

# PolyWorks® software – module overview

PolyWorks has a modular structure and offers optional extensions



## PolyWorks/Inspector™

The standard software platform for coordinate metrology and analysis of 3D measurement data



- Import of point clouds, or direct digitizing with a plug-in interface for laser scanners and coordinate measuring machines (CMM)
- Import of CAD files. Included are IGES, STEP, SAT, Parasolid, STL (additional translators are optional)
- Various alignment possibilities of nominal and measured data (best fit, 3-2-1, RPS, alignment based on primitives), up to virtual assembly of parts
- Generation and management of multiple coordinate systems as well as multiple positions of a digitizing system
- Surface comparison with color map of the deviations
- Generation and analysis of cross sections
- Measurement of flush and gap according to free definable templates
- Automatic multi-piece inspection features
- Automatic extraction of primitives and exhaustive implementation of GD&T according to the ISO 1101 and ANSI/ASME standards
- Optimized alignment of parts based on flush and gap measurements
- Touch probe measurements with manual devices (arm, laser tracker, CMM)
- Statistical analysis of serial measurements with integrated data base (Statistical Process Control)
- Macro programming and plug-in interface for process integration
- Advanced reporting tools with free definable templates
- PolyWorks/IMView™**  
License free 3D viewer for the visualization of PolyWorks projects, with basic measurement possibilities



## Additional PolyWorks Meshing module



- Best fit alignment of scanned data and overlap reduction of point clouds
- Shaded and interpolated visualization of scan lines
- Creation of polygonal meshes with adjustable resolution
- Filtering and curvature based reduction



## Additional PolyWorks/Inspector™ Airfoil Gauge module



- Analysis and measurement of wing, propeller and turbine blade profiles
- Extraction of all relevant features from cross sections
- Generation of templates for the extraction of features from different blade profiles
- Specific alignments of profiles in 3D and in 2D cross sections



## Optional CAD translators



- In addition to the standard formats (IGES, STEP, SAT, Parasolid, STL), the following CAD import modules are optional available: CATIA V4 and V5, Inventor, Pro/E, SolidWorks, UG NX, VDA-FS, JT

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### PolyWorks/Inspector™ Probing

Touch probe measurement with manual devices



- Direct plug-in interface to mobile measurement devices including arms, laser trackers, photogrammetry systems and manual coordinate measuring machines (CMM)
- Support of multiple sensor systems
- Import of CAD files. Included are IGES, STEP, SAT, Parasolid, STL (additional translators are optional)
- Various alignment possibilities of nominal and measured data (best fit, 3-2-1, RPS, alignment based on primitives), up to virtual assembly of parts
- Generation and management of multiple coordinate systems as well as multiple positions of a digitizing system
- Guided probing of features, sections, surface and boundary points
- Build-inspect mode to adjust fixtures
- Bundle adjustment and temperature compensation
- Complete implementation of GD&T according to DIN ISO 1101 and ASME Y14.5M standards
- ISO tolerances for features
- Tactile flush and gap analysis with guided probing and customizable parameter definitions
- Statistical analysis of serial measurements with integrated data base (Statistical Process Control)
- Macro programming and plug-in interface for process integration
- Reporting tool and license free 3D viewer [PolyWorks/IMView™](#) for the presentation of results and documentation



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### PolyWorks/Talisman™

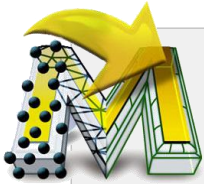
Bringing PolyWorks in the palm of your hand



- Connects mobile computing devices (iPod touch, iPhone, iPad) to your PolyWorks session
- Configure Probing sessions, get intelligent visual guidance and perform Probing operations
- Secure encrypted communication between Talisman and PolyWorks for ultra-confidential setups
- View and interact with Digital Readouts and 3D scene

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### PolyWorks/Modeler™

Processing of point clouds, optimization of polygonal meshes and reverse engineering



- Import of point clouds, or direct digitizing with a plug-in interface to laser scanners or other optical digitizing systems
- Best fit alignment of scanned data and overlap reduction of point clouds
- Creation of polygonal meshes with adjustable resolution
- Filtering and curvature based reduction of polygonal meshes
- Mesh optimization for visualization and simulation
- Extraction of curves and feature lines
- Curve editing and smoothing
- Matching and merging of polygonal meshes
- Functions for touch probe measurement and alignment of polygonal models (PolyWorks/Inspector™ Probing)
- Parametric 2D Sketching for Solid Modeling Workflows



### Additional NURBS Reverse Engineering module



- Fitting of NURBS surfaces using a curve network
- G2 patch continuity and n-sided surface patches are supported
- Import of CAD data in IGES and STEP format
- Export of created CAD surfaces in IGES and STEP format
- Import of CAD data and watertight tessellation for hybrid modeling



### Additional Advanced Manufacturing module

- Morphing of tessellated CAD models and meshes
- Die correction for the compensation of spring-back or other deformations which can occur during the fabrication
- Creation of quadrilateral meshes from existing triangular meshes, for instance for finite element simulation purposes (NASTRAN format)

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### PolyWorks/Surveyor™

Universal software solution for surveying applications



- Import, alignment and visualization of point clouds from terrestrial laser scanners
- IGES and STEP CAD import
- Includes best fit alignment of scanned data and overlap reduction of point clouds with the **IMAlign™** module 
- Visualization and registration of scans
- Reduction of overlaps between scans
- Efficiently processing of very large datasets with PolyWorks 64-bit
- Creation of meshes based on point clouds. Filtering and smoothing of meshes
- Creation of digital terrain models
- Automatic tracking of sharp edges, step edges
- Automatic extraction of polylines from color gradients of colored scans
- Automatic extraction of pipe center lines
- Complete set of fitting routines for basic geometric primitives
- Creation of single and parallel cross-sections
- Typical survey measurements
- Surface and volume calculations
- Point-cloud-to-mesh or point-cloud-to-CAD comparison
- Reporting tool and license free 3D viewer **PolyWorks/IMView™** for the presentation of results and documentation 