CASE STUDY

Rishabh Engineering analyzes Octave Aspect Pipe Stress for large Brownfield refinery project

Key facts:

Company: Rishabh Engineering

Website: www.rishabheng.org

Industry: Oil & Gas

Country: United States

Octave products used: Aspect Pipe Stress *(CAESAR II*, Forte 3DWorx *(CADWorx Plant Professional),* Forte 3D *(Intergraph Smart 3D),* Forte Isogen *(Isogen)*

Headquartered in Vadodara, India, Rishabh Engineering (Rishabh) provides engineering services to global engineering, procurement and construction (EPC) companies, engineering contractors, original equipment manufacturers (OEMs), fabricators and surveying companies in the oil and gas, chemical, petrochemical, power, water/ waste water and utility industries.

Identifying goals

A major EPC firm selected Rishabh to provide pipe stress analyses for a large Louisiana refinery processing 250,000 barrels per day to produce gasoline, jet-A aviation fuel, low-sulfur diesel and anode grade coke.

The project's 100 systems included a heavy naphtha stripper hydrocracker unit operating at 120 psig and 600° F, a main fractionator operating at 120 psig and 700° F, the catalytic cracking unit, the alkylation unit and connected piping systems. The 100,000 feet of piping ranged up to 36 inches in diameter. The project involved 180 pieces of equipment and 52 load case combinations.



The brownfield project faced a tight schedule, resource constraints and challenges due to space restrictions and existing structures.

The contractor also required three major revisions in basic layouts plus frequent changes in specifications. The project required strict adherence to international standards, plus seamless and clear communication with the client.

Key benefits:

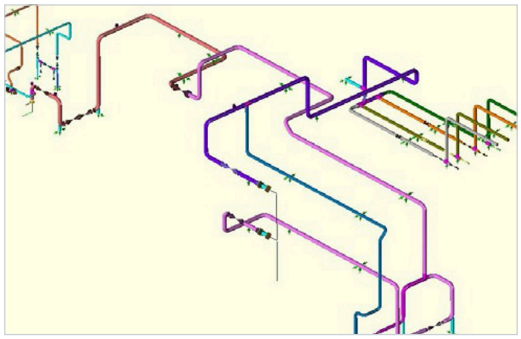
- Completed project under tight schedule and resource constraints
- Performed pipe stress analysis despite space constraints and existing structures
- Reduced modeling time by 75 percent
- Minimized documentation time by 7 percent.
- Cut overall man-hours by 22 percent

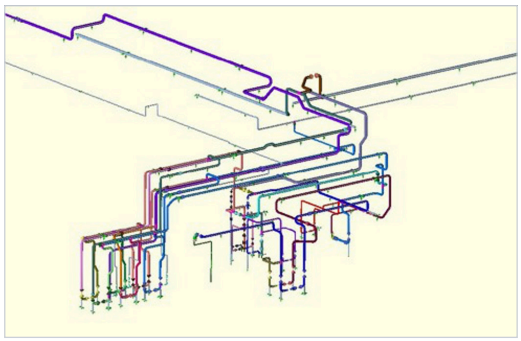
"By using Aspect Pipe Stress, we reduced overall work-hours by 22 percent from an initial projected 4,880 to 4,000 work-hours."

Arpit Gupta
Manager of Business Acquisition, Rishabh Engineering

Overcoming challenges

Rishabh used Aspect Pipe Stress with its comprehensive library of major international piping codes and ability to perform quick model revisions if a line fails during the analysis and output of comprehensive isometric drawings. The team used Forte 3DWorx to model the stress-critical systems then imported the model files into Aspect Pipe Stress for analyses, increasing productivity with this compatibility.





The system's piping required 50 supports and the 100 systems required 3,500 supports, with about 350 to 400 of them necessitating lift-off considerations, typically requiring a manual process.

Aspect Pipe Stress's intuitive Alternative Sustained Stress (Alt-SUS) case helped cut the required time by half. The engineers were also able to import the client's Forte 3D model into Aspect Pipe Stress. These compatibilities reduced modeling time by 75 percent.

Realizing Results

"Aspect Pipe Stress's built-in Isogen module helped designers extract isometrics and customize them in accordance to the client's templates," explained Arpit Gupta, manager of business acquisition at Rishabh.

The Isogen template also provided issued for construction (IFC) drawings, reducing remodeling time. This in turn significantly reduced documentation time by an estimated 7 percent.

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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