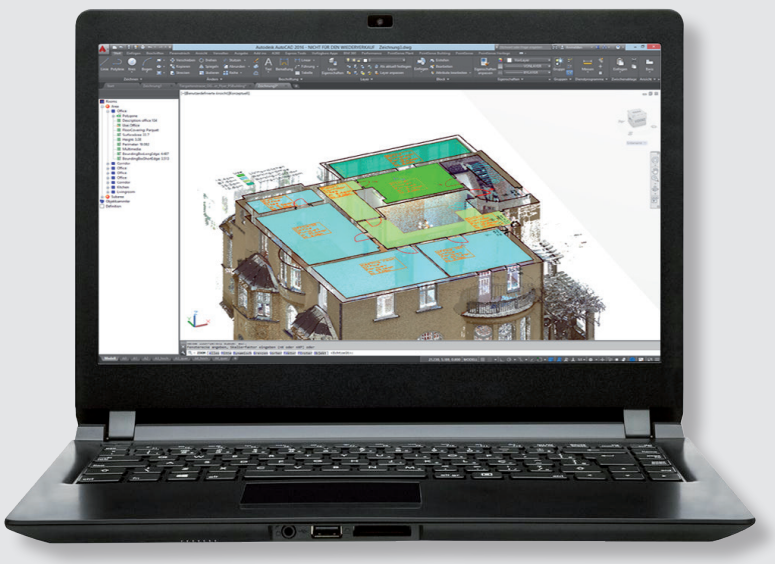
PointSense Building

From 3D laser scanner data to 2D plans



Areas of application

PointSense Building is used everywhere where 2D plans must be quickly generated from 3D scanner data, for example, for planning within existing structures, the capture of existing data for facility management or also for interior outfitting and special forms of construction such as ship building

Special features

- Fast construction of 2D sections with tools for the automatic fitting of polygons
- Special drawing and dimensioning commands for building elements such as windows, doors, stairs. etc.
- Database suitable region management
- Computation of ortho images from the point cloud

Classical features

- Process thousands of millions of surveyed points with AutoCAD
- Intuitive navigation in the planar view
- Efficient point cloud management:
- Isolation, colouring, masking and naming of point cloud regions

Floor plans and sections from 3D laser scanner data

PointSense Building is the industry specific solution for fast and efficient processing of 3D laser scan data of existing architecture. The resulting floor plans, sections and elevations are produced directly in AutoCAD. PointSense Building offers numerous tools for the management of point cloud data and for the efficient drawing of well designed plans.

Drawing 2D plans in 3D scanner data

A powerful region manager divides point clouds into processing relevant sub-regions. The regions can be hidden and displayed, coloured, joined, inverted or also individually exported. They are generated from polygonal selections or from automatic slice generation, which are especially suited for generating slices and floor plans at any desired level and sections in any position. Interfering objects such as trees or furniture can be cut out with very little effort.

Automatic drawing of wall, floor and ceiling forms

PointSense Building supplements AutoCAD with useful tools to create 2D plans from 3D laser scanner data. Polygon fitting tools for the semi-automatic drawing of wall, floor and ceiling forms in defined slices of the point cloud. Precise and continuous line strings are generated from the alignment of strings of adjacent lines and their automatic intersection. Planes can be automatically extracted from the point cloud and intersected with each other to produce edges, corners and points.
Special commands for building surveying save time
Special commands for doors, windows, stairs, alcoves or pillars speed up the drawing of building plans. For doors, for example, five clicks or less are sufficient and the typical building plan type dimensioning is automatically created at the same time.

Trace the CAD plan from the ortho image

PointSense creates ortho images in any direction from the point cloud. These photo like raster images display all objects true to scale and parallel to the projection plane. The ortho image can drawn over with CAD objects and dimensioned or it can itself be used as an image plan. An example of its use be for facade views.

Structured room schedules

Parallel to creating the CAD drawing a list of floor areas can also be simultaneously created. Bounding polygons and additional spatial information are managed in a clear and freely adaptable tree structure. At the press of a button the polygons are created, surface areas calculated and the room information block created. Visualisations (e.g. different room hatches for each type of room use) are likewise automatically created. The export of the list of floor areas to a database, for example to the CAFM program, happens seamlessly.

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 they are oriented to each other.
Supported scan data formats	Riegl RiScanPro-Projects (RSP), Leica (PTZ, PTS, PTX), ASCII, LAS, E57, Zoller&Fröhlich (ZFS, ZFPRJ), Topcon (CL3, CLR) Leica (PTG) and Faro (FLS, FWS).

Important features

General features

- Point cloud management and clipping
- Definition, editing, colouring and management of slices and regions of point clouds
- Import of various scan data formats with several colouring functions
- Import of orthophotos (Reconstructor, Trimble RealWorks)
- Import images in ReCAP and in Agisoft PhotoScan format (xml)
- Import rectified images from Riegl projects
- Flatten the drawing

Drawing and construction tools for building plans

- fast and precise determination of wall forms from one or more point cloud slices (for straight and free formed contours) as well as constrained perpendicular w alls
- Drawing and annotation/dimensioning of building elements: Doors, windows, stairs, ceiling grids, alcoves

Drawing sections and elevations

- UCS Features: Define a perpendicular or inclined UCS with just a few clicks
- Create ortho images of the point cloud from any viewpoint

General features for drawing plans

- Construction tools: Fillet lines, 2D lines, extend longitudinally or perpendicularly, extend and trim 3D lines, rotate the crosshairs, plumb points onto lines, place measurements on lines, determine tie distances
- Draw rectangles by clicking on points, e.g. for rectangular pillars
- Draw 2D and 3D arcs and circles through three points, for example for circular columns or wall forms
- Height dimensions: Symbols for absolute and relative heights, subsequently change the datum height, symbols are customisable
- 3D Distance dimensioning
- Construction planes to determine inaccessible corners and edges:
  - Plane fitting to point cloud regions - with constraints
  - Plane fitting with one click, automatic determining of plane boundaries
  - Draw planes by clicking on points
  - Determine intersection points and intersection lines of multiple planes
  - Change boundaries
  - Create a UCS from planes

Analysis commands

- Flatness analysis of facade faces etc.
- Deformation analysis of cylindrical surfaces

Planar View

- Displaying the scans 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
- Colouring of the scans according to intensity, distance or original RGB

Commands for completing plans and adding details

- Plan analysis: Find small gaps, line remnants and double lines
- Flatten the drawing: Reduction of the 3D measured data to a pure 2D plan
- Helmert transformation for the subsequent alignment of plan segments

Surface data for room schedule management

- Automatic recording of bounding polygons and calculation of the surface data, with the help of intelligent pattern recognition.
- Recording of alpha numeric spatial information in a clear tree structure
- Numerous features for exporting the data in a database suitable format (Excel, ASCII tables, XML, HTML, AutoCAD blocks, CAFM suitable polygon)
- Drawing visualization relevant to the selected object attributes (e.g. different coloured hatching for the rooms dependent on the type of use)

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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