

# POWER BUSINESS



*India's first ultra-supercritical power plant – 2x660 MW Khargone Thermal Power Plant, Madhya Pradesh*

## Overview:

L&T has established itself as one of the leading EPC players in the thermal Power Plant business in India and is known to deliver complete turnkey business solutions from concept to commissioning. The business has expertise which encompasses every aspect of design, engineering, manufacture, construction and project management.

The business has developed its own capabilities for executing large and complex power projects, which include in-house engineering, state-of-the-art manufacturing facilities, competent manpower and decades of experience earned in executing large and complex projects within and outside India. It has a proven track record of delivering complete power plant solutions with the scale and sophistication to meet India's growing energy needs.

The business executes combined cycle gas-based power projects on a turnkey basis. It has an excellent track-record in implementing projects in India and overseas.

The business has built on its core competencies and capabilities and has emerged as a major player in new emission-control technologies, such as Flue Gas Desulphurisation (FGD) in the thermal power plant industry. It now has a sizeable presence in the FGD business.

The business has project management offices at Vadodara, Faridabad, Dhaka and various project sites.

The business also manages the following JVs:

**L&T-MHI Power Boilers Private Limited**, a joint venture with Mitsubishi Power Limited, Japan, for the engineering, design, manufacture, erection and commissioning of ultra-supercritical / supercritical boilers in India up to a single unit of 1000 MW.

**L&T-MHI Power Turbine Generators Private Limited**, a joint venture with Mitsubishi Power Limited, Japan and Mitsubishi Electric Corp. (MELCO), for manufacture of Steam Turbine Generator (STG) equipment of capacity ranging from 500 MW to 1000 MW. The Company is engaged in the engineering, design, manufacture, erection and commissioning of ultra-supercritical / supercritical turbines and generators in India.



2x660 MW Shree Singaji Thermal Power Plant (Stage-II), Madhya Pradesh

**L&T Howden Private Limited**, a joint venture with Howden Holdings B.V. L&T Howden, is in the business of regenerative air-preheaters and variable pitch axial fans (equipment, after-market spares and services) for power plants.

**L&T-Sargent & Lundy Private Limited**, a joint venture with Sargent & Lundy LLC, USA, which is engaged in the business of providing design, engineering and project management services for the power sector.

## Business Environment

The Covid-19 pandemic has led to the acceleration of the shift to renewable energy, thus leading to subdued tendering activity in the thermal power sector and postponement of tenders. Tenders for FGD Units were also delayed due to changes made by the Government in procurement policies with respect to sourcing from countries sharing a land border with India, which form the major source of raw material supplies for FGD units. The industry is now gearing up to attain self-sufficiency under 'Atmanirbhar Bharat' initiative of the Government of India to reduce its dependency on imports.

The gas availability in India for power generation projects continues to remain subdued, with a large part of installed gas-based power generation capacity being idle. While the LNG prices in international markets had softened due to the pandemic, the landed cost of LNG in India still remains unviable. This, along with low tariffs discovered

for renewable energy, makes it extremely difficult for new gas-based power generation projects to take off.

In international markets, the business continued with the execution of projects in Bangladesh. Other markets, such as the GCC and South East Asia, also remained subdued due to reduced demand growth in the wake of the pandemic and the focus on renewable energy.

While utility-scale gas-based power generation projects are a good and viable solution for grid balancing with renewable energy, in the near term, the sector will continue to face challenges such as the inclination of countries towards the installation of more renewable energy projects, stiff competition for tariffs and muted power demand growth. The limited availability of projects and the over-capacity of manufacturing capabilities across the sector continue to put pressure on prices.

## Major Achievements

Major achievements by the business during the year include:

- Completion of facilities of India's first ultra supercritical power project for Central Utility in Madhya Pradesh
- Final take-over of 2<sup>nd</sup> Unit by State Utility for a project in Rajasthan
- Received provisional acceptance for a gas project in Bangladesh



Ultra-supercritical / supercritical turbine manufacturing facility at Hazira, Gujarat

- Performance guarantee test of a gas project in Bangladesh
- Commercial operation of a central utility project in Uttar Pradesh where the supercritical boilers are supplied by boiler JV
- A dominant player in the FGD market, with over 20% of the market share

### Significant Initiatives

The business is strategically focusing on new energy areas having significant potential such as energy storage, carbon capture, etc. It is working on a business plan for technology selection and finalisation of Go-To Market strategy.

The business continues to focus on initiatives to reduce cost in areas such as procurement, manufacturing, logistics, value engineering, overheads, etc. to improve its competitiveness, and intends to continue its cost-saving journey in the coming years. The business also enhanced its focus on initiatives to achieve quality and EHS excellence and expand its global footprint.

To expand its international footprint, the business is laying emphasis on business development activities in select international geographies. It has taken steps to strengthen its presence in such geographies to capitalise on the opportunities available in this sector.

### Digitalisation

The digital adoption in the business is progressing at a rapid pace. The business had implemented multiple digital technologies, such as IoT, AR/VR and mobility, in multiple areas of project execution and manufacturing. The business benefits of these implementations are being monitored and measured closely. The next phase of digital has begun, where the focus is on developing new solutions using AI, ML, RPA and Analytics to get insights, achieve automation in most aspects of project execution. Solutions such as connected machines and vehicles to improve productivity and utilisation by predictive analytics, various Bots and mobility apps for efficient business operations and Artificial Intelligence (AI) & Machine Learning (ML) for Video / image analytics are helping project sites in maintaining compliance related to Covid-19 protocols and safety.

### Environment, Health and Safety

The business has always laid great emphasis on Environment, Health & Safety of all stakeholders. With the pandemic, challenges were faced at project sites, which were addressed by:

- Liaison / tie-ups with nearby Covid-19 treatment hospitals / facilities
- Augmenting medical facilities and resources to take care of the employees
- Regular sanitisation of all facilities and vehicles



400 MW Bibiyana South Combined Cycle Power Plant, Bangladesh

- Provision of isolation facilities and conducting of regular inspections of labour colony and bachelor accommodation
- Continuous health monitoring (temperature as well as SpO2) of all employees
- Regular training / counselling of all employees regarding precautions to be taken viz. maintaining immunity, wearing a mask, maintaining hygiene, social distancing, etc. Provided essential supplies in labour colony during lockdown.

The business continues to focus on safety awareness through weekly theme-based Safety Toolbox Talks, monthly theme-based safety skits based on monthly Life Saver programme campaigns and activity-based skill orientation programmes for workmen. Specialised external trainings were conducted in welding and gas cutting operations, safe usage of PPEs and a demo on work-at-height rescue, fire safety and fire-fighting techniques at all project sites. An external virtual training programme was conducted on 'Scaffolding and Lifting & Rigging' for various sites for frontline engineers, contractor supervisors, foreman and scaffolders and riggers. Detailed sessions regarding implementation of the EHS Council's 'Mission Zero Harm' roll-out plan for each site were organised.

Use of digital technologies to regulate safe working conditions:

- Developed and implemented Online App STARRT (Safety Task Analysis Risk Reduction Talk) card for multiple or simultaneous or multi-level activities
- Cameras installed in sites / facilities for real-time monitoring and capturing of unsafe acts / conditions and communicating the same to site safety personnel for immediate and long-term corrective action
- Conducted six monthly online Internal EHS audits on the Teams platform with a virtual tour of site operations and interviewing of contractor and operations' employees

### Risks and Concerns

With the increased emphasis on renewable energy, the business continues to face headwinds as regards the opportunities available for thermal power. Further, excess manufacturing capacity continues to drive prices downwards and would reflect in the financials of EPC players.

The pandemic has set in some uncertainty on project execution timelines, for which the business has initiated the required steps, considering *force majeure* conditions.



*Ultra-supercritical / supercritical boiler manufacturing facility at Hazira, Gujarat*

## Outlook

While the projections of 267 GW thermal power capacity by FY 2030 as per CEA projections and retirements of old, inefficient, and polluting power plants indicate that thermal power is still going to be the mainstay in country's power generation mix, the business is gearing up for the shift towards new energy opportunities in the near future.

It is estimated that the total installed capacity of power plants for which FGDs are to be installed is around 167 GW, involving 440 FGD units. About 73 GW of FGDs have been ordered till date, while the balance units are expected to gain momentum in next couple of years in order to meet the revised deadlines stipulated by MoEFCC.

The Government has an ambitious plan to increase the nuclear power production to 23 GW by 2031 from the current level of 7 GW. The business sees large-value

opportunities in this segment and has tied up with world-class OEMs.

The business is also focusing on international markets for opportunities. The inherent advantages of gas-based power projects, i.e. fuel flexibility and fast ramp up and ramp down capabilities, make it most suitable for grid balancing along with renewable energy projects. New developments for the usage of hydrogen and ammonia as fuel for green power generation are likely to present meaningful opportunities in medium-term future.

L&T-MHPS Boiler JV and L&T-MHPS Turbine Generator JV are looking forward to leveraging upcoming spares and service opportunities in the domestic market and will continue to explore business opportunities in the international market for export orders.