

ADVANCED 3D LASER SCANNING AND SURVEY

WWW.RAMBOLL-OILGAS.COM

RAMBOLL

UNIQUE 3D SCANNING AND SURVEYS THAT SAVE VALUABLE TIME AND INCREASE PRECISION

Ramboll has an integrated department of trained surveyors to perform 3D scanning and surveys.

With substantial experience in using this cutting-edge technology, our services can save you hours of costly shutdown time as well as the expensive human errors that invariably follow traditional methods or occur when the 3D technology is misapplied.

Quicker implementation

Scannings can be used for controlling new components before their assembly, thereby enabling quicker assembly with fewer problems, less offshore welding and shorter shutdown time for process systems.

3D surveying is ideal for facilitating quicker implementation of projects allowing for substantial financial benefits.

Ramboll uses and develops specialised 3D laser scanning and survey tools. We offer precision surveys to engineering, design and construction project activities.

The surveys help reduce and even

eliminate the inherent geometrical problems associated with new or retrofit design and construction projects.

Cutting edge technology

Our skilled personnel and state-of-the-art equipment capture real scenes with an unprecedented combination of speed, accuracy, completeness and safety. The technology is utilised in most of our process and production area projects.

3D laser technology facilitates the capture of physical objects such as structures, pipe work and mechanical components. Through survey analysis this is converted to a virtual but true to life as-built 3D.

From this model existing component geometries and physical relationships can be extracted within a tolerance of few millimeters.

Modeling in India

3D scanning can be used for modeling of as-built models. Our modeling team at our office in Chennai, India, is specialised in

modeling projects.

A real life example

Ramboll's surveyors have performed a 3D scan of equipment in a workshop in Scotland. The existing as-built documentation and models were not up to date and the team was able to identify large differences.

As a result new designs were performed based on the 3D scan. The team also performed an as-built check of the new equipment and spools in the workshop.

The project was successfully carried out without any delay or problems.

Selected references

2011

- Scanning and modeling of Gorm Platform E, Ramboll
- Static GPS survey on South Arne, Hess Denmark
- Scanning of Tyra East - Platform A as part of Tyra optimization project, Maersk Oil
- Scanning and modeling of the topside on FPSO Petrojarl I due to

major upgrade, Ramboll

- Scanning of kettle building at Studstrupvaerket, Ramboll/DONG Energy

2002-2011

- More than 50 laser surveys performed on various modification projects, Maersk Oil

2010

- Scanning of trace from two tanks to pump. Scanning will be used as basis for detailed design of new pipe and supports, Ramboll
- Scanning of Dan Bravo platforms A, B, C and D for Rig Acces, Maersk Oil

2009

- Scanning and deformation analyses of caisson for monitoring of wellhead cracks at Siri Platform, Ramboll
- Scanning and survey for design of tie-in from new Trym oil field into existing production platform, Ramboll
- Scanning for design of new flare line, Statoil Refinery Kalundborg
- Scanning of process area at refinery to verify and update as-

built documentation, Shell Denmark

2008

- Documentation and entire area layout, Q8 Denmark
- Laser and 3D survey of turbine exhaust on Greater Ekofisk field, ConocoPhillips
- Rig, process module, laser and 3D survey of flowlines and well hookup of Volve field in North Sea, Maersk Contractors
- Rig access and laser scanning of all wellhead platforms, Maersk Oil
- As-built survey and approval of dimension of equipment in workshop in Scotland, Maersk Oil

2007

- Flowline upgrade, separator hookup, laser and 3D scanning, Hess Denmark

2004-2007

- 3D laser scanning of industrial plant for rebuilding project, Amersham, Norway

More information and contact

If you want to know more about our services and projects, please contact:

Lau Jensen, Survey Manager
e:lauj@ramboll.com
m: +45 5161 7255

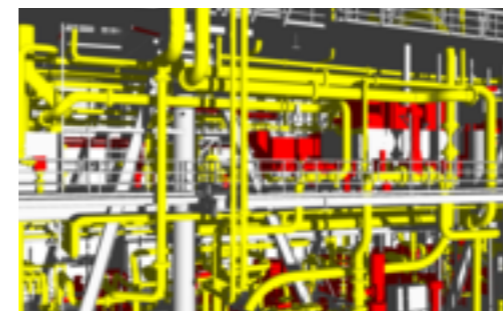
3D LASER SCANNING SYSTEMS

With an advanced surveying instrument that uses high speed laser, our surveyor is able to capture vast amounts of coordinates. The scanner "records" a 3D picture of a site, structure or construction by measuring angles and distances to points on surfaces which are visible to the scanner.

All data from the different scannings are gathered in a so-called "point-cloud", which is basically a cluster of points in three dimensions. These points are later processed by a software program that produces 3D

The 3D point clouds are compatible with all CAD programs. The data from PC and CAD models can be integrated into the same final design.

The 3D and laser scanning systems are very user friendly and easy to understand for both engineers and customers. Ramboll provides Netview solutions for online access to the data.



LEFT
Model of Gorm Platform

RIGHT
View in NetView solution

FRONT PAGE
FPSO Petrojarl I, point cloud and model of topside