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Schedule-driven design



GAS TRANSMISSION STATION BUILT IN RECORD TIME

WORKFLOW AUTOMATION INCREASES PRODUCTIVITY AND SAVES DESIGN TIME.

THE THAI MULTINATIONAL energy company, PTT Public Company Limited (PTT), is a state-owned oil and gas company that was established in 1978. It is one of the largest corporations in Thailand and is also the only Thai company that is ranked in the top 100 list of Fortune's Global 500 companies. PTT owns extensive submarine gas pipelines in Thailand, runs a network of Liquefied Petroleum Gas (LPG) terminals throughout the country, and also connects with various gas pipelines in the Gulf of Thailand. Its primary mission is to accelerate the supply of adequate oil for domestic consumption.

PTT's engineering team was assigned to design a gas transmission pipeline Block Valve Station called BV12. The station controls and measures the supply of natural gas to South Bangkok Power Plant. Its main objective is to ensure that the gas dispatch is consistent and safe and is conducted accurately.

Lertrit Sabpipatana (Pete), engineer in the Academy and Information Division of PTT Limited, said, "Our mission was to design an efficient plant which adhered to highest safety standards. Along with it, we also have to maintain our company's image of being an environmentally friendly and socially responsible organization."

With this brief, and a strict timeline to complete the project, the marketing and engineering departments at PTT came together to conceptualize and work on the design ideas. Considering the project size, critical nature of the project, and the need for operational efficiency, the team decided to adopt Autodesk Plant Design software for this project.

"With just 12 months to complete the BV12 project, it was crucial that we work efficiently while reducing downtime errors," Pete said. "By using Autodesk Plant Design Suite, we were able to be more competent and efficient, ensuring that every gas pipeline laid was in accordance to stringent safety regulations. We have greatly benefitted from adopting these solutions and have achieved tremendous savings in terms of time and costs."

Saving design time

Autodesk Plant's intuitive user interface allowed the project team to maximize efficiency in the design processes. This allowed them to better manage their efforts and resources, and ensure all project requirements were met.

Since most engineering departments in public and private organizations in Thailand use Autodesk solutions extensively, the familiarity of the software enabled the PTT team to work with partners seamlessly in sharing and reviewing drawings. PTT uses Autodesk Plant Design Suite Premium, which includes AutoCAD P&ID, AutoCAD Plant 3D, and Autodesk Navisworks Simulate.



PTT's engineering team designed a gas transmission pipeline Block Valve Station that controls and measures the supply of natural gas to South Bangkok Power Plant.

Key benefits included ease and precision in design, with the ability to create and update the drawing and engineering documents and to develop piping bill of material. The team saved more than 50 percent of its design time and saw a significant reduction in manpower requirements of about 40 percent, as many aspects of the project workflow were automated within the software.

"We have benefited greatly from the intelligent AutoCAD P&ID drawings, piping isometric, and general arrangement drawings for BV12. Previously, we had to create all these drawings separately, which was extremely time-consuming and would require extra manpower from the team. Using the precise drawings and bill of materials generated from AutoCAD Plant 3D, any construction or modification is now done easily and accurately," Pete said.

Comprehensive plant design and a 3D model have helped BV12 internal stakeholders such as operation and maintenance, procurement, and safety and security divisions to be more operationally efficient. "With precise 3D model drawings and Navisworks Simulate Software, construction and modifications are done more easily and accurately," Pete said. "Furthermore, using this software can generate piping and equipment lists automatically. This allows us to plan our emergency response procedures more efficiently. Our piping and equipment maintenance and procurement division also benefited as this allowed them to operate more cohesively."

For the BV12 project, PTT achieved a 65-percent increase in human productivity, resulting in major cost savings and better utilization of resources. The company had initially provisioned three draftsmen for the project. With the adoption of Autodesk Plant Design Suite, the team could automate many workflow processes using one draftsman to complete the required work without compromising on the quality of output.

"Design technology definitely poses a clear advantage, and we expect to see more companies start to adopt it more extensively throughout their projects," Pete said.

Information provided by Autodesk (www.autodesk.com).