ENG reduces MEP modeling with Edgewise in huge gas reservoir BIM project

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Edgewise was 30% Faster than Manual Modeling

ENG expedited a huge, complex scan-to-6D BIM project for a large gas reservoir by automating the MEP modeling. The team used ClearEdge3D's EdgeWise as-built modeling platform to model the facility's complex piping automatically. The results were accurate enough that they required only basic clean up, connection, and QA before adding to the high-quality Revit model.

The Project: Jackson Prairie Underground Gas Storage Facility

The staggering 200,000 sq ft facility in the northwestern USA holds over 44 billion cubic feet of natural gas, making it the 14th largest in the whole country. Since its certification in 1970, the site has undergone multiple expansions and renovations. But virtually all of these changes were undocumented. That meant existing as-built was extremely out of date.

The facility's co-owner and operator, Pudget Sound Energy, needed to generate a current model that they could use for applications like FM, regulation, and inspection. They called on ENG, one of the largest BIM services providers in the US, to generate a high-detail BIM model.

The Challenge:

Minimal existing documentation, high complexity

The team was not able to work with the small amount of existing documentation, since it was often hand drawn, incomplete, or just poor quality. Rain is common in Washington State, so the scanning technicians faced numerous delays due to bad weather. And the facility had a significant number of unique features like valves that couldn't be quickly modeled in Revit. That meant ENG would need to perform extensive custom modeling work.

On top of that, ENG faced a short timeline. The final model was due just one month after scanning. The team knew they needed to speed up the modeling process for this complex job however possible, while still producing at the necessary standards and LOD.

The Solution:

A coordinated delivery strategy and automatic modeling

They set out to build the model by combining a smart delivery strategy with automated modeling software. ENG used five teams to perform tightly coordinated modeling work, with one focused specifically on the use of ClearEdge3D's EdgeWise.

This tool processes point cloud data to generate accurate models of elements such as pipes, ducts, walls, conduit, and other elements automatically. It would enable them to expedite the process of modeling the site's extensive MEP, greatly reducing the processing time compared to manual workflows.

The Workflow:

Terrestrial scanning, EdgeWise, Revit, and manual QA

ENG captured the site with Trimble terrestrial laser scanners and post-processed the point clouds in RealWorks. They output structured RCP files for EdgeWise, where they modeled the MEP automatically, and then performed basic manual cleanup to remove unwanted data.

Next they passed that data to another team that finalized the MEP as they performed the overall architectural modeling for the BIM model. They used the EdgeWise Easy Connect tool to connect pipes and clean up fragments, then exported the data to an empty Revit file. There, they checked for false positives and ensured that all pipes and fittings were in the correct families before sending to the final model.

Meanwhile, to keep the project moving along quickly, ENG's other teams performed a variety of tasks. They modeled custom elements, added facilities data to the BIM, and performed stringent QA/QC using CloudCompare and visual inspection.

The Results:

EdgeWise modeled MEP 30% faster

With its smart automation, the EdgeWise team processed the MEP for each zone in only 3 hours. That added up to a time savings of 30% over other methods. ENG says that if the team were to perform the same work today, they believe that updates and improvements to EdgeWise mean they could do the same automatic modeling work even faster.

The Conclusion:

ENG met its tight deadline while maintaining standards

The firm was able to work fast using automated modeling tools like EdgeWise and a delivery structure built around multiple project teams. The met the customer's deadline and produced a 6D BIM suitable for a variety of applications, and did so at an incredible LOD 500.

"We were able to reduce our modeling production for the pipes by 30%. And that was great, because we were on a tight deadline. EdgeWise helped us a lot."

To learn more or request a software demonstration, visit clearedge3d.com or contact us at **sales@clearedge3d.com or +1 866.944.8210**