CASE STUDY

Technip Energies enhances Brownfield project execution with Octave solutions

Key facts:

Company: Technip Energies

Website: TechnipEnergies.com

Industry: Energy

Country: France

Octave products used: Intergraph Smart Laser Data Manager, Forte Review *(Intergraph Smart Review)*, Forte 3D *(Intergraph Smart 3D)*, Leica JetStream

Technip Energies is a global leader in subsea, onshore, offshore, and surface technologies with 37,000 employees across 48 different countries.

Identifying goals

Technip Energies, a global leader in subsea, onshore, offshore, and surface technologies, was awarded a contract to execute a revamp project for an oil refinery in Senegal. The project scope included an upgrade of the existing facility to improve the yearly production capacity. For this objective, Technip Energies' mission was to analyze and assess the existing facility and develop a plan to achieve the new production goals. This could have been done either by replacing existing equipments or by building a completely new area within the facility.

After the initial assessment, Technip Energies set the project's key objectives of increasing the refinery's productivity by 30% and adapting it to the Senegalese crude processing.

To achieve these objectives which would ultimately allow to increase the client's competitiveness within the Senegalese oil market, Technip Energies opted for the construction of a new preflash crude unit within the facility and its connection to the existing plant, while revamping the existing reformer unit by replacing some of the older parts with new equipment. An additional challenging goal was to optimize specific measurement tools such as laser scanning and point cloud data technologies for improved efficiency and productivity.

Overcoming challenges

The key challenge of the project was the complexity and size of the point cloud created during the laser scan of the existing facility. While Technip Energies has significant experience working with laser surveying technology, it had previously experienced problems when working with the point cloud data. Files were often too big for the designers to work with, causing a lot of wasted time during the design process.

Realizing results

The first step of the project was to execute a laser scan of the existing refinery to capture the as-built status of the facility, and to acquire the point cloud from the refinery. Technip Energies contracted another engineering company for this preliminary step. Scans of the refinery were taken, within a one week period, to capture all the equipment, lines, specifications, pipes and pipe connections. The sub-contractor cleaned the original point cloud files to ensure that only the necessary points were included before sending the files over to Technip Energies.

The unified point cloud was first captured in E57 format. After the capture, the point cloud data was converted by Technip Energies from E57 to JetStream format using Smart Laser Data Manager.

Key benefits:

- Improved work process due to software integration and ease of use
- High quality documentation quickly produced from the as-built model
- Increased efficiency due to faster point cloud data management and review

"We have witnessed clear time savings– the time needed to upload a point cloud went from around 15 minutes to a few seconds, providing unparalleled improvement in design efficiency."

Thomas Kerjouan
Project Information & Tools Domain Department Manager, Technip Energies

When in JetStream, the software loaded and fully rendered the entire point cloud instantly, providing accurate and informed modelling with no need to decimate data at the cost of reliability. The point cloud was then cross-checked against the plot plan to ensure accuracy.

The JetStream model allowed to ease the design team work, and helped solve the issue of accuracy – previously, the design team might not have opted for the point cloud data as it was too time consuming and very slow to upload and check. With the lighter and faster approach, the design teams were able to use the captured data to improve the accuracy of the design. This in turn improved the overall project efficiency and lowered costs, as onsite work and last-minute changes were minimized due to the design matching the as-built situation, and clashes being resolved during the design process.

In practice, the design team used the point cloud to first remodel the existing equipment and the lines connecting the new and old equipment using Forte 3D. The point cloud data was displayed inside the Forte 3D environment so that the lines designed inside the existing unit would match the new designs.

Forte 3D was used during the project to:

- Get accurate tie-in locations
- Avoid clashes with existing items when creating new plant designs
- Enable the 3D designer to visualise space requirements
- Build accurate 3D models for the new scope and extract deliverables and quantities
- Check the existing 3D models of the current facility for accuracy and completeness

The point cloud data was then used during the review process with the client to see the process of the project, and to compare models to ensure that no clashes were remaining.

Octave was chosen for the project due to their unparalleled performance, integration and efficiency. The integration between the laser surveying software from Leica and the Smart Laser Data Manager made it easy and fast to use point cloud data and manage licenses. The key reason was the improved efficiency – taking up to 15 minutes to upload and view point cloud data, the new solution brought the time down to a few seconds per file.

Moving forward

As a long-term Octave client, Technip Energies has been using Forte 3D and Octave solutions in the past and will consider the Smart Laser Data Manager solutions in its upcoming similar Brownfield projects.

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.