC laying from BSNL
- 400 kV Gas Insulated Substations (GIS) at Lahal for HPPTCL
- 400 kV GIS at three locations and 765kV GIS at two locations for PGCIL
- 400kV AIS at Karamadai for TANTRANSCO
- Power Distribution projects for various DISCOMs in Uttar Pradesh, West Bengal and Odisha

- Transmission Lines for PGCIL, State TRANSCOs of Bihar, Tamil Nadu and UP and from Sterlite industries
- Solar orders to tune of 85 MWp

### International Orders

- Orders from Algeria for 220 kV substation from SONEGAS
- 6 EHV GIS for Qatar General Electricity & Water Corporation (KAHRAMAA)



765 kV DC transmission lines at Kudgi, Karnataka.





India's first 1200 kV substation at Bina in Madhya Pradesh. L&T offers complete solutions in high-voltage substations and power transmission lines.

#### Marquee Projects Commissioned

- 765 kV GIS at Pune; 765 kV AIS at Dharamjaygarh, Bhiwani, Jind, Jabalpur, Bina & Indore; 400 kV GIS at Bokaro and Nagapattinam; 400 kV AIS at Tuticorin - for PGCIL
- 765 kV AIS at Phagi for RRVNL
- 400 kV AIS at Thiuvalem & Kayathar for TANTRANSCO
- More than 14,000 villages electrified across India
- 7 units of 660 to 800 MW supercritical power plants commissioned with eBoP works

- Transmission line corridors of over 600km including 800 kV HVDC line from Nidhura to Agra, 765 kV D/C line from Raipur to Wardha of PGCIL, 765 kV D/C line from Wardha to Aurangabad of PGCIL, 400 kV D/C line from Pugalur – Pandiyankuppam of TANTRANSCO and 400 kV D/C line from Mettur – Thiruvalam TL of TANTRANSCO.
- 82 MWp solar PV plants commissioned – the highest executed by any pure play EPC player last year
- 2 220 kV GIS at Doha Industrial Super & Duhail in Qatar for KAHRAMAA

- 16 132 kV GIS executed across multiple geographies
- 110 km of 220 kV cabling works in Qatar for KAHRAMAA
- 292 km of 380 kV OHL in Saudi Arabia for SEC
- 234 km of 220 kV OHL in UAE for Abu Dhabi Transmission & Despatch Company



Electrical installations at the gas-based industrial super substation in Doha.





Asia's largest (125 MWe) solar thermal power plant in Rajasthan, based on high efficiency, CSP technology. L&T is the country's largest player in the field of solar plant construction.

#### Subsidiary Companies

Through L&T Oman LLC and L&T Saudi LLC, EHV and primary substations, overhead transmission lines erected on EPC basis

#### New Orders

- 400 kV GIS from Oman Electricity & Transmission Company (OETC)
- 115 kV transmission line projects in the Kingdom of Saudi Arabia from Saudi Electricity Company (SEC)

#### Marquee Projects Commissioned\*

- Four 132 kV substations in Oman
- More than 500 km of transmission lines (380 kV & 220 kV) in Saudi Arabia

#### Track Record

- 22,000 ckm of transmission lines of voltage levels up to 765 kV
- 615 AIS/GIS including India's first 1200 kV AIS and 765 kV GIS. 29380 MW of E-BoP for thermal power plants
- 480 MW of Solar Plants



World's largest single rooftop (7.5 MWp) solar power plant in Punjab.





1200 MT Ethylene Oxide Reactor for Saudi Arabia. In addition to plant and equipment, L&T also manufactures and supplies complex internals to the specifications of global process licensors.

## L&T HEAVY ENGINEERING

L&T Heavy Engineering operates at the upper end of the technological spectrum. It manufactures and supplies custom-designed and engineered equipment and systems to critical process industries, viz., fertiliser, refinery, petrochemical, chemical and oil & gas as well as to sectors such as thermal and nuclear power, aerospace and defence.

The track record covers large and complex projects, incorporating a high technology base. Its capability spectrum includes in-house engineering, R&D centres, world class fabrication facilities and an experienced and competent project team committed to a safe work culture.

Many of the products manufactured by L&T Heavy Engineering have set global benchmarks. These include the world's largest vacuum column, the biggest coke drum, the biggest ethylene oxide reactor, the largest FCC regenerator. The equipment was manufactured under stringent schedules while conforming to high safety standards.

The Heavy Engineering business is structured into two major Strategic Business Groups (SBGs) with various Business Units functioning under each one.

- Process Plant Equipment and Nuclear
- Defence and Aerospace.

### Business Performance

Major orders secured by the Defence & Aerospace business include production of Artillery systems upgrade and land engineering systems, as well as the first-ever non-offset export order from the Philippines.

### Manufacturing & Fabrication Facilities

**Hazira, Surat:** This is a heavy manufacturing complex with mega-sized capabilities. It has captive 'Load-on' and 'RO-RO' jetties. The track record includes manufacture and shipment of the world's largest ethylene oxide reactors to Kuwait, the execution of the single largest order for reactors ever placed on a single company and the world's largest coal gasifier – exported to China.



Unsaturated Gas Demethanizer. L&T has designed, manufactured and supplied critical process plant equipment to over 40 countries.





Steam generators for pressurized heavy water reactors. L&T is certified by ASME to use 'N' and 'NPT' stamps for manufacture of equipment and systems.

**Powai, Mumbai:** L&T's nodal complex has a track record of manufacturing equipment that has set industry benchmarks. L&T's Strategic Submarine Design Centre is also located here.

**Vadodara:** Ranoli Works is a specialised facility manufacturing equipment and internal assemblies for the core sector as well as products from advanced composites for defence and aerospace.

**Coimbatore:** A precision manufacturing facility meets the needs of precision machined and manufactured components and assemblies for the aerospace industry.

**Talegaon, Pune:** A Strategic Systems Complex for integration and testing of weapon systems, sensors and engineering systems.

**Visakhapatnam:** A bay, leased from DRDO, facilitates building of strategic submarines.

**Bengaluru:** A new Product Development centre supports the Talegaon facility. It undertakes design and engineering of Defence Electronic Systems for military communications and avionics, and is supported by a dedicated Strategic Electronics Centre.

**Sohar, Oman:** A heavy fabrication facility, set up as a joint venture in Oman, manufactures a range of equipment for the hydrocarbon and power sector.

Manufacturing teams are backed by production engineering and manufacturing process development centres at each location. Technology and Product Development Centres in Mumbai and Bengaluru carry out new product development and research & development for process plant and nuclear equipment and for equipment & systems (including electronic systems/subsystems) for strategic sectors.



L&T will build the cryostat for the prestigious ITER project. The cryostat will be the world's largest high-vacuum pressure chamber.





*The photograph is for representation purposes only, and does not purport to be a photograph of the actual nuclear-powered submarine built by L&T.*

*L&T's contribution to INS Arihant – India's first Nuclear Powered Submarine included design engineering, pressure hull, outer hull and structures, special equipment, outfitting – equipment, piping, cabling systems, integration and trials.*

### Significant Initiatives

The business has been engaged in significant Modification, Revamp and Upgrade (MRU) projects in key power plants in India. Award-winning process improvements have led to record production levels of a missile-a-day of Akash missiles at Coimbatore.

The Company has invested in multiple intra-organizational processes to ensure delivery of superior quality products and services. These include:

- Enterprise-wide Collaboration for Alignment with Strategy (ECAS)
- LAKSHYA (Strategy perspective planning exercise)

- Implementation of the Theory of Constraints
- Employee Engagement
- Innovation
- Sustainability and Corporate Social Responsibility Initiatives

The business also works at improving health, safety and environment aspects.

### Technology & Product Development Centres

These centres focus on new product development and enhancing manufacturing technology. They are engaged in upgrading technologies related to process industries, manufacturing, mechanical systems, defence electronics &

embedded software solutions and submarine designs. Emphasis is laid on welding & metallurgy, composite materials, heat transfer, hydrodynamics, computational fluid dynamics, stress analysis, drives, microwave & RF, embedded systems, high availability systems and military communication.

Significant initiatives have been taken to focus on new product development either through internal development projects or through participation in opportunities presented by 'Make' and Buy & Make (Indian) programs or through collaborative programs with national laboratories such as DRDO and ISRO.



*Inclined BRAHMOS Launcher – adding muscle to India's firepower.*





Pinaka multi-barrel rocket-launcher. L&T works closely with defence research organisations to develop and manufacture weapon and missile systems.

#### Track Record

##### **Kuwait**

- 1500 MT Ethylene Oxide Reactor - the world's heaviest
- Twenty-two 1000-tonne reactors delivered within a year

##### **Malaysia**

- The world's biggest multiwall Ammonia Converter.

##### **China**

- The world's largest Coal Gasifier.

##### **Saudi Arabia**

- A complex bi-metallic Urea Stripper

##### **India**

- Two 1320 MT FCC Regenerators - the world's heaviest

#### L&T SPECIAL STEELS AND HEAVY FORGINGS

This is a joint venture of L&T and Nuclear Power Corporation of India Limited. The JV has set up a fully-integrated manufacturing facility at Hazira, Gujarat to produce ingots and finished forgings required for critical equipment in nuclear power and hydrocarbon industry, rotors in power industry, rolls in steel plants and other heavy forgings for general engineering applications. The JV, with an annual capacity of 40000 MT of finished forgings, is a major strategic step towards offering a more economical and sustainable alternative to import of heavy forgings.

#### Track Record

Special steels in various grades; Ingots of the largest size ever made in India; heavy forgings required for critical equipment in refineries, fertiliser, nuclear and thermal power and other segments. A vertical shaft furnace facility enables manufacture of rotors. The facility has been qualified by leading companies including foreign majors. It is executing development orders.



L&T has supplied critical systems for India's mission to the moon and Mars.





*L&T's forge shop at Hazira is among the largest in the world, offering a wide range of finished forgings for the nuclear, hydrocarbon and power sectors. It has the capability to manufacture single-piece forgings of up to 120 MT, and up to 40,000 MT a year.*

## SPECTRUM INFOTECH

This is a wholly-owned subsidiary of L&T. It undertakes technology development and manufacture of avionics Line Replacement Units (LRUs) for military applications like the Light Combat Aircraft. The focus is on embedded solutions, control and signal processing for the defence sector. Technology development and manufacture is undertaken of avionics LRUs for military applications. Spectrum Infotech is certified by the Centre for Military Airworthiness and Certification (CEMILAC) of the Ministry of Defence, India. It has obtained AS9100 Rev C, ISO 9001 and ISO 27001 certifications. Spectrum Infotech is a key player in the design, development and engineering of integrated life support systems for LCA.

The Company has developed the technology to position and control a high precision Gimbal platform for directed energy weapons applications.

## LARSEN & TOUBRO HEAVY ENGINEERING LLC.

This is a joint venture of The Zubair Corporation and L&T, established in Sohar in the Sultanate of Oman. It focuses on business in the Middle East, mainly GCC countries and supplements the parent company's India-based manufacturing and fabrication facilities. Leveraging its geographical proximity

to the Middle East and Africa, the company is providing critical equipment to industries in these markets. It also assists L&T in revamping and upgradation of refinery projects in the region.



*Crusher Shaft for the mineral and mining sector.*





A 28,000 DWT defence vessel on the ship-lift at L&T's shipyard at Kattupalli. L&T offers ship design, building, maintenance and repair services for defence and commercial vessels.

## L&T SHIPBUILDING

L&T's shipbuilding arm offers total solutions – from concept and design for new-builds as well as repair and retrofit – for defence and commercial vessels.

L&T has two shipyards – one on India's west coast (Hazira in Gujarat) and the other on India's east coast (Kattupalli near Chennai in Tamil Nadu). A heavy-duty ship-lift at Kattupalli ensures quicker turnaround of vessels. The systems at the yards conform to several standards: ISO 9001 QMS, EMS 14001 and OHSAS 18001.

### DEFENCE

In-house design capabilities, production of critical equipment and

systems, ship and submarine construction experience and proven project management skills enable the business to leverage emerging opportunities.

L&T's Warship Design Centre has designed fast speed boats, attack craft, offshore patrol vessels, frigates and corvettes.

**Business Performance:** An order was received from the Indian Navy for dry docking its vessel INS Jyoti. The in-house design and construction of Interceptor class of ships for the Indian Coast Guard has been well received for its high performance characteristics.

### COMMERCIAL

L&T builds specialized multi-purpose heavy-lift roll-on-roll-off, semi-submersibles, container ships, LPG/LNG vessels, chemical tankers, dredgers, reefers, cable-layers, etc. In addition, it executes repairs, including rig repair and ship conversions.

**Business Performance:** Halul Offshore Services, Qatar placed orders for ten specialized commercial vessels.



High-speed Interceptor for coastal defence.





2x800 MW supercritical thermal power plant, Krishnapatnam, Andhra Pradesh. L&T has manufactured critical equipment like turbine-generators, boilers, ESPs and axial fans, among other systems, for supercritical power plants across India.

## L&T POWER

L&T is a proven complete solutions provider for thermal power plants. It sets up coal and gas-based power plants on a lumpsum turnkey basis. It is the first Indian company to have executed a supercritical thermal power plant - 2x700 MW at Rajpura, Punjab - on a complete EPC basis.

The Company manufactures supercritical / ultra-supercritical boilers, turbines & generators, pulverisers, pressure piping, axial fans, air-preheaters and electrostatic precipitators at Hazira.

Design and project management centres at Vadodara, Faridabad and Chennai ensure international standards of safety and quality while maintaining on-time delivery.

### Major Orders:

- The first complete EPC order from NTPC for 2x660 MW ultra-supercritical power plant at Khargone, Madhya Pradesh.
- Steam Generator order from NTPC for 2x660 MW Tanda II TPP, Uttar Pradesh.
- Repeat order from MPPGCL for full EPC package of 2x660 MW Shree Singaji TPP - II, Madhya Pradesh. L&T has successfully executed BoP EPC package for 2x600 MW Shree Singaji TPP - I.
- EPC order for BPDB 225 MW Sikalbaha CCPP, Bangladesh.

L&T booked fresh orders worth over Rs. 15,000 Crore in 2014-15.

**Projects Executed:** The first unit of 2x700 MW of Nabha Power TPP at Rajpura, Punjab, completed a year of successful operation in February 2015. L&T had supplied India's first indigenously manufactured supercritical boilers, turbines and generators for Nabha Power.

In 2014-15, a cumulative capacity of 3,420 MW built by L&T attained commercial operation. This includes four Steam Turbine Generators, three Steam Generators and one unit of Balance of Plant Project.



Enclosed turbine at a supercritical power project.





2x700 MW supercritical thermal power plant, Rajpura, Punjab. L&T leverages global technology to provide EPC solutions for thermal power projects across India.

**TRACK RECORD**

- Over 100 power projects built
- Cumulative power capacity - over 50,000 MW
- Erected India's first 110 MW, 500 MW and 660 MW Boilers
- First 800 MW STG Island
- First 2x700 MW supercritical EPC project
- Largest supercritical BTG contract for a state utility

**Major Subsidiaries**

L&T-MHPS Boilers is a joint venture of L&T and Mitsubishi Hitachi Power Systems, Japan. It engineers, designs, manufactures, erects and commissions supercritical boilers up to 1000 MW, single unit. Manufacturing facilities are at Hazira (Gujarat), with design

and engineering centres at Faridabad and Chennai. With a total installed capacity of 5000 MW, the Company has also executed major export orders.

L&T-MHPS Turbine Generators is a joint venture of L&T, Mitsubishi Hitachi Power Systems and Mitsubishi Electric Corp. It carries out engineering, design, manufacturing, supervision of erection and commissioning of supercritical turbines and generators. Its facility at Hazira manufactures STG equipment of 500 MW - 1000 MW, with an annual capacity of 5000 MW. It is India's first manufacturing company to receive all four ISO Integrated Management Systems Certification from DNV (ISO 9000, ISO 14000, ISO 18000 and ISO 50000).

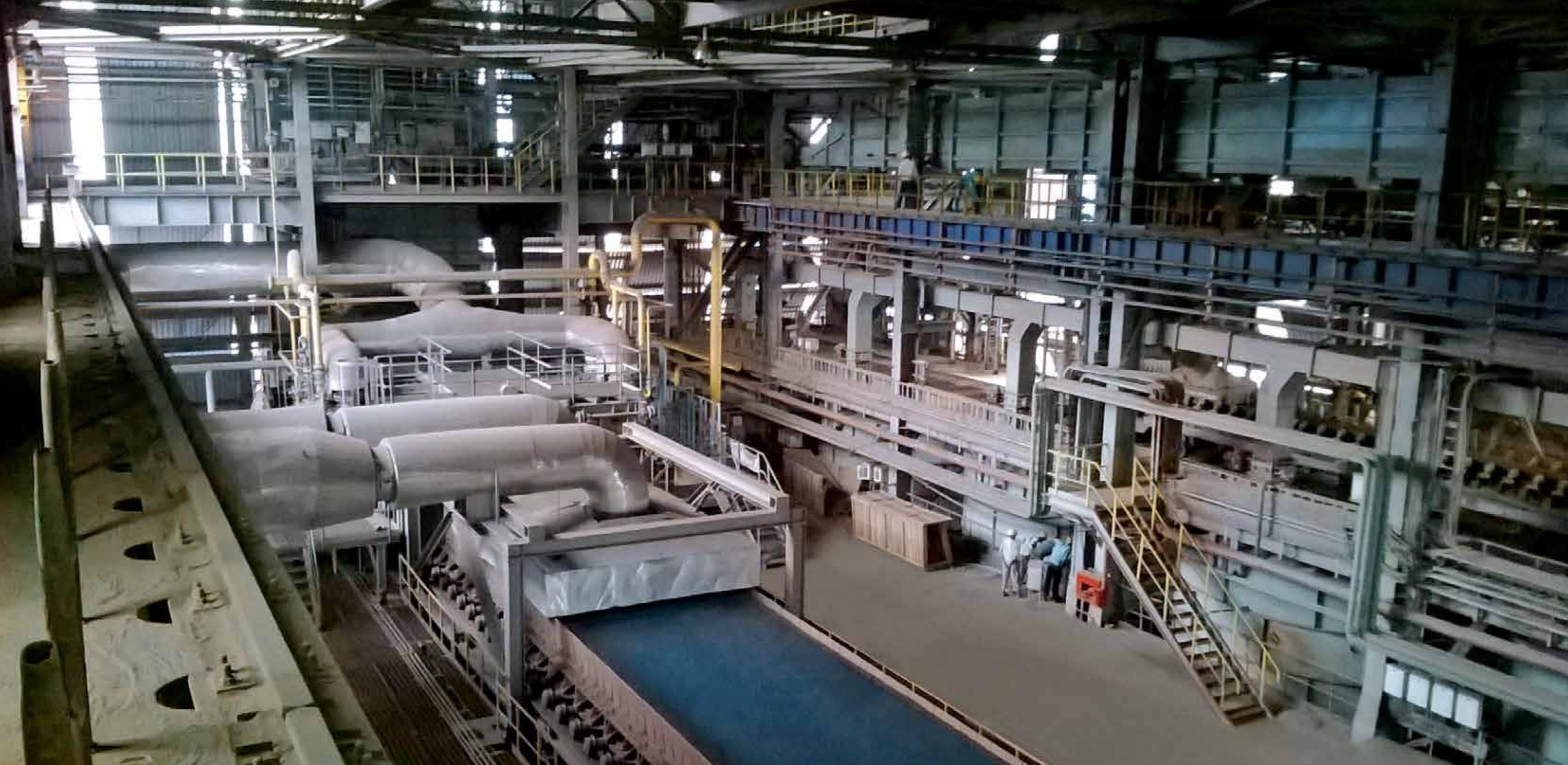
L&T Howden, a joint venture with the Howden Group, manufactures axial fans & air pre-heaters at Hazira for supercritical power plants. The design & engineering centre is at Faridabad.

L&T-Sargent & Lundy - a joint venture with Sargent & Lundy, USA - is a power-sector engineering and consultancy firm, offering services for over two decades. This includes concept to commissioning including basic and detail engineering, owner's engineering, lender's engineering, RLA and special consulting assignments. The track record covers projects in USA, Saudi Arabia, Oman, UAE, Jordan, China, Thailand, Malaysia, Sri Lanka, Bangladesh and Kenya. Expertise covers gas turbine based projects, coal-based projects and the renewable sector.



Supercritical boiler made at state-of-the-art manufacturing facilities at Hazira.





*Sinter Plant 3 at the Bhilai plant of Steel Authority of India. L&T offers steel makers a major advantage - a single dependable source from engineering to commissioning for every phase of steel making, viz., blast furnace, sinter plants, pellet plants, coke oven batteries...*

## L&T METALLURGICAL & MATERIAL HANDLING

L&T's Metallurgical and Material Handling business provides comprehensive EPC solutions in all facets of iron and steel making, covering ore beneficiation, iron making, steel making and steel finishing lines as part of its Ferrous business unit. The Non-ferrous Business Unit provides turnkey services for aluminium, copper, lead and zinc industries. Its Bulk Material Handling business units undertake EPC contracts for coal and ash handling systems for the power sector, and raw material handling systems for port, steel and mining sectors.

Its Products Business Unit at Kansbahal (Odisha) offers key equipment - crushing systems, surface miners, sand plants apron feeders, etc. meeting the requirements of cement, power and other infrastructure sectors.

L&T has comprehensive and robust design and engineering capabilities to cater to EPC needs across all disciplines. Workshops at Kansbahal (Odisha) and Kancheepuram (Tamil Nadu) have in-house facilities to manufacture high-end equipment for the metallurgical sector and material handling industries involving heavy fabrication, precision machining and critical assemblies.

Proven project management and construction capabilities enable L&T to commission complex projects in record time with the highest safety and quality standards, enhancing value to customers.

A leader in most of its business in India, L&T is rapidly establishing a presence in GCC countries. It secured two large EPC orders and is actively pursuing prospects in this region.



*Steel Melt Shop for a steel major in Oman.*





3600 TPH Stacker Reclaimer, Rajpura, Punjab. L&T is a one-stop solutions provider for all bulk material handling requirements for power, steel, mines, ports, cement and other industries.

#### Projects Executed\*

- Coke Oven Battery 11 & PCI for HBF, at Tata Steel, Jamshedpur
- Coke Oven Battery at Bhushan Steel, Angul
- Electric Arc Furnace, JSIS, Oman
- Drywall Gypsum Board, Zawawi Minerals, Oman
- Pickling Line and Tandem Cold Mill at Tata Steel, Jamshedpur
- Sinter plant for SAIL at Bhilai.
- Aluminium Smelter Expansion, Balco Korba
- Aditya Aluminium Smelter, Lapanga
- CHP for MPPGCL Malwa-I, UPRVUNL Anpara, NTPL Tuticorin & GMR Energy
- Material Handling System for Adani at Vizag Port
- EMAL - Aluminium Smelter expansion, Abu Dhabi

- 1600 TPH Rotary Breaker for Rio Tinto in Australia
- India's Biggest Compound Impactor - 1500 TPH for ACC, Jamul
- 4 Apron Feeders for GRINDROD, South Africa

#### Projects Under Execution\*

- Sinter Plant, Blast Furnace, Coke Oven, Hot Strip Mill, Raw Material Handling system at Tata Steel, Kalinganagar
- Blast Furnace for SAIL at Bhilai
- Coke Dry Quenching project, Tata Steel, Jamshedpur
- Coal Handling Plants at Block B, Nigahi, Khadia & Lingaraj for Coal India Limited
- Material Handling packages for Adani at Dhamra and Mundra
- CHP for MPPGCL Malwa (Phase II) and RRVUNL Chhabra

- Material Handling Equipment Supply package, Suratgarh
- Material Handling Project at Reliance Industries, Jamnagar

\*The lists are indicative. For more information, please refer to our Annual Report



1600 TPH Rotary Breaker manufactured at Kansbhal and supplied to Rio Tinto, Australia.





India's widest range of switchgear: As an industry leader in Power Distribution systems for six decades, L&T switchgear is widely used in agricultural, industrial, building and commercial sectors.

## L&T ELECTRICAL & AUTOMATION

L&T's Electrical & Automation business offers a wide range of products and solutions for electricity distribution and control to several sectors: industrial, utilities, infrastructure, buildings and agriculture. Its range includes LV and MV switchgear components, electrical systems, marine switchgear, industrial & building automation solutions, surveillance systems, energy meters and protection relays.

The business comprises two Strategic Business Groups (SBGs):

### Products SBG

- Electrical Standard Products business unit
- Metering & Protection System business unit.

### Projects SBG

- Electrical Systems & Equipment business unit
- Control & Automation business unit

### Facilities

The Company's manufacturing facilities incorporate a technology base on par with the best in the industry worldwide. Within India, the facilities are located in and around Mumbai, Ahmednagar, Vadodara, Coimbatore and Mysore.

Internationally, the business has factories in Saudi Arabia, Jebel Ali (Dubai), Kuwait, Malaysia, Indonesia, Australia and the UK. High-precision tool manufacturing facility ensures high-quality

manufacture, while Switchgear Training Centres impart training in good electrical practices.

The business' in-house design & development capabilities are rated among the industry's best. The facilities at Powai (Mumbai), Ahmednagar, Mysore and Coimbatore are approved by the Department of Scientific & Industrial Research, Ministry of Science & Technology. In 2013-2014, two new R&D Centres were introduced in Mumbai – the Embedded Design and Development Centre and the Power Electronics & Automation Technology Centre.



L&T's new range of high-tech AC Drives for different applications.





Switchboard installation at a power plant. L&T provides power distribution and control solutions – including LV and MV switchboards - across the value chain, from point of generation to end user.

#### Intellectual Property

Applications were filed in India for 153 patents, 6 trademarks, 47 designs and 1 copyright. It also made 9 foreign applications.

#### Subsidiary Companies

**TAMCO** – a leading manufacturer of LV and MV switchgear – has manufacturing facilities in Malaysia, Indonesia and Australia.

**L&T Electrical & Automation FZE**, based in Jebel Ali, Dubai, provides system integration solutions for Oil & Gas, power, water and infrastructure majors. The solutions are centered around process automation and telecommunication applications for the Middle East, Africa and CIS markets.

**L&T Electrical & Automation Saudi Arabia Company** has a state-of-the-art integrated manufacturing facility in Dammam to offer customers the complete range of electrical systems and switchgear components.

**Henikwon Corporation Sdn.Bhd., Malaysia** is a leading manufacturer of LV and MV Bus Bar Trunking (BBT) systems.

**Servowatch System Ltd., U.K.** provides marine- specific alarms, control & monitoring software and system integration solutions. It has executed over 1000 installations in 25 years.

**Kana Controls General Trading and Contracting. Co., Kuwait** offers systems for automation.

**Product Launches:** The period saw two major product launches. A range of Distribution boards and an array of AC Drives with unique features - designed to suit the needs of various industries and applications.



Mumbai International Airport Network Operations Centre - powered by L&T's control and automation systems and expertise.





Booster compressor platform with an interconnecting bridge executed for Oil & Natural Gas Corporation (ONGC) in South Basin Gas Fields off India's west coast. This project won the 'PMI Distinguished Project Award' from Project Management Institute, USA.

## L&T HYDROCARBON ENGINEERING

L&T Hydrocarbon Engineering delivers world-class 'design-to-build' engineering and construction solutions on a turnkey basis across the hydrocarbon spectrum – upstream, midstream, downstream and pipelines. As a newly-formed subsidiary, carved out of the L&T conglomerate, it provides dedicated services to the hydrocarbon sector.

In-house capabilities are complemented by partnerships with global leaders, enabling the Company to deliver single-point solutions extending from front-end design through engineering, procurement, fabrication, project management, construction, installation and commissioning.

### Serving Multiple Geographies

The Company serves multiple geographies through Overseas offices in: **Middle East:** UAE (Sharjah and Abu Dhabi); Saudi Arabia (Al-Khobar); Kuwait; Oman (Sohar and Muscat) and Qatar (Doha). **South East Asia:** Singapore, Malaysia (Kuala Lumpur); Indonesia (Jakarta).

### HSE & Sustainability

The Company's robust HSE Management System is OHSAS 18001 & ISO 14001 certified, and meets international standards. Vendors and contractors adhere to safety and environmental standards. As a responsible corporate citizen, L&T Hydrocarbon Engineering is committed to inclusive growth, and participates actively in the

development of the communities around its international and domestic project locations.

### Hydrocarbon Upstream

The Company's upstream turnkey solutions cover wellhead platforms, process platforms and modules, subsea pipelines, brown field developments, floating systems, upgrade/new-build of jack-up rigs and conversion to EPS/MOPU.

### Design Engineering

Engineering capabilities of its subsidiary L&T Valdel cover concept studies, FEED, basic engineering, 3D model-based detailed engineering, special studies including safety, risk assessment,



Major repair and upgradation was carried out on a jack-up rig for Foresight Drilling, UK.





3000 tonne captive installation and pipelay vessel installs a wellhead platform at Yetagun off Myanmar. The vessel provides the Company with the installation edge for all its offshore projects.

pre-service engineering and commissioning assistance. The Upstream Technology Centre focuses on conceptual aspects, optimisation, value engineering, advanced engineering solutions, failure analysis and trouble shooting in offshore structures.

#### **Fabrication Facilities**

Three fabrication facilities – with a combined capacity of around 150,000 TPA offer year-round delivery. Facilities are located at Hazira (Surat, on India's west coast), Kattupalli (near Chennai, on India's east coast) and at Sohar (north Oman).

#### **Installation**

Offshore installation and pipe-lay capabilities are enhanced

through a heavy lift-cum-pipelay vessel which has successfully installed 67 offshore structures and laid 237 km of sub-sea pipeline at oil fields in India and South East Asia.

**Customer base\*:** Clientele includes ONGC, GSPC, British Gas, PETRONAS, PTTEPI, ADMA-OPCO, ZADCO, Saudi Aramco, Qatar Petroleum, Maersk Oil Qatar, Songas, Bunduq, etc.

**Orders\*:** Orders were received from ONGC for Additional Development of the Vasai East project (2 wellhead platforms, 35 km pipelines & modification), MHN RD III project (5 wellhead platforms) and rerouting of 42" SBHT pipeline at Umbrhat beach, Gujarat.

#### **Facts In Figures**

A snapshot of our track record:

- Wellhead platforms - 55
- Process platforms - 41
- Gas compression platforms - 11
- Platform modifications - 134
- Subsea Pipelines - 700 km
- Living quarters - 9
- Drilling Rigs - 3

*\*The list is indicative, not exhaustive.*



Wellhead platform commissioned off Abu Dhabi.





Upgrade project executed on an EPC basis for export gas compression facilities of Dolphin Energy, Qatar. L&T Hydrocarbon has executed multiple complex gas projects, demonstrating the Company's integrated capabilities in this segment.

## Hydrocarbon Mid & Downstream

The Company provides EPC solutions for refining, petrochemical, fertilizer (ammonia & urea complexes) and onshore oil & gas processing, LNG and other cryogenic tanks and terminal projects. It also builds and delivers modular process plants for onshore hydrocarbon projects. Solutions are offered for hydrocarbon process plants, meeting the highest international safety and quality requirements.

It has executed multiple large-value projects on a turnkey basis covering FEED, process and detailed engineering, procurement,

construction and commissioning. Projects have been executed with technologies from process licensors like UOP, Axens, Haldor Topsøe, CB&I Lummus, Black & Veatch, Ortloff, ExxonMobil, BOC Parsons, Du-Pont (Invista) and Davy Process Technologies.

The Company is prequalified by international oil & gas producers including Saudi Aramco, KOC and KNPC in Kuwait, PDO and ORPIC in Oman, GASCO and ADCO in UAE, SOCAR and BOTAS (TANAP, Turkey), PETRONAS, CNPC and Dragon Oil in Turkmenistan, Lukoil in Uzbekistan and Sonatrach in Algeria.

## Design Engineering

Engineering Resource Centres are located at Faridabad, Mumbai and Vadodara.

L&T-Chiyoda – a joint venture with Chiyoda Corporation of Japan – complements the Company's design & engineering centres.

The Company's FEED Group develops innovative solutions and has proven capabilities in process simulation, process design, design optimisation, design analysis and fluid dynamics. It has undertaken concept studies, advanced simulation (steady state, dynamic and transient) process design, FEED, performance improvement studies, debottlenecking and troubleshooting of units of oil & gas facilities.



4.17 MMTPA FCCU reactor & regenerator section for IOCL's Paradip Refinery.





3-D rendering of a petrochemical plant. The Company has engineering centres dedicated to providing detail engineering and FEED services for mid & downstream projects across the hydrocarbon spectrum.

#### Research & Development

R&D expertise translates into a competitive advantage across all businesses of L&T Hydrocarbon Engineering. It enables the Company to choose the right technology and products, optimise process / equipment design, solve product or process-related problems and deliver guaranteed performance.

#### Project Management

Dedicated project specialists are based at offices and design facilities in Sharjah (UAE), Al-Khobar (Saudi Arabia) and East Ahamadi, Kuwait in addition to offices in Mumbai and Vadodara.

**Client Base\*:** The Company has executed on-shore gas processing, refinery & petrochemical projects for India's major public sector companies such as IOCL, MRPL, ONGC, HPCL and BPCL, as well as fertilizer majors like NFL and GNFC. Major international clients include Saudi Aramco, PDO, KOC, Dolphin Energy, GASCO, ADCO, etc.

**Orders\*:** In the Middle East, the Company secured a large EPC contract from Kuwait Oil Company for a gathering centre. In the niche segment of large scale cryogenic terminal projects featuring full containment cryogenic storage tanks, the Company secured orders for a cryogenic ethylene tank / terminal project and a cryogenic ethane-cum-LNG storage tank project.

#### Facts In Figures

- 12 Hydrogen Generation Units
- 16 Sulphur Recovery Units
- 4 MSQ Upgradation Projects
- 3 CCR Projects
- 7 Diesel Hydrotreating Plants
- 15 Gas Processing Facilities
- 4 Petrochemical Complex / Units
- 6 Syngas and Ammonia FEED Conversion Projects
- 15 Modular Process Plants
- 76 Cracking Furnaces & Reformers
- 7 Cryogenic Storage Terminals

\*The list is indicative, not exhaustive.



Fertilizer plant at Kakinada in South India.





An aromatic complex built on LSTK basis for ONGC Mangalore Petrochemicals Limited in Mangalore. L&T Hydrocarbon has proven capabilities to execute critical sections of major petrochemical complexes.

## Hydrocarbon Construction & Pipelines

The Company undertakes EPC projects of cross-country pipelines for the oil & gas sector involving laying, horizontal directional drilling, testing, pre-commissioning & commissioning, and also renders turnkey construction services for refineries, petrochemicals, chemical plants, fertilizers, gas gathering stations, crude oil & gas terminals and underground cavern storage systems for LPG. Capabilities include heavy lift competency and advanced welding technologies. A strong safety culture ensures that world class HSE and Quality standards are maintained.

### Design Engineering

L&T-GULF – a joint venture with GULF Interstate Engineering, Houston (USA) provides engineering & consultancy services for onshore cross-country hydrocarbon pipeline projects and onshore oil & gas field development projects.

### Client Base

A focus on GCC markets has led to partnership ventures in Saudi Arabia, Kuwait and Oman. Customers include GASCO, ADCO, TAKREER, ADGAS, ADMA OPCO, Borouge, Al Hosn, ENOC (UAE), Saudi Aramco, SADARA & SATORP (KSA), KNPC, KOC, KAFCO (Kuwait), QP, Dolphin Energy (Qatar), PDO, OGC and Oiltanking Odfjell Terminals & Co. LLC (Oman).

Within India, the Company has executed projects for private sector customers like Cairn Energy, Reliance Industries, HPCL Mittal Energy as well as major public sector units. The Company commenced execution of a coal bed methane field development project for Reliance Industries, which includes installation of field pipelines, power distribution network, construction of well site facilities, group gathering stations and associated facilities.

### Facts In Figures

- 4500 km+ pipeline projects
- 9 Oil & Gas Terminals



Lowering of 36" dia. gas pipeline for Qatar Petroleum at Ras Laffan. The EPC scope also included civil, mechanical, electrical and instrumentation works for three metering stations.





*L&T 9020 Wheel Loader: This indigenously manufactured machine is the best-in-class Wheel Loader with powerful engine & efficient hydraulics and is becoming a popular solution for diverse material handling requirements.*

## CONSTRUCTION & MINING MACHINERY

L&T's Construction & Mining Machinery Business Unit markets, distributes and provides after-sales support for a wide range of equipment sourced from Komatsu's plants globally including India for use in core sectors of the Indian economy. The machines include Hydraulic Excavators (up to 800 T), Rear Dump Trucks, Wheel Loaders, Crawler Dozers, Motor Graders and Wheel Dozers.

Komatsu Excavator models for the construction segment range from 7 T to 45 T and are powered by diesel engines from 60 HP to 330 HP. L&T also offers Tipper Trucks from Scania which have application in both construction and mining segments. L&T markets and distributes the indigenously designed construction equipment manufactured by L&T Construction Equipment Limited.

L&T Construction Equipment Limited is a wholly-owned subsidiary of L&T which manufactures hydraulic excavators for Komatsu India besides its own hydraulic excavator L&T 300 and wheel loader L&T 9020. It also manufactures and markets high-precision hydraulic systems and components for various mobile and industrial applications.

### Significant Initiatives

- Opened ultra-modern 33,500 sq.m service and training centre at Kancheepuram
- Expanded after sales service support through long-term full-maintenance contracts

## RUBBER PROCESSING MACHINERY

It manufactures and markets rubber processing machinery for the global tyre and rubber industry with supplies to all the global tyre majors. The machines are produced at its manufacturing facility at Kancheepuram, Tamil Nadu.

## L&T KOBELCO MACHINERY PRIVATE LIMITED

This JV of L&T and Kobe Steel, Japan manufactures internal mixers and twin screw roller-head extruders for the global tyre industry.



*Komatsu PC130 Hydraulic Excavator: L&T offers a wide range of equipment for the construction and mining industry.*





State-of-the-art factory of L&T Valves at Coimbatore, India. Leading the way in flow control solutions, the Company has been serving the needs of the oil and gas and power sectors for over five decades.

## L&T VALVES

L&T Valves Limited is a leader in flow-control solutions for critical services. A wholly-owned subsidiary of L&T, the Company leverages its fifty-year heritage of excellence to manufacture valves for key sectors such as oil & gas and power.

L&T Valves has a marketing network that spans the globe, reinforced by strategic alliances with key international distributors. In India, it has a presence in every industrial centre through a network of offices, field engineers, distributors, automation centres and service franchisees.

Manufacturing facilities are located at Chennai, Coimbatore and Kancheepuram. Quality Management System is certified to comply

with ISO 9001 and API Spec Q1. The Company is licensed to offer products monogrammed API 600, API 6D and API 609 as well as valves with CE Marking (Pressure Equipment Directive 97/23/EC) and ATEX certification (Council Directive 94/9/EC). Ball and Butterfly Valves with SIL-3 certification (IEC 61508) also are offered.

### EWAC ALLOYS LIMITED

A market leader in maintenance & repair welding, it has a factory in Ankleshwar. Products and services include consumables, specification-grade electronics and flux-cored welding wires.

## L&T CUTTING TOOLS LIMITED

It provides metal cutting solutions to the manufacturing industry offering Industrial Cutting tools of ISCAR Limited, Israel.

## FOUNDRY

It makes SG iron and special iron castings for wind-power and other engineering services at its 30,000 MT capacity unit in Coimbatore. It can produce castings ranging from 3 T to 28 T. Awarded Energy Management Certificate ISO 50001: 2011



L&T valves find application in refineries and petrochemical complexes, LNG and GTL plants, process platforms and cross-country pipelines, and supercritical and nuclear power plants across the globe.





*L&T Infotech's global headquarters in Mumbai.*

## L&T INFOTECH

L&T Infotech is a wholly-owned subsidiary of L&T. It is one of the fastest-growing global IT services companies and ranked 6th among India-based global IT services companies by The National Association of Software companies in India (NASSCOM). A three-pronged approach - Business-to-IT Connect, Engage the Future and Execution Excellence gives the Company the competitive edge.

L&T Infotech is structured around two clusters. The 'Industrials' cluster leverages the expertise and knowledge of other L&T businesses and caters to clients in verticals like process & discrete manufacturing, energy & utilities, hi-tech & consumer electronics, automotive & aerospace, engineering & construction as well as wholesalers and retailers of products.

The 'services' cluster focuses on banking, financial services, insurance, travel & logistics, media & entertainment and healthcare. Service lines like SAP, Enterprise Integration, Oracle, Microsoft, Manufacturing Execution SystemsTesting, and Infrastructure Management Systems further complement our offerings, thus enabling the Company to be a single source for complete outsourcing services.

The Company is well placed to offer new age digital technologies in the areas of Cloud, Mobility, Analytics, Social media, Internet-of-Things and smart solutions for Smart cities. Through its value proposition of Engage-the-Future and its 'Thought Partnership' practice, the Company helps CXOs to conceive and chart out a

technology roadmap for their organisations.

Nine delivery centres in India and nine centres in proximity to clients, with a diversified workforce worldwide enable L&T Infotech to offer 24x7 commitment to its promise of Execution Excellence. The business is currently expanding into new geographies such as Australia, Canada, Singapore, South Africa, India and the Middle East, while consolidating its presence in North America and Europe.



*L&T Infotech's facility in Chennai.*





Headquartered at Knowledge City, Vadodara, L&T Technology Services has delivery centres in India and the US. The Company provides design and development solutions for multiple industry sectors.

## L&T TECHNOLOGY SERVICES

L&T Technology Services is a wholly-owned subsidiary of L&T and the partner of choice for Engineering Services with proven expertise across the complete engineering lifecycle. The Company has been at the forefront of cutting-edge technology and innovation for over six years, offering design and development solutions throughout the entire development chain.

Leveraging its multi-disciplinary and multi-domain expertise, the company employs global best practices to meet the needs of industry verticals like Industrial Products, Medical Devices, Transportation, Telecom and Hi-tech and the Process Industry.

Services are offered in the areas of Mechanical Engineering Services, Embedded Systems & Applications, Product Lifecycle Management and Asset Information Management. We also offer solutions for Engineering Analytics, Power Electronics, Machine-to-Machine and the Internet-of-Things (IoT).

The Company helps clients achieve a sustainable competitive advantage through value-creation in products, processes and services. Headquartered in India, with close to 10000 highly skilled staff, 11 delivery centres globally with operations in over 30 locations worldwide, we provide tailor-made solutions, powered by robust Quality Management Systems.

All global delivery centres are ISO 9001:2008 certified. Aerospace & Medical Devices practices are AS 9100C and ISO 13485:2003 certified. Embedded Systems & Software activities are assessed at Maturity Level 5 of SEI's CMMi® Development + IPPD (Integrated Process and Product Development) Ver. 1.2.

Alliances and partnerships include AUTOSAR (Automotive Open System Architecture), Mentor Graphics, National Instruments, Siemens, Dassault Systemes, PTC, Texas Instruments, Sierra Wireless, ThingWorx, Intel, Tele2, CISCO, Infor, Freescale, Oracle and Microsoft. The Company ranks among the top four global ER&D service providers in the Zinnov Consulting Survey 2014.



Engineering services that enhance efficiency, while reducing time-to-market and costs.





*Beyond the clear, realistic targets and the measurable progress achieved by our CSR team, is a less quantifiable but deeply fulfilling goal – spreading smiles.*

## CORPORATE SOCIAL RESPONSIBILITY

### Building India’s Social Infrastructure

Corporate Social Responsibility, no matter how well intentioned, runs the risk of diffusion - of trying to run too many programmes, do too many things, too soon. We have therefore narrowed our focus to a single theme: Building India’s Social Infrastructure. Based on key criteria, a few villages have been selected in water - stressed districts around the country, and more are being identified.

Through our Integrated Community Development programmes we partner with the community and address issues of water, sanitation, education, health and skill building.

Active participation from the community is sought every step of the way, breaking down illusionary differences between ‘us’ and ‘them’, between ‘experts’ and dependent villagers awaiting relief.

Communities pledged their support through ‘Shram Daan’ or voluntary service. They agreed to partner L&T in implementing projects, and most importantly, assume ownership of the plan. This would ensure that the programmes are sustained all the way to success.

### CSR in Action

At L&T, we believe it is imperative that a company’s social responsibilities transit from lofty thought, emotional prose and slick presentations to tangible action with measurable benefits. The well-being of the less privileged of our country is far too important to be lost in the translation of plans into performance.

So we asked ourselves a few simple, specific questions. Did our programmes last year improve access to water in summer for villagers in Talasari, Maharashtra and in Rajpura, Punjab? How much water and energy do our plants consume?

And how will our plans for the next year improve their lot further? The answers to these questions are the real yardsticks of success.

For us, if it is not CSR on the ground, it is not CSR at all.

We have a CSR department in Mumbai, supported by units around the country. The L&T Public Charitable Trust further supplements our efforts. Our Corporate Social Responsibility policy is endorsed by the Group Executive Chairman. The Company’s Sustainability & CSR organization structure enjoys Board level representation.

The following pages present our CSR in action.





*The social infrastructure we seek to build covers a wide spectrum - water, sanitation, education, health and skill building.*

## WHERE WILL THE NEXT EINSTEIN COME FROM?

We do not believe genius limits itself to neat little demographic brackets. The next Einstein, the next Homi Bhabha could well be from a disadvantaged community far away from the metropolitan centres. Our responsibility then is to ensure that the high road of opportunity is open to all.

L&T set up a Science Centre at Ondipudur Boys Higher Secondary School, in Coimbatore. It provides hands-on science education for the underprivileged and acts a hub of science learning. It will also

act as a resource centre, teacher training centre and venue for project-based and integrated learning.

## LETTING A HUNDRED BALWADIS BLOOM

The first day - in fact the first weeks - in school can be a daunting experience for a child, especially one from a disadvantaged background. L&T has set up over a hundred 'Balwadis' in partnership with NGOs across the country.

Conventionally, such centres used to confine themselves to looking after the health and nutrition requirements of children. We went a

step further to provide an enriching learning environment.

Pre-school education helps underprivileged children prepare themselves to enter the formal school set-up. It has helped increase enrolment and reduce dropouts. Our programme also gets parents actively involved in the process. For the responsibility of education remains within the family.

## A.R.T. - CAMPAIGN AGAINST AIDS

A new Anti-Retroviral Therapy (ART) Centre in north Mumbai has been built and operated by L&T and owned by the Municipal

Corporation of Greater Mumbai. Our partner is the Mumbai District Aids Control Society.

It is another example of how we are collaborating with government departments in the battle against AIDS - a campaign that we began as early as 1985.

The ART Centre offers the entire range of pathology tests for up to 2000 patients. They can avail of free medical and super specialty consultation and X-Ray facilities. Ultrasonography is offered at concessional rates. Medicines issued at the facility are as per the NACO protocol.





*We believe education, skill building and vocational training are powerful weapons in society's war against deprivation.*

## THE POWER PLANT THAT ALSO PROVIDES WATER

For the villagers around L&T's supercritical power station at Rajpura, Punjab, the plant is a many-sided benefactor.

In addition to lighting up their lives with thermal power, it is also helping to quench the thirst of many. Rajpura receives an average annual rainfall of 677 mm – not quite enough for year-long needs of the farmers.

L&T engineers constructed a multi-tiered water conservation

system. This includes two storage tanks (Capacity: 7694 cubic metres), filtration chamber and a recharge-well for harvesting rainwater and facilitating artificial recharge.

It has led to a rise of the water table and more water for the community.

## L&T-EERS ARE MORE THAN VOLUNTEERS

Volunteers offer their services for good causes. L&T-eers do more. They are passionate champions of the causes they espouse. They are conscious of the company's long history of responding to

social needs. And they carry this tradition further. From teaching at municipal schools to donating blood, running marathons for a cause to mobilizing funds for supporting a number of community initiatives, L&T-eering has become a way of life.

The employees also assist in tree plantation drives, participate in company-wide programmes for energy conservation and recycling of material. All this is carried out in the personal time of the employees, well beyond office hours

As we said, they are more than volunteers. The only way to describe them is – L&T-eers.

## REDUCE, REUSE...RETHINK

To the traditional three 'Rs' of sustainability, viz. Reduce, Reuse and Recycle, L&T added a fourth - Rethink. At L&T's Hazira unit, our innovative engineers are using a Vapour Absorption Machine that taps into the exhaust duct from the forge reheating furnace. Thus no natural gas is needed when the furnace is in operation. It has minimised natural gas consumption and led to annual saving of approximately 192,000 cubic metres of natural gas.

Yes, reducing and re-thinking has its rewards!



## Awards & Recognition

Every year, L&T and its people receive a number of national and international awards that acknowledge its varied accomplishments. Presented by the media, industry associations, independent bodies and academia, they honour the Company's contribution in various spheres of business, technology, financial performance, growth and environmental protection. For details of recent awards, please visit [www.Larsentoubro.com](http://www.Larsentoubro.com)

