

To the attention of: XXXX

FROM LASER SCANNING TO 3D MODEL – A BRIEF SCOPE OF THE WORK

STAGE 1 POINT CLOUD SURVEY

Our team uses **LEICA ScanStation C10** in order to measure fast and accurate the selected building. The scanner works by firing out a laser and for every surface the laser hits, it records a 3 dimensional point in space (xyz coordinates).

LEICA C10 ScanStation is capable of measuring up to **50.000 points/second** with accuracy of **+/- 2 mm**.

The number of the required scanning positions needed to obtain a full building 3D model, depends of the size and the complexity of the building.

The raw data obtained from each scanning position is a large amount of (xyz) points, called a **point cloud**.

STAGE 2 POINT CLOUD REGISTRATION

The point clouds measured of each scanning position are merged and transferred in the same coordinate system, using specialised software tools, in a process that is called **Point Cloud Registration**.

After removing the unnecessary points of the surrounding of the building, the point cloud is ready for use from the client, or for further processing to produce the **3D Model** or the **BIM model** of the building, depending on the client's needs.



Image 1: 3D Point Cloud of piping

STAGE 3 CONVERTING THE POINT CLOUD IN A 3D CAD MODEL

A Point Cloud consists of a series of points in 3D space.

It is ideal for visualizing a building and easily extract the accurate dimensions of every little detail.

It can be viewed and edited with specialised software, or with the newest versions of a CAD design software, like AutoCAD Civil 3D 2014.

Although, to be able to extract without any effort 2D or 3D drawings of the building captured, the point cloud needs to be converted in a 3D Model that consists of surfaces and solids instead of points.

The produced 3D Model of the building can be viewed or edited very easily, with any CAD design software. The 3D Model can also be inserted in various software packages, to perform a static or dynamic analysis of the building.

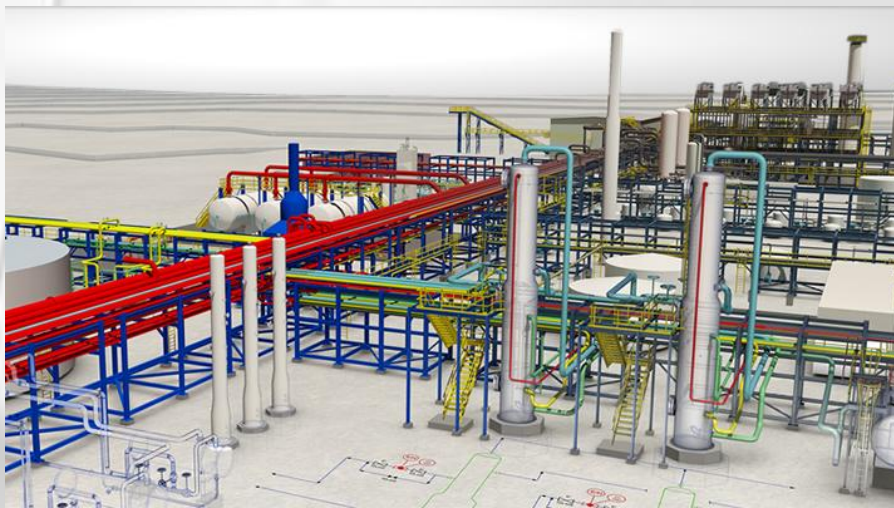


Image 2: 3D Model of a power plant

STAGE 4 CREATING THE BUILDING INFORMATION MODEL (BIM)

The BIM is a 3D Model of a building that combines an accurate 3D visual model, with additional data for the Mechanical, Electrical, Structural, Architectural and Plumbing components of the structure.

It can be viewed on software like Revit or Archicad and it has great advantages such as:

- Extracting 2D cross section or level plans directly from the BIM
- Make changes on the 3D BIM and these changes will be applied in every extracted 2D drawing

- simultaneously
- Make changes on every part of the construction and see how they work together before actually construct them.
- Visualize every detail of the building and easily navigate into it.

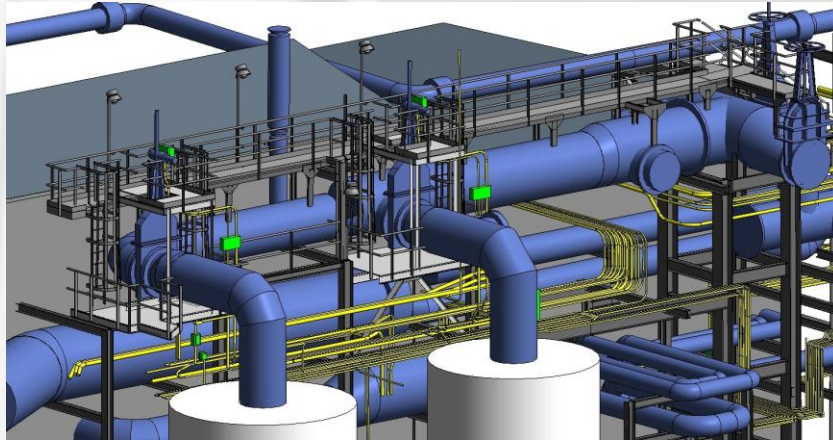


Image 3: BIM model of refinery system in Revit

OUR SERVICES

We measure any building with Leica C10 ScanStation laser scanner and deliver:

1. the 3D Point Cloud of the structure
2. the 3D CAD Model
3. the BIM Model
4. 2D Drawings extruded from the BIM model, such as cross section plans and level plans

For more information on our services or to learn more about Point Cloud and BIM, contact us on:
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