



building renewables **infrastructure**



The Indian CONSTRUCTION GIANT

L&T Construction, India's largest construction organization and ranked among the world's top contractors, has been transforming cityscapes and landscapes with structures of immense size and grandeur for several decades. The organization'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 eight related businesses:

- Buildings & Factories
- Heavy Civil Infrastructure
- Transportation Infrastructure
- Power Transmission & Distribution
- Renewables
- Water & Effluent Treatment
- Minerals & Metals
- L&T GeoStructure

Over eight decades of **UNDISPUTED LEADERSHIP**

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 over eight decades.

EPC PROJECTS	
CONSTRUCTION	ENERGY
HI-TECH MANUFACTURING	
HEAVY ENGINEERING	DEFENCE
SERVICES	
IT SERVICES	TECHNOLOGY SERVICES
DIGITAL SERVICES & E-COMMERCE	
FINANCIAL SERVICES	
OTHERS	
REALTY	SMART WORLD & COMMUNICATION
CONSTRUCTION & MINING MACHINERY	
RUBBER PROCESSING MACHINERY	VALVES

Building landmarks, setting benchmarks*

- **12** International Airports
- **330,000+** IT Seats
- **84,000+** Dwelling Units
- **95+** Manufacturing Facilities
- **27,000+** Hospital Beds
- **500,000+** km of Water & Wastewater Networks
- **12,400** MLD of Water & Wastewater Treatment Plants
- **1.1 million+** Hectares of Land Being Irrigated
- **935** EHV Substations
- **48,355 ckm** of Transmission Lines
- **100,000+** Habitations Electrified
- **20+** GWp Portfolio of Solar Plants
- **436** km of Metro Rail Corridors
- **468** km of High-Speed Rail
- **23,528** Lane km of Roads, Interchanges, & City Infra
- **12 million** Sq. m. of Runways
- **12** Nuclear Power Projects
- **6,129** Tkm of Railway Track Laying
- **21,872** Tkm of Railway Electrification
- **47 million** tonnes of Hot Metal (Iron) Making
- **21** Blast Furnaces
- India's Largest City Surveillance Project: **6,000** cameras at **1,500** locations at Mumbai

*The track record information published here is as of May 2024



209 MWp/190 MW Solar Tracker Project, Karnataka

INDIA'S LARGEST SOLAR EPC PLAYER

Conventional energy is finite. To light up tomorrow's world you need imaginative, innovative solutions. L&T Construction has developed the capability to provide solutions for every challenge under the sun.

L&T is one of the leading players in Renewables Business. It has a track record that includes execution of some of the largest solar plants in the country. L&T has proven EPC capabilities in offering economically viable and technically superior solutions for solar power plants. The comprehensive range of design and construction services includes:

SEGMENTS

- Utility Scale Solar PV
- Floating Solar
- Battery Energy Storage Systems

PRODUCTS

- Battery Energy Storage Container Solutions
- Mobisol
- Solar Pumps

22 MWp Solar PV Power Plant at Rajasthan



324 MWp Fixed Tilt Solar PV Project at Rewa Ultra Mega Solar Park (RUMS), Madhya Pradesh



2x11 MWp with 16 MW/8MWh Battery Energy Storage System, Andaman



4 MWp Floating Solar PV Project, Tirupati



7.5 MWp Solar Rooftop PV System at Beas, Punjab



110 MWp Fixed Tilt Solar PV Project in Tamil Nadu



Crystalline - Si module technology based grid connected PV



Tracker technology



Asia's largest CSP plant
125 MWe solar thermal power plant
(600 acres) at Pokhran, Rajasthan



HV Substation and Transmission



345 MWp Solar PV Project in Tamil Nadu

KNITTING A GREEN ZONE

Grid Connected PV (Utility Scale)

Having a project portfolio of 5.4+ GWp of solar projects under construction & commissioned in India & Abroad, L&T provides technologically agnostic, independent and flexible utility solar power projects with a high bankability factor. L&T's solar projects are characterized by speed of execution, superior quality and optimum land requirement.

COMPLETE SOLUTIONS FOR FLOATING SOLAR SYSTEMS

L&T commissioned one of the first MW-scale Floating Solar projects in India

L&T's Renewables business unit commissioned a first-of-its-kind MW-scale Floating Solar project and has a total portfolio of 140 MW across India. The scope of work included design, procurement, supply, installation, testing, commissioning, operation, and maintenance along with power evacuation at higher voltage levels. The company's offerings perfectly adapt to various sizes of floating solar projects with reliable options for end users.



28 MWp Floating Solar PV Project in Auraiya, Uttar Pradesh



BATTERY ENERGY STORAGE SYSTEM

24x7 Stable Renewable Power

L&T's containerized solution for Battery Energy Storage System (BESS) is an all-in-one design including cutting-edge power electronics, state-of-the-art control systems and advanced battery technologies. With flexible and scalable design options, L&T offers a range of solutions ranging from KW to MW scale. Further, to provide immediate benefit to the customer, the storage solution is specifically designed for Plug and Play, which helps in reduction of installation time dramatically.

Containerized BESS with

- IP Protection
- Access Control
- Fire Protection
- Temperature Control
- Web SCADA
- EMS Controller

Features

- Intelligent Energy Management System
- ON Grid & OFF Grid functionality
- Black Start Possibility
- Balancing between renewable energy sources and load/consumption
- Grid Stabilization
- Reactive Power Adjustment

L&T MOBISOL

Ensuring seamless power supply in a modular format

L&T MobiSol is an integrated containerized system consisting of PV modules, smart inverter technology, battery and/or diesel generator with an intelligent control system. It offers customers reliable and un-interrupted power supply whenever and wherever required typically for townships, islanded resorts, commercial and industrial applications. The advantage of this unique system is that it is rapidly deployable for meeting the power demands in an economical and convenient way due to easy transportation, low maintenance and minor preparatory work at site.



Inside view of CIF Factory



Test lab and Testing Facility



Skilled workforce

BESS INTEGRATION FACILITY










The BESS Integration facility at Kanchipuram is a state-of-the-art facility for integrating electrical and mechanical components into the containerized system. Along with integration, various tests are carried out on the integrated containers, by replicating the site conditions to ensure smooth operation at sites.

Features

- 
 Powered by 100kW Solar PV +12kW BIPV + 250kWh BESS Capable to
- 
 Annual Capacity of 600 MWh in a single shift basis
- 
 Capable to integrate multiple containers 20ft / 40ft in parallel
- 
 State Of The Art testing facility to ensure full fledged fat
- 
 Capable to simulate & test bess applications like PV smoothing, ancillary services, spinning reserve etc.
- 
 State Of Art testing facility containing PV simulators, grid emulators, load banks, DG & bess systems



Product Features

- 
 Modular design with separate cabinet for battery, inverter and other equipment
- 
 Robust roof-top mounting type and collapsible type designed for solar module fixing
- 
 Higher IP grade ensuring safety and reliability
- 
 Electrical protection inbuilt
- 
 Reduction in CO2 emissions
- 
 Easy transportation from one place to another
- 
 Factory testing of the assembled system
- 
 Highly flexible, scalable, single container solution to replace DG from 25 kVA to 62.5 kVA
- 
 Possibility for 24x7 power supply without any interruption



Container Integration Facility - L&T, Kanchipuram



SOLAR PUMPING SYSTEM

Multiple benefits for investors

L&T's Solar Pumping System is a state-of-the-art in-house developed technology that offers customized solutions for diverse applications with a wide range of configurations comprising automatic tracking system, early start & late stop: extended operating hours, enhanced and stable water output upto 30%, improved access to power and water, advanced diagnostics & alert management system, easy to operate, safe, simple installation, negligible maintenance & running cost.

Application

- Irrigation & Sprinklers
- Customized solution for Schools & Education Institutes
- Industrial Water application
- Drinking Water
- Customized Solution for Health Centers & Hospitals
- Solarization of Existing Grid Connected Pumps



INTEGRATED TRACKER SOLUTIONS

In-house developed layout designs for tracker-based projects with multiple benefits for developers

L&T's optimized EPC design with its tracker service providers deployed in its solar projects enables harnessing the power of the Sun coupled with latest module technologies to get the most generation benefits. The Horizontal Single Axis Tracker (HSAT) system is one such solution of L&T that offers multiple benefits to the developers.

Design Specialization

- In-house developed EPC design
- Flexible row/block arrangement for better land utilization
- Optimized for various module technologies
- Optimized design for shading and automated module cleaning robots
- 1500 V DC system compatible
- In-house solution for automated grading & levelling
- Suitable for undulated and sloped ground profile
- Inter row shading loss elimination

Aligned to international quality standards with its tracker service providers

- Wind tunnel testing
- Engineering validation
- Industrial-grade type testing and ensuring reliability
- Bankability assessment

1.5 GWac Bifacial Single-Axis Tracker Plant in Sudair, KSA



i-LSTK INTEGRATED LUMP SUM TURNKEY SOLUTIONS

L&T is committed to playing a significant role in the arena of renewable energy by spearheading the green revolution in India. Over the years, L&T has gained expertise in different solar technologies to design and execute solar power plants including financing assistance for solar projects of different capacities.

Pre-bid Services: L&T provides bid management services and load-flow study coordination to key clients and developers interested in developing projects under various national and State policy tenders in a exclusive EPC collaboration mode.

Project Development: Complete end-to-end solutions are offered including pre-feasibility analysis, economic feasibility analysis, technical assessment, land arrangement, solar farm site evaluation and selection and grid connectivity along with permits and regulatory approvals.

Project Finance: L&T's project management team facilitates debt financing support through financing institutions, as well as assistance through in-house financial consultants.

Engineering: A core team of in-house design experts uses cutting-edge software to design the layout and choose the best technology for a solar farm. L&T produces optimized designs for lowest LCOE and higher ROE after a thorough study of the long-term energy prediction analysis.

Procurement: Access to the best technology solutions is facilitated by L&T's wide experience across a global supply chain and long-term component partnerships it shares with supply partners. L&T's JIT techniques optimize resources and provide ISO and OHSAS-certified facilities for manufacturing structures.

Construction: World-class construction management and planning with single-point responsibility give L&T an edge over competition. Timely project completion is ensured within the estimated budget, thus establishing a long-term sustainable solution for the customer in the shortest time.



OPERATIONS & MAINTENANCE

Post commission, monitoring, operations and maintenance support with tailor-made O&M packages for seamless operation (Turnkey +) is also on offer. Apart from established processes and procedures for proactive and reactive (breakdown) maintenance, L&T offers 24x7 site surveillance support for very large solar farms. Smooth functioning is ensured using a remote monitoring system at L&T's HQ in Chennai, real-time plant technician support and a well-networked communication channel with transmission / grid operator and plant owners.



Facilitation of land



EPC of Solar PV Power Plant



Power evacuation



Operation and Maintenance



ENGINEERING, RESEARCH & DEVELOPMENT

Engineering tomorrow's technology, today

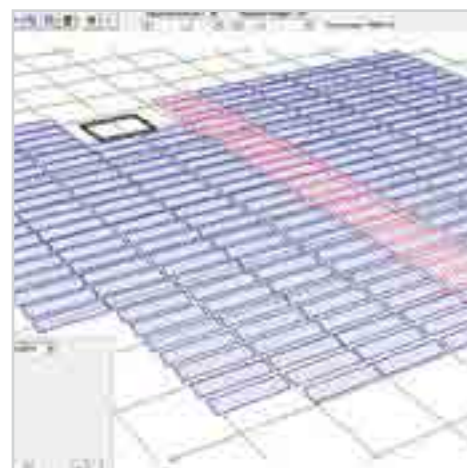
With in-house developed technologies like BESS and 'Mobisol' (L&T's containerized energy solutions), we are forging the future of sustainable energy. L&T's talent pool of design engineers actively incubates various technologies and has derived valuable insights on different aspects of solar power systems. The state-of-the-art design team at Chennai delivers cost-effective solutions using the latest software and the designs are accredited by leading financial institutions and technical agencies. A core team interacts with global technology suppliers in the renewable domain to constantly enhance knowledge and optimize design options suitable for site conditions globally. A special team of foundation engineering experts have developed unique structural designs, in-house software, and innovative techniques to hasten the construction process.



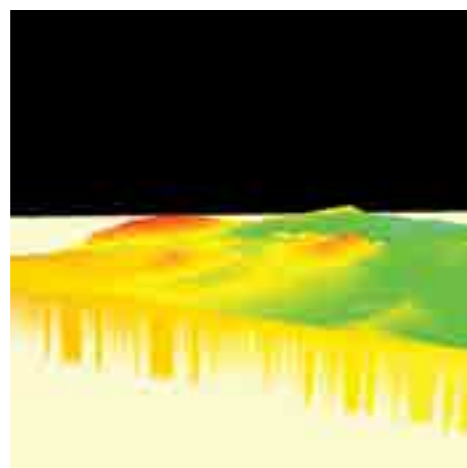
2.5 MWp East-West Solar PV Plant

Design optimization includes:

- Selection of solar components for maximum power
- Optimum string and array design
- Shadow analysis for optimization of array layout
- Optimization of cabling, block sizes and civil works



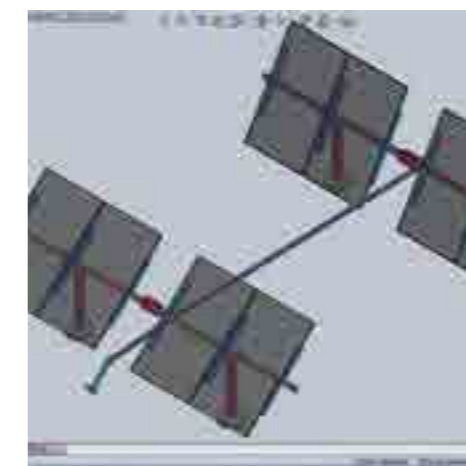
PVSYST



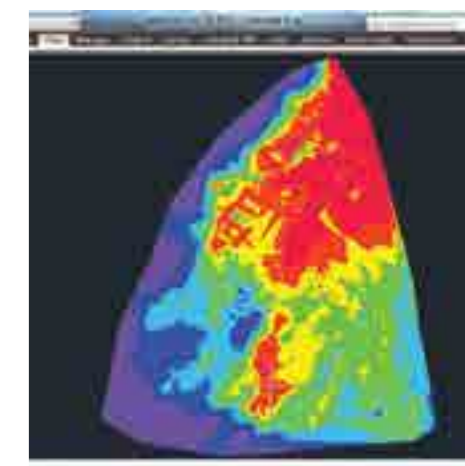
Global Mapper – Terrain Model



Stadd Pro



Solid Works



Civil 3D



Contour-based solutions for challenging terrains

PROJECT MANAGEMENT

L&T's project management teams have repeatedly demonstrated their ability by delivering complex projects ahead of time even under critical conditions and stringent timelines. With perfect understanding of the fundamental drivers in the sector, L&T implements world-class project management practices in all its projects and meets the core criteria of shortest gestation time from conceptualization to commissioning. This is evident from the hallmarks of execution in the Indian solar industry. L&T has executed the largest and most complex solar power plant projects in India and has emerged as the one of the largest EPC players, providing solutions for various solar technologies. L&T's global sourcing capabilities include:

- GPS enabled advanced monitoring systems for tracking the flow of goods
- JIT techniques for optimization of resources
- Strategic long-term component partnerships with supply partners
- Creating value in projects by awarding contracts to local contractors and logistic companies

DIGITAL TRANSFORMATION

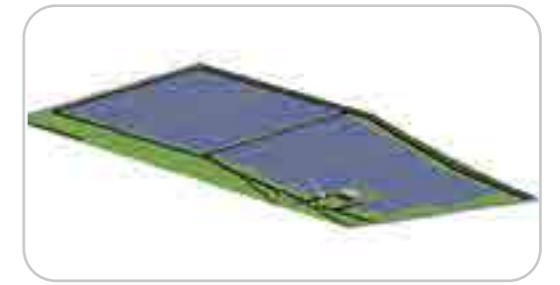
During the journey of digitalization at L&T, our intent is to enhance value propositions in each phase of renewable project development starting from the engineering, procurement, and construction to the commissioning, operations, and maintenance phases.

- Fast and accurate site survey using drones, LIDAR
- Optimized solutions with in-house developed software for various engineered items such as MMS, cables, civil work, etc.
- Integrated project management using in house developed applications such as PRAPTI and ALIGN integrated with BIM



Project Progress Monitoring

- Drone survey for monitoring module performances
- Inventory management and material tracking using RFID and QR codes
- Optimum asset utilization using IOT in P&M
- Digital security at site stores
- Immersive VR training on safety practices



Digital Surveillance and Performance Monitoring

SAFETY AND 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 OHSAS 18001. L&T continues to maintain its tradition of meeting stringent quality standards and adherence to time schedules across all projects.



Safety orientation



Hands-on training at Construction Skills Training Institute (CSTI)



Awards and accolades



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