CASE STUDY

Larsen & Toubro Heavy Engineering designs complex refinery with Octave Aspect Pressure Vessel

Key facts:

Company: Larsen & Toubro Heavy Engineering

Website: www.larsentoubro.com/heavy-engineering

Industry: Oil & Gas

Country: Oman

Octave products used: Aspect Pressure Vessel *(PV Elite)*

EPC completes large diameter, high pressure columns under tight deadline for Oman project

Larsen & Toubro Heavy Engineering (L&T) manufactures and supplies custom-designed equipment and critical piping to process industries such as fertilizer, chemical, refinery, petrochemical and oil and gas, as well as to sectors such as thermal and nuclear power, aerospace and defense.

Identifying goals

L&T was assigned the design and manufacture of five large-diameter, high-pressure columns for a refinery facility in Liwa, Oman. The project required complete mechanical design and fabrication per ASME Sec VIII Division 1 and 2 codes and included the nozzles, platforms, internal components, pipe loading, and other elements. The columns had diameters ranging from 2.9 meters to 4.5 meters and lengths of 26 meters and 30 meters.

The company has extensive experience in the design and manufacturing of critical process equipment, including pressure vessels. It is challenging to design such large-sized columns – the heart of the entire refinery – while addressing the many design conditions of the client and following the international code requirements to ensure safe operation. In addition, the contract delivery date was very stringent.

Overcoming challenges

“With a project of such large size and complexity in design, Aspect Pressure Vessel helped us to efficiently resolve various calculations and double-check possible conditions for our client,” said Apurva Patel, mechanical manager of static engineering at L&T.

Meeting deadlines is very important for manufacturers if they are to satisfy the client’s requirements and build trust for future business opportunities.

“Without Aspect Pressure Vessel, we would have experienced delays at the start of the project that would impact the whole subsequent manufacturing cycle time due,” said Patel.

Key benefits:

- Expedited design reviews with 3D model to save time
- Handled many nozzles, platforms, internals and pipe loading, along with many code design conditions
- Performed fast calculations and better controlled revisions
- Checked for any clashes with 3D capabilities to finalize locations of nozzles to accommodate piping requirements

"Aspect Pressure Vessel helps to enhance the firm's reputation with clients across the globe."

Apurva Patel
Assistant manager of Engineering, L&T

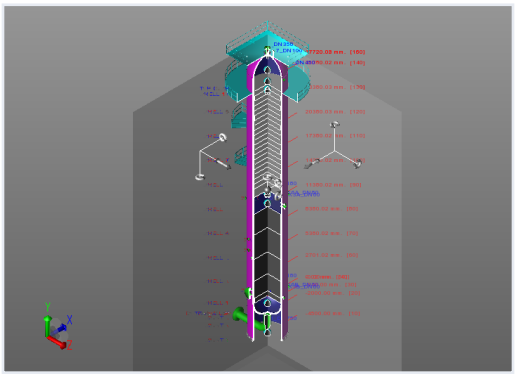
This would cause a loss of money and lower the level of trust of the client in the firm's capabilities. The large complex design benefited from the Aspect Pressure Vessel 3D model, which allowed for checking for clashes and other issues before preparing the drawings. L&T could then finalize the locations of nozzles to accommodate piping requirements.

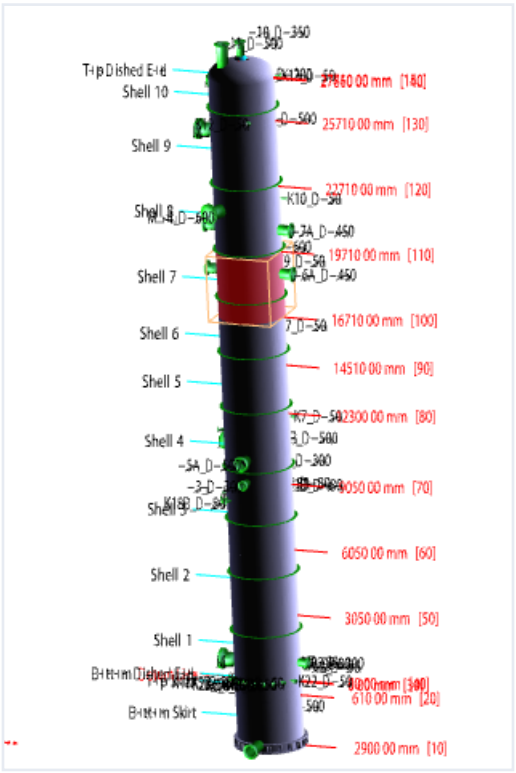
Realizing results

L&T designed complete equipment with all related design conditions and represented supporting calculations for review by the client and any third-party inspectors assigned to that task. With Aspect Pressure Vessel, L&T was able to deliver client requirements within the planned timeline and receive the milestone payments from the client as scheduled.

Aspect Pressure Vessel provided fast and convenient calculations and control of the various revisions required by the client, saving time and expense. The company was able to reduce design time with Aspect Pressure Vessel's user-friendly interface and accurate output.

"The software's 3D PDF feature impressed the client. This enabled our client to feel and understand the complete design package," Patel said.





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About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property and assets – for any scope, at any scale. For decades, we've partnered with customers to sharpen performance, elevate efficiency and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what's possible from day one onward.

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