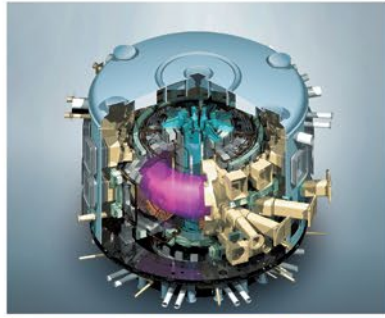




**GLOBALLY
BENCHMARKED
PROUDLY BUILT
IN INDIA**



THE COMPANY

Larsen & Toubro is an Indian multinational engaged in EPC Projects, Hi-Tech Manufacturing and Services. It operates in over 50 countries worldwide. A strong, customer focused approach and the constant quest for top class quality have enabled L&T to attain and sustain leadership in its major lines of business for eight decades.

Headquartered in Mumbai, Larsen & Toubro Limited is one of the largest and most respected companies in India's private sector. L&T has unmatched capabilities across Technology, Engineering, Construction, Manufacturing and maintains a Leadership Position.

L&T's businesses include Buildings & Factories, Infrastructure, Heavy Engineering, Water & Effluent Treatment, Power, Minerals and Metals, Smart World & Communication, Defence, Shipbuilding, Hydrocarbon, Machinery & Industrial Products, Realty, Financial Services and IT & Technology Services. Team L&T comprises over 50,000 people worldwide.

VISION

L&T aspires to be a builder of nations.

We will build a better future with engineering, technology and innovation; contributing to each geography and community that we operate in.

With trust, integrity & excellence at our core, we will aspire to be the partner of choice for our customers.

Our employees are valued partners in our entrepreneurial journey; empowered to reach their fullest potential and deliver exceptional value to all our stakeholders.



HEAVY ENGINEERING

L&T Heavy Engineering business is global leader in supply of the Engineered to order hi-tech equipment needs of Refinery, Oil & Gas, Fertilizer, Petrochemicals and Nuclear power plants. The business has been at the forefront of introducing digital Industry 4.0 techniques, products and materials into manufacturing sector for over eight decades.

A.M. Naik Heavy Engineering complex at Hazira is globally benchmarked state-of-the-art fully integrated , digitally enabled manufacturing complex.

Our capability spectrum not only covers in-house engineering, R&D centres, and world class fabrication facilities, but also includes a highly talented team, committed to a safe and sustainable work culture. The business achieved international recognition through an impeccable track record of executing large complex projects and constantly creating new international benchmarks.

Our state-of-the-art manufacturing facilities are located at:

- Hazira (Surat) - A. M. Naik Heavy Engineering complex with its own waterfront 'Load on' and 'Ro-Ro' jetties
- Ranoli (Vadodara) - Vadodara Heavy Engineering Works, a facility that handles stainless steels, non-ferrous, exotic materials, and process plant internals

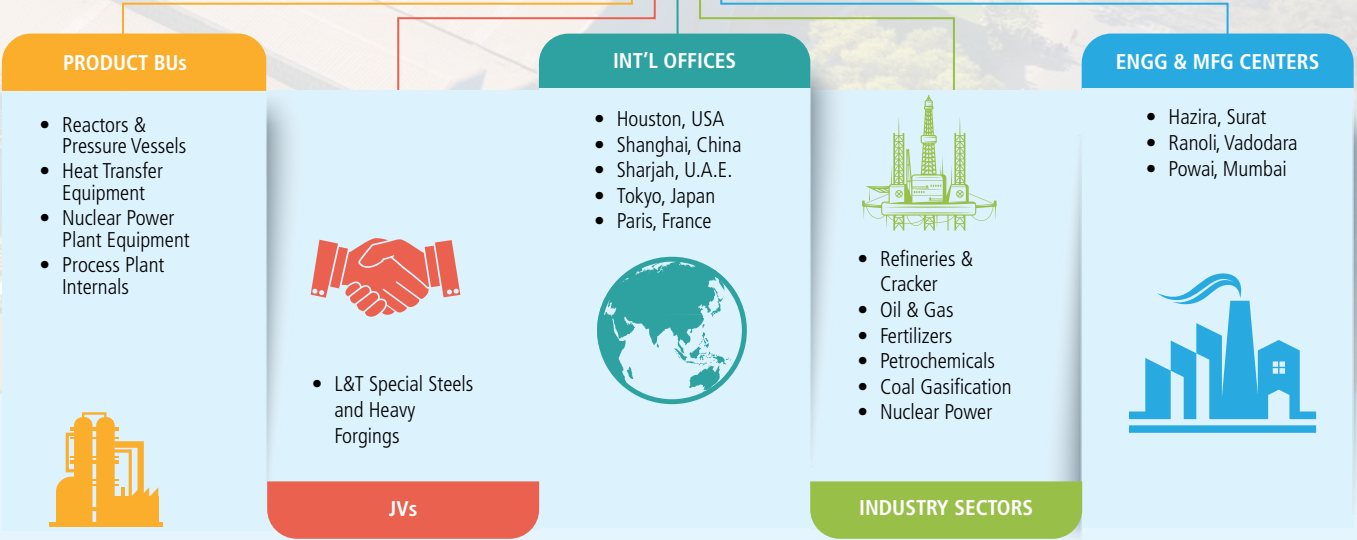
VISION

To be a global leader in Custom-built equipment, leveraging State-of-the-art, Digitally Enabled Technology with built-in quality to deliver utmost Reliability and Customer Satisfaction.

We will drive Innovation and Sustainability while creating enduring value for Customers, employees, and other stakeholders.



L&T Heavy Engineering



Global Benchmarks

USD 421 Mn

World's Single Largest Order of 22 Reactors for KNPC, Kuwait

2313 MT

World's Heaviest LC-Max Reactors for HPCL Vizag Refinery

658 MT

World's Heaviest Coke Drums - 6 Nos. PEMEX, MEXICO

33 Months

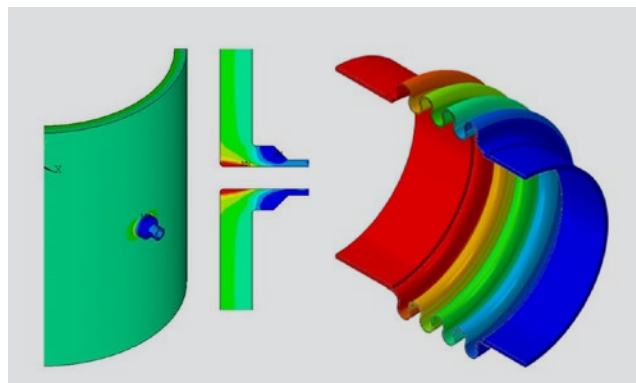
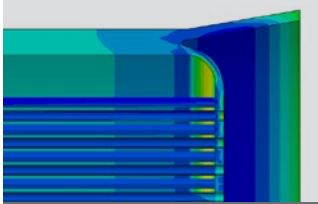
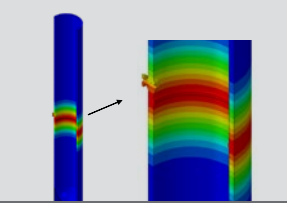
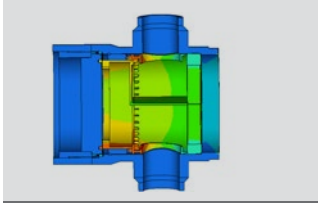
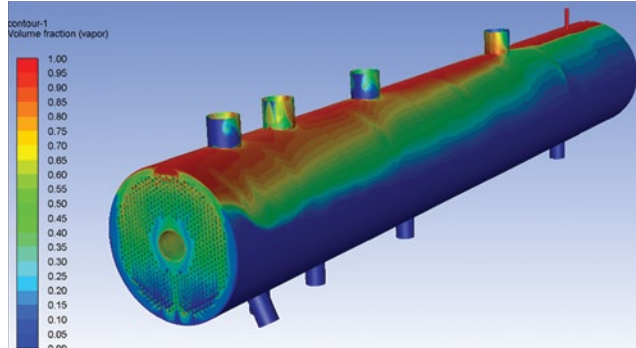
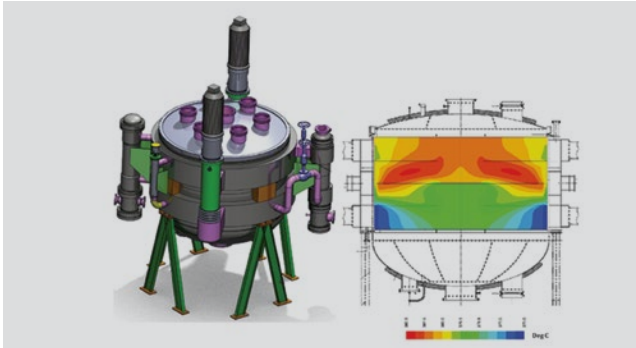
Manufactured Nuclear Steam Generator for NPCIL

16.3 m Diamter

Largest RFCC Package for Reliance Industries, India

29.4 m Diamter

The Cryostat - world's largest stainless steel, high vacuum pressure chamber weighing 3,850 MT for ITER, France

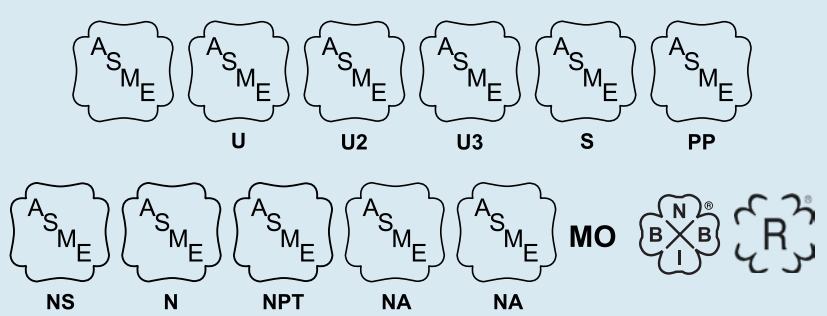


DESIGN & ENGINEERING: TECHNOLOGICAL EXCELLENCE

L&T's engineering capabilities are geared to design equipment as per customer specific requirements, and international codes and standards. Fabrication drawings for critical equipment are generated through 3D automation which have been developed in house. The perpetual endeavour of design engineers is to generate optimum solutions leading to lowest capital and operating costs.

TECHNOLOGY SOLUTIONS UNDER ONE ROOF

MECHANICAL	THERMAL	ANALYSIS	SPECIAL
Design to International- Codes & Standards - ASME Sec. I, III & VIII - EN 13445 - PD5500 - British - IBR - AS1210 - Australian - ADM - German - KTA - German - JIS - Japanese - Stoomwezen - The Netherlands - TEMA Standards - EJMA Standards - GB 150 - Chinese	Members of HTFS & HTRI Design of Equipment - All types of Shell & Tube Exchangers - Screwplug Closure (Breech lock) HP Heat Exchangers - Helixchanger/Helitower - Transfer Line Exchangers - Nuclear Steam Generators - Multi Tubular Reactors - Shell & Tube LNG Vaporisers	Finite Element Analysis - Static & Dynamic - Linear & Non-linear - Response Spectra Analysis - Thermo-structural - Steady state & transient - Buckling - Fatigue & Fracture - Creep & Creep-Fatigue Interaction	Fluid Structure Interaction Analysis (FSI)
		Computational Fluid Dynamics - Conjugate Heat Transfer - Single & two-phase flows - Reactor Chemical Kinetics - Particle Dynamics	Simulation of weld induced distortion and stress pattern
		Piping Flexibility	Analysis for metal
		Flow Induced Vibration (FIV)	Chemical Process Simulation
		Integrated System Analysis	Collaborative Research & Process Developmen
		Lifting & Transportation	Failure Analysis
			Analysis and engineering for Site Fabrication and Revamps
			Experimental Stress Analysis
			Destructive / Non-destructive Testing



AD-2000 MERKBLATT

SETTING BENCHMARKS IN QUALITY ASSURANCE

The Total Quality Management approach ensures deliveries fully comply with customer specifications. Safety and operational reliability are integral to every system and piece of equipment supplied.

Quality assurance is supported by advanced testing and inspection facilities including a 12 MeV linear accelerator, ultrasonic testing, ToFD and PAUT, magnetic particle and liquid penetrant examination, high-pressure and high-vacuum testing, and helium and freon leak testing.

ADVANCED NDE – ToFD & PAUT

- ASME-compliant alternative to radiographic inspection
- Weld thickness range: 6 mm to 430 mm
- Faster inspection with no radiation hazards
- No handling at assembly stage
- Recordable UT data retained as baseline for lifecycle reference

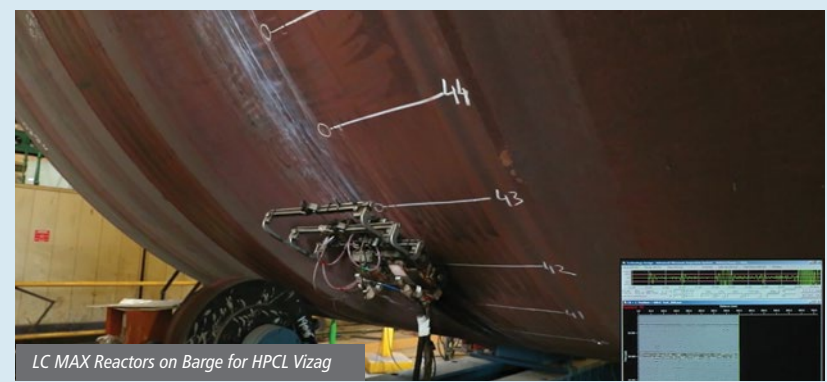




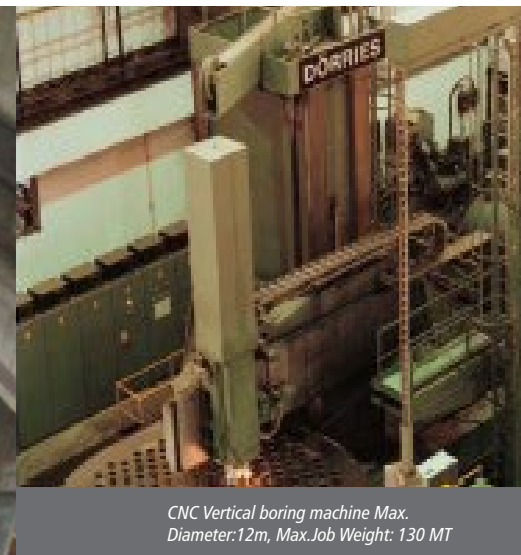
Plate-rolling machine for hot rolling of plates 300mm max. and 4500mm wide max.



Three CNC floor-mounted horizontal boring machines. Spindle diameter: 200 mm & Travel: 5m x 17m



IOT Enabled Shell Overlay Station



CNC Vertical boring machine Max. Diameter:12m, Max.Job Weight: 130 MT



CNC Horizontal multi-spindle deep-hole drilling machine Drilling Depth:1100mm Number of Spindles: 2

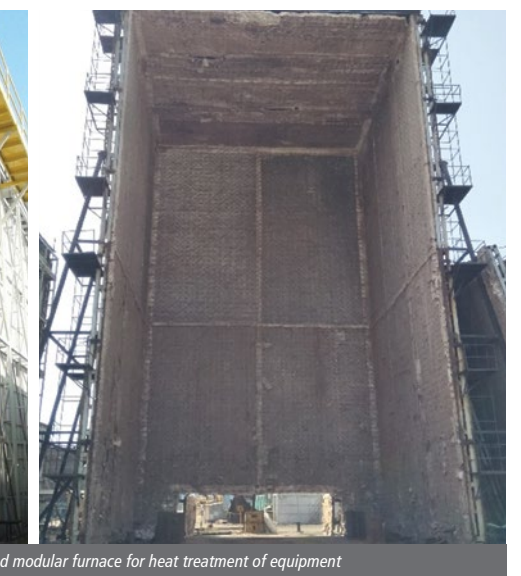


CNC Vertical multi-spindle deep-hole drilling machine. Drilling Depth: 900mm Number of Spindles: 2

The capabilities of CNC Floor Mounted and Special Purpose machines are supported by a battery of general purpose machines, all geared to the precision machining needs of a world class fabricator.

HEAT TREATMENT

One of the crucial activities in manufacturing of any pressure vessel is Post Weld Heat Treatment. Our workshops are equipped with several large automatic control gasfired modular furnaces, with dimensions up to 51 m length & 24 m height capable of performing Heat Treatment & stress relieving of sections and equipment of large size. Systematic configuration of gas burners and regulated air flow ensure uniform heat treatment.



Natural gas-fired bogie hearth furnace and modular furnace for heat treatment of equipment

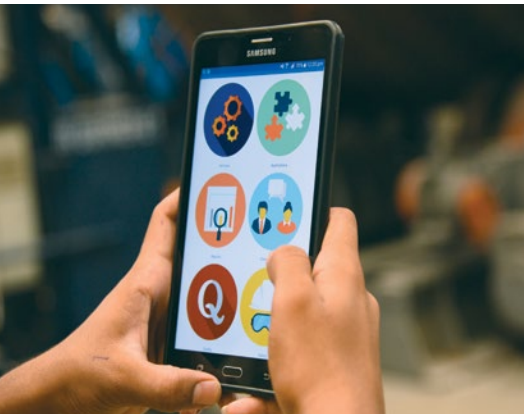
WORLD CLASS CAPABILITIES: FABRICATION

L&T's world class fabrication capabilities have been achieved through the perfect integration of efficient material handling and preparation, precision machining and welding processes for a range of materials in varying thickness, backed by technological excellence in design and engineering and responsive quality as well as IT systems.

COMPREHENSIVE WELDING CAPABILITIES

WELDING PROCESSES	MATERIALS WELDED	SPECIALISED WELDING TECHNIQUES
• SMAW • SAW (Semi-Auto/Machine) • NG SAW • Tandem/Twin-Head SAW • LSO SAW • GTAW (Manual/Semi-Auto/Machine) • Hot Wire GTAW • Activated TIG • Keyhole TIG • Automatic Tube # Tubesheet • Inner Bore welding • Orbital TIG • GMAW (Semi-Auto/ Machine) • Pulse GMAW • CMT • Robotic welding • FCAW (Semi-Auto/Machine) • Self-Shielded/Gas Shielded • ESW • Conventional/High speed cladding • PAW • Laser Beam Welding • Arc Stud Welding	• Carbon steel • Low alloy steel (C-Mo, Mn-Mo-Ni, 3.5 Ni, Cr-Mo, CrMoV) • Quenched & Tempered Steel • Stainless Steel • Austenitic stainless steel • Super austenitic stainless steel • Duplex stainless steel, Super & Hyper duplex stainless steel • Ferritic stainless steel • Maraging Steel • Nickel based alloys (Inconel, Incolloy, Monel, Hastelloy) • Copper based alloys (Cupronickel, Aluminum Bronze, Brass) •Titanium & titanium alloys	• Tandem / Twin SAW • Semi-Automatic GTAW/SAW • Robotic • Hot Wire GTAW • Activated - TIG • Narrow/ Ultra-Narrow Gap SAW / GTAW • Pulsed GTAW/GMAW • Internal BoreTube to Tubesheet • Cold Metal Transfer (CMT) • Self - Shielded FCAW • Strip Cladding • High Speed ESW

Continuous improvement in Welding Technology has enabled the development of over 8000 welding procedures qualified as per international codes and standards - ASME, BS, EN/BS, AS/NZ - for a variety of materials in a range of thickness (0.5 to 800 mm) covering the complete spectrum of welding processes. Specialised fabrication facilities include 100,000 class of dust-free enclosures with areas of 1000 sq. m. and 400 sq.m.



DELIVERING ENHANCED VALUE THROUGH DIGITALISATION!

L&T Heavy Engineering embraces digital solutions to enhance its operational excellence and offer your business value - added benefits

WE CONSTANTLY STRIVE TO INCREASE VALUE FOR YOU THROUGH:



On-Time Delivery



First Time Right



Significant Productivity Improvement

OUR DIGITALISATION INITIATIVES INCLUDE:



Smart Machines

- Smart Stations
- Asset Tracking & Utilization
- Remote Monitoring by Smart AR Glass



Smart Processes

- Advanced Metrology & NDT
- Integrated Engineering Manufacturing Quality System
- Live Project Tracking



Data Analytics

- Real Time Monitoring of Machines
- smart Procurement
- Online Dashboards



Reactor Regenerator Package for Pertamina, Indonesia



LC MAX Reactors on Barge for HPCL Vizag



RO-RO Jetty
90 m X 40 m

Main Jetty
200 m X 18 m

Captive Jetty at A M Naik Heavy Engineering Complex

L-Shaped Jetty
80 m X 40 m



Ethylene Oxide Reactor for LPCL, China

TIMELY DELIVERIES: LOGISTICS

TRAFFIC & LOGISTICS

Specialists provide traffic and logistics services for domestic and international customers. All arrangements are made for safe, low-cost and timely deliveries.

Traffic and logistics regularly carry out comprehensive route surveys from point of origin to final destination; plan and

arrange the right mode of transport; obtain statutory clearances and organise inter-agency co-ordination as per the specific needs of customers.



Reactors (260+)



EO Reactors (55+)



FCC & Columns (280+)



Coke Drums (80+)



HP Heat Exchangers (450+)



Ammonia Equipment (200+)



Largest EO reactor of BASF technology for BASF, China



Urea Equipment (160+)



Steam Generators (40+)



Modification, Revamp Site work (100+)



Coal Gasifiers (30+)



LNG Vessels (135+)



Process Plant Internals (500+)



Methanol Converter for Yanchang, China weighing 392 MT



L&T Patented Molten Salt Bath Reactor System, IOCL Dumad

KEY PRODUCTS



GLOBAL FOOTPRINTS

Products exported to more than 50+ Countries spread over all five continents.



PO Reactors



Titanium Clad Dehydration Towers

PETROCHEMICAL PROJECTS

EQUIPMENT SUPPLIED

- Ethylene Oxide Reactors
- ACN Reactors
- Dissolver Reactors
- Methanol Convertors
- Convection Section modules for Cracker Furnace
- RG Boiler for Methanol Plant
- Molten Salt Bath Reactor
- Ti clad Dehydration Towers
- TLX & USX Heat Exchangers
- Oleflex Reactors
- Catofin Reactors & Products Splitters
- PO Reactor
- AM Reactor
- PTA Equipment
- Rod Baffle Exchangers
- Zirconium & Titanium Heat Exchangers



290mm thick CrMoV forged ARDS reactor for KNPC. Total 22 nos. weighing 19000 MT



Worlds Heaviest LC-MAX Reactors (2313 MT) for HPCL Visakh Refinery



5 critical renewable diesel reactors to one of North America's largest renewable diesel producer Diamond Green Diesel (DGD)



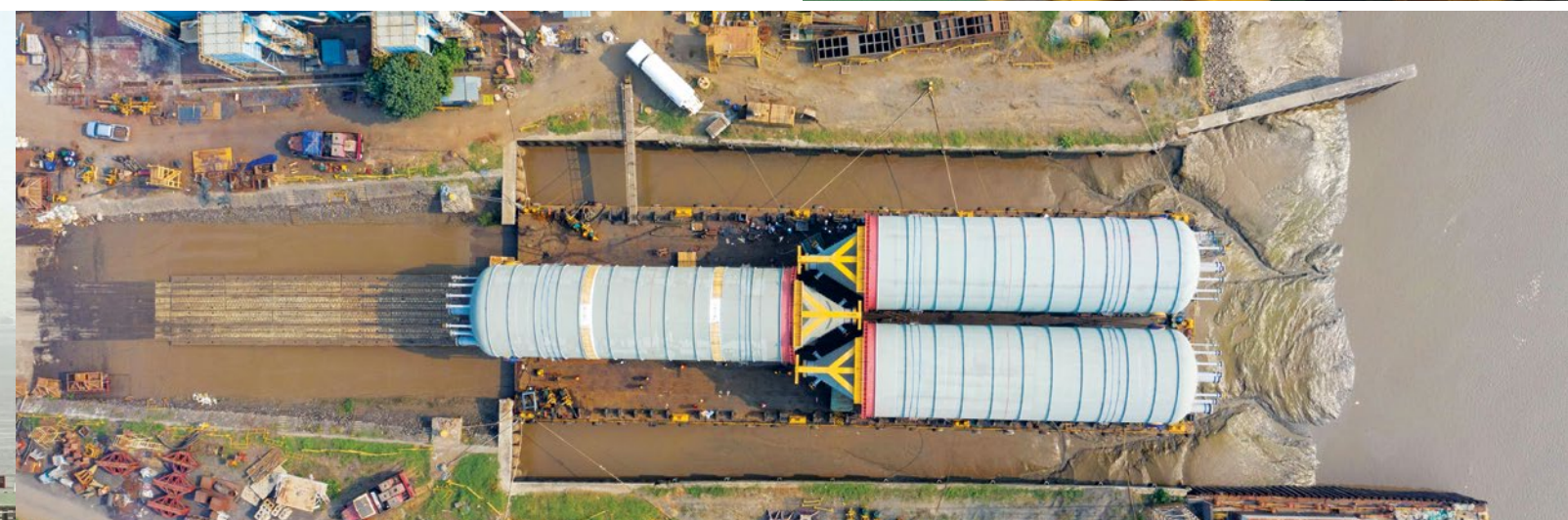
Heaviest Vacuum Column weighing 964 MT



High Pressure Screw Plug Heat Exchangers 66 nos. supplied to KNPC, Kuwait



RAPID FCC Reactor-Regenerator Package, total 2 nos. weighing 8750 MT



Worlds largest Coke Drums for PEMEX, Mexico

REFINERY PROJECTS

EQUIPMENT SUPPLIED

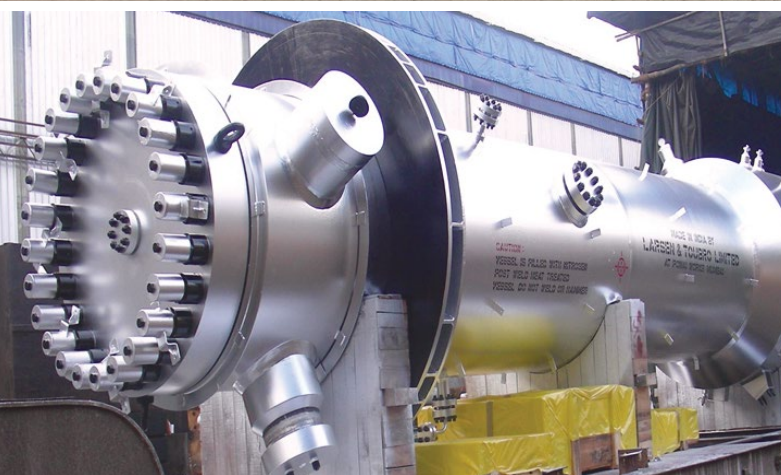
- Hydrocracker & ARDS / VRDS reactors
- HDS/Hydrotreater reactors
- Fluid Catalytic Crackers including Reactors, Regenerators and Accessories
- High pressure heat exchangers with threaded lock closures
- Heat exchangers in various materials of construction including 1-1/4 Cr - 0.5 Mo, 2-1/4 Cr - 1 Mo, Nickel Alloys, Duplex SS
- Reactors for Renewable Diesel
- Coke Drums
- Helixchangers/Helitowers
- High-pressure vessels (separators for hydrocracker, merox vessels, etc.)
- Columns including Vacuum columns, Crude columns, fractionators



Ammonia converter



Urea Stripper Supplied to Petronas, SAMUR, Malaysia



Synloop Boiler



Carbamate Condenser Supplied to SAFCO V, Saudi Arabia



Unitized Chiller weighing 380 MT for a project in Indonesia



Urea Reactor supplied to RFCL India



Waste Heat Boiler Package including RG/CG boiler, steam drum, risers & downcomers at Sohar Fertilizer plant

FERTILIZER PROJECTS

EQUIPMENT SUPPLIED

- Ammonia Converters
- Ammonia Converter Basket
- Waste Heat Recovery Boiler package including RG, CG Boiler, Steam Super heaters, Synthesis Loop Boiler, Steam Drums, and R&D Piping
- High Pressure Exchangers for Synthesis Loop
- Secondary Reformer Waste Heat Boiler & Steam Super heaters
- Ammonia Unitized Chillers
- KRES Exchanger
- Urea Reactors
- Urea Strippers
- Carbamate Condensers & Separators



Amine Absorber for Saipem(Marjan, KSA)



Heavy Thick Vessels for KNPC Al-Zour



Global Benchmark in Manufacturing : Steam Generator for 700 MWe (PHWR) Nuclear Power Plant

OIL & GAS PROJECTS

EQUIPMENT SUPPLIED

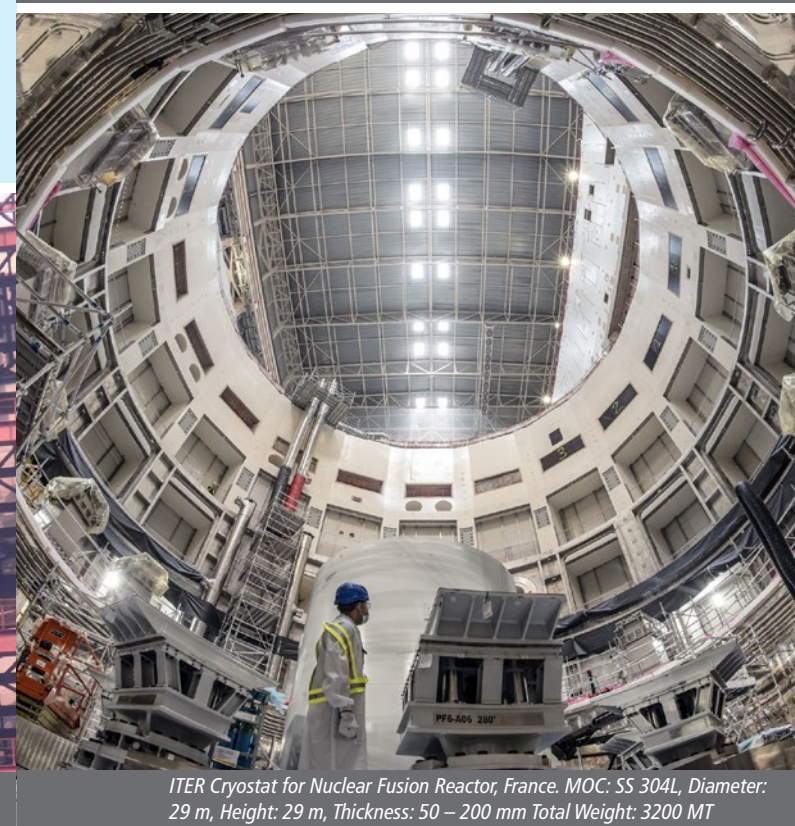
- LNG Vessels
- Gas Processing Equipment



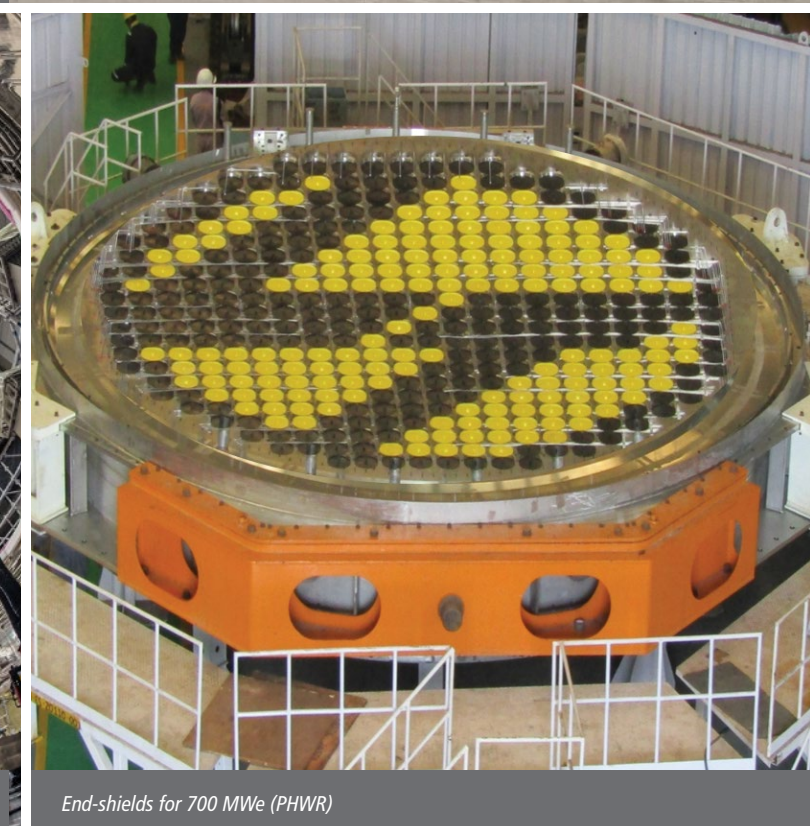
A section of a coal gasifier being exported to Vietnam



The world's largest coal gasifier manufactured by L&T erected at a project site in China



ITER Cryostat for Nuclear Fusion Reactor, France. MOC: SS 304L, Diameter: 29 m, Height: 29 m, Thickness: 50 – 200 mm Total Weight: 3200 MT



End-shields for 700 MWe (PHWR)

COAL GASIFICATION PROJECTS

L&T is the leading manufacturer of key gasification equipment with supplies to projects in China, Vietnam and India. L&T has supplied

- Nine gasifiers to various projects in China
- Two gasifiers to Vietnam of Shell Technology.
- Nineteen gasifiers in India of Air Products, Lurgi & CB&I Technologies

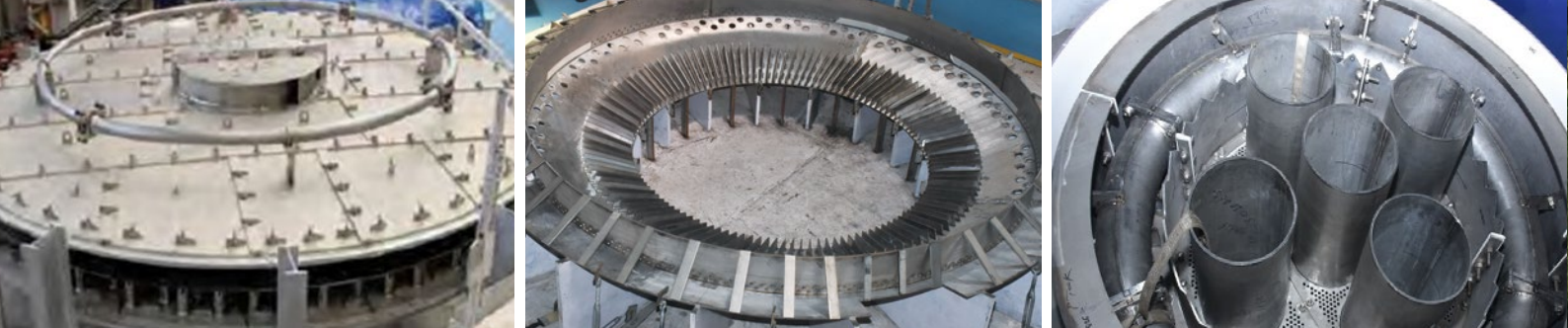
L&T is also qualified for supplying gasifiers as per GE, KBR, Siemens among other gasification technology providers.

NUCLEAR POWER PLANT PROJECTS

EQUIPMENT SUPPLIED

- Steam Generators (220 MWe, 540 MWe & 700 MWe)
- End Shields (220 MWe, 540 MWe & 700 MWe)
- Pressurizer (700 MWe)
- Cryostat for Fusion Reactor (ITER France)

- Spent Fuel Canisters & Casks (for US market under US NRC)
- Reactor Headers
- Calandria
- End Fittings
- Safety Heat Exchangers



Internals for Hydroprocessing Reactors, Gasification and Urea Equipment



Internals for FCC - Cyclones and Air Rings



Exotic Metal Exchangers and Equipment for Specialty Chemical Industry

GREEN INITIATIVES

At L&T, we believe that a holistic approach and responsible informed choices can lead to sustainable solutions. Our programmes are aligned to help combat climate change, drive energy efficiency, and encourage renewable energy usage.

Green initiatives at A M Naik Heavy Engineering Complex:

- India's first Green Hydrogen Demo Plant (Since Aug 2022)
- CII Certified Single Use Plastic (SuP) Free Certificate Campus
- ESG Champion of India by D&B in Environmental Risk and Opportunities
- Water efficiency and conservation measures that achieved 89% Water Neutral Campus
- Renewable energy adoption thereby decarbonizing energy consumption, with renewable sources contributing 70% of total energy consumption
- Mangrove plantations spanning 150 hectares at Hazira
- Energy Efficient Manufacturing Processes

We foster a culture of responsibility through periodic awareness and trainings for our workforce and thereby embed environmental stewardship within our business.

PROCESS PLANT INTERNALS

L&T owns dedicated facility to manufacture specialized equipment -internals of exotic metallurgies. Approved by all leading process licensors, this inhouse facility compliments the supply chain.

INTERIALS SUPPLIED

- Hydro processing Reactors Internals
- Gasification Internals
- Urea Internals
- Cyclones
- Air Rings
- Swirl Assemblies

EXOTIC MATERIAL EQUIPMENT

Our state of the art facility also expands our capability to supply complete equipment of exotic metallurgies like SS, DSS, Urea grade Steel, Inconel, Titanium, Zirconium etc. as a one stop solution provider. Our offerings also includes Oxygen mixing spargers / Nozzles.

CONTACT

INDIA

DOMESTIC MARKETING

Mr. Anirban Sinha
L&T Heavy Engineering, 5th Floor,
Tower B, L&T Innovation Campus,
Saki Vihar Road, Powai,
Mumbai 400 072
Tel: +91 22-6705 4036
e-mail: anirban.sinha@larsentoubro.com

NUCLEAR MARKETING

Mr. Ajaykumar Dubey
L&T Heavy Engineering,
5th Floor, Tower B, L&T Innovation Campus
Saki Vihar Road Powai, Mumbai - 400 072
Tel: +91 22-6705 2996
e-mail: Ajaykumar.Dubey@Larsentoubro.com

INTERNATIONAL MARKETING

Mr. Allwyn Lewis
International Marketing – HE
Gate 1, SBU-2nd Floor, Surat-Hazira Road
Mora, P.O. Batha, Dist. Surat,
Gujarat 394 510
Tel: +91 261-280 5353
e-mail: Allwyn.Lewis@Larsentoubro.com

CHINA

Shanghai Office
Mr. Rahul Desai
L&T Heavy Engineering
Room 1601, Summit Center No.1088
West Yan'an Road, Shanghai 200052
Mobile: +86-139-1136-3065
e-mail: heicch@larsentoubro.com
rahul.desai@larsentoubro.com

MIDDLE EAST & AFRICA and CIS

Sharjah Office
Mr. Mohamed Sohail Panwala
L&T Heavy Engineering, 6th Floor,
Sheikh Abdullah Bldg., Al Qasimiya Street,
P.O. Box 71447, Sharjah, U.A.E.
Mobile: +971 563 755 788
e-mail: heicme@Larsentoubro.com
Sohail.Panwala@Larsentoubro.com

SOUTH EAST ASIA, JAPAN & KOREA

Tokyo Office
Mr. Avneesh Mishra
Chief Representative –
South East Asia, Japan & Korea
L&T Heavy Engineering
JA Building 13F,
1-1-1 Otemachi, Chiyoda-ku,
Tokyo 100-6813, Japan
Mobile: +81-709-312-1175
Whatsapp Contact: +91 972-420-0718
email: avneesh.mishra@Larsentoubro.com

EUROPE

Paris Office
Mr. Velliyangiri N
Chief Representative Europe
L&T Heavy Engineering, Tour Initiale,
1 Terrasse Bellini, Puteaux-92800,
Paris, France
Mobile: +33 745614117 /
+91 9909924534
e-mail: heiceu@Larsentoubro.com
N.Velliyangiri@larsentoubro.com

AMERICAS

Houston Office
Jaskirat Singh Ghotra
Chief Representative – Americas
L&T Heavy Engineering
10370 Richmond Ave, Suite # 1310
Houston, Texas – 77042, USA
Mobile: +1-732 692 3682
e-mail: jaskirat.ghotra@larsentoubro.com



L&T Heavy Engineering

A brand of Larsen & Toubro Limited

Larsen & Toubro Limited, Heavy Engineering

A M Naik Heavy Engineering Complex, Gate 1, Surat-Hazira Road,
Mora, P.O. Batha, Dist. Surat, Gujarat 394 510.
www.Larsentoubro.com
CIN : L99999MH1946PLC004768

Registered Office:

Larsen & Toubro Limited, L&T House
N. M. Marg, Ballard Estate
Mumbai 400 001, INDIA