

Improvements

WM | Quartis R2025-1

Update Information

WM | Quartis



Improvements WM | Quartis R2025-1

At a Glance

WM | Quartis R2025-1 brings numerous innovations for a wide range of applications and areas of use.

WM | Quartis R2025-1 enables the **standard-compliant evaluation** of **coaxiality**, **runout** and **total runout** for short axis elements **with two references**, as well as the evaluation of **position tolerances** for a group with a complete reference system.

WM | Quartis R2025-1 additionally displays **component deviations** for **position tolerances** in the measurement reports and enables the evaluation of the **load length ratio (Pmr)** for a plane.

WM | Quartis R2025-1 offers **optimized measurement and filtering functions**, including curvature-dependent measurement of curves and the spline filter in accordance with ISO 16610-22.

WM | Quartis R2025-1 improves the **optical measurement** and processing of point clouds. Point clouds can be captured element-based or with a rotary table, then thinned and **triangulated into polygon meshes**.

WM | Quartis R2025-1 extends the **extraction** of elements from **point clouds** with new functions, including the extraction of edges, rectangles with optional corner radii, outer elements, and the use of relative references and offset of the reference ROI.

WM | Quartis R2025-1 offers **detailed collision detection**, considering the travel paths to and from the probe changer, as well as the PH10 unlocking processes

WM | Quartis R2025-1 improves measurements with the PHS head through **PHS compensation** and the **mirroring** of rotary/swivel positions in measurement programs.

WM | Quartis R2025-1 introduces **updated CAD interfaces**, along with further useful improvements and enhancements. More details can be found on the following pages.

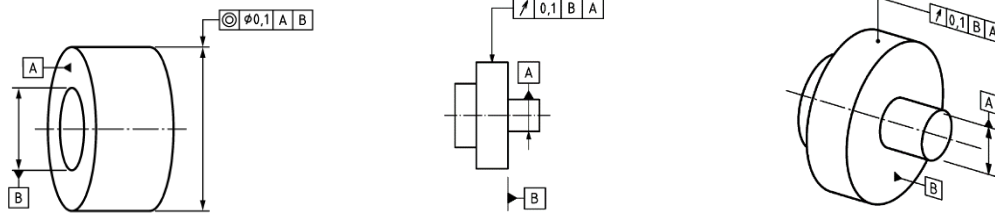
Note:

Some improvements are not included in the standard product WM | Quartis R2025-1 and require additional, chargeable modules. These are described in the document "Products and Modules WM | Quartis R2025-1".

Evaluate Characteristics and Output in the Measurement Report

Evaluate Coaxiality, Runout and Total Runout with two References

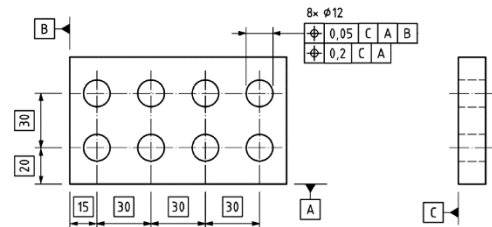
The characteristics of coaxiality, runout, and total runout can now also be evaluated for short axis elements in accordance with standards. A plane is typically defined as the primary reference, while the axis element serves as a secondary reference to precisely define the position of the rotation axis.



Evaluate the Position Tolerance of a Group with a Complete Reference System

It is now also possible to use element groups for position tolerances based on complete reference systems without open degrees of freedom.

Pattern tolerancing can now be fully performed via the element group.



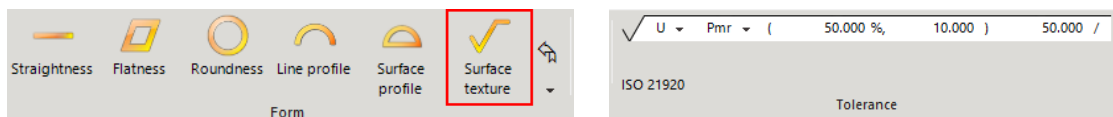
Report with Component Deviations

In addition to the previous information, the deviations between the nominal TED value and the actual TED value can now also be displayed and output in report tables for the position tolerance.

2 Positions tolerance ϕ (C)		0.000	0.100	0.024	0.024	24%
B	34.500	34.511	0.000	0.000	0.011	
C	57.500	57.496			-0.004	

Evaluate Load Length Ratio of a Plane

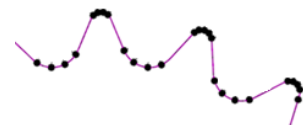
A new feature "Surface" allows evaluation of the load length ratio of a plane on a primary profile with the characteristic value identifier "Pmr".



Optimized Measuring and Filtering Functions

Measure Curves with Curvature-Dependent Point Distribution

Curvature-dependent measurement distributes points more densely on a curve in areas of higher curvature. This optimizes the measurement, reduces the number of measuring points and shortens the measuring time.



Spline Filter (Low-Pass) Available

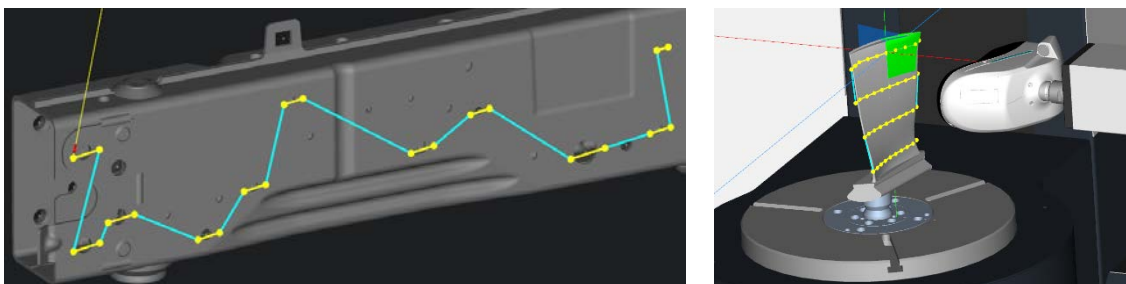
In addition to the Gaussian filter, the spline filter per ISO 16610-22 is now available as a low-pass filter in the filtering function.

Improvements WM | Quartis R2025-1

Optical Measurement and Evaluation

Element-Based Measurement of Point Clouds

Point clouds can now be measured on an element basis. This is particularly useful if the elements are later extracted using a measurement program automatically created from a measurement plan.

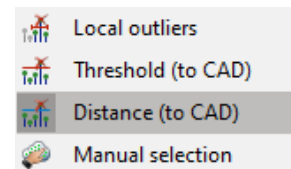
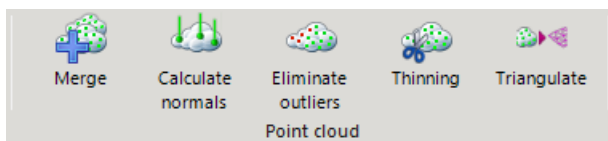


Measure Point Clouds with Rotary Table as Feed Axis

Point clouds can now be captured with a rotary table and optical line scanner. This enables fast, complete and efficient measurement of turbine blades, for example.

Editing and Processing Point Clouds

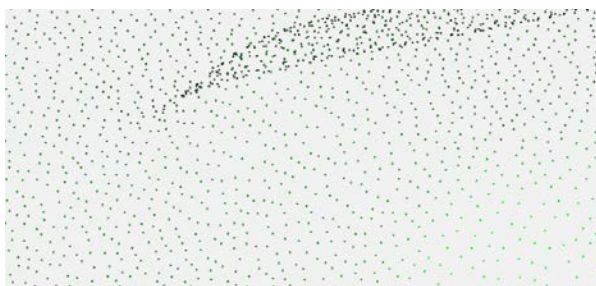
The following new, useful functions are available for editing, processing and evaluating the captured point clouds.



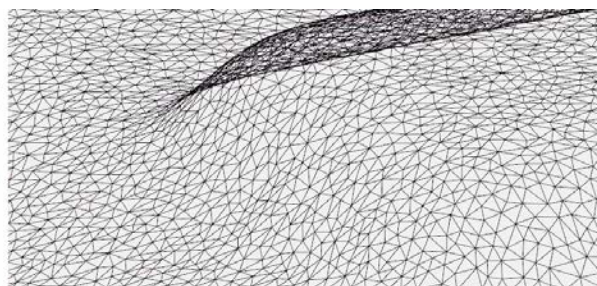
The “**Eliminate outliers**” function has been expanded to include the “Distance (to CAD)” method to remove points based on their distance to the CAD model.

The new “**Thinning point cloud**” function removes unnecessary measuring points in areas with a high point density, for example in the case of overlapping scan paths or multiple scans from different sensor directions.

With the new “**Triangulate**” function, a polygon mesh can be created from a point cloud by triangulating the point cloud. This makes it possible to convert a point cloud that was captured or imported with an optical line scanner into a polygon mesh. The generated polygon mesh can be exported and saved in a file.



Point cloud

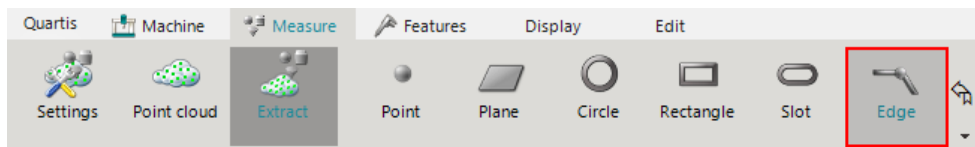


Polygon mesh (triangulated point cloud)

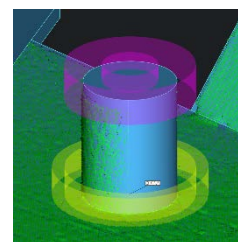
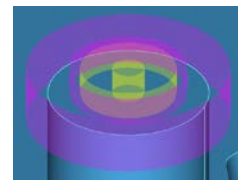
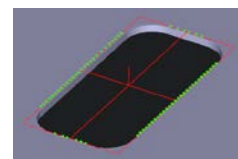
Extended Functions for Extracting Elements from Point Clouds

The extraction of elements from point clouds has been enhanced with several new options and functions that enable a more precise and flexible calculation of elements:

- Extract edge from point cloud**
 Edge points and flanged edge points can now be extracted from right-angled and rounded edges.

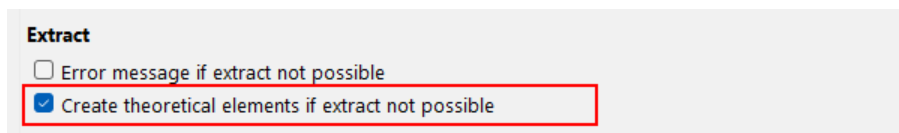


- Extract rectangle with optional corner radii**
 Points in the area of the corner radii of a rectangle are excluded from the calculation in order to calculate the rectangle elements more accurately.
- Extract external elements with internal reference**
 For external elements (e.g. external circle, rectangle, slot), the reference ROI can be positioned within the element ROI.
- Relative reference available for "Extract elements"**
 For the elements point, circle, rectangle, slot and hexagon, the ROI can be shifted relative to an existing element or by a specific value.
- Adjustable offset of the reference ROI to the element ROI**
 The reference ROI can be shifted axially to the element ROI for circles, rectangles, slotted holes and hexagons, which is useful for offset reference planes, e.g. for weld nuts in car body and housing construction.



Automatic Creation of Replacement Elements in the Event of Extract Errors

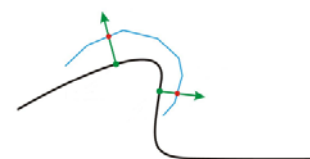
Theoretical elements can now be created automatically when executing extract program sentences if the extract is not possible due to missing or incomplete point clouds.



This makes it possible to quickly identify problematic elements in the component or CAD model. This is particularly useful if the extract programs are created automatically using measurement plans. This makes it easier to determine in which areas additional point clouds need to be scanned or existing scans need to be improved.

Form Point BA as Measuring Principle for Program Generation

When generating a program from a measurement plan in "Daimler/Audi Inspection Feature ASCII Format", the "Form point BA" measurement principle is now also supported.



This measuring principle creates a "measuring macro" with several elements and operations for calculating the form point BA. The measurement program can be generated either as a tactile measurement program or as a point cloud extract program.

Improvements WM | Quartis R2025-1

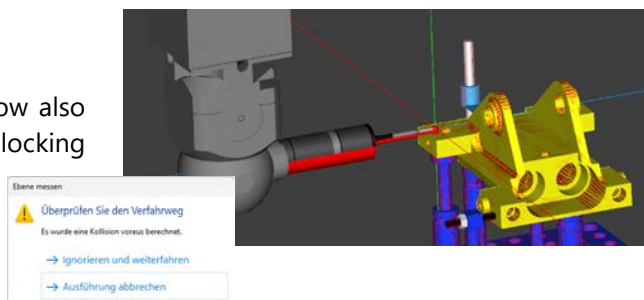
Detailed Collision Detection

Travel Path to and from the Probe Changer Considered

The detailed collision detection now also monitors travel paths and swivel movements up to the first slot of the probe changer, as well as the return to the starting position or changeover starting point after the last slot.

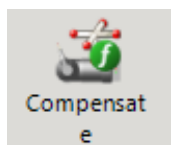
Unlocking of the PH10 Considered

The unlocking of the PH10 swivel system is now also monitored. This prevents collisions during unlocking before swiveling.



Measure More Accurately and Easily with the Renishaw PHS Head

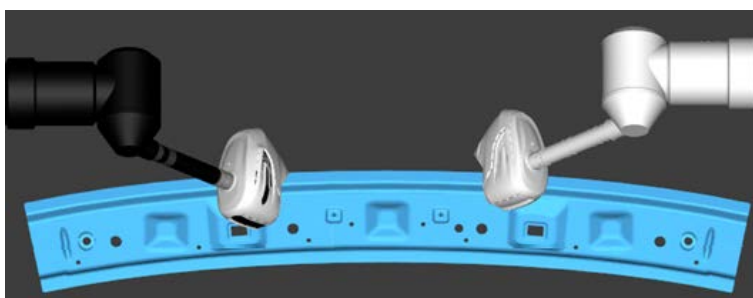
PHS Compensation for WENZEL WM | LS Line Scanner



The new PHS compensation enhances the measuring accuracy of point clouds captured with optical line scanners on the PHS swivel head. Mechanical deviations caused by deflections and torsional forces are measured and automatically compensated.

Program Mirroring Including PHS Rotate/Swivel Positions

PHS swivel positions are now also considered when mirroring measuring programs. This simplifies the transfer of programs, for example for double-column measuring machines or side-inverted components, without additional adjustments to the PHS angular positions.



Further Highlights for Maximum Productivity

Edit Material Thickness for Multiple Program Sentences Simultaneously

In measuring programs with multiple points, the material thickness can now be changed for all program sentences together. This includes activating and deactivating as well as adjusting the value - a function that is particularly useful in toolmaking, for example, when changing spark gaps.

New and Actualized CAD Interfaces

WM | Quartis R2025-1 supports the following CAD interface formats:

- CATIA V4 (4.1.9 to 4.2.4)
- CATIA V5 (R8 to R2024)
- CATIA V6 (up to R2024)
- DXF (2000/2002 and R12)
- IGES (up to 5.3)
- Inventor (V11 to **2025**)
- Parasolid (9 to 36)
- Creo, ProEngineer (16 to Creo **11**)
- Siemens NX (NX1 to **NX2406**)
- Solid Edge (18 to SE 2023)
- SolidWorks (2003 to **2025**)
- STEP (AP203, AP214, AP242)
- VDA (1.0 and 2.0)



The formats that have been changed compared to WM | Quartis R2024-2 are shown in **bold** in the list above.

Additionally, the CAD interfaces have been further developed through general improvements, optimizations, and error corrections.

Parameterized Measurement of Curves

Newly implemented DMIS functions enable the automated and parameterized measurement of curves. This includes single-point measurements and scanning, with or without rotary table, supported by commands to control the rotary table.

Automatic Intermediate Saving of DMO files

The new setting "Save DMO file time interval [s]" in the program settings allows DMO files to be saved automatically at defined intervals during long measurement programs. This preserves measured and calculated values in the event of a fault and simplifies resuming the measurement program.

Further Improvements

- **Measure on polygon mesh:** This function can now be recorded in measurement programs.
- **Export of point clouds:** All point clouds of a measurement can now be exported via a new option.
- **Line scanners on fixed probe heads:** The WM | LS line scanners and Nikon 3D laser scanners can now also be configured on a "fixed probe head" in addition to the PH10M, which is particularly advantageous for the WENZEL GT machines.
- **Large CMMs with dual drive and rotary table:** The WPC2050 driver now also supports CMMs with dual drive and rotary table.
- **Hexagon RDS measuring arms:** Compatibility with RDS version 6.5 (previously 6.2) established.
- **WM | LS sensors:** Support for Kreon Toolkit 23.1.0 integrated.



WENZEL Metromec AG

Rheinfelsstrasse 1
CH-7000 Chur / Schweiz
Phone: +41 81 257 07 00
E-Mail: info@wenzel-metromec.ch
Web: www.wenzel-metromec.ch

WENZEL Group GmbH & Co. KG

Werner-Wenzel-Strasse
D-97859 Wiesthal / Deutschland
Phone: +49 6020 201-0
E-Mail: info@wenzel-group.com
Web: www.wenzel-group.com

Improvements_WM_Quartis_R2025-1_EN_20BE01
© WENZEL Metromec AG

Subject to technical modification and to changes in scope and design.