PolyWorks Inspector™

The 3D dimensional analysis and quality control solution to gain control of your product engineering and manufacturing process

innovmetric

PolyWorks|Inspector™ is a universal 3D dimensional analysis and quality control software solution to control tool or part dimensions, diagnose and prevent manufacturing and assembly issues, guide assembly building through real-time measurements, and oversee the quality of assembled products by using portable metrology devices and CNC CMMs.

Complete Dimensional Analysis and Quality Control Toolbox

At the heart of PolyWorks|Inspector lies a powerful inspection engine with parametric data handling, mathematical algorithms certified by PTB, and extensive visual and audio feedback capabilities. It allows users to extract meaningful information from their measured 3D data, automate the inspection process when more than one piece is measured, and structure the presentation of measurement results to facilitate enterprisewide digital collaboration.

Always get the alignment right

Surface and cross-section best-fit

Best-fit measured surfaces and cross-sections to their nominal definition, with the option of constraining in rotation, translation, or within a tolerance zone.

Measurement object best-fit

Construct your alignment from features, datum targets, surface points, or edge points, and use weights and axial constraints to optimize the results.

Multiple device position alignment

Align your 3D measurement device while compensating for temperature changes, and use bundle adjustment to maximize the global accuracy.

Measure all the required dimensions

Universal data handling

Extract measured dimensions from point clouds, polygonal models, or probed points, and nominal dimensions from a CAD model or a measured part.

Smart GD&T

Benefit from a smart GD&T engine based on the latest ASME and ISO standards, with advanced DRF, material condition, datum modifier, and tolerance zone capabilities.

Deviation analysis using color maps

Obtain surface, boundary, cross-sectional, or thickness measured-to-nominal deviations, and analyze them through a color map display.

Profile and Flush & Gap gauging

Evaluate advanced dimensions on fillets, design feature lines, and sheet metal part assemblies, such as radius, angle, bending, sharpness, flush, and gap.

Feature-based dimensioning

Measure a feature's diameter, position, or orientation, or distances and angles between two features, in 2D or in 3D, and configure the dimensions' display intuitively.

Airfoil gauging

Extract advanced features on fan, compressor, and turbine blades to control and analyze dimensions, such as edge radius, thickness, length, width, angle, and area.

Automate quality control tasks

Multipiece data management

Measure multiple pieces using different 3D measurement devices, and store them in a single project folder or an online data management solution using an optimal format that minimizes disk space usage.

Play Inspection tool

Use the powerful Play Inspection and Sequence Editor tools to automate measurement workflows by ordering and triggering operations.

Macro scripting

Add macro scripts to your measurement workflows to apply proprietary techniques, provide special feedback, or interconnect to other systems.

Review inspection results efficiently

Control views

Organize projects containing hundreds of dimensional and GD&T controls into small and logical groups of controls, with individual controls tied to specific alignments and coordinate systems.

First Article Inspection Reports

Quickly publish an AS9102 and PPAP-compliant First Article Inspection Report by measuring a piece from the first production run and transferring the results automatically to Excel using PolyWorks|ReportLoop™.

Statistical Process Control (SPC)

Assess the repeatability and predictability of your manufacturing processes with multipiece statistics automatically calculated for object dimensions and surface deviations.

Measurement System Analysis

Design and carry out repeatability and Gauge R&R studies and publish results in elegant, content-rich Excel templates using PolyWorks|ReportLoop.

Market-leading Portable Metrology Platform

Renowned for the power and stability of its direct hardware interfaces, PolyWorks|Inspector offers an extensive set of guidance technologies that the world's largest manufacturing OEMs trust to implement efficient, precise, and repeatable measurement processes for portable metrology devices.

Plug-and-play interfaces for all your portable metrology needs

Maximize the productivity of your scanning arms

Tens of thousands of portable arm operators worldwide enjoy the reliability and efficiency of our scanning and probing workflows every day.

Leverage our disruptive laser tracker innovations

We provide innovative laser-tracker-based scanning technologies that greatly accelerate the analysis and dimensional control of your large parts and tools.

Scan large structures rapidly using spherical digitizing

Minimize rework time when assembling large aerospace structures by scanning them using a spherical grid digitizer and simulating the assembly process beforehand.

Tailor measurement methods to your processes

Integrate additional measurement devices or in-house proprietary measurement techniques by creating and embedding macro scripts within your measurement objects.

Guidance technologies for repeatable 3D measurement processes

Generate high-quality surface scans

Produce great scanning results under all circumstances thanks to our unique real-time quality meshing technology that computes and displays quality metrics in real time.

Ensure sufficient scanned data for reliable feature extraction

Get real-time feedback on scanned surface, curve, and circumference coverage with guidance graphics that indicate where an operator should capture additional scans.

Implement repeatable probing workflows

Use images, text, 3D graphics, and tolerances, on your computer screen or a mixed-reality display, to deploy guided probing inspection projects that improve operator efficiency and ensure measurement repeatability on the shop floor.

Guide assembly building with real-time measurements

Accurately track part location during assembly using digital readouts, simultaneously displaying real-time measured reflector positions from multiple laser trackers.

High-productivity CNC CMM Solution

PolyWorks|Inspector has reinvented the way inspection projects are set up and executed on CNC CMMs, within a flexible, user-friendly, and efficient CNC CMM operational paradigm, similar to the one we offer for portable metrology devices.

The most user-friendly offline sequencing workflow on the market

Reduce the complexity of your CMM programming tasks

We deliver shorter and easy-to-understand CNC CMM sequences, as our nominal features, dimensions, and reports are created and managed outside of the sequence editor.

Accelerate the sequencing process while staying in control

Select objects to be measured and let the sequence editor automatically find the proper tool orientations, the optimal measurement order, and collision-free measurement paths.

Fix sequencing mistakes intuitively

Our intelligent sequence editor provides immediate feedback when illogical or incorrect operations are detected, and lets you repair detected mistakes in a single click.

Avoid potential collisions automatically

We offer powerful collision analysis and avoidance technologies that detect potential tool collisions in real time and automatically modify the toolpaths to prevent them.

The most powerful online platform ever designed

Configure a CNC CMM sequence for any machine in your park

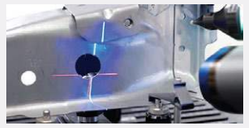
Build your measurement sequence once for a specific CNC CMM configuration, then use our conversion tool to automatically adapt it to any CNC CMM brand or type.

Protect your CNC CMM and its accessories

Avoid costly damages by detecting, in real time, potential tool collisions with parts or fixtures prior to launching a CNC measurement operation online.

Add measurement objects to a sequence effortlessly

To perform additional measurements, just create and select new measurement objects and let the sequence editor optimally insert them within your CNC CMM sequence.



Complement your CNC CMM projects with portable metrology data

Use a portable laser scanner to measure the fixtures for collision analysis purposes, or a scanning arm to measure surfaces and features that can't be reached by the CMM.

Packages

	PREMIUM	STANDARD	PROBING++	PROBING	GAUGING
Single-point measuring device for portable metrology	•	•	•	•	
Single-point measuring device for CNC CMMs	•		•		
Point cloud digitizer for portable metrology	•	•			
Point cloud digitizer for CNC CMMs	•				
Measurement collection for digital gauges	•	•	•	•	•
Manual measurement data entry and visual checks	•	•	•	•	•
Real-time quality meshing and offline point cloud meshing	•	•			
PolyWorks|Modeler™ Light module	•				
PolyWorks|AR™ plug-in	•			Option	Option
IGES/STEP neutral CAD file translator	•	•	•	•	•
Part alignment toolset	•	•	•	•	•
Dimensional control toolset	•	•	•	•	•
Smart GD&T toolset	•	•	•	•	•
Reporting toolset	•	•	•	•	•
Simulation mode for offline project setup	•	•	•	•	•
Repeatable multipiece measurement workflows	•	•	•	•	•
Statistical Process Control toolset (SPC)	•	•	•	•	•
Native CAD file translators	Option	Option	Option	Option	
Airfoil gauges	Option	Option	Option	Option	
One-year support/maintenance	•	•	•	•	•
Two complimentary seats to attend a Basic classroom training	•	•	•	•	

Please visit our website for latest package updates.

Technical Specifications

Computer Requirements

Minimum Computer Requirements*

- **CPU:** Dual-core CPU
- **RAM:** 4 GB
- **Graphics cards:** Hardware-accelerated, professional OpenGL graphics card equipped with 1 GB of memory
- **Operating system:** 64-bit Windows 11 or 10, Professional Edition
- **Input device:** Two-button mouse with wheel

*These requirements are adequate if you are planning to use single-point probing devices and your CAD model file sizes are smaller than 50 MB.

Recommended Computer Requirements**

- **CPU:** Quad-core CPU
- **RAM:** 32 GB
- **Graphics card:** NVIDIA RTX*** / Quadro series graphics card equipped with at least 2 GB of memory
- **Operating system:** 64-bit Windows 11 or 10, Professional Edition
- **Input device:** Two-button mouse with wheel

**This configuration covers a broad range of applications by offering the performance required when importing larger CAD models or laser scanning large parts with high resolution. If you have doubts about the best system configuration for your type of application, contact our technical support team.

***GeForce RTX graphics cards are not recommended as they are not professional graphics cards.

Single-Point Measuring Device Plug-ins

- **Arms:** Faro, Hexagon/Romer, Nikon, CimCore, Kreon, PMT, RPS Metrology, Tomelleri-SpaceArms, TTS Vectoron
- **Handheld, optically tracked devices:** Aicon, Creaform, Geodetic, Keyence, Metronor, Nikon, NDI, Scantech, Zeiss
- **Laser trackers:** API, Faro, Leica
- **Manual CMMs:** I++, Deva, Insight Metrology, MZ1060/2000/2010, Renishaw, Samsoft, Wenzel
- **CNC CMM controllers, through direct drivers:** Brown & Sharpe, Coord3, DEA, Leitz, LK, Mitutoyo, Pantec, Sb-Elektronik, Wenzel
- **CNC CMM controllers, through Zeiss CMM-OS:** Zeiss
- **CNC CMM controllers, through I++:** All brands
- **Theodolites:** Leica TDRA6000

Point Cloud Digitizing Device Plug-ins

- **Line scanners:** API, Faro, Hexagon, Kreon, Laser Design, Leica, NDI, Nikon, Perceptron, TTS Vectoron, Zeiss
- **Planar grid scanners:** Faro, Hexagon, Konica Minolta
- **Spherical grid scanners:** Surphaser
- **Polygonal mesh scanners:** Creaform, Hexagon, Scantech
- **Direct point scanners:** API, Leica, Nikon
- **CNC CMM line scanners, through direct drivers:** Kreon, Nikon, Wenzel
- **CNC CMM line scanners, through I++:** Hexagon, Zeiss

Point Cloud File Formats

38 formats describing planar grids/meshes, line scans, spherical grids, and unorganized point clouds.

Measurement Collection Device Plug-ins

- **Receivers:** MicroRidge (MobileCollect, GageWay), Mitutoyo U-Wave, Sylvac/Fowler
- **Devices:** All devices compatible with the above receivers and all those that allow keyboard input simulation.

CAD File Formats

CATIA V6/V5/V4 | NX (UG) | Creo (Pro/E) | Inventor | SolidWorks | ACIS | IGES | JT | Parasolid | QIF | STEP | VDA-FS

Languages

Chinese (Simplified and Traditional)
Czech
English
French
German
Hungarian
Italian
Japanese
Korean
Polish
Portuguese
Russian
Spanish

Please visit our website for the latest specifications.

Universal Software Platform

With just one software to master, dramatically reduce your operational costs by increasing measurement specialist competency, eliminating metrology silos, boosting employee mobility, and improving overall teamwork efficiency.

Interface with all 3D measurement devices thanks to a universal digitizing hub

- Operate all portable probing devices through direct hardware plug-ins
- Interface with all point cloud scanning devices through direct hardware plug-ins or measurement file import
- Connect to major brands of CNC CMMs through direct drivers or I++
- Integrate measurements performed with digital gauges as well as visual checks

Bring all relevant data under one roof through a universal data hub

- Create inspection projects automatically from 3rd-party software measurement results and share them digitally enterprisewide with PolyWorks|DataLoop™
- Import all GD&T control types from native CAD and QIF MBD files to ensure digital interoperability with the product definition processes
- Measure a dimensional control of a scanned or probed object with a more accurate device and inject the measured value in the object for reporting purposes

Perform all inspection tasks with or without CAD data using a universal 3D metrology workflow

- Follow the same planning process for both portable and CNC CMM metrology
- Use the Play Inspection technology to execute autogenerated or user-defined measurement sequences
- Leverage the 3D Control Reviewer and dynamic updateable inspection reports to implement a measurement-control-centric reporting workflow

Deploy universal inspection projects playable on any 3D measurement device

- Preconfigure the measurement workflow for all your measurement devices with piece measurement templates
- Predefine multiple measurement templates within one inspection project
- Adapt measurement objects and sequences to different measurement principles automatically with conversion tools

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PTB SmartGD&T™

Corporate Headquarters:

innovmetric

InnovMetric Software Inc.
2014 Cyrille-Duquet, Suite 310, Québec QC G1N 4N6 Canada
Phone: 1-418-688-2061 | 1-888-688-2061
info@innovmetric.com | www.innovmetric.com

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