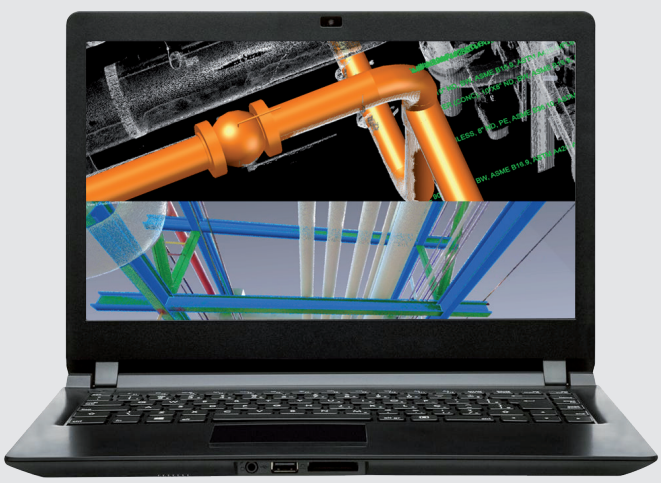
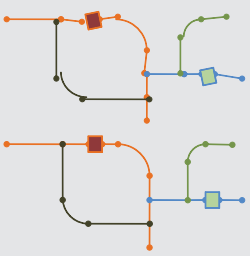
PointSense Plant

From 3D laser scans to consistent plant models



Reverse engineered piping system
Type recognition and best-fit of steel members

- Intuitive sequence of steps for modelling piping systems and steel constructions from 3D laser scans for further processing in planning software, for edge interference models and visualisation
- Extendable catalogues control pattern recognition
- Determine the tie in points on flanges for alterations and extensions
- Analysis of cylinders, elliptical truncated cones and planar surfaces for distortions
- Unrolling and volume calculations with deadwood subtraction
- All in the usual AutoCAD environment



Schematical illustration
of the function
"Apply Constraints"

PointSense Plant supports you when processing 3D laser scans

Plant planners can process point clouds directly in AutoCAD. Piping systems, steel construction elements are efficienty modelled. The resulting models can be exported to plant planning programs such as Plant 3D, MEP, CADWorx, AutoPLANT etc. PointSense Plant has all the tried and tested tools to model, manage and process 3D scanner data in AutoCAD.

Walk The Run – the intelligent pipe run tracer

Automation and pattern recognition are the basis for the efficient processing of 3D laser scanner data, however too much automation can lead to expensive mistakes. The "Walk The Run" function guides the user through the pipe system, the pattern recognition, on the basis of a catalogue, suggests types and positions for recognised pipes, bends, tee-pieces and fittings. These procedures give the user full control over the modelling process and ensures geometrical and technical workmanship. The thickness of the insulation is taken into account in pattern recognition.

Apply Constraints – the way to compatible models

Plant design software requires coaxial centrelines for fittings and pipe bends must be coplanar. The function "Apply Constraints" creates pipe runs that on the one hand fit in the point cloud and on the other hand satisfies the consistency conditions of the plant design software. In the same way steel construction elements are aligned coplanar to each other, and if need be perpendicular, and trimmed.

Fittings catalogues

FARO 3D Software provides a standard catalogue of fittings. Plant 3D catalogues can be directly imported. In cases where the fittings are missing or special fittings (out of spec) are needed, the user can create his own fittings or even full catalogues. The software then uses them in the pattern recognition process.

Determine tie in points

If precise tie in points are required, they can - without any modelling at all - be surveyed in and marked.

Planar Views from Scans

The photo like view of the scan data that is provided by PointSense allows a more intuitive navigation than that in the CAD environment.

Export pipe centrelines and fitting information

After creating a piping system it can be converted into AutoCAD Plant 3D objects, 3D solids or a labelled centreline layout. The standard AutoCAD objects can be used afterwards in any plant software systems. The same applies to steel construction.

Analysis of cylinders and truncated cones – tank tools

Tanks, boilers or containers can be unrolled and checked for deformations. It is possible to precisely compute volumes including taking the internal subtracted volume (deadwood) into account. Cylinders, elliptical and circular truncated cones are all supported.

Technical Requirements

Platform	AutoCAD and the associated vertical products such as Civil 3D, Architecture or Map 3D subsequent to the 2013 versions. From the 2015 releases onwards 64-bit support only. Should you be using older Autodesk products please check with your kubit distributor
Operating system	Dependent on the version of AutoCAD being used, recommended is a 64 bit system.
Hardware requirements	Computer: Graphic card as recommended by Autodesk, processor at least 2.5 GHz, RAM at least 8 GB; Laser scanner type to suit job in hand
Data requirements	Registered, that is to say the scans are oriented to each other
Supported scan data formats	Riegl RiScanPro-Projekte (RSP), Leica (PTZ, PTS, PTX), ASCII, LAS, E57, Zoller&Fröhlich (ZFS, ZFPRJ), Topcon (CL3, CLR) Leica (PTG) and Faro (FLS, FWS).

Important features

Point cloud management

- Import of orthophotos (Reconstructor, Trimble RealWorks)
- Definition, editing and management of slices and regions of point clouds
- Import oriented images from Riegl projects
- Collision analysis
- Analysis of planes, cylinders and truncated cones
  - Deformation analysis
  - Calculation of (partial) volume
  - Unrolling of the point cloud and profiles
  - Lists
- Elevation plans
- Ortho images of point clouds
- 3D distance dimensioning
- Flatten the drawing

2D modelling

- Line/polyline fitting - with constraints
- Automatic polygon fitting in multiple slices
- Draw UCS independant arcs and circles through three points

3D modelling

Piping Systems

- Automatic recognition of pipes, bends, flanges, valves, reducers, tee-pieces, etc.
- Precise location of the tie in points of all fittings
- Pattern recognition based on the predefined catalogue and/ or self defined fittings
- Import of catalogues from Plant 3D
- Conversion of the fittings to Plant 3D
- Fittings can be displayed as blocks
- Export annotated centrelines for further processing in other plant software
- Export as standard AutoCAD objects, e.g. 3D solids
- Adjusts the diameter of insulated pipe runs
- Assures the consistency (coaxial and coplanar centrelines) of the total piping system
- Flexible textural and graphical marking of any point cloud regions (e.g. for asset management);organised in a flexible tree structure; table export

Structural steel work

- Steel beams (T, H, L, U profiles and any user defined profile) can be fitted with just two clicks.
- The profile type is automatically recognised.
- Batch processing for capturing complex steel cosntructions through copying and pattern recognition
- Assures the consistency (coaxial and coplanar centrelines, orthogonality)
- Advance Steel export, SDNF export

Tie in points

- Precisely determine tie in points on flanges and dimension them (flange centr, centreline and rotation)

Plane

- Plane fitting - with constraints
- Plane fitting with only one click
- Automatic determination of plane boundaries
- Various construction methods using planes

Planar View

- Displays the scan data in a photo like, planar view
- Transfer coordinates from the planar view into the AutoCAD drawing
- Freely defined AutoCAD command macros
- Distance and coordinate picking
- Colours of the scans according to intensity, distance or original RGB

Free trial!
PointSense programs can be tested free of charge and without obligation. You can find a request form on the website www.FARO-3D-Software.com. Or simply call by phone.

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