



## Ramboll Oil & Gas Slashes Modeling Time on North Sea Platform by 75%

Ramboll Oil & Gas, based in Denmark, reported huge time savings on recent 3D modeling projects using the automated feature extraction and modeling tools in EdgeWise Plant. Ramboll maintains its own 3D Scanning and Survey Department comprising 40 technicians and eight Z+F and FARO laser scanners.

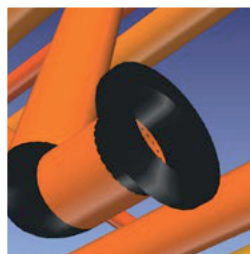
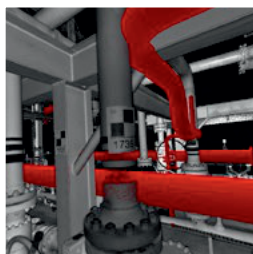
Typical projects for Ramboll are modifications to oil production platforms in the North Sea, which present numerous unique challenges.

"Modifications on the platforms are continual," said Robert Greenhalgh, 3D Data Specialist with Ramboll, explaining that his group is often asked to scan interior space on the structures so that new pipe runs and other equipment can be fabricated onshore and then seamlessly installed. An accurate as built model is crucial in the congested space to make sure the installation will fit and can be connected to tie-ins on the first try.

### Weather and Space Conspire Off-Shore

Off shore platforms are unique in that they are typically heavily congested with space at an absolute premium.

### Ramboll Workflow



Z+F Scanners → LFM Register → EdgeWise Plant → AutoCAD → SmartPlant 3D

Add to that some of the worst weather on the planet, and North Sea platforms present a potential scanning nightmare—one that Greenhalgh and Ramboll are well-equipped to handle.

*"We reduced our 3D modeling time substantially with EdgeWise Plant."*

- Robert Greenhalgh, 3D Data Specialist,  
Ramboll Oil & Gas

When working in the congested areas, the company employs swivel targets for maximum scanning efficiency. "Flat paper targets just aren't workable in the windy conditions of the North Sea," said Greenhalgh. "Control surveys are accomplished with 60% survey target coverage, then augmented with the LFM bundle adjustment package to complete the target

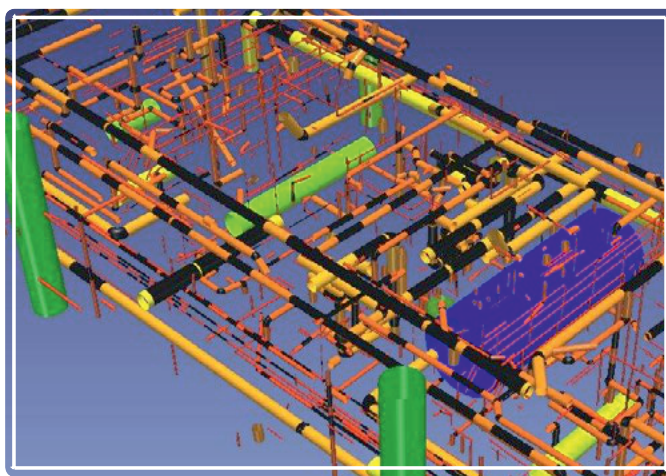
network without having to perform a full survey. This minimizes time on the dangerous site."

The constant strong wind poses another challenge in that it can stop a magnetic drive scanner from operating, causing untenable delays. On site, Ramboll employs scanners with mechanical drives to reduce weather-related delays.

The 3D models are layered by use with different process lines placed on distinct model layers to make it easier for users to interact with the data. The models allow Ramboll to view the current status of a platform along with proposed future designs. Precise tie-ins are delivered to the pipe engineers so they can connect new spools and equipment.

## 20 Scans in 4 Hours

Ramboll's recent project, a plant room on a typical North Sea platform, required the piping to be extracted for a review and redesign. The pipe engineers needed the piping connection positions in the form of the precise bolted flange positions along with the connection faces. On this particular platform, the fittings are standard ANSI fittings.



*EdgeWise Plant extracted 85% of the cylinders automatically.*

Greenhalgh and his team scanned the room and two access platforms utilizing twenty set-ups with a Z&F 5010 in only four hours of site time. In under two hours, the scans were registered in LFM Register while on site so that if anything was missed, another costly trip to the platform wouldn't be needed. The firm used LFM Converter to export PTX files to EdgeWise Plant, although EdgeWise can now process .zfs files directly, so this step is no longer required.

## EdgeWise Extracted 85% of the Cylinders Automatically, Reducing Ramboll's Modeling Time by 75%

Using EdgeWise Plant's automated feature extraction algorithms, the Ramboll technicians extracted 85 percent of all pipes in the project space in just one hour of processing time. They then spent only 14 hours cleaning

up the model and adding pipe fittings. If they had used their previous workflow of building the model one pipe at a time, the project would have taken 60 man-hours, according to Greenhalgh. Ramboll slashed its pipe modeling time by 75 percent with the EdgeWise software.

Among the features that impressed Greenhalgh most was the spec-driven flange placement, which made it simple for design engineers to include connection positions in their models inside of SmartPlant 3D. In addition, the Ramboll team was amazed at how quickly the QA process located standard pipe fittings. The technicians also liked how EdgeWise Plant eliminated points from the cloud once a pipe was extracted, making it easier to see what remained to be done. "Time saved on the

auto-pipe extraction gave us more time to spend on positioning the piping and layering the 3D model," said Greenhalgh.

After 14 hours of QA and finishing in EdgeWise Plant, Ramboll exported a COE file directly into AutoCAD for a solid model import to SmartPlant3D. The 3D reference model allowed piping engineers to snap their design to the existing connection points.

"It should be in every pipe modeler's toolbox," said Greenhalgh. "We reduced our 3D modeling time substantially with EdgeWise Plant."



to learn more or request a software demonstration  
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Ramboll is a leading engineering, design and consultancy company founded in Denmark in 1945. The company employs close to 10,000 experts and have a significant presence in Northern Europe, India and the Middle East. With close to 200 offices in 21 countries the company emphasizes local experience combined with a global knowledge-base.