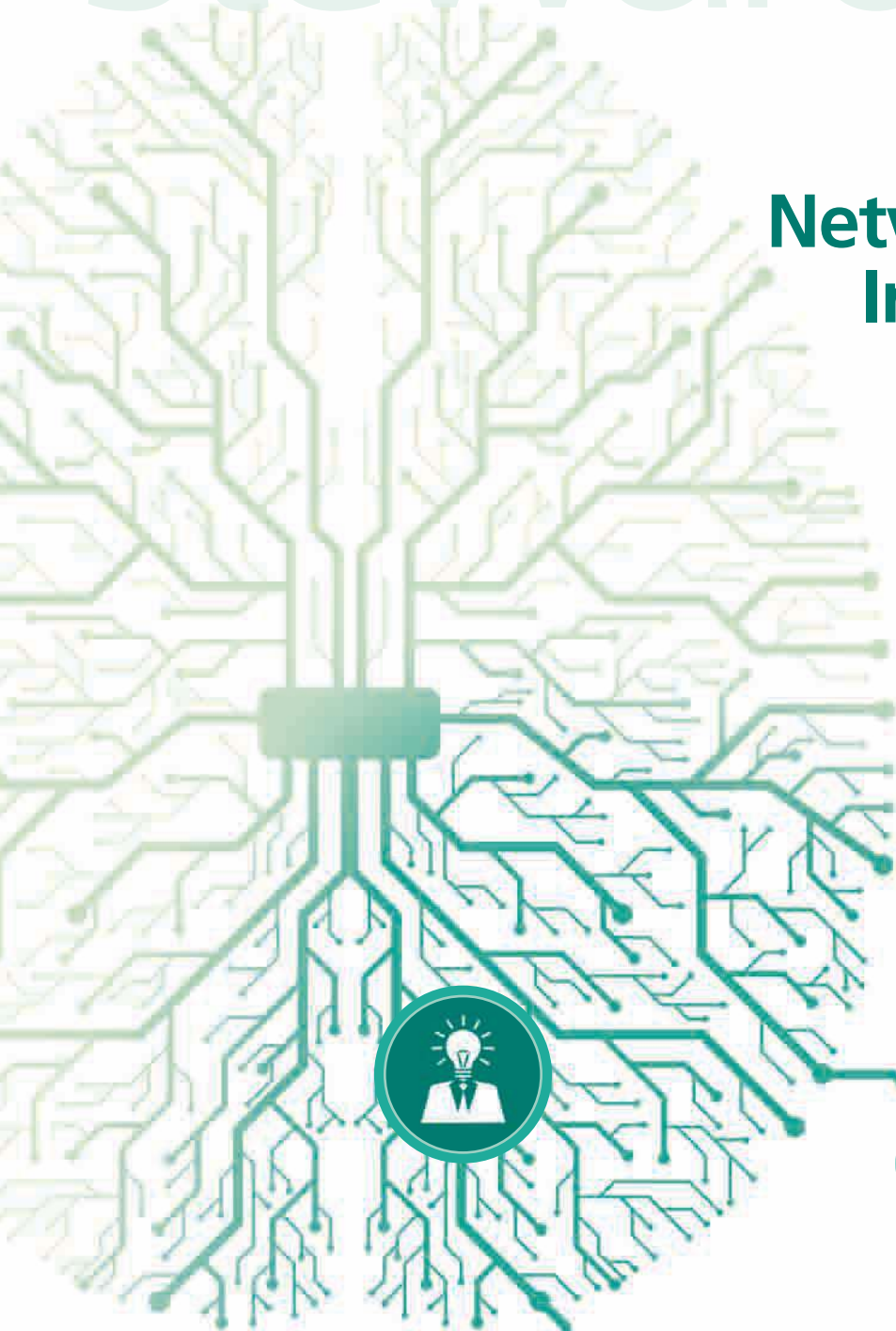


# product stewardship

**Networked for  
Innovation**





## Product Stewardship

L&T executes projects and develops products of national significance across India and other select geographies. We recognize the responsibility that comes with our large-scale operations. It propels us to undertake measures to reduce the E, H & S Capital (EHS) impact of our offerings across their lifecycle, while maximizing economic benefits. To ensure this, we have a comprehensive EHS management system at our manufacturing facilities and project sites to identify, manage and minimize such risks.

Our practices in EHS management are complemented by the support of our supply-chain partners including contractors. We encourage them to be safe, efficient and reliable with minimal EHS impact as they work at our facilities, including the transportation of our products. We extend our environmental and social practices to the supply chain and are committed to implement our Environment and Social Code of Conduct, which is now a part of the Supplier Agreements.

### Our approach to product stewardship includes:

- Management systems and internal audit processes to assess, prevent or mitigate potential EHS risks to our workforce at our facilities and project sites.
- Screening of suppliers and their working to enhance environmental and social performance throughout the supply chain and to promote responsible use of our products.
- Providing adequate information to our customers regarding the use of our products.
- Extending our 'Green Products and Services' portfolio, which helps customers improve their environment footprint and move towards a low carbon path.

**L&T's E&A business filed 101 patents, three trademarks, four design applications in India, along with two foreign patent applications (in Malaysia) and 18 foreign trade mark applications (in Indonesia, Vietnam and Malaysia) during 2016-17. This was the 10<sup>th</sup> consecutive year, where we filed more than 100 patent applications. The business received grants for 50 patent applications (in India, USA, Australia and Europe).**

### Raising the roof with in-house capabilities

L&T Hydrocarbon Engineering (LTHE) developed the in-house capability for roof-raising in Cryogenic Tank Projects. At the Reliance Dahej site, the Company is executing a project involving cryogenic ethane / LNG tank construction. A steel roof along with other structural attachments (total 850 MT) has to be lifted to an elevation of 37 m for the construction of the tank. This is done by using four air blowers, located at a temporary opening in the outer tank wall, at the ground level. Cryogenic tank roof raising forms a critical part of the Cryogenic Tank construction process and requires meticulous planning and strict quality checks to ensure that

the roof is lifted in a well-balanced manner, flawlessly. It took a dedicated engineering team, months of planning and utilization of their combined expertise to execute this task successfully. The roof-raising operation was completed in seven hours. It took another 5 hours to weld it in place along with a compression ring at the top. The businesses' in-house capabilities resulted in savings of ₹ 11 Mn, along with enhanced control of the process, and improvements in quality, safety and execution speed. The learnings and expertise gained will hold LTHE in good stead for executing similar projects in future.

# Product stewardship highlights

## Product stewardship highlights across various businesses

### Infrastructure



Provision of new gravity sewers, force mains and pump stations for Kirulapone catchment area, Sri Lanka

Extension of water transmission pipeline from the Lake Victoria Water Supply Scheme to Tabora, Nzega and Igunga towns, Tanzania

State-of-the-Art international airports at Chandigarh and Kochi

Hospitals and medical colleges for Employee's State Insurance Corporation and the Government of West Bengal

High-rise residential towers for DLF, Godrej, Prestige Groups

Cement plants for Orient and Wonder Cement Ltd.

Factory establishment for Hero Motor Corp Ltd.

Bankura Water Supply Scheme, West Bengal

52 MGD Water Treatment Plant, South 24 Parganas, West Bengal

Pudukottai Water Supply Package, Tamil Nadu

Cuddalore Water Supply Package, Tamil Nadu

Plant Water System at Raichur, Karnataka

Hanamapur Lift Irrigation Scheme, Karnataka

Sauni Yojana Link 3 Package 3, Gujarat

Ganga River Front Development Project, Bihar

### Heavy Engineering



Atmospheric Residue Desulfurization (ARDS) Reactors and Fluid Catalytic Cracking (FCC) Reactor Regenerator Package for the RAPID project of Petronas, Malaysia

K-COT Converter Unit for Lotte Chemicals, Malaysia

HP Heat Exchanger package for KNPC, Kuwait

High-pressure piping for Greenville Power Project, Virginia, USA

Steam Generators for Nuclear Power Corporation of India Ltd.

## Electrical & Automation



### Product and Project Launches

---

Omega Air Circuit Breakers 50kA – 2000A and 2500A

---

Enriched range of Capacitor Duty Contactors Type MO-C and expanded to Power Quality Solutions

---

Energy management solution through a new range of digital panel meters and energy management software

---

New Design Verified Power Distribution Solution – Ti – as per IEC 61439

---

Compact substation

---

For QRail, implementation of network-wide Building Automation and Control Systems for 37 stations

## L&T Hydrocarbon Engineering



### Offshore

---

ONGC's Additional Development of Vasai East Project

### Onshore

---

Aviation Fuel Depot, New Abu Dhabi International Airport for TAKREER, UAE

---

Yibal Third Stage Depletion Compression and Saih Rawl Depletion Compression for PDO, Oman

---

Export Gas Compression facilities upgrade for Dolphin Energy, Qatar

---

Ethane/LNG storage facility and BOP for RIL, Dahej, India

## Customer Delight

L&T customizes the design and delivery of its products and technologies to fulfill the varied needs of its customers. Be it infrastructure, engineering or smart world segments; we are not content in merely meeting customer expectations but work towards exceeding them. Our indigenously developed offerings focus on quality, as we continuously pursue operational excellence, supply chain management, resource utilization and cost optimization.

Customer satisfaction surveys are regularly conducted across all businesses, and the feedback received is weaved into our operations. The Heavy Civil Infrastructure business collects and reviews customer feedback on product quality on a monthly basis. The Power business obtains feedback through Voice of Customer (VoC) surveys. The results of this year's survey show an increase in satisfaction levels. The Buildings and Factories business collects on-site feedback from customers every quarter, on a scale of 1 to 10 (10-Excellent, 1-Poor). In the year 2016-17, it received 320 responses from 93 project sites across various clusters with a total score of 8.2. Senior management personnel take part in reviewing feedback and suggest corrective and preventive actions in areas which receive below average scores.

## Product Labelling

Our product labelling adheres to the relevant codes and specifications, and is monitored through a robust system. All our Electrical Standard Products (ESP), Electrical Standard Equipment (ESE) and industrial machinery, have the Bureau of Indian Standards (BIS) label. Most of the products are internationally certified, verified and tested at third-party laboratories. At time of the delivery, product specific documentation is shared with the customer and training is imparted as required for the safe use of products, along with services rendered during troubleshooting.

## Marketing Communication

L&T communicates periodically with multiple stakeholders like customers, channel partners, consultants and collaborators. All our communications conform to the recommended guidelines. We do not engage in the sale of banned or disputed products. During the reporting period, no complaints were received from any of our stakeholders about incorrect or misleading marketing communication.

## Compliance

L&T adheres to all the statutory regulations and voluntary codes related to its products and services. L&T implemented a structured system to review and report compliance on a quarterly basis. The compliance is regularly reviewed by the Executive Management Committee and the Board of the Company. During the reporting period, there were no incidents of non-compliance with statutory requirements, and no monetary fines were imposed.

## Customer Health, Safety and Privacy

Customers' health and safety is a key criterion that we follow with our products and services. Safety aspects are considered at every step of the product and project, from design to commissioning. To minimize the related health and safety aspects of our products, L&T provides operation and maintenance (O&M) manuals and conducts training programmes for customers' employees. Products are provided with adequate labelling, including product information and possible hazards. No incidents of non-compliance were reported with respect to regulatory and voluntary codes concerning the health, safety and labelling aspects related to any of our products or projects during the year. There were no complaints regarding breach of customer data or privacy in the FY 2016-17.



## CASE STUDY

# Safer project execution also reduces costs

Innovative HDPE pipe laying method cuts time

At the project site of IT City in Mohali, L&T Water and Effluent Treatment business's team devised a new method for laying a nine-meter, deep trunk, sewerage HDPE line. The standard method involves lowering pipes using steel shoring and shuttering to avoid soil collapse. However, in spite of using a shoring box, there is the risk of a soil collapse and collection above the shoring box. Additionally, the use of MS shoring plates requires an 18MT Crawler Crane due to its high operating radius, resulting in additional execution costs. Moreover, executing pipe jointing at a nine-meter depth can also lead to life threatening situations.

### New methodology devised by the L&T team

Based on the new method devised, the cross-section was reduced, since there was no human movement inside the trench. The slopes were designed to support the weight of the soil, and a wider cross section was adopted

at the manhole chambers. Secondly, six-meter long HDPE pipes were joined above ground to a length of 30 meters prior to lowering in the nine-meter-deep trench. A subcontractor was encouraged to procure a Hydraulic Butt Fusion machine, which was then used to lower the pipes. Two 14 MT Hydraulic Cranes were used to lower 30-meter pipe spools. A 25 mm PP rope was used to pull one end of the belt from the ground level to remove the cotton belts from the lowered pipeline.

### Result

The new method brought in cost savings to the tune of ₹ 17.2 million, with safe operations, and no time lost to injury. Moreover, the execution time was cut down by six months, enabling the team to complete laying of 10 kilometers of pipeline in a year. The job included fusion welding of 1,200 pipes, 0.3 million m<sup>3</sup> of earthwork excavation and construction of 300 manholes.



## India's Pink City is also **India's First Smart City**

L&T was entrusted with the task to transform Jaipur into a smart city by Jaipur Development Authority, Government of Rajasthan. As a Smart City, it ensures 24x7 surveillance and facilitates on-line access to wide-ranging information about the city, its rich culture, historic locations, utility centers and e-Governance formalities at the click of a button. A host of smart solutions were incorporated including WI-FI hotspots, digital facilities at public hospitals, interactive information kiosks, surveillance cameras, Video surveillance through cameras at tourist sites, environmental sensors, parking information systems and remote kiosks with facility management services. The task called for quick integration of highly-sensitive information and communication-based smart technology services, and L&T responded to the call with state-of-the-art 'smart solutions'.





## CASE STUDY

# Keeping an eye on Mumbai, the L&T way

L&T Smart World and Communication business was awarded 'The Mumbai City Surveillance' project, to develop a state-of-the-art surveillance system, to ensure citizen safety and real-time emergency response. The project included design, development and implementation of the CCTV-based surveillance system (MCS project) for the city. The system provides 24x7 surveillance through over 5000 cameras at 1500 locations, linked to a Network Operations Centre. The system monitors the region for law and order disruptions, like crowding, traffic incidents and incursions. An integrated smart analytics tool provides real-time updates and analysis, enabling the city's administration to make informed decisions proactively.

The project improves the security scenario of over eighteen million people, living in urban Mumbai, helping spot potential dangers before they occur and reducing response time in any eventuality.



Mumbai City Surveillance Project

