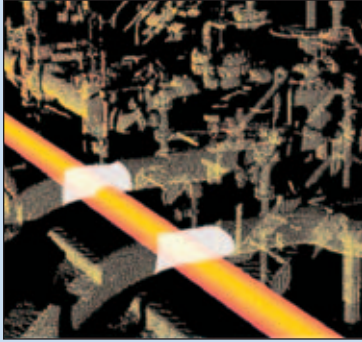
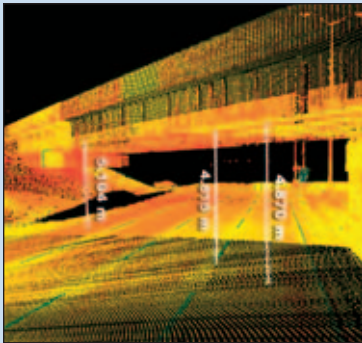


Leica CloudWorx 3.3 for AUTOCAD

Software Application That Lets Users Take Advantage of Rich 3D Point Clouds Directly Within CAD



Interference Checking



Point-to-Point Clearance Measurement



Accurate 2D Elevation from Point Clouds

Leica Cyclone CloudWorx 3.3 for AutoCAD

delivers 3D point clouds created by High-Definition Surveying (HDS™), or 3D laser scanning, systems directly into the hands of designers and engineers who need accurate, detailed field conditions. Leica CloudWorx provides immediate productivity, enabling users to easily visualize and work with 3D point cloud data, create accurate as-builts, check proposed designs against existing site conditions and compare construction progress with design plans in the familiar AutoCAD environment.

Powerful Performance and Visualization

3D laser scanners capture existing conditions in the field to generate a highly visual and accurate representation of reality as 3D point clouds. Leica CloudWorx uses Leica Cyclone technology to efficiently display point clouds in AutoCAD – merging sophisticated rendering performance, visualization, data management and data interrogation with popular CAD tools.

Point Cloud Display Control

To focus on particular areas of interest, easy-to-use tools define specific areas of 3D point clouds to display. For improved visualization, segments of point clouds can be selectively hidden using fences and user-defined cutplanes or slices through the point cloud data.

Spatial Navigation with 3D Limit Box

Project data can be organized into 3D Limit Boxes. A Limit Box Manager enables users to navigate spatially through the database quickly loading and viewing data as-needed.

Accurate Building Documentation

Slices through point cloud data facilitate the creation of planimetric and elevation drawings. 2D lines, polylines, and arcs can be best-fit to point cloud slices to provide accurate results. Cross sections of point clouds can also be plotted directly, introducing an entirely new, accurate "deliverable" and reducing project cycle time.

As-built Piping Models

Leica CloudWorx' powerful pipe fitting tool enables users to quickly create accurate, intelligent as-built piping models, best-fit to the 3D point clouds, with the help of tools in applications like Bentley AutoPLANT and COADE CADWorx. Tie-in locations for proposed retrofit designs can also be easily identified and marked. Planar surfaces can also be modeled from point clouds using CloudWorx fitting and 'region growing' tools.

Detailed Information for Retrofit Projects

Engineers can use CloudWorx in retrofit design projects to check proposed designs for potential interferences with point clouds that represent actual "as-built" or "as-is" conditions. The unparalleled detail provided by point clouds allows engineers to create 2D or 3D designs based on accurate, comprehensive information, providing time- and cost-savings throughout a project's various construction phases.

Civil Engineering Applications

Leica CloudWorx integrates with applications like Autodesk Land Desktop to deliver solutions for civil engineering projects – such as transportation infrastructure, land development, bridge models and more. The user can extract 3D coordinates to represent site features that are easily identifiable in detailed point clouds. Original ground points can be extracted for topographic modeling.

Leica CloudWorx Modules

CloudWorx is available as two distinct products for different user and organization needs. Leica CloudWorx Pro is the full-featured product for generating both 3D and 2D deliverables from point clouds in the AutoCAD environment. Leica CloudWorx Basic provides a reduced subset of features and is suited primarily for generating 2D deliverables.

Available in Multiple Languages

CloudWorx Basic and CloudWorx Pro are available in English, German and Japanese language versions.

- when it has to be **right**

Leica
Geosystems

Leica CloudWorx 3.3 for AUTOCAD

CloudWorx Basic Features	CloudWorx Pro Features	Benefits
Leica Cyclone CloudWorx Basic and Pro 3.3 provide the following features.	In addition to Basic features, Leica CloudWorx Pro 3.3 provides the following features.	Easy to Learn and Easy to Use Integrated into existing AutoCAD design and work processes Short learning curve
Large Point Cloud Support Efficient loading Visualization Navigation Cyclone Object Database Client/Server technology - Fast data processing - Efficient data management	Point Cloud Management By scanner location	Fast, Accurate, Comprehensive, Reality-based Comprehensive as-built data Efficient modeling and information extraction tools Higher confidence as-built projects through sophisticated software algorithms.
Rendering Level of Detail (LOD) graphics "Single pick" point cloud density control Intelligent memory management	Modeling Pipe Modeling: - Least-squares fitting - Fit points inside fence - Grow from pick - Grow a piping run from picks - Connection of piping run - User-defined error tolerance Planar surface (patch) modeling: - Least-squares fitting - Fit points inside fence - Grow from pick - User-defined error tolerance Best-fit 2D lines, polylines, arcs: - Fit 2D lines, polylines, arcs to point cloud slices - User-defined tolerance Flange Tie-Point Location Tool Place flange tie-point from point cloud - Using coordinate axis - Using pipe axis - Using 2 or 3 hint points - Optional flange thickness offset distance - Find Tie-Point - Work from flange face - Offset to hidden face - Offset to raised face	
Visualization View point clouds with: - Intensity mapping - True color	Interference Checking Check designs for potential interferences with point clouds Highlight interfering points User-defined parameters Advanced clash management database system - Project based management - Organized by group of clashing points per CAD entity - Clash by region - Sort, classify, ignore - Re-run clash and update status - Configure clash parameters - Automated visualization - Auto navigate to any specific clash - Auto limit box about clashing point region - Wireframe box surrounding clashing points - Advanced relational database reporting system (Requires Microsoft Access)	Supports Wide Range of Plant, Civil, Architectural Applications Accurate 2D planimetric and elevation drawings 3D as-built models Engineering planning As-is condition assessment for range of applications including retrofit and revamp projects
Display Control Control over: - Displaying point clouds - Snapping to point clouds Flexible point masking: - Fence - Section (half-space) - Slice - Limit box (volume clipping)		Verify Designs with Detailed Point Cloud Data Facilitate adjustments to proposed retrofit designs for clash-free installation Support construction monitoring
Point Cloud Management Limit Box Manager Cutplane Manager (sections, slices) Hide Regions Manager (fences) Layers in Cyclone database		Minimize or Eliminate Site Revisits Detailed point clouds archived in Cyclone database provide data on as-needed basis
Measurement 3D point coordinate Point-to-point Point-to-design entity		Workgroup Support Flexible licensing and enterprise usage options. Licensing options include node-locked, floating, or Leica EnterpriseElite subscription licensing. Database sharing via Cyclone-SERVER or via Terminal Server access.
Modeling Tracing		System Requirements English: Microsoft Windows XP (SP1 or higher), Windows 2000 (SP3 or higher with up to date security patches) German/Japanese: Microsoft Windows XP Professional (SP2 or higher) 2 GHz Pentium 4, or higher 512 MB RAM (1GB or more recommended) SVGA or OpenGL accelerated graphics card Ethernet network card, for licensing
Output Ability to plot points		AutoCAD Version Support CloudWorx 3.3 supports basic AutoCAD and the AutoCAD-based family of product versions 2002, 2004, 2005, 2006 and 2007. Note: Future versions of CloudWorx for AutoCAD will no longer support the AutoCAD 2002-based family of products. Autodesk has discontinued services and support for AutoCAD 2002-based products, effective January 15, 2006.
Point Cloud Archiving Point clouds as historical as-built record		

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