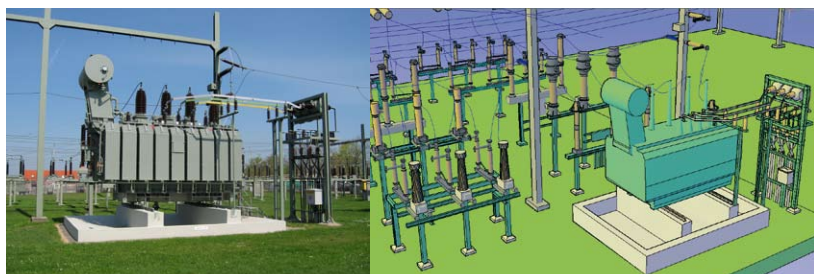


## Generating a 3D model from laser scanner data using PointCloud in AutoCAD

### Project documentation for a transformer station



Frequently, the project drawings of complex facilities do not reflect the actual state of the facility, since small changes and rebuilding are not always documented. The planning of renewals and reconstruction, though, has to be based on accurate and up-to-date documents. Existing facilities therefore have to be resurveyed at high resolution. For reasons of cost, such re-surveying should be rapid and should disturb the operation of the facilities as little as possible. To survey the transformer station in question, Johannes Soumagne of Hamburg-based Ingenieurbüro Dr. Wesemann chose to use 3D laser scanning.

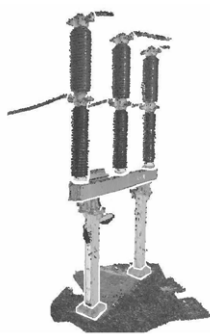
Using a Zoller & Fröhlich Imager 5003 laser scanner, the on-site element of the survey took just one day, and the transformer station did not have to be taken out of commission. The evaluation of the scans was carried out with PointCloud in AutoCAD. After specifying the required level of detail, the various parts of the transformer station were reconstructed in line with the drawing specifications using the extensive 3D functionality of AutoCAD and PointCloud.

This technique produces large amounts of data and the handling and administration of this within the CAD environment was made easy by PointCloud. In addition, by overlaying the point clouds on the transformer station parts as they were modelled, a real-time quality check could be carried out.

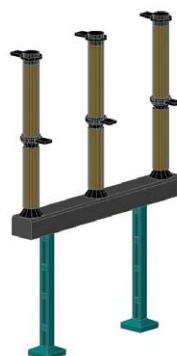
The result of the exercise is a detailed 'as-built 3D model' containing every component part of the transformer station from which 2D plans can be extracted at any point. In addition, any planned renewals and reconstructions can be added to the model so that their effects can be simulated.



Foto of the power switch



Power switch



CAD-Modell

Specifically, the time spent evaluating the scan data and preparing the data in CAD was substantially reduced by using PointCloud. The measurements and areas needed for the CAD model could directly be taken from the point cloud without difficulty.

Johannes Soumagne, Division Manager, Ingenieurbüro Dr. Wesemann

#### Task

As-built documentation of a transformer station for the ongoing technical planning of upgrade of component parts, Hamburg region

#### Customer

Dr.-Ing. Wesemann,  
Geodesy engineering corporation  
Hamburg,  
[www.ib-wesemann.de](http://www.ib-wesemann.de)

#### Timeframe

Data acquisition: 1 day  
Data evaluation: 7 days  
(May 2007)

#### Results

A complete 3D CAD model of the transformer station for planning, visualisation and parts cataloguing purposes

#### Advantages

Time saving, easy evaluation of large amounts of data directly in CAD

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