CASE STUDY

Major oil and gas company enhances project delivery by leveraging Octave's Design Solutions

Key facts:

Industry: Oil and Gas

Country: India

Octave products used: Forte 3D *(Smart 3D)*, Forte Review *(Smart Review)*, Facets P&ID *(Smart P&ID)*, Facets Electrical *(Smart Electrical)*, Facets Instrumentation *(Smart Instrumentation)*, SmartPlant Foundation, Aspect Pipe Stress *(CAESAR II)*, Aspect Pressure Vessel *(PV Elite)*

Identifying goals

An internationally recognized design and engineering consultancy organization needed a comprehensive engineering solution suite that would enable a data-centric approach to engineering. The key goals for the company were to:

- Ensure project high-quality deliverables
- Meet project timelines
- Reduce rework
- Optimize costs

The company has executed several refineries, petrochemicals and oil and gas complexes in many countries across the globe. This case study discusses the Indian refinery project as well as the international oil refinery project in the Middle East.

Overcoming challenges

Key to successful project execution in both cases was the ability to optimize cost and engineering design efficiency, while ensuring that the projects would meet the strict deadlines mandated by the facility owners.

The company searched for a solution provider that could help them to:

- Generate intelligent and robust P&IDs
- Standardize and centralize engineering data management across different sites globally
- Enhance revision control when generating intelligent 3D models
- Allow for real-time clash-checking of designs to avoid rework
- Reuse designs between different departments and projects

Key benefits:

- Reduced the amount of rework needed due to the ability to do real-time clash-checks and having a single source of truth for engineering data
- Ability to reuse design data and models across different sites enabling efficient worksharing in large, global engineering projects
- Ensuring cost optimization by improving design efficiency
- Creation of a digital project library helps to quantify upcoming projects and drive cost optimization during the bidding process

These capabilities were key for the company when executing the detailed engineering for the greenfield project for an oil company in India. During this project, the company generated the required documents based on the basic engineering, including documentation for civil, mechanical, process and electrical engineering. Octave solutions were used to facilitate data reusability across different disciplines, as the various engineering departments collaborated throughout the project, having access to a centralized data repository.

Another example of Octave tools in action is the global oil refinery extension the company executed for an oil and gas onshore facility located in the Middle East. For this project, the company worked with project teams located in the Middle East and India. the company performed the detailed design for the project, using Octave solutions across the different sites. This was one of the first experiences they had in such a large multinational project execution having interoperability and integration as key challenges.

With the help of Octave solutions, the company was able to create P&IDs and 3D models intelligently and use the models across the different sites globally. The experience of global work sharing was successful, as the ability to share data while maintaining consistent version control and real-time clash-checking helped save time across the different sites significantly.

The detailed design phase was carried out smoothly with the support of Octave's Hydrabad and global development teams, who provided real-time support.

Realizing results

The company has 25+ years of experience in executing projects–from the very first 3D design suite to the latest versions of 3D analytics, schematics, as well as data management and integration solutions.

Octave solutions were chosen for some of these projects due to the software suite's outstanding capabilities, including data-centricity, ability for real-time clash-checking and overall efficiency improvements. The company used the following solutions:

- **Octave Facets P&ID:** The company used the solution to create intelligent piping and instrumentation diagrams across different sites. The solution is the preferred choice due to its capabilities: customizable and logical naming philosophy and control, the ability for global work-sharing and creating a single source of truth for P&ID data. It generates various reports which are useful for project execution for downstream activities.
- **Octave Forte 3D:** The solution enables global work-sharing across different sites, enabling the company to improve design safety and efficiency. Global work-sharing makes information available at different locations nearly at the same time, while ensuring necessary security and control.

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AGM-IT

The company was also especially impressed with the software's fast modeling capabilities, automated to-do-lists and ability to do real-time clash checking.

- **SmartPlant Foundation (SPF):** The company uses SPF as a centralized data warehouse, enabling a single source of truth for engineering information. This has enabled the company to improve data consistency and efficiency as no time is lost locating information.
- **Octave Aspect Pipe Stress and Octave Aspect Pressure Vessel:** The company uses Aspect Pipe Stress as a standardized tool and best practice solution for stress analysis. The company also uses Aspect Pressure Vessel for pressure vessel design.
- **Octave Facets Instrumentation:** The company uses Facets Instrumentation to generate, instrument indexes, loop diagrams and process data updates. The software's enhanced features of importing data in Excel, as well as the reporting functionality, are key features for the company.
- **Octave Forte Review:** The company uses Forte Review for interactively reviewing and analyzing large, complex 3D models of their projects. The ease-of-use and tag reporting capabilities, clash checks help to reduce risk and increase efficiency.

The ability to exchange data efficiently and without errors between different solutions has improved engineering efficiency across different projects.

Moving forward

During the collaboration of more than twenty years, the company and Octave have worked together to improve the solution offering. For example, during these initial global projects, they noticed some issues with the reporting capabilities in Forte 3D's Material Take-Off reports. Based on their feedback, Octave's development team worked on debugging the reporting issue and derived a solution which could cut down the average report extraction time to less than an hour per report.

The company and Octave look forward to collaborate both globally and locally for upcoming projects. An AGM-IT at the company, said: "We have a long history with Octave: Over 20+ years of experience using the wide range of Octave's software, including engineering, design, analysis and information management solutions. This shows that Octave products have abundant potential to serve the needs of the engineering industry when it comes to generating quality output with maximized efficiency, while saving time and cost."

The ability to exchange data efficiently and without errors between different solutions has improved the company's engineering efficiency across projects. With the help of Octave solutions, the company was able to create P&IDs and 3D models intelligently and use the models across the different sites globally.

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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