



L&T Construction
Water & Effluent Treatment



building water **infrastructure**



The Indian CONSTRUCTION GIANT

L&T Construction, India's largest construction organization and ranked among the world's top 30 contractors, has been over the past seven decades transforming cityscapes and landscapes with structures of immense size and grandeur. The company's capabilities span the entire gamut of construction - civil, mechanical, electrical and instrumentation engineering - and its services extend to all core sector industries and infrastructure projects.

Several of the country's prized landmarks - edifices, structures, airports, industrial projects, flyovers, viaducts, water and power infrastructure projects carry L&T's signature of excellence in construction. Today, more and more structures beyond India's boundaries are standing tall, thanks to L&T Construction.

L&T Construction straddles seven related businesses:

- Buildings & Factories
- Transportation Infrastructure
- Heavy Civil Infrastructure
- Power Transmission & Distribution
- Water & Effluent Treatment
- Smart World & Communication
- Renewable Energy

Eighty years of UNDISPUTED LEADERSHIP

Larsen & Toubro is a major Indian multinational in technology, engineering, construction, manufacturing and financial services, with global operations. Its products and systems are marketed in over 30 countries worldwide. A strong, customer-focused approach and the constant quest for top-class quality have enabled L&T to attain and sustain leadership in its major lines of business business across eighty years.

- Construction
- Heavy Engineering
- Hydrocarbon Engineering
- Power
- Metallurgical & Material Handling
- Ship Building
- Infrastructure Concession
- Realty
- Construction & Mining Machinery
- Valves
- Infotech
- Technology Services
- Financial Services

Building landmarks, setting benchmarks*

- **11** International Airports
- **400+** High Rise Towers
- **40** Institutions & Public Spaces
- **70000+** Apartment Units
- **85+** Manufacturing Facilities
- **22000+** Hospital Beds
- **5 lakh +** km of Water & Waste Water Networks
- **7200** MLD of Water & Waste Water Treatment Plants
- **7.3 lakh** Hectares of Land Being Irrigated
- **805** Substations
- **36900 ckm** of Transmission Lines
- **1.5 lakh+** km of Distribution Lines
- **156263** Habitations Electrified
- **120** Towns Power Quality Enhanced
- **2.5+** GW Portfolio of Solar Plants
- **344** km of Metro Rail Corridors
- **19.5** km of Monorail Corridors
- **22600** Lane km of Highways
- **12.08 million** Sq. m. of Runways
- **8315** MW of Hydro Power Projects
- **8080** MW of Nuclear Power Projects
- **5075** tkm of Railway Track Laying
- **17906** tkm of Railway Electrification
- **245** Signalling & Telecom Installation in Stations
- India's Largest City Surveillance Project: **6000** cameras at **1500** locations at Mumbai

*The track record information published here is as of September 2020

Aerial view of the 250 MLD Water Treatment Plant and 5310 ML Raw Water Reservoir, Nagaur, Rajasthan



FULFILLING A VITAL HUMAN NEED

Water, one of the most vital sectors in the world today, calls for comprehensive technological / infrastructure solutions. L&T Construction's Water and Effluent Treatment business segment provides complete solutions through its concept to commissioning capability covering process design, detailed engineering, procurement, project management and execution that cover:

- Urban & Rural Water Supply
- Industrial Water Supply
- Water Treatment Plants
- Sewage Treatment Plants
- Effluent Treatment Plants
- Wastewater Collection Network
- Desalination
- Micro & Lift Irrigation Projects
- Water Management
- Smart Water Infrastructure
- Plant Water Systems
- 24x7 Pressurized Water Supply
- Non-Revenue Water (NRW) / Unaccounted For Water (UFW)



Transmission Mains, Bisalpur, Rajasthan



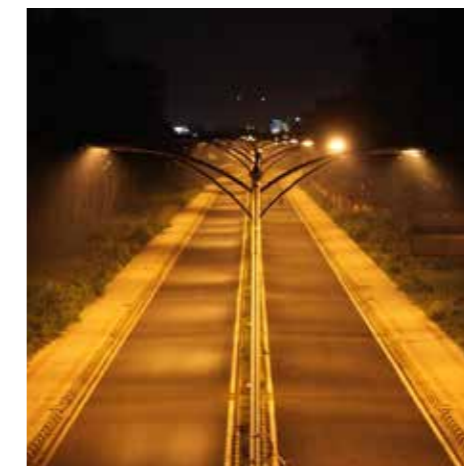
241 MLD Wastewater Treatment Plant, Doha, Qatar



100 MLD Common Effluent Treatment Plant, Narol, Gujarat



Ali Sagar Lift Irrigation Scheme, Telangana



Smart Infrastructure, Raipur, Chattisgarh

Floating barge intake, Sahibganj, Jharkhand



227 MLD Water Treatment Plant at Garden Reach, Kolkata, West Bengal



Elevated Storage Reservoir, Pune, Maharashtra



137 MLD Water Treatment Plant at Nashik, Maharashtra



181 MLD Water Treatment Plant, Vellore, Tamil Nadu



TAPPING RESOURCES DELIVERING PROMISES

Urban and Rural Water Supply

L&T's Water Supply & Distribution business caters to the requirements of providing quality potable water through end-to-end water solutions covering every single aspect of the water cycle – right from tapping water from the source through intake wells, water treatment, construction of pumphouses and reservoirs, transmitting through pipelines and distributing to end users. L&T does it all with precision.

Be it above ground, underground or laying pipelines on rugged hilly terrains over long distances, L&T's cutting edge technology ensures a safe and reliable network.

Over the years, L&T has mastered the techniques for removing all types of contaminants and harmful microorganisms through an array of process technologies covering conventional treatment and advanced treatment like Ozonation and Granular Activated Carbon.

L&T thus enables access to clean and safe drinking water thereby fulfilling a vital human need!



Bisalpur-Jaipur Water Supply Scheme with 400 MLD WTP, Rajasthan

CONVERTING THE SOURCE INTO A RESOURCE

Industrial Water Supply and Treatment

As leaders in constructing high capacity Water Treatment Plants, Effluent Treatment Plants, Sewage Treatment Plants and Zero Liquid Discharge Systems, L&T plays an important role in the industrial sector by executing many significant projects for various industries such as power, steel, petrochemical, refineries, textile/dyeing and leather.

L&T has a proven track record of offering total solutions spanning the entire spectrum of the value chain - right from tapping water through intake structures, pre- and post-treatment plants, creating infrastructure and pipeline network for distribution of water to industrial belts, treating effluent / sewage / waste water for reuse and safe disposal of the treated effluent through marine pipe installations.



Ash pond with Water Recovery System, Bakreshwar, West Bengal



Asia's largest Micro-Filtration Plant of 158 MLD at Raichur, Karnataka



Plant Water System, Sagardighi, West Bengal



12 Million Cu.m Storage Reservoir for Vizag Steel Plant, Andhra Pradesh



60 MLD Water Treatment Plant for Pithampur Industrial Area, Madhya Pradesh

120 MLD Wastewater Treatment Plant, Varanasi, Uttar Pradesh



31 MLD Wastewater Treatment Plant, Bhatpara, West Bengal



Wastewater Treatment Plant at the President's Estate, New Delhi



Perspective of 318 MLD Wastewater Treatment Plant at Coronation Pillar, New Delhi



Rehabilitation of Wastewater Pumping Stations for Colombo Municipal Council, Sri Lanka



RECOVERING RESOURCES

Wastewater Collection and Treatment

L&T's wastewater business is a Total Solutions Provider and a forerunner in integrating modern technologies in every area of wastewater spectrum including Collection, Interception, Treatment, Recycling, Resource Recovery and Reuse.

The vertical works on recovering nature's most valuable resource from wastewater and has developed customised solutions integrating an array of technologies ranging from the age-old Up flow Anaerobic Sludge Blanket (UASB) to the most advanced state-of-the-art Membrane Bio Reactor (MBR) technology. The other technologies successfully commissioned include Activated Sludge Process (ASP), Fixed Bed Activated Sludge Process (FBAS), Extended Aeration (EA), Anaerobic-Anoxic-Oxic (A2O), Moving Bed Biofilm Reactor (MBBR), Sequential Batch Reactor (SBR), Tertiary treatment with Ultra Filtration and Reverse Osmosis (TTRO).

L&T's capabilities in the wastewater sector also include developing sustainable and innovative execution methods for wastewater collection systems such as horizontal direction drilling and micro tunneling thereby enabling speedy project completion with highest quality and best-in-class safety standards.



375 MLD Wastewater Treatment Plant, Jebel Ali, UAE



USHERING IN A GREEN REVOLUTION

Lift Irrigation Projects and Rehabilitation of Canals

L&T's Large water systems business possesses the domain knowledge and expertise to execute mega lift irrigation and micro irrigation project schemes. Services offered include design and construction of intake wells, overhead tanks, pumping stations, transmission mains, distribution channels and delivery cisterns covering transmission of bulk water through large dia pipeline networks to complete electro-mechanical and instrumentation works with SCADA system installations and Outlet Management systems.

The canal systems in India are largely unlined resulting in substantial transmission losses due to seepage. L&T designs and constructs fool-proof lining systems for new canals and rehabilitates existing canals.



Mohanpura Lift Irrigation Project, Madhya Pradesh



Pump house at Hanamapur, Karnataka



Delivery Chamber for a Mega Lift Irrigation Project, Odisha



Lift Irrigation Scheme for GIDC at Dahej, Gujarat



Kharkai Barrage, Jharkhand

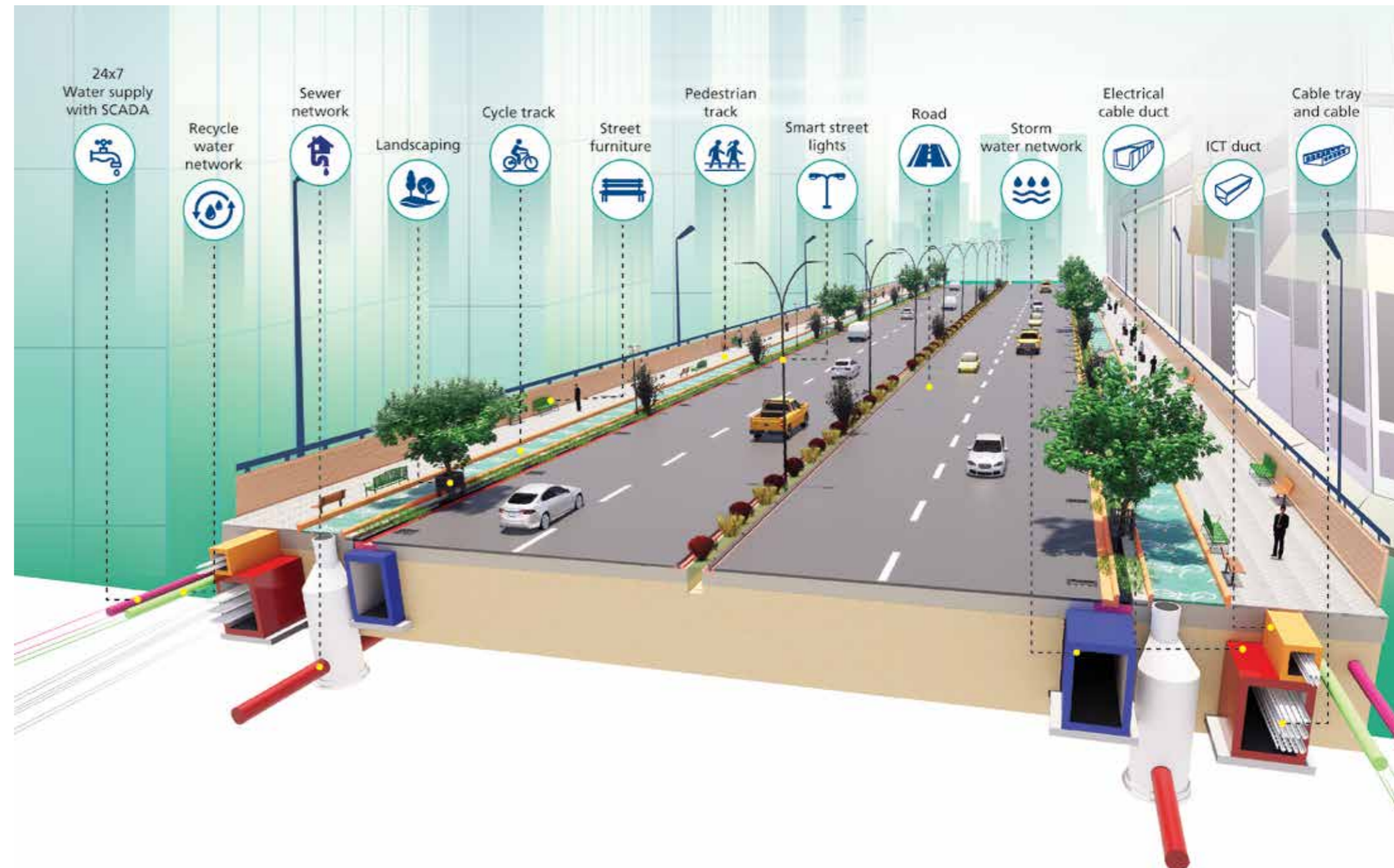
BUILDING A SMARTER TOMORROW

Smart Water Infrastructure

As a leading EPC solutions provider with comprehensive industry knowledge and on-ground experience, L&T's Smart Water Infrastructure business offers a range of solutions for smart city infrastructure development for both Greenfield & Brownfield with the capability to design and engineer processes for both local requirements as well as for the future.

L&T's end-to-end design and build capability ensures that infrastructure built today is scalable in line with smart city requirements to enable urban communities avail the benefits of sustainable development. L&T's integrated approach harnesses the full potential of urban infrastructure comprising smart roads including non-motorized tracks, 24X7 Water & Power supply, ICT enabled infrastructure, waste collection & treatment, rain water harvesting, waste to energy processing, landscaping and more.

Perspective view of an Integrated Urban Infrastructure



Green-field development at Dholera, Gujarat



Precast duct laying at Amaravati, Andhra Pradesh



Integrated infrastructure development, Rohtak, Haryana



PLB Duct at Amaravati, Andhra Pradesh



Substation, Bidkin, Maharashtra

SALT WATER TO POTABLE WATER

Desalination

Desalination is the future source of water. Increasing demand for fresh water resources has made municipalities and industries to opt for desalination as an alternative water source. Indigenous technology combined with high calibre engineering resources enable L&T to execute state-of-the-art desalination plants. As a leader in water infrastructure and management, L&T has the prowess to provide solutions for new generation water systems and meet demanding delivery schedules.

Reverse osmosis technology at a desalination project



Leak detection and rectification



Perspective of 100 MLD Desalination Plant for GIDC at Dahej, Gujarat

MAKING EVERY DROP COUNT

Water Management

L&T is the preferred partner in implementing integrated water management projects for many urban and local municipal bodies. L&T provides one-stop solution in water management encompassing equitable pressure management, hydraulic modelling, leakage management, asset mapping on GIS, billing and meter data management, reduction of non-revenue water (NRW) through various water loss reduction programs and leakage rectification works. Digitalization and innovative technologies have been the key enablers for smart and efficient delivery of water to all consumers in water distribution management projects.



District meter cabinet



Testing of water meters

AT THE FOREFRONT OF TECHNOLOGY

Having successfully executed a wide array of projects spanning across multiple technologies covering water treatment, wastewater treatment, industrial effluent treatment, L&T has emerged as the technology leader in delivering technologically superior projects globally.

A snapshot of L&T's technological footprint:

Water Treatment – Municipal and Industrial

- Pulsator Technology
- Tube Settler
- Rapid Sand Gravity Filter
- Inclined Plate Settler
- Ozonization
- Demineralization
- Reactor Clarifier
- Microfiltration
- Sea Water Reverse Osmosis (SWRO)

55 MLD Wastewater Treatment Plant, Nellore, Andhra Pradesh



Wastewater Treatment – Municipal Sewage and Industrial Effluent

- Activated Sludge Process (ASP)
- Anaerobic-Anoxic-Oxic (A2O) Process
- Sequencing Batch Reactor (SBR)
- Membrane Bioreactor (MBR)
- Fixed Bed Activated Sludge (FBAS)
- Moving Bed Biofilm Reactor (MBBR)
- Extended Aeration Process (EA)
- Ultrafiltration (UF)
- Reverse Osmosis (RO)

IN SAFE HANDS

Operation and Maintenance

Operation, control and maintenance are indispensable for the continuous and safe operation of any water infrastructure. Team L&T favorably responds to this vital need following growing demand from clients and undertakes the operation and maintenance of all types of water supply, wastewater & irrigation projects as well as water & wastewater treatment plants.



Anaerobic digesters



UV Disinfection System



Methane gas holder

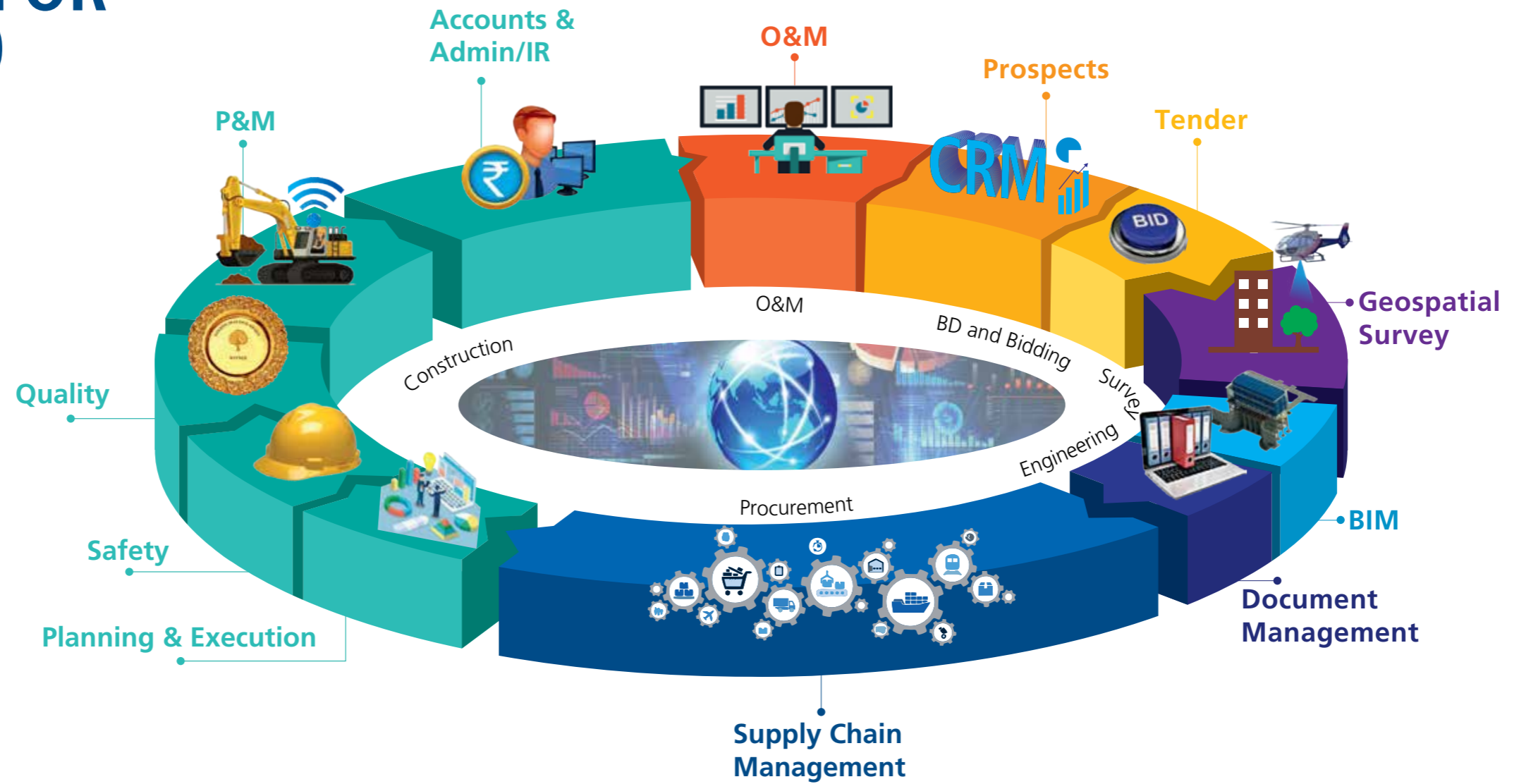


UF-RO Membrane

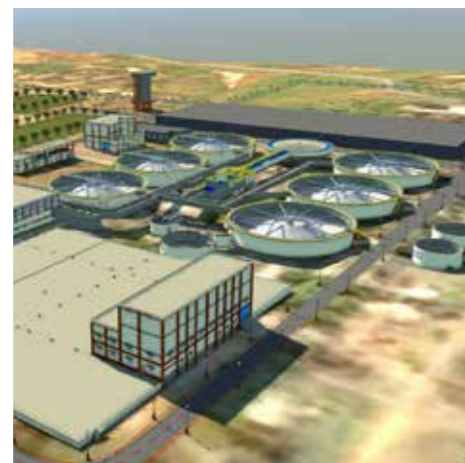
GEARING UP FOR INDUSTRY 4.0

L&T has been at the forefront in driving digitalization by implementing a range of digital interventions across the value chain right from the pre-bid stage till operation & maintenance thereby setting new grounds on effective business delivery.

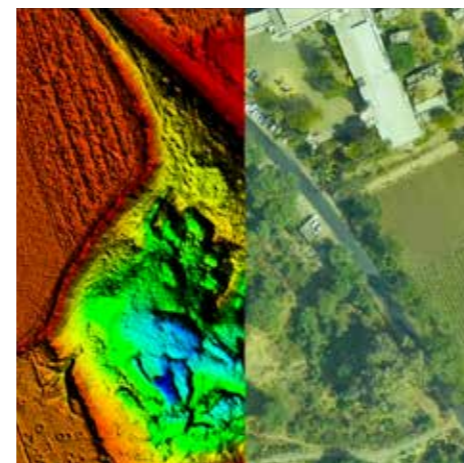
L&T is utilizing the power of various next generation technologies like Building Information Modelling (BIM), Artificial Intelligence, Mobility, Virtual reality, Analytics etc., to enable data driven decision making and these initiatives have resulted in improved project monitoring & control, operational effectiveness, enhanced productivity, reduced costs and have helped establish L&T as a Digital Construction brand.



Real-time Project monitoring with SCADA



BIM Model of a Water treatment plant



Topography Mapping through Aerial LiDAR



Site Walkthroughs through Virtual Reality



Strategic insights through Data Analytics

SPECIALIZED ENGINEERING AND DESIGN

L&T's engineering and design capabilities cover the entire gamut of water infrastructure with a proven track record of executing multitude of projects in the areas of water supply, water transmission and distribution, water treatment, desalination, water management, municipal and industrial wastewater network, wastewater treatment, Smart Water Infrastructure, Irrigation, Canal rehabilitation, river front development etc. L&T offers total engineering solutions with expertise in the fields of hydraulics, fluid mechanics, process technologies and structural design covering process, civil, mechanical, electrical and instrumentation.

Design office at Chennai



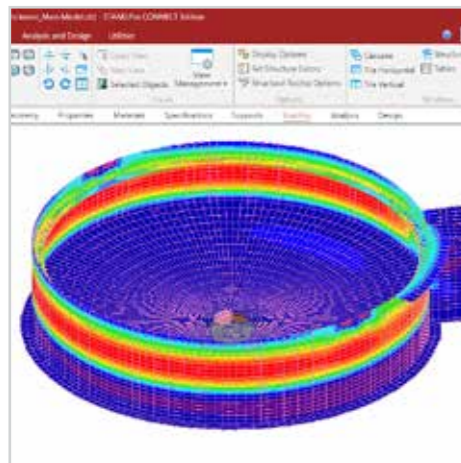
UNMATCHED CAPABILITIES

Project Management: At L&T Construction, the impetus for creating efficient and reliable water infrastructure is well supported by a multi-disciplinary team of professionals who cater to turnkey project requirements through meticulous planning and efficient project management. The organization leverages its domain expertise for providing suitable process systems / schemes to meet varying and ever-increasing customer requirements. To facilitate seamless project control, L&T aligns work schedules by integrating sequences through project monitoring software like MSP and Primavera which is backed up by a centralized in-house information system for data retrieval.

Supply Chain Management: Fortified by longstanding strategic relationships with vendor partners for pumps, pipes, process equipment and E&I manufacturers of international repute, L&T leverages its global sourcing capabilities and offers clients a value-added service with flexibility of choice and guidance on equipment selection.

Safety & Quality: At L&T, Environment, Health & Safety (EHS) is considered a core value. Systems and procedures have been established for implementing the requisites at all stages of construction and are accredited to the International Standards of ISO 9001, ISO 14001 and ISO 45001. L&T continues to maintain its tradition of meeting stringent quality standards and adherence to time schedules across all projects.

Construction Skills Training Institute (CSTI): Through its Construction Skills Training Institutes, L&T has been providing skill development training to empower and convert rural youth into trained workmen in significant numbers.



3D Model of Sludge Thickener



Project Review at site



Plant operator Training at CSTI



Pipeline installed on steep gradients



Safety orientation at site



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