



LARSEN & TOUBRO, INDIA

Key Facts

Company: Larsen & Toubro Limited

Website: www.larsentoubro.com

Industry: Chemical & Petrochemical,
Refineries & Fertilizers

Country: India

Products Used:

- CAESAR II®

LARSEN & TOUBRO REDUCES DESIGN CYCLE TIMES WITH CAESAR II®

A global company founded in 1938 and one of the largest private companies in India, Larsen & Toubro Limited's Heavy Engineering group (L&T HE) designs, manufactures and supplies precision custom-engineered critical static hi-tech equipment and systems for the processing industries including oil & gas refineries, petrochemical, fertilizer and coal gasification plants. This includes reactors, pressure vessels, high pressure and heat exchangers for such facilities plus waste heat boiler and steam drum packages with interconnected piping for facilities in more than 40 countries. It operates fabrication facilities in Mumbai, Hazira and Ranoli in India and also in Oman, each with ISO 9001:2000 certification.

DESIGNING AND FABRICATING COMPLEX AMMONIA AND SNG PROJECTS FOR INDIA AND CHINA

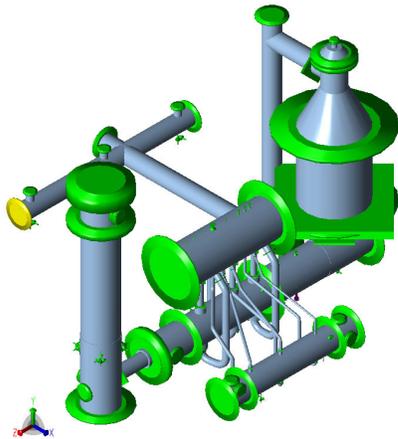
For ammonia plant feedstock changeover projects in Panipat and Bhatinda, India, L&T's task was to supply the waste heat boilers, steam super-heater, steam drum, riser and down-comer piping. For a 4 billion m³/year coal-to-synthetic-gas project in Inner Mongolia, China, L&T had to supply the methanator boilers, steam super-heater, steam drum, riser and down-comer piping. These projects required thermal and mechanical design, procurement, manufacturing, inspection and testing, and installation of all equipment plus the interconnecting piping between steam drum and boilers. These projects required precise calculations for riser and down-comer piping between waste heat and methanator boilers and steam drum to ensure code compliance, and it had to evaluate piping systems for operating loads and wind and seismic loads.

VISUALIZING FOR QUICK ALTERATIONS WITH CAESAR II

To address these complex system design challenges, Larsen & Toubro chose CAESAR II® because of its ease of use, capabilities and universal acceptance. "With CAESAR II we were able to access and modify the input elements element by element, allowing for quick alterations that helped us take multiple runs and



optimize the design,” explained Sachin Khanderajuri, assistant manager at L&T HE. “The software’s animation capability helped us understand the behavior of the system for each load case and take corrective measures if necessary.” L&T HE used CAESAR II to check the complex system for different load combinations and ensure an optimum design. “The user-definable CAESAR II software reports were very clear and accurate,” Khanderajuri added.



The ease of use and quick iterations with CAESAR II in our projects has reduced the design cycle time substantially.

REDUCING DESIGN CYCLE TIMES WITH CAESAR II

The graphical user interface of CAESAR II allows L&T HE’s engineers to learn, understand, implement, and deliver the results quickly. L&T HE uses Intergraph CAESAR II stress analysis and piping flexibility calculations for new piping systems and to address code compliance and fitness for service evaluation for existing piping systems. “The ease of use and quick iterations with CAESAR II in our projects has reduced the design cycle time substantially,” concluded Khanderajuri.

ABOUT HEXAGON

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon’s PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build, and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 3.8bn EUR. Learn more at [hexagon.com](https://www.hexagon.com) and follow us @HexagonAB.