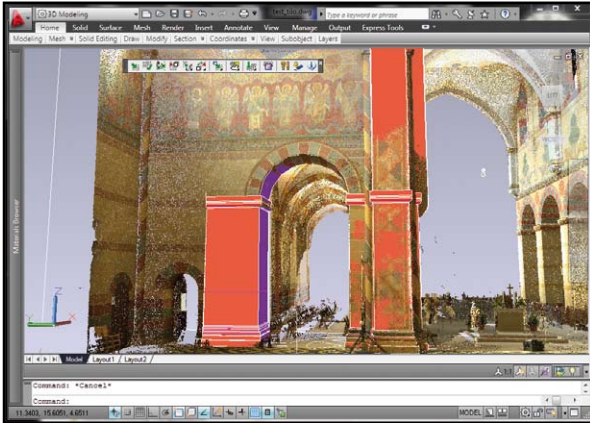


PointSense family:

PointCloud and PointCloud Pro

Analysis of 3D laser scan data within AutoCAD

PointCloud and PointCloud Pro are member of the kubit PointSense family. They provide several tools for the management and analysis of laser scan data within AutoCAD and support the import of almost all currently available 3D laser scan data formats into AutoCAD.



Management of point clouds within AutoCAD

The Section Manager is a straightforward tool designed for managing and controlling how point cloud sections are displayed. These sections can be selected or generated automatically; either parallel to a UCS (user coordinate system) or along a designated path.

Analysis of the 3D scan data

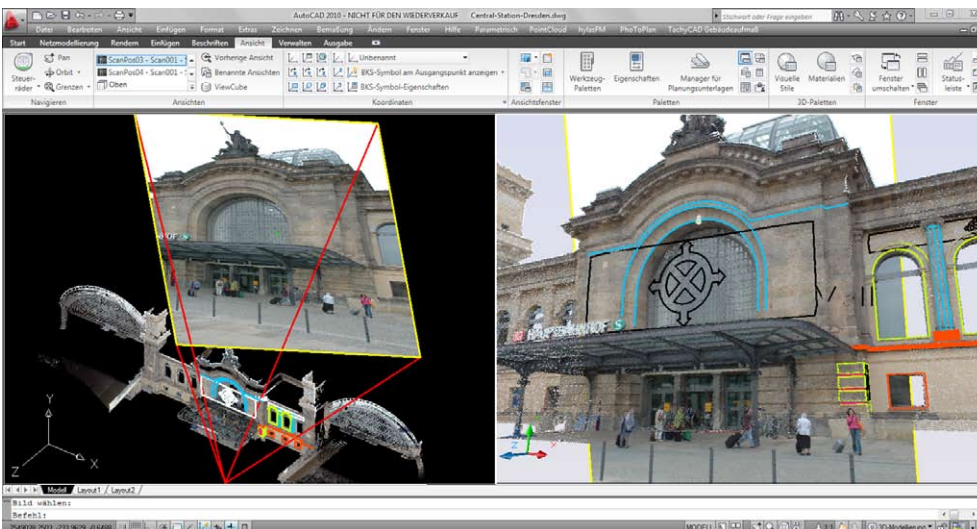
PointCloud Pro adds powerful tools for analyzing 3D laser scan data in AutoCAD. Geometric objects such as polylines, planes and cylinders may automatically be adapted to parts of the point clouds. A spatial join of these objects produces corners, edges and peaks. Additional functionality includes clash detection and the creation of ortho images from point clouds.

Use of photos within AutoCAD

PointCloud also combines AutoCAD with photogrammetric functions. Oriented images can be overlaid onto point cloud data in order to enhance the quality of the visual detail. Simple photos from a digital camera can be oriented by attaching control points to the drawing. Geometric objects drawn on the photos are automatically placed in their correct position within the point cloud.

Classic photogrammetry within AutoCAD

Images can also be used with the classic photogrammetric multi-image procedure in PointCloud. By clicking the same point in two separate images, PointCloud Pro can calculate the 3D coordinate of the desired point. This makes 3D modeling possible without the need for 3D scan data.



kubit GmbH has been developing software since 1999. kubit programs enable users to transfer data accurately and efficiently from various measuring devices/sensors into AutoCAD. The software then offers numerous functions for an efficient analysis, evaluation and documentation of the data within CAD. This way, kubit combines the field-proven solutions of sophisticated measurement technology with the well-tried CAD functionality for a wide range of users.

From Real World to CAD

Laser scanning – Data acquisition precise, fast and efficient

- Import of almost all 3D scan data formats into AutoCAD
- Efficient management of point clouds: masking, dividing, joining
- Combination of scan data, CAD and photos
- Fast construction of 3D wireframe models and solids
- Automated fitting of polylines, cylinders and planes to point cloud sections
- Cylinder line tracing for the transfer to other design programs
- Ortho images with X-ray function
- Clash detection analysis between scan and drafted CAD objects
- Higher resolution by combining scan data and photos
- Integration of photogrammetric functions

Universally usable

PointCloud software can help many different AutoCAD workflows

- Inventory documentation in the preservation of monuments and historic buildings
- Construction supervision
- Archaeological excavation documentation
- Crime scene documentation and preservation of evidence

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Requirements

Operating system	depends on the used AutoCAD version, we suggest a 64-bit Windows operating system
Platform	AutoCAD and all AutoCAD based verticals, e.g. Civil 3D, Architecture or Map 3D starting from version 2007 up to 2012. Please contact the kubit sales department if you are using older Autodesk products.
Hardware requirements	computer: graphics board as suggested by Autodesk, processor at least 2.5 GHz, RAM at least 3 GB; laser scanner: type depending on the tasks camera: common digital camera
Data requirements	registered, meaning toward each other, oriented and geo-referenced scans
Supported point cloud formats	kubit PTC and Autodesk PCG
Supported external scanner data formats	Riegl RiScanPro projects (RSP), Leica (PTZ, PTS, PTX), ASCII, with AutoCAD 2011 also LAS and Faro (FLS, FWS)
Supported image formats	all image formats supported by AutoCAD, e.g. TIF, BMP, JPEG, PNG oriented images from Riegl, RiScanPro projects, Trimble RealWorks Survey Orthophotos, Reconstructor Orthophotos
Required reference information (image orientation)	at least nine control points or four control points and the camera parameters

Comparison of the functions of PointCloud and PointCloud Pro

Functionality	PointCloud	PointCloud Pro
Managing point clouds	x	x
Importing different scanner data formats (ASCII, Leica, Riegl)	x	x
Importing orthophotos (Reconstructor, Trimble RealWorks)	x	x
Defining, processing and managing of layers and zones of point clouds	x	x
Importing oriented images from Riegl projects		x
Clash detection		x
Ortho images	x	x
Flattening of drawings	x	x
2D modeling		
Adapting line/polyline – with restrictions		x
Adapting polygon		x
Drawing arcs and circles through 3 points UCS independently		x
3D modeling		
Cylinder		
Adapting cylinder		x
Joining cylinder		x
Inserting transition piece		x
Process cylinder		x
Generate cylinder axis and AutoCAD solids		x
Generate cylinder line		x
Plane		
Adapt plane – with restrictions		x

	PointCloud	PointCloud Pro
Draw plane		x
Change plane – extend (two planes)		x
Change plane – intersection line (two planes)		x
Change plane – intersection point (three planes)		x
Change plane – change boundary		x
Working with images		
Insert oriented image (kubit ORI format)		x
Insert raster image		x
Manage control points (define, import, adapt size)		x
Set UCS according to view		x
Image orientation		x
Camera view and navigation		x
3D drawing with oriented images and surfaces (point cloud, plane, cylinder)		x
3D drawing – with two oriented images (two-image evaluation)		x
PlanarView		
Independent Windows program for the display of the point clouds within a photo-like, planar view	x	x
Coordinate transfer between PlanarView and AutoCAD	x	x
Freely definable AutoCAD command macros	x	x
Distance and coordinate tap	x	x
Coloring according to intensity, space or original RGB	x	x

Trial versions

You may test the programs without obligation, free of charge. You will find more information including a request form at www.kubit-software.com. Or just send an e-mail or call us!

- Lockheed Martin
- HOCHTIEF Consult IKS Energy
- OJSC "VNIPIgazdobycha"
- ThyssenKrupp
- Sightline