

3D Modeling & Piping Stress Analysis of Pressure Vessels

Key Features

Technology:

Hexagon CAESAR 2018

CADWorx 2018

Navisworks 2018

Duration:

The project was completed in a period of 7 weeks

Deliverables:

1. Piping Stress Analysis Report
2. CAESAR II Model

The Client

An engineering services provider engaged in pressure vessels & exchangers, design and analysis of piping components, cyclic services, linear and non-linear structural design & analysis for equipment supports, platforms, different structures, with structural modeling, CAD drawings, along with engineering & fabrication detail.

The Business Need

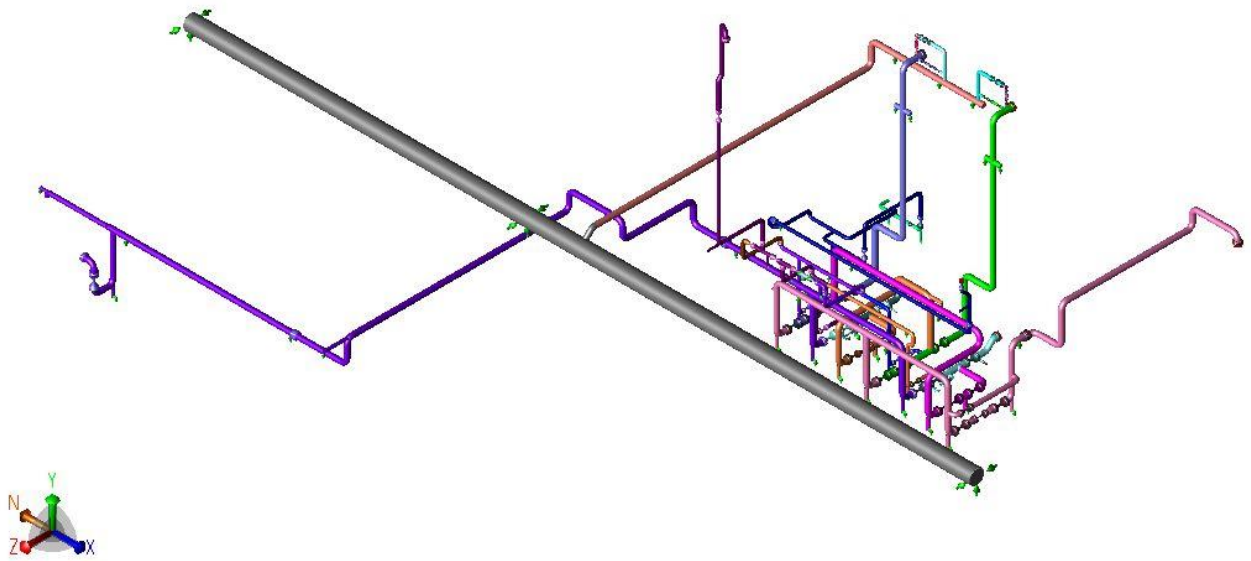
To develop 3D models on CAESAR II and conduct stress analysis for one of their ongoing projects.

Rishabh's Solution

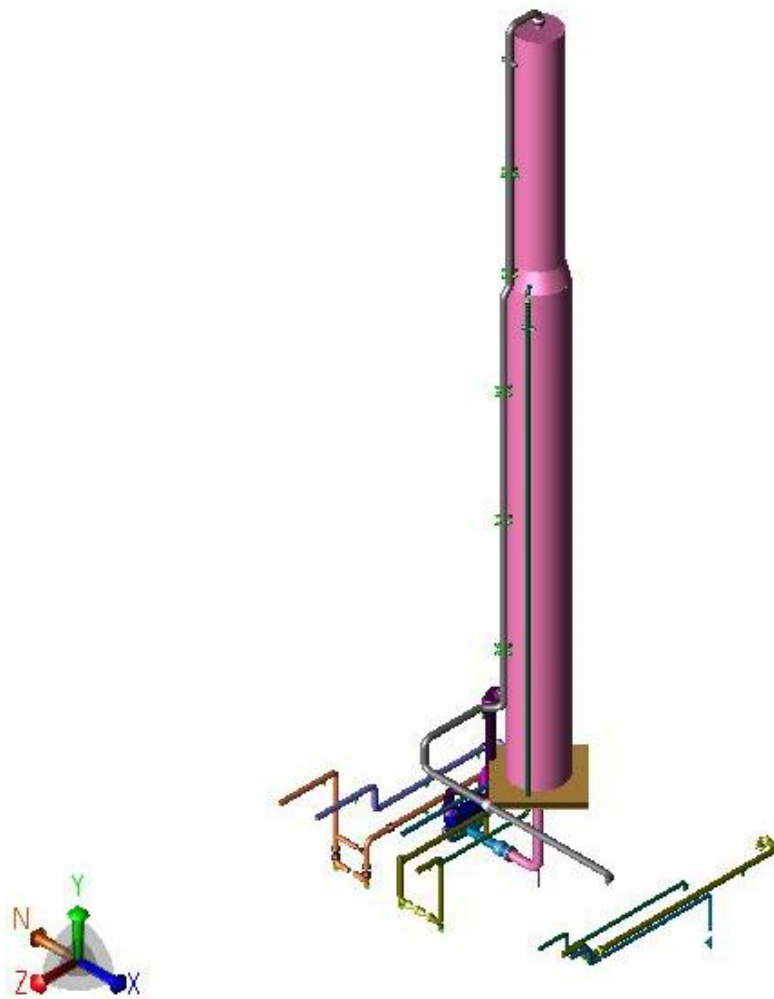
Rishabh Engineering was appointed to execute the 3D Modeling & Piping Stress Analysis for the end customer. We extracted the .CII file using CADWorx (as Hexagon owns both CAESAR & CADWorx tools) to avoid data loss during the file extraction. Initiated with debugging the CAESAR model, followed by fixing the broken links and the project ensured that the boundary condition matches with the CADWorx model.

The Model check on CAESAR II got completed in 7 weeks with 1 Stress Engineer, and with the below design parameters:

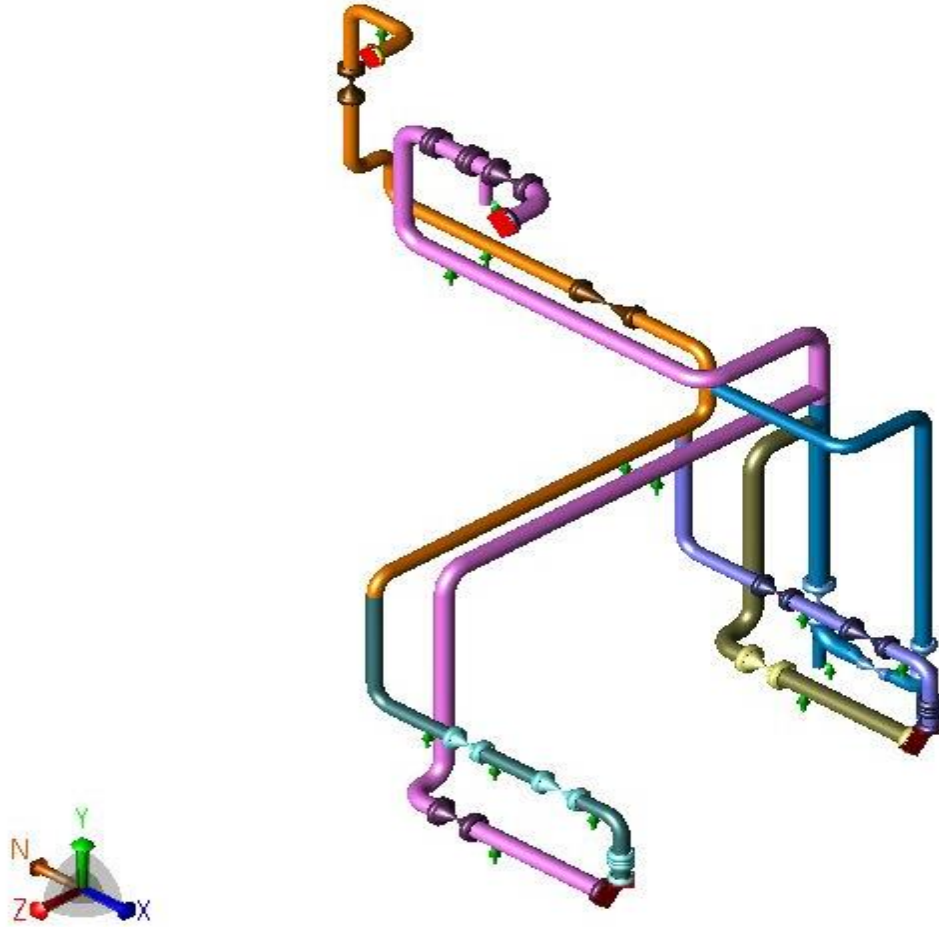
Parameter	Value
Total Piping Systems	5
Total Number of Lines	100
Max. Pipe Diameter	30"
Max. Temperature	350° F
Max. Pressure	350 psi



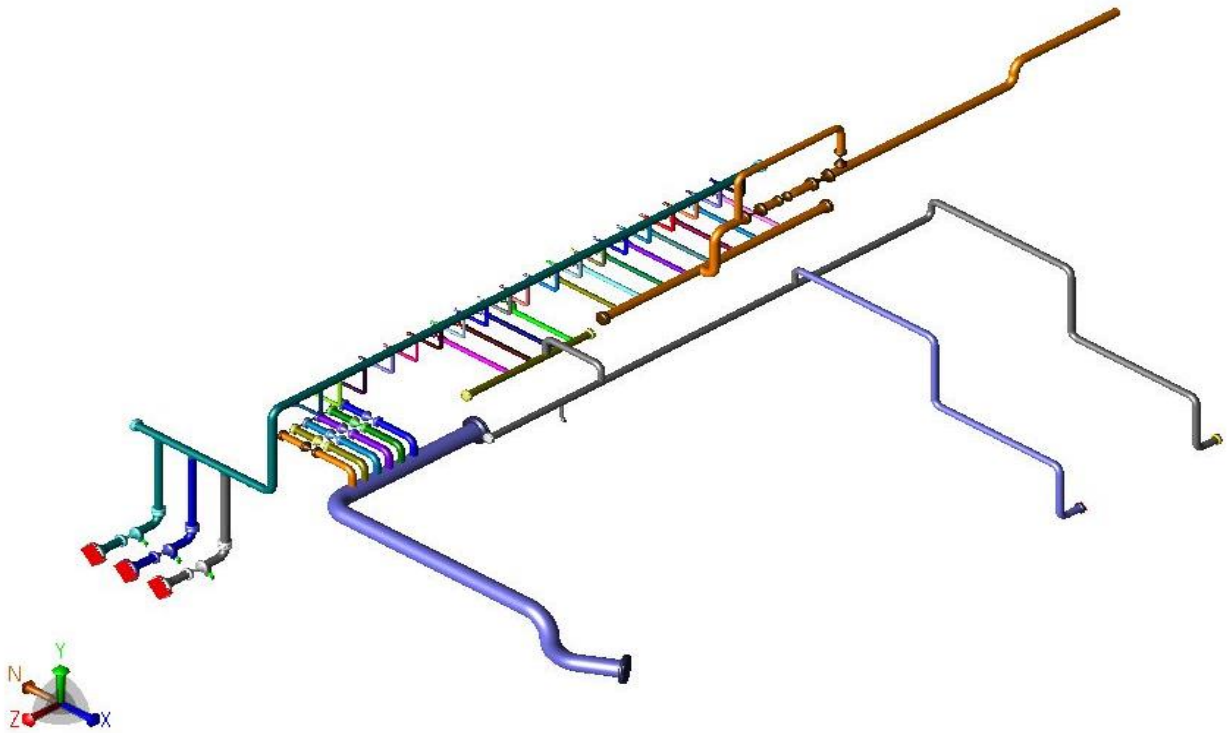
Model 1: FEED Area



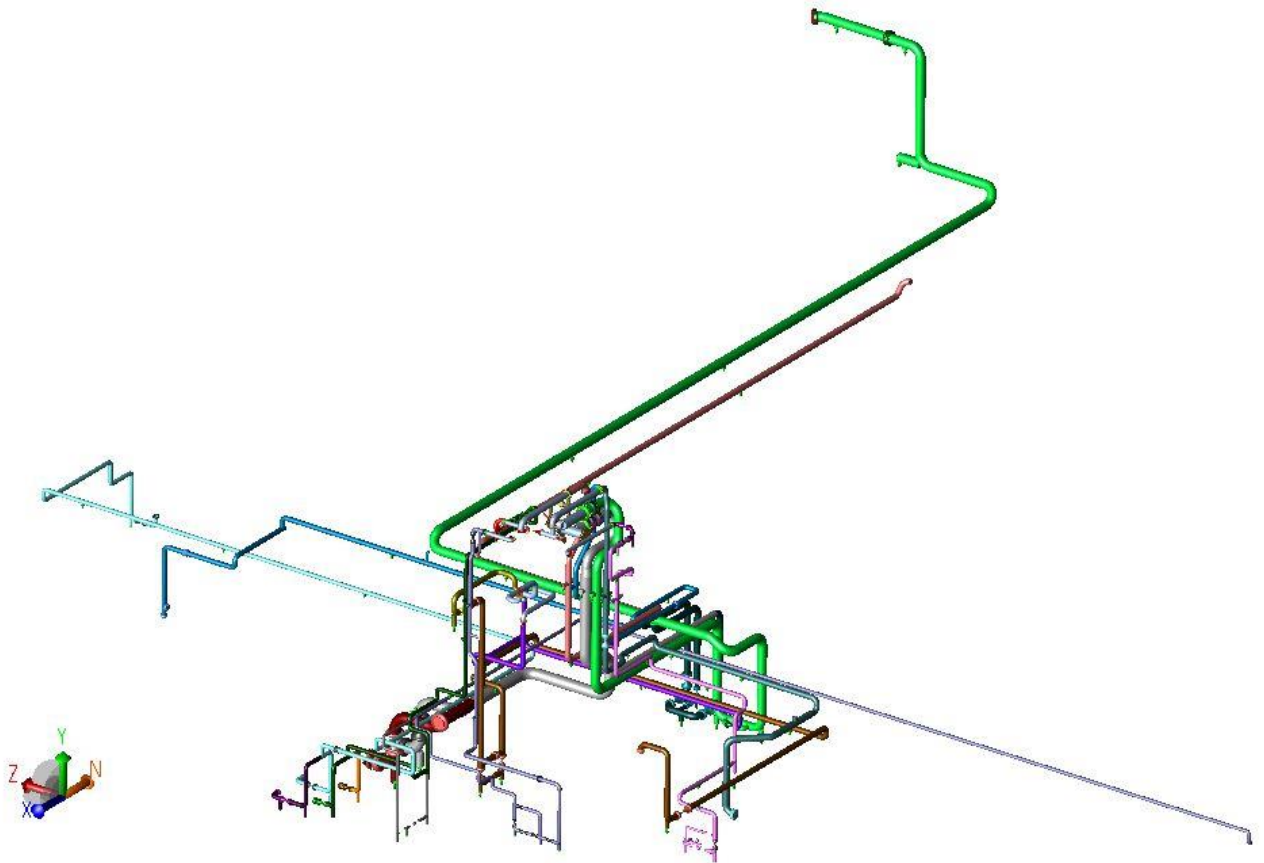
Model 2: Depropanizer Area



Model 3: Expander Generator



Model 4: WSAC Area



Model 5: Cold Box Area

Challenges & Approach

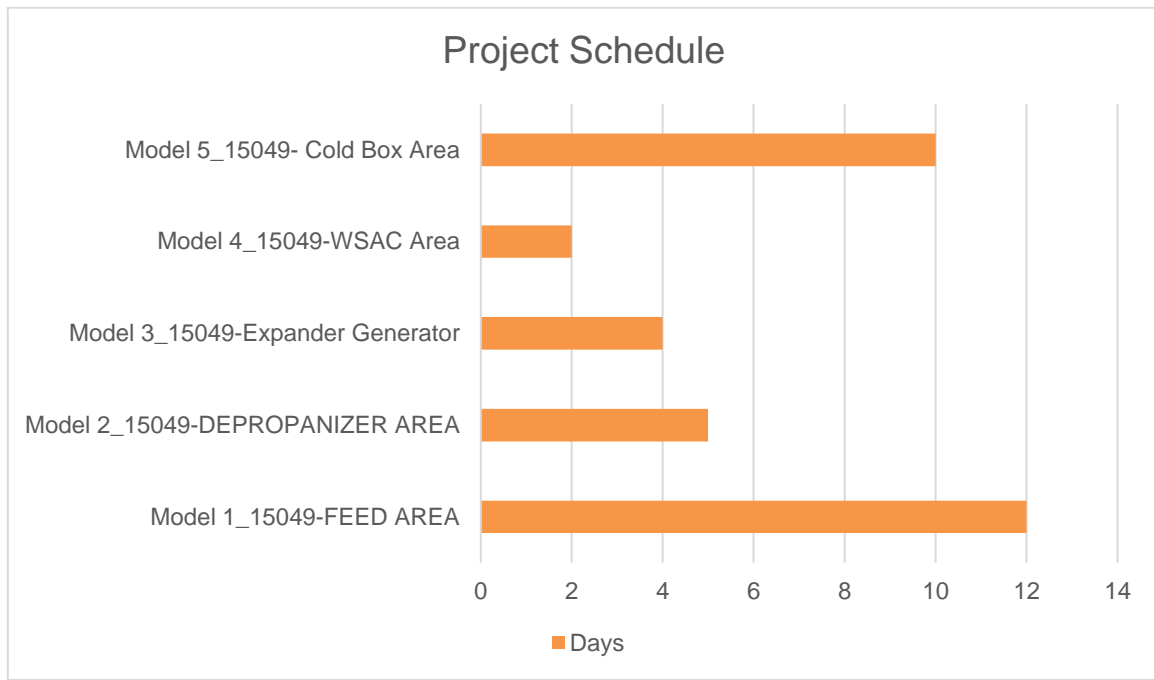
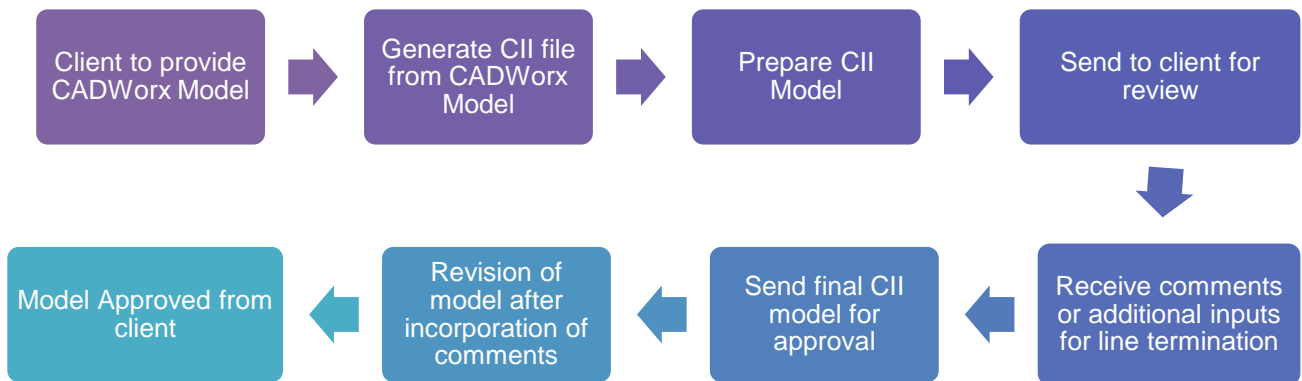
Technical Challenges:

- **Issue:** Logical support locations for some of the lines were not discoverable in the generated model.
- **Solution:** The Isometrics were generated using CADWorx, and support was provided as per the available dimensions in Isometrics.

Achievements:

- The C-II model generated from CADWorx software resulted in a 12% reduction on the estimated project time as compared to the model prepared from Isometrics or General Arrangement drawings.

Project Execution Methodology



Technology Used

- CAESAR-II 2018
- CADWorx 2018
- Navisworks 2018

Key Deliverables

- Piping Stress Analysis Report
- CAESAR II Model

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About Rishabh Engineering

Rishabh Engineering provides multidisciplinary engineering support services to EPC companies in industries like Oil and Gas, Petrochemical, Power and Water treatment. Our parent company, Rishabh Software is a CMMI level-3, ISO9001 and ISO27001 company that provides services in Software Development, Business Process Outsourcing (BPO) and Engineering Services Outsourcing (ESO) to clients globally. Rishabh has offices in USA, UK and India with their main delivery center in Vadodara, India.