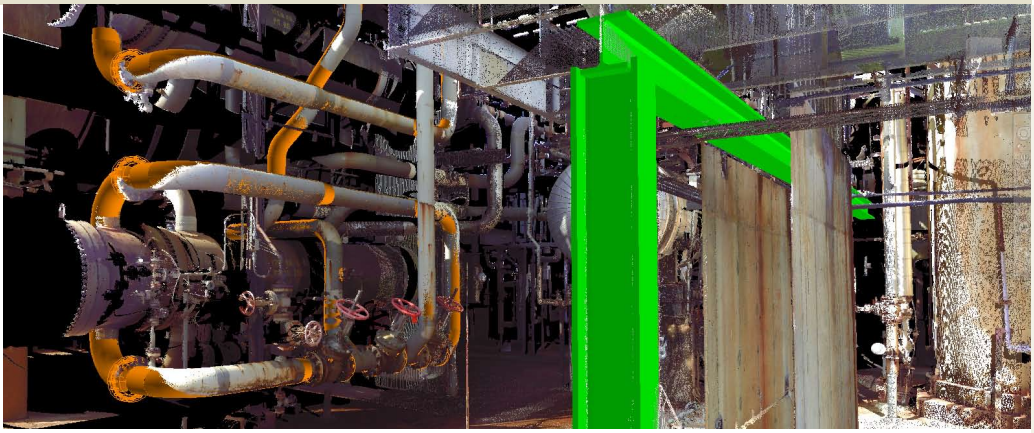
Fact Sheet

kubit PointSense Plant



Intelligent Plant design from laser scan data in AutoCAD

kubit PointSense Plant utilizes the latest Autodesk PCG engine, capable of handling more than two billion points in a DWG. Now users involved in industrial facility design can use their data sets efficiently in CAD, utilize kubit tools for pattern recognizing assets from the cloud and move directly into their familiar AutoCAD based plant design programs (Plant 3D, MEP, CADWorx, AutoPlant, etc.). Exact tie-in points for components can even be determined without any modeling. This is in addition to kubit PointCloud's classic tools for modeling, managing and manipulating data sets in AutoCAD.

Walk through a Pipe Run

Automation and pattern recognition is essential for efficient use of point cloud data but too much automation can lead to costly errors. kubit's "Walk the Run" tool guides a user through a run, pattern recognizing and suggesting insertion points for pipes, elbows, tees and inline fittings based on what is in the user's custom catalog. This semi-automatic approach keeps the user in control of the modeling process to ensure accuracy the first time through a run.

Intelligent Centerlines and Component Information

After routing a pipe run the user is left with native AutoCAD solids and/or the options to export AutoCAD Plant 3D objects or export an intelligent centerline. A native AutoCAD 3D polyline is derived with correct starting and endpoints for each pipe, elbow and fitting along a run. These items are also tagged with text for reference. The user can now use this routing line in combination with their intelligent piping packages.

Flexible Piping Catalogs

The kubit team will provide the majority of standard catalogs needed for piping jobs in multiple industries. In case a fitting doesn't exist, the user can create custom patterns for their library. The software then learns to read this pattern within a run. This is excellent for custom built fittings.

Planar view of Scans

The planar view of PointCloud provides a clear photo-like image of the single scans and allows a much more intuitive navigation than the one inside of point clouds. Snapping background points by mistake is impossible in this view.

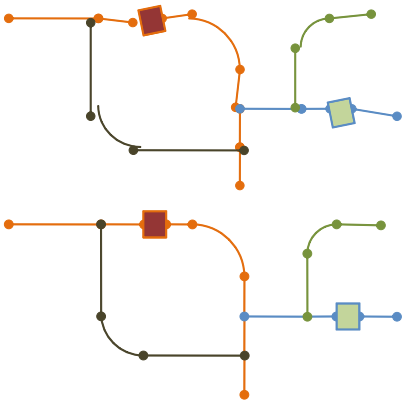
Piping the point cloud made easy in CAD:

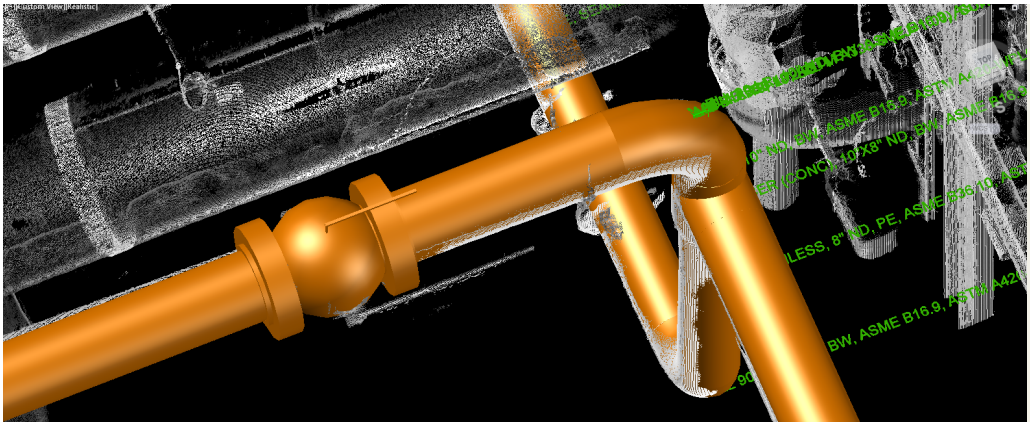
- Intuitive steps for modeling piping systems or deriving connection points and linking to industry standard piping design software packages
- Catalog driven pattern recognition for industry standard components or user created fittings
- No need for expensive, complex software outside of AutoCAD
- Clash detection support between solids and cloud data
- Support for insulated pipe runs

Classic kubit PointCloud tools:

- Utilize two billion points with the AutoCAD PCG Cloud Engine
- Improve visual quality of scan data in CAD with Smart Sections
- Efficient cloud management: Slicing, clipping, coloring, masking and naming sections

Schematical illustration of the function "ApplyConstraints"





kubit GmbH
Software for Surveying and As-Built Documentation

Tiergartenstraße 79
01219 Dresden
phone: +49 351 418880- 0
fax: +49 351 418880- 29

info@kubit-software.com
www.kubit-software.com

Requirements

Operating system	depends on the used AutoCAD version, we recommend a 64-bit Windows operating system
Platform	AutoCAD and all AutoCAD based verticals, e.g. Civil 3D, Architecture or Map 3D starting from version 2010. 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 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 and higher also LAS, E57, Zoller&Froehlich (ZFS, ZFPRJ), Topcon (CL3, CLR) Leica (PTG) 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

Functions of PointSense

Managing point clouds

- Importing different scanner data formats (ASCII, E57, Leica, Riegl, Zoller&Froehlich, Topcon)
- Importing orthophotos (Reconstructor, Trimble RealWorks)
- Defining, processing and managing of slices and sections of point clouds
- Importing oriented images from Riegl projects
- Clash detection
- Deformation analysis
- Elevation map
- Create ortho-images from point clouds
- 3D distance dimension
- Flattening of drawings
- 2D modeling
- Fit line/polyline – with restrictions
- Fit polygon
- Drawing arcs and circles through 3 points UCS independently

3D modeling

Pipes

- Auto recognize pipes, elbows, flanges, valves, reducers, tees and more
- Locate accurate tie in points for all objects
- Use provided piping catalogs or create your own fittings for pattern recognition
- Fittings can be visualized using customized blocks
- Export intelligent centerlines for use with piping design packages
- Export native AutoCAD solids, e.g. 3D solids
- Adjust pipe diameter for insulated runs
- Assure coaxial and coplanar axis runs for design software
- Dynamic 3D labeling of user-defined point cloud areas and flexible database creation without modeling (e.g. for asset management)
- Mend all gaps and irregular alignments along modeled pipe runs “ApplyConstraints“
- Bent pipelines or metal tubes can be best fitted to the cloud
- Structural steel work: T, H, L, U beams and any user defined shapes can be fitted by two clicks

Plane

- Fit plane – with restrictions
- Draw plane
- Edit plane – extend (two planes)
- Edit plane – intersection line (two planes)
- Edit plane – intersection point (three planes)
- Edit plane – intersection lines (three planes)
- Edit plane – change boundary
- Working with images
- Image orientation
- Insert oriented image (kubit ORI format)
- Insert raster image
- Manage control points (define, import, adapt size)
- Set UCS according to view
- Camera view and navigation
- 3D drawing with oriented images and surfaces (point cloud, plane, cylinder)
- 3D drawing – with two oriented images (two-image evaluation)

PlanarView

- Display of the scan data within a photo-like, planar view
- Coordinate transfer from the planar view into the AutoCAD drawing
- Freely definable AutoCAD command macros
- Distance and coordinate measurement
- Coloring of scans according to intensity, space or original RGB

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!

References

kubit PointSense Plant is being used worldwide:

- **CMDS - Construction Management & Design Services, Inc.**
- **DEEM First**
- **EN Engineering**
- **JE Dunn**
- **Marmac Field Services, Inc.**
- **National Park Service**
- **PrecisionPoint, Inc.**
- **SNC-Lavalin Inc.**
- **T. Baker Smith, LLC**