



New Scan-to-Revit Workflow Saves 70% in Complex Hospital MEP Project

In preparation for the installation of a large HVAC unit on the roof of the John H. Stroger Jr. Hospital in Chicago, Nederveld, Inc. was contracted to create 3D models of the rooftop and the mechanical room just below. Designers needed the models to make sure the unit could be placed in just the right spot on the roof, where space was limited, so that connection pipes could be properly run down into the crowded MEP room.

“Our customer on this project was a design shop that prefabricates a lot of the equipment prior to installation,” said Clair VanderZwaag, HDS/BIM Manager for Nederveld, which is a forensic engineering, land use consulting and high definition scanning firm based in Grand Rapids, Michigan. “They have to understand everything that’s going on in the installation space ahead of time, so they needed a complete as-built model.”

9,000 Square Feet of Spaghetti Pipes

VanderZwaag added that hospital scanning projects are more demanding than most because those

facilities typically can’t shut down while scanners are being operated. He saw this project as ideal to test EdgeWise MEP because the mechanical room had some of the most densely packed piping he’d ever seen, like “spaghetti.”

“The mechanical room is 9,000 square feet and it’s jammed with pipes, conduits and other HVAC equipment,” said Katie Sparling, Nederveld HDS/BIM Coordinator.

“The client was extremely happy to receive their model in three days after scanning.”

- Clair Vander Zwaag, Managing Director, Nederveld, Inc.

Nederveld scanned both the hospital roof and mechanical room with a Leica ScanStation C10 terrestrial scanner. With three rooftop HVAC units already in place, the roof required four separate scans, while the MEP facility was captured in six scans. Interestingly, the HVAC units were operating at the time and released steam that was picked up by the

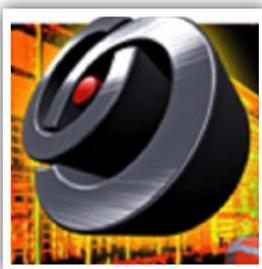
laser. These steam clouds in the point clouds had to be manually edited out later during the processing.

The point clouds from the 10 scans were combined into a single data set in Leica Cyclone. From there, Sparling exported one data file in PTS format to

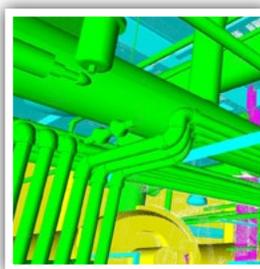
Nederveld Workflow



Leica C10



Cyclone Register



EdgeWise MEP



Revit



AutoCAD

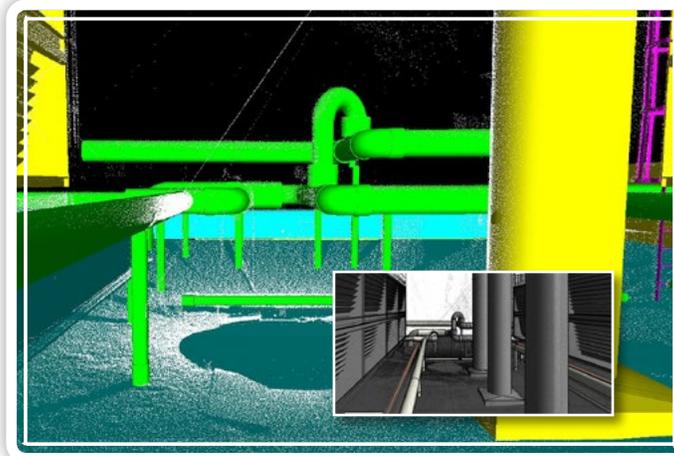
Autodesk Revit and another in PTG format to the latest version of EdgeWise MEP. She exported the two different files so she could work on one while the computer was crunching points in the other.

With a background in architectural technology, Sparling is an experienced AutoCAD user but had only recently learned the EdgeWise MEP package. She had received a one-hour web tutorial and then applied it in one small project. This was her first experience with a major automated pipe extraction project.

EdgeWise MEP Extracts Even Small Pipes with Precise Accuracy

Sparling worked in Revit to draw walls, floors, columns and beams on the point cloud and set up EdgeWise MEP to automatically extract all pipes one inch in diameter and larger from the PTG file. With periodic interruption to check on the progress, the extraction took about two hours. She was amazed at how many pipe surfaces the software was able to extract from a point cloud containing so much MEP data.

"I had very limited experience with the previous version of EdgeWise, but what impressed me right away about the latest version was the number of points it brought in," said Sparling. "This provided much finer point data resolution which enabled the software to extract smaller pipes with greater accuracy. The software captured every pipe I was able to visualize in the point cloud."



The new workflow of scan to EdgeWise MEP to Revit improved overall efficiency in the hospital MEP modeling project by 70%.

VanderZwaag, who had used the earlier versions of EdgeWise, was also impressed. He was particularly enthused by the greater fidelity in the scans, saying, "The model looked more realistic and we saw terrific detail in the extracted pipe elbows and T's."

With so many pipes extracted in the crowded room and on the roof, Sparling took full advantage of the manual clean-up functions in EdgeWise MEP to edit the pipe model over the next two days.

Once the pipe model was completed, she imported it into Revit as a fully functional pipe family where it fit into the larger model for the room and roof. After additional editing in Revit, she delivered the final 3D model in an AutoCAD file to the client.

EdgeWise MEP a Major Timesaver for Nederveld

EdgeWise MEP's full integration with Revit is a major timesaver in the workflow, allowing pipe extraction and editing in EdgeWise then finishing in Revit. Previously, pipes were modeled one at a time and pipe extraction was clumsy and time consuming, explained VanderZwaag. Now, instead of assigning two people for modeling, they rely on just one person for pipe creation and clean-up.

VanderZwaag estimates the new workflow of scan to EdgeWise MEP to Revit improved overall efficiency in the hospital MEP modeling project by 70 percent.

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



Nederveld, Inc. was founded in 1977, specializing in land surveying. We have developed today into a multi-service organization providing comprehensive services in the disciplines of Land Planning, Civil Engineering, Land Surveying, Environmental Consulting, High Definition Scanning, Forensic Engineering and Fire Investigation.