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 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.
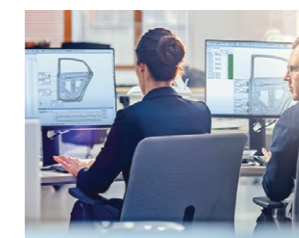
**First-article inspection**

Access a global list of controls sorted by characteristic index, and display critical results in 3D with the preferred point of view for easier dimensional analysis and reporting.

**Statistical Process Control (SPC)**

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

# 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 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.
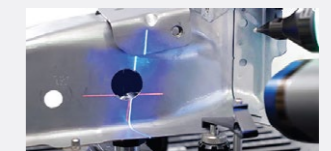
**Complement your CNC CMM projects with portable metrology data**

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 and manual CMMs** | • | • | • | • | |
| **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** | • | | | | |
| **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** | • | • | • | • | |

# TECHNICAL SPECIFICATIONS

## Computer Requirements

### Minimum Computer Requirements*

- **CPU:** Dual-core CPU
- **RAM:** 4 GB
- **Graphics cards:** Hardware-accelerated, professional OpenGL graphics card (NVIDIA-certified cards and drivers) equipped with 1 GB of memory
- **Operating system:** 64-bit Windows 10, 8.1, or 7 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 Quadro series graphics card equipped with 2 GB of memory (NVIDIA-certified cards and drivers)
- **Operating system:** 64-bit Windows 10, 8.1, or 7 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.

### Single-Point Measuring Device Plug-ins

- **Arms:** Faro, Hexagon/Romer, Nikon, Mitutoyo, CimCore, Kreon, RPS Metrology, Tomelleri-SpaceArms, TTS Vectoron
- **Handheld, optically tracked devices:** Aicon, Creaform, Geodetic, Keyence, Metronor, Nikon, NDI, Zeiss
- **Laser trackers:** API, Faro, Leica
- **Manual CMMs:** I++, Deva, MZ1060, 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

- Creaform (VXscan)
- Faro (3D Imager, Laser Line Probe)
- Hexagon (PC-DMIS Scanning, Romer Absolute Arm for Scanning)
- I++ (Hexagon, Zeiss)
- Konica-Minolta (RANGE7)

- KREON (Scanner)
- Laser Design (Surveyor Scanner)
- Leica (Absolute Scanner, T-Scan, ATS Laser Tracker)
- Mitutoyo (Scanner)
- NDI (ScanTRAK)

- Nikon (Laser Radar, Scanner)
- Perceptron (ScanWorks)
- Surphaser
- TTS Vectoron (Scanner)
- Zeiss (L-Scan, Probe Scanner, T-Scan)

### Point Cloud File Formats

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

### CAD File Formats

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

### Languages

| | | | | |
|---|---|---|---|---|
| Chinese (Simplified and Traditional) | Czech English French | German Hungarian Italian | Japanese Korean Polish | Portuguese Russian Spanish |
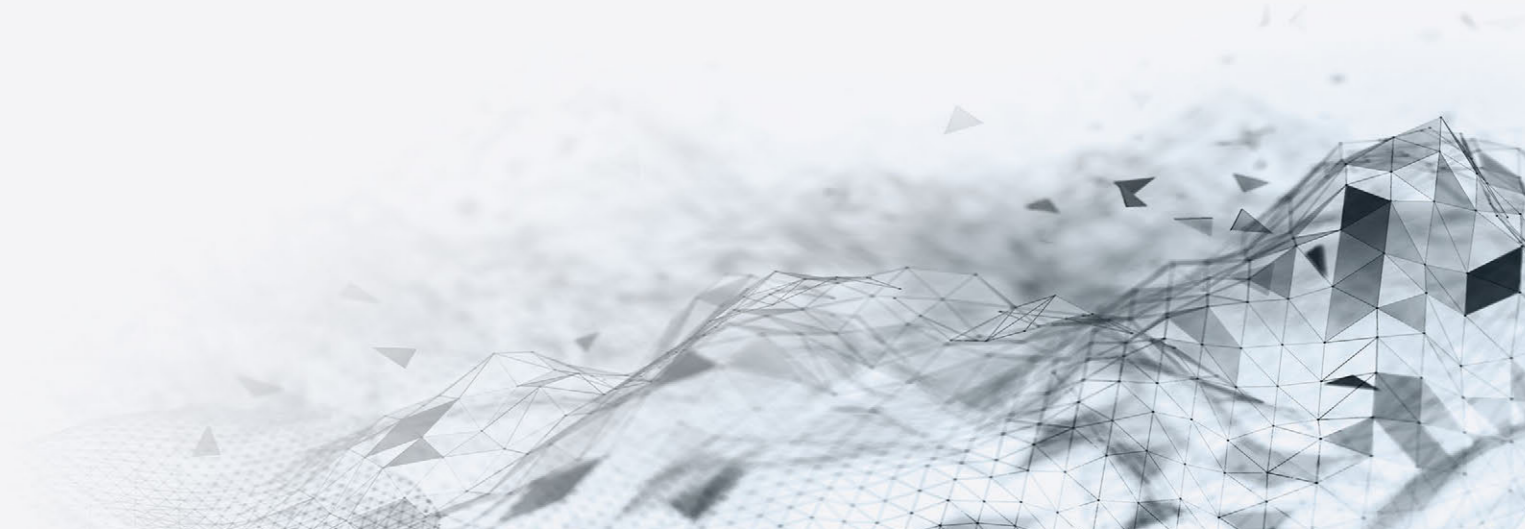
# UNIVERSAL
## SOFTWARE PLATFORM

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.
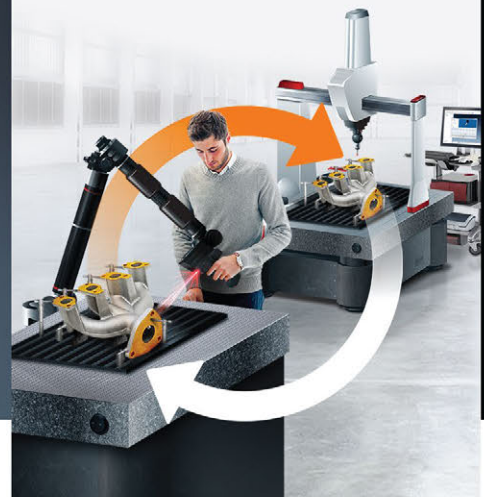
**Perform all inspection tasks using a universal 3D metrology workflow**

**Deploy universal inspection projects playable on any 3D measurement device**

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

**PTB** Certified

**Smart**GD&T™

Corporate Headquarters:

## innovmetric

**Your 3D Metrology Software Partner**

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