CASE STUDY

Welcron Hantec uses Octave design solutions to deliver pilot biomass plant

Key facts:

Company: Welcron Hantec

Website: www.hantec.co.kr

Industry: Power & Utilities

Country: Korea

Octave products used: Forte 3DWorx *(CADWorx Plant Professional),* Facets P&IDWorx *(CADWorx P&ID Professional)*

Key benefits:

- Significant reduction of work hours through the automatic generation of deliverables
- Minimization of duplicated activity such as the creation of bills of materials based on P&IDs and isometric drawings
- Reduction of human error due to manual checking

Established in 1994, Welcron Hantec Co., Ltd (Welcron Hantec) is a Korean engineering and manufacturing company, specializing in food and pharmaceutical plants, energy saving thermal plants and environmental plants.

The company's line of business also includes green technologies, such as renewable energy, fresh water treatment and desalination plants. One of its focuses is on promoting its capabilities in the delivery of biomass power plants, as well as biodiesel and bioethanol plants.

Identifying goals

Welcron Hantec recently won a significant contract to perform the design, manufacturing, transportation, installation and commissioning of one process in a 300TPA pilot biomass plant, which will later be scaled up to a 150,000TPA commercial-size plant. The pilot plant is required to perform many of the same processes as the commercial plant, but on a smaller scale.

The plant owner set a significant challenge for Welcron Hantec. In the technical meeting prior to the awarding of the contract, the owner demanded the project be completed in five months. As the shipping date had been fixed, and they spent two months in the request for quotation process, all deliverables were required within three months – from piping and instrumentation drawings (P&IDs) approved for design, right through to delivery to the port transport facility.

On its own, the first stage of the project (productions of documents such as P&IDs, layouts, pipe plans, general arrangement drawings and instrument lists) needed to be completed within one week after the kickoff meeting, a dramatic reduction in schedule from the at least one month it would usually take.

Given these requirements, it was clear to Welcron Hantec staff that its existing AutoCAD® software would not be sufficient to complete this project in the required timeframe. They looked to other solutions on the market for an answer to this issue.

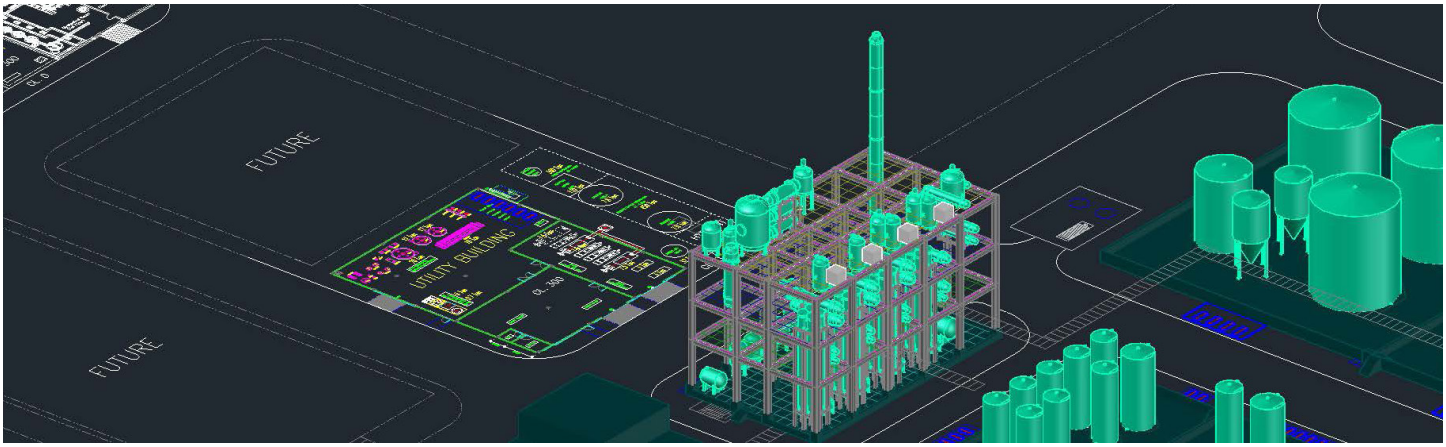
Overcoming challenges

After evaluating a number of competitive design solutions tailored to the small-to-medium sized plant market, Welcron Hantec selected the following products from the Octave's Forte 3DWorx design suite:

- Forte 3DWorx, a complete set of tools for efficient 3D plant design
- Facets P&IDWorx, which enables the creation of fully intelligent P&IDs

"As Forte 3DWorx is AutoCAD-based, we knew it would be easy for us to learn. This was very important given the compressed project timeframe, because Forte 3DWorx-trained staff can teach new staff very quickly in order to get them up-and-running on a project," said Welcron Hantec's chief engineer, Sahnghyun Cho. "The bi-directional links between the solutions were also a key factor in our decision, ensuring that drawings and databases are continuously in synch. "Overall, Forte 3DWorx represented excellent value-for-money."

After just one week of implementation, Welcron Hantec staff were ready to tackle the biomass pilot plant project with Forte 3DWorx.



Realizing results

Overall, Welcron Hantec noted a range of benefits after implementing Forte 3DWorx, each of which helped the company to meet its goal of producing all deliverables in three months instead of five. These benefits included a significant reduction of work hours through the automatic generation of deliverables, minimization of duplicated activity such as the creation of bills of materials based on P&IDs and isometric drawings and the reduction of human error due to manual checking.

Forte 3DWorx – specific benefits and results

1. Welcron Hantec's original estimate of the work hours required to produce the isometrics, layouts, section views and pipe plan drawings for this project was eight weeks from the equipment layout except steel structure design. Forte 3DWorx was able to produce them in two days, including the design of steel structures and the production of loading data which usually takes two weeks by the collaboration with structure company. This reduced the time to create a basic structure, including the location of individual equipment, in a 3D model.
2. Because Forte 3DWorx and Facets P&IDWorx share a database, the bill of materials (BOM) for piping was created in less than the two days typically required when 2D drawing processes are applied. "An error-free BOM was also a bonus," added Cho.

Facets P&IDWorx – specific benefits and results

1. The P&IDs produced by AutoCAD are not "intelligent" – which means the data required to provide the project owner with a quotation and budget estimate is extracted manually. Welcron Hantec estimates that the intelligent P&IDs produced by Facets P&IDWorx have saved it a minimum of half a day per P&ID drawing page – items such as BOM for valves, equipment/pipe/valve tag number check and double-checking.
2. The company saved half of one work hour for each P&ID modification if revision works such as numbering checks, BOM modifications, valve/nozzle checks and pipe fitting checks were performed simultaneously. "Previously, when we were performing these checks manually, many mistakes occurred and we required at least one work day to correct three pages of P&ID drawings and related documents," said Cho.

Moving forward

Welcron Hantec is already applying the Octave design solutions and new methodologies to another biodiesel plant project, located in China.

"We have been very impressed by the functionality of the Forte 3DWorx design suite, and the results they have provided," said Cho. "In the future, we hope to make Forte 3DWorx design suite the company standard across Welcron Hantec, which will ensure we are getting the best results on all active 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.

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