COMPANY
Rishabh Engineering Services

LOCATION
Vadodara, INDIA

SOFTWARE
Autodesk® AutoCAD® Plant 3D
Autodesk® Navisworks®

Rishabh Engineering Services (RES) successfully delivers Intelligent 3D Model

AutoCAD 3D and NAVISWORKS help Rishabh Engineering Services create 3D model for Utility Piping of Boiler House.

"It was a complex project and we had to adhere to a deadline. As the project was meant for a boiler house, it lacked open space which created a restriction for the lay out and sizes, the plot plans were also not defined. This made the project different from any other industrial project,"

—**Arpit Gupta**
ENGINEERING BUSINESS DEVELOPMENT MANAGER,
Rishabh Engineering Services.

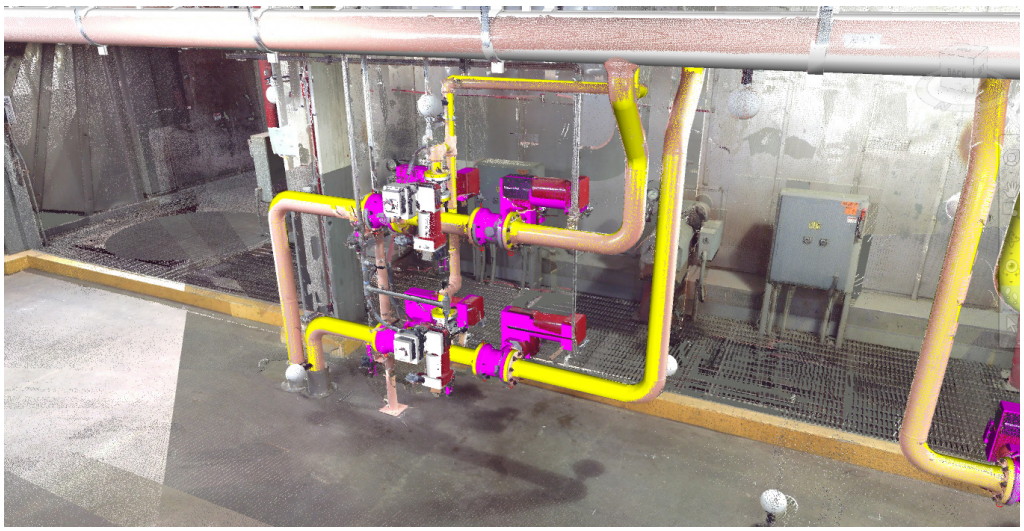


Image courtesy: Rishabh Engineering Services

Rishabh Engineering Services (RES), a division of Rishabh Software, is a multi-discipline engineering services company established in 2006 in Vadodara, Gujarat. The company is one of the most sought after names when it comes to high quality engineering support solutions and caters to EPC leaders operating in Oil & Gas, Petrochemicals, Power, Fertilizers and Water/Wastewater industries across the globe. As a part of their service portfolio, RES offers multi-disciplinary engineering support services including engineering and stress analysis, design and detailing, 3D modeling, as-built documentation, design validity checks, model and drawing conversion.

The company has undertaken several unique and landmark projects, from gas processing plant to oil refineries, boiler plants to leading engineering and construction companies for the Owners/ Operators like Chevron, BASF, Shell, KOC, ADCO etc.

One such unique project that RES recently delivered was for an existing boiler plant, where the client, a US-based multi-discipline engineering firm with process, mechanical, structural, civil, material handling, electrical, instrumentation and controls engineers to cater clients in the areas of Energy, Oil & Gas, Material Handling, Industrial Plants etc. Client wanted to develop an intelligent 3D model using AutoCAD Plant 3D from the laser scanned data. The project was unique in various aspects.

The Project

3D Laser Scanning Point Cloud Data Conversion to Semi Intelligent 3D Model for Utility Piping of Boiler House

Rishabh Engineering Services took up this project of US-based multi-discipline engineering firm which has process, mechanical, structural, civil, material handling, electrical, instrumentation and controls engineers to serve clients in the areas of Energy, Material Handling, Industrial Plants etc. The firm conducts 3D laser scanning & filed surveys in the field of Oil & Gas, Process Plants, Mining, Industrial Plants and Utility sectors. They also offer services in structural, civil, mechanical, material handling, process, electrical, instrumentation and controls engineering and designing.

As the project was meant for a boiler house, it lacked open space which created a restriction for the lay out and sizes, the plot plans were also not defined. This made the project different from any other industrial project.

AUTODESK.

Using AutoCAD Plant 3D and Navisworks, RES was able to effectively create models with 99.9% accuracy fulfilling the quality parameters required by the client.

The process revolved around converting high definition scans into Semi Intelligent 3D models. Reverse Engineering and Point Cloud Data Conversion to Semi Intelligent 3D Model using AutoCAD Plant 3D from the laser scanned data generated through FARO Laser scanner for piping system of an existing boiler plant.

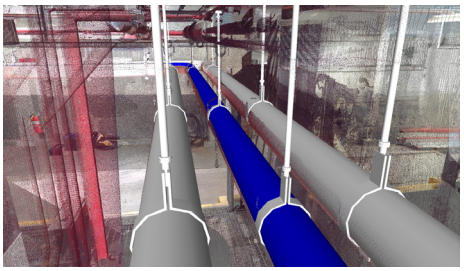


Image courtesy: Rishabh Engineering Services

Stepwise process:

- Received Inputs from client: Point cloud data (registered & stitched)
- Study of Inputs
- Semi Intelligent Modeling in KUBIT POINT SCENE PLANT
- Export the model into AutoCAD Plant 3D
- Clash detection & review for exact overlap of 3D Model over Point cloud data in Navisworks
- Creation of support library for support library
- Review of Final Semi-Intelligent 3D Model in Navisworks by overlapping it on point cloud data

Challenges faced

- Thorough understanding of the scans was very important to come up with the Semi-intelligent 3D model. Having the scans without having P&IDs (Piping & Instrumentation Diagrams) can lead to difficulty while relating the line or the equipment in such projects. The major challenge for the team was to view the scans clearly in order to create accurate Semi Intelligent 3D model
- Navisworks helped Rishabh a lot while reviewing the 3D Model on point cloud data through overlap function which ultimately led the company towards 99.99 % accuracy in 3D Model
- Navis Works also helped taking care of aspects like dimension measurements, Clash detection and interference checking etc
- Other challenges were keeping up with the schedule and quality

Autodesk effect

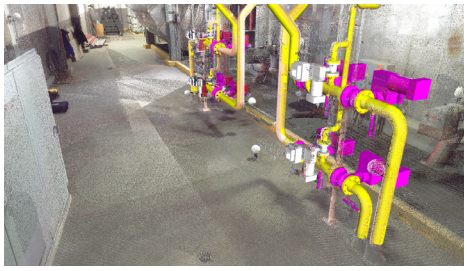
Using AutoCAD Plant 3D and Navisworks, the team was able to effectively create models with 99.9% accuracy fulfilling the quality parameters required by the client. The team observed that optimization of scans to make Semi Intelligent 3D models was accurate.

The solutions also helped get through major challenges like keeping up with the quality, on-time delivery, team collaboration and model accuracy. As there were no clear cut inputs in the form of engineering documents, visualizing the facility without engineering documents could have been difficult, but solutions from Autodesk and the training provided by them helped to clearly visualize the scan.

At a glance

What was delivered: Semi-Intelligent 3D Model on AutoCAD Plant 3D
Duration: 1 week
Team Size: 4
Engineering Software Used:

- 3D Modeling - AutoCAD Plant 3D
- FARO Scene
- Model Review - Autodesk Navisworks
- Utility - Kubit Point Scene Plant



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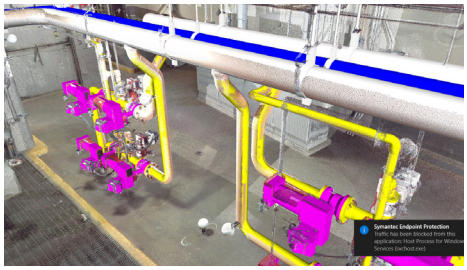

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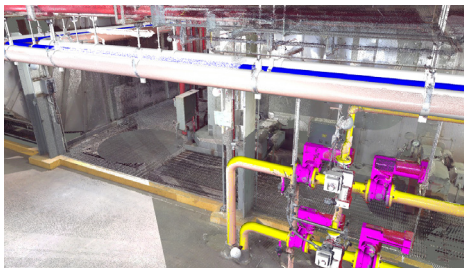

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> "After using AutoCAD Plant 3D and Navisworks, the team observed that optimization of scans to make Semi Intelligent 3D models was accurate and there was a cut-down on the time consumed,"
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