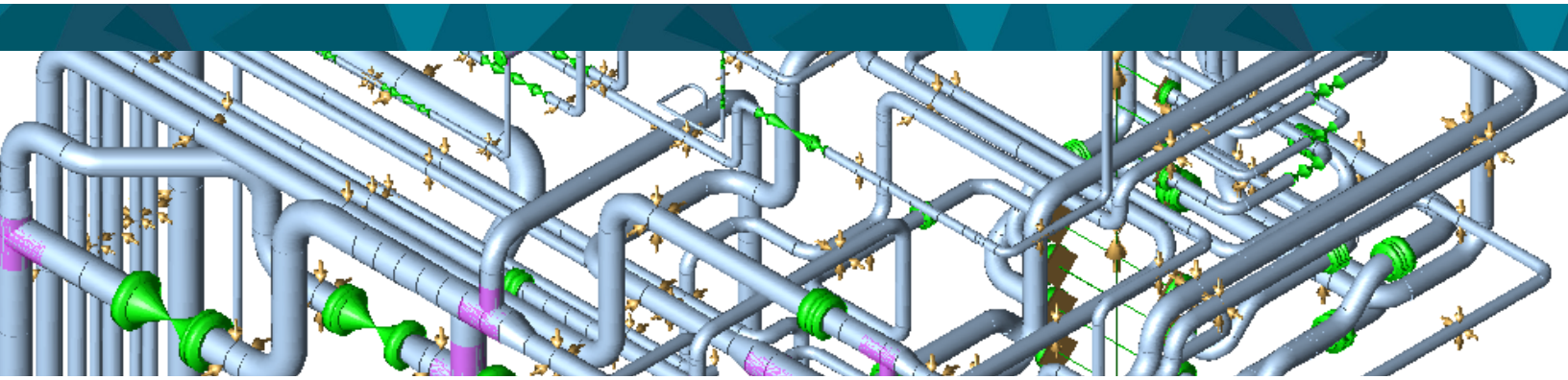
HEXAGON
PPM

CASE STUDY



L&T-VALDEL ENGINEERING LTD., INDIA

Key Facts

Company: L&T-Valdel Engineering Ltd.

Website: www.lntvaldel.com

Industry: Offshore

Country: India

Products Used:
CAESAR II®

Key Benefits:

- Analyzed 150 load cases per piping system
- Streamlined design updates with compatibility and automation
- Reduced labor hours by 80 percent on slug force calculations

L&T-VALDEL SUCCEEDS ON OFFSHORE LOADING FACILITY WITH CAESAR II®

EPC resolves complex stress conditions in rotating design

L&T-Valdel Engineering Ltd. (LTV) provides engineering services for oil and gas projects including wellhead and process platforms, floating production storage and offloading (FPSO) facilities, pipeline systems, and drilling rigs. The company's 600 engineers and designers are located in Bengalore and Chennai in India and in the UAE.

IDENTIFYING GOALS

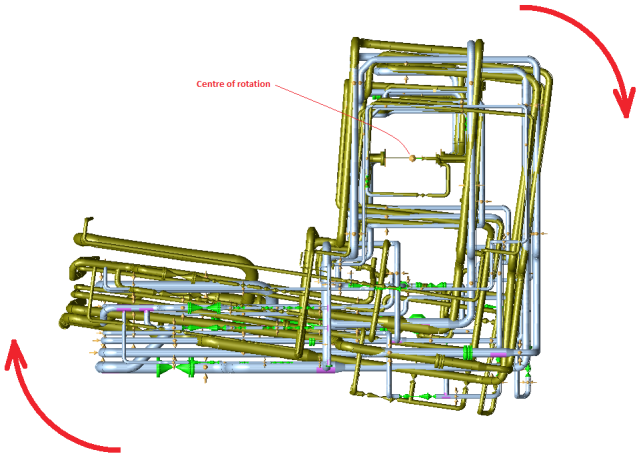
LTV was awarded a subcontract to design internal turrets for two offshore floating production storage and offloading (FPSO) facilities. Each turret system includes a 28-meter diameter geo-stationary turntable and a turret access structure (TAS) that revolves around the turntable to enable weathervaning.

The facility has 14,000 meters of piping with diameters of 0.75 to 24 NPS and a thickness of up to 40 mm. The lift weight capacity is 3,300 metric tons for each turntable and 1,500 metric tons for each TAS. The project budget was for 120,000 labor hours.

OVERCOMING CHALLENGES

Swivel stack equipment enables the transfer of crude oil between these two independent structures that are rotating with respect to one other. It has fixed inlet nozzles and revolving outlet swivel nozzles that align with the TAS.

This unique swivel design requires calculating every pipe support position to reduce nozzle loads. The circular layout requires piping elbows with angles of 30, 45, 60, and 90 degrees, or an arbitrary angle in special cases.



The project required analyzing 150 load cases per piping system. These complexities would add time constraints for engineers and required optimizing of processes wherever possible.

Facing these challenges, LTV chose CAESAR II®.

“CAESAR II easily handled the large amount of displacements input, saving us significant time,” said Vikas Shivalingaiah, technologist at LTV.

“We saved more labor hours by using CAESAR II output to quickly identify mismatches between the stress results and pipe model, which enabled faster updates.”

REALIZING RESULTS

CAESAR II’s compatibility with other pipe modeling software enabled easy interfacing between teams.

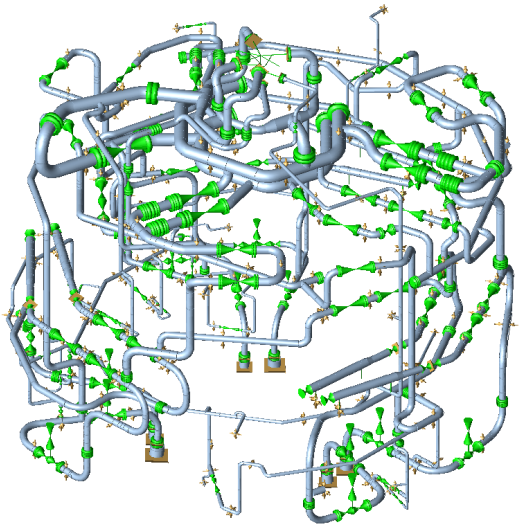
LTV saw 80 percent of labor hours saved on slug force calculations alone compared to manual methods. Productivity for the overall project improved significantly.

Without CAESAR II, LTV would have faced many more hours doing manual analysis and design, which would have caused schedule slippage and a less optimal piping design. CAESAR II eliminated manual work which reduced labor hours and paperwork, since all the data is passed to different interfaces digitally.

“We think that we have done an amazing job with CAESAR II,” Shivalingaiah added.

AWARD-WINNING PROJECT

LTV received the 2016 CAESAR II Drivers of Success Runner-Up Award for its use of the software. The annual Drivers of Success competition recognizes innovative applications of Hexagon PPM products, impressive project results, and significant benefits from collaboration among disciplines and the integration of the products.



ABOUT HEXAGON PPM

Hexagon PPM is the world’s leading provider of asset life cycle solutions for design, construction, and operation of industrial facilities. By transforming unstructured information into a smart digital asset, our clients are empowered to visualize, build, and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire life cycle.

PPM is part of Hexagon (Nasdaq Stockholm: HEXA B; hexagon.com), a leading global provider of information technology solutions that drive productivity and quality across geospatial and industrial landscapes.