

Improvements

WM | Quartis R2023-2

Update Information

WM | Quartis



Improvements WM | Quartis R2023-2

At a Glance

WM | Quartis R2023-2 offers a wide range of improvements for special applications and areas of use.

WM | Quartis R2023-2 contains further useful functions for **standard-compliant tolerance evaluation** according to **ISO GPS** and **ASME Y14.5**. You evaluate **distances** of two parallel straight lines optionally with the specification operators (LP, GG, GC, GN, GX or E). The **position tolerance** of a **pattern tolerance** supports further applications. You can now also evaluate the **diameter** of an entire **group** of circles or cylinders in one step. In addition, you can now also evaluate **user-defined features** with a one-sided (zero-limited) tolerance zone.

WM | Quartis R2023-2 shows in the **3D graphic** the **components** mounted on the coordinate measuring machine, such as the probe changer, reference ball, clamping plates, stop angle or clamping devices. You program and check your measuring sequences even more efficiently thanks to the expanded graphic display.

WM | Quartis R2023-2 includes some improvements for **simplified and better measuring**. You define and scan any **spatial 3D curves** on your parts. When scanning axial lines on rotationally symmetrical elements, such as cylinders, cones or spheres, the "**Constant scan direction**" setting ensures more stable measurement results. With the REVO **RUP1 ultrasonic probe**, you can perform **thickness measurements** on previously inaccessible workpieces.

WM | Quartis R2023-2 includes additional functions for **optical measurement** and **evaluation**. You can measure directly on **polygon meshes** and use them to evaluate the actual data acquired with a **Computed Tomography** (CT) scanner in terms of length measurement. You can align point clouds or polygon meshes comfortably with the new fully automatic **best-fit alignment**. The optimized **triangulation** of the CAD models ensures more meaningful nominal-actual comparisons. Such **colored 3D comparisons** can now also be generated directly from point clouds.

WM | Quartis R2023-2 offers **updated CAD interfaces** as well as other useful improvements and enhancements. You can read more about this on the following pages.

Note:

Some improvements are not included in the standard product WM | Quartis R2023-2 and require additional, chargeable modules. These are described in the document "Products and Modules WM | Quartis R2023-2".

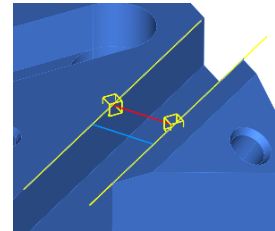
Standard-Compliant Evaluations according to ISO GPS and ASME

Evaluate Distance of Parallel Lines with Specification Operators

You determine the distance between two parallel straight lines with the specification operators LP, GG, GC, GN, GX or E.

With the two-point measure (LP) and the enveloping condition (E), two values, the largest and smallest rank order measure, are calculated and output on the report.

- LP Two-point size
- GG Least squares
- GC Chebyshev
- GN Minimum circumscribed
- GX Maximum inscribed
- E Envelope requirement**

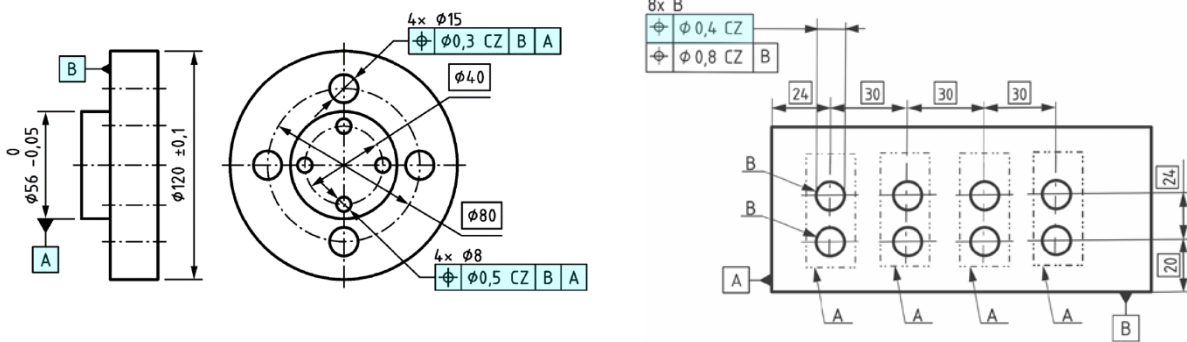


(E)	10.011	10.000	UTol 0.100	LTol -0.100	ISO 286	0.011	11%
	9.979					-0.021	-21%
Calculate	Actual	Nominal	Tolerance			Deviation	

1 Distance line - line (E), inside							
SX	10.000		0.100	-0.100	10.011	0.011	11%
GX	10.000		0.100	-0.100	9.979	-0.021	-21%

Evaluate Pattern Position Tolerances

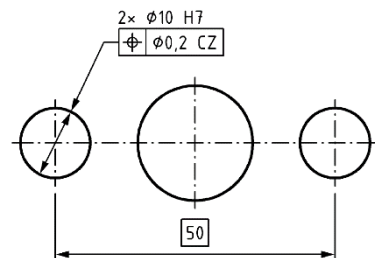
You evaluate the position tolerance of pattern tolerances according to ISO GPS or ASME Y14.5. Other reference systems with open degrees of freedom are supported.



Evaluating the Diameter of an Element Group

You evaluate element groups consisting of cylinders or circles with the feature "Dimension" in addition to the feature "Position".

A feature with the largest deviation of all elements contained in the group is generated. In addition, a feature with the specific deviations is generated for each element of the group.



User-Defined Feature Supports Zero-Limited Tolerance Zones

You now also evaluate user-defined features with one-sided (unilateral, zero-limited) tolerance zones.

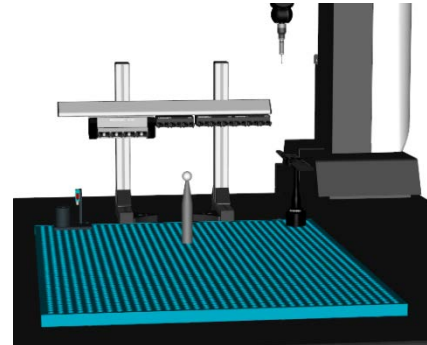
ID	1	0.033	0.000	UTol 0.100	0.033	33%
Type						
<input checked="" type="checkbox"/> Unilateral tolerance						
Feature	Actual	Nominal	Tolerance	Deviation		

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Graphical Display of the Components Mounted on the CMM

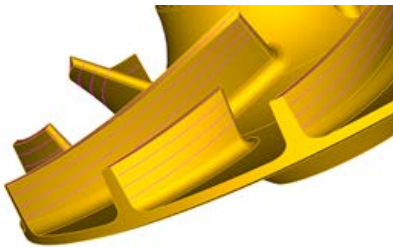
You use the 3D graphics for offline programming and for visual collision monitoring.

The components mounted on the coordinate measuring machine, such as the reference sphere, probe changing systems, clamping plates, stop angles, precision vices, clamping devices, etc., can now be displayed in the 3D graphics.



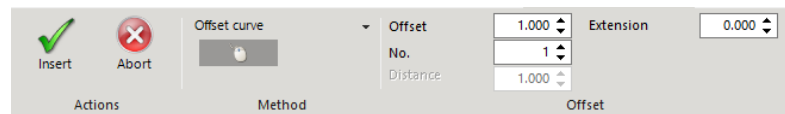
Simplified and Better Measurements

Define any Curves and Scan them as spatial 3D Curves



You scan virtually any spatial 3D curve on your parts.

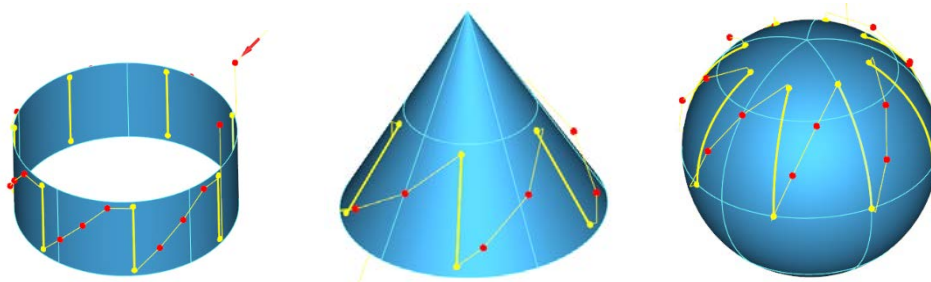
To do this, simply insert an offset curve into the CAD model of the part, click a polyline curve, or select a curve already in the CAD model.



Consistent Scan Direction when Measuring with Distribution Method "Axial Lines"

You want a constant scan direction when scanning, so that the probe ball is always dragged over the workpiece surface and not alternately dragged and pushed.

The "Consistent scan direction" setting is now also available for "Axial lines".

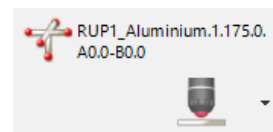


Thickness Measurement with Renishaw REVO RUP1 Ultrasonic Probe



The Renishaw REVO RUP1 ultrasonic probe enables single-sided measurement of workpiece thicknesses, providing the ability to measure features that were previously inaccessible with tactile systems.

Ultrasonic thickness measurement with REVO RUP1 has been integrated into WM | Quartis.



You can perform thickness measurements and evaluate the results in corresponding features.

Optical Measurement and Evaluation

You measure optically by capturing point clouds with a line scanner or acquire the component geometry with a CT (computed tomography) scanner.

Measuring on Polygon Meshes - Evaluating CT Data

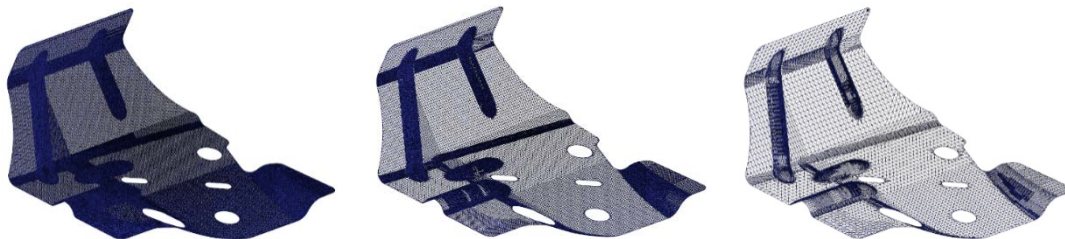
You measure directly on polygon meshes and can thus evaluate the actual data acquired with a Computed Tomography (CT) scanner in terms of length measurement. All elements with all available tactile distributions and options are available.



Optimized Triangulation of CAD Models

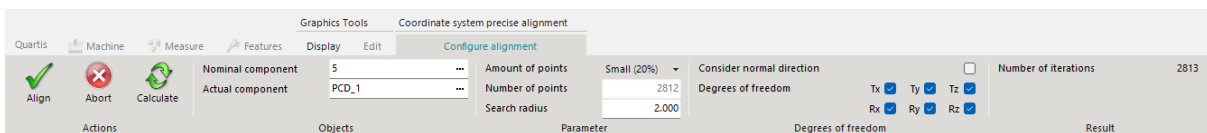
You benefit from an optimized triangulation of the CAD models. The parameter for the maximum triangle edge length is set dynamically based on the effective part size.

The following images show the triangulation with the presets Fine, Medium and Rough.



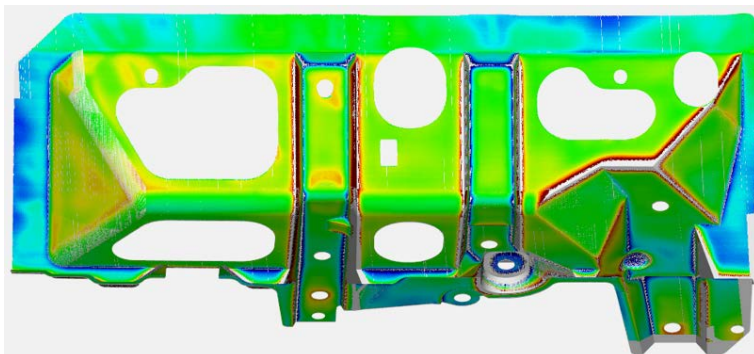
Fine Alignment of Polygon Meshes and Point Clouds

Based on the "Coarse Alignment" function implemented in WM | Quartis R2023-1, the "Fine Alignment" function is available. This is a fully automatic best-fit alignment for point clouds or polygon meshes.



Color 3D Comparisons of Point Clouds with CAD Nominal Data

You generate color images showing component deviations directly from point clouds, e.g. taken with a line scanner. The comparisons can be supplemented with deviation flags embedded in the measurement report and output in a PDF document.



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Additional Improvements in the Optical Measurement and Evaluation Area

- The "Coarse Alignment" function can be recorded in the measuring program.
- Pre-travel and post-travel of optical scan paths can be set separately. This allows you to make better use of the space available on the coordinate measuring machine depending on the sensor position.
- Start, intermediate and end-points of an automatically calculated optical scan path can be adjusted individually. By editing a scan path, you can adapt it optimally to the workpiece dimensions.
- Extract elements from point clouds: You can now define the ROI (Region Of Interest) using both absolute and relative values.

Further Innovations Simplify Daily Work

New and Actualized CAD Interfaces

WM | Quartis R2023-2 supports the following CAD interface formats:

- CATIA V4 (4.1.9 to 4.2.4)
- CATIA V5 (R8 to **R2023**)
- CATIA V6 (to **R2023**)
- DXF (2000/2002 and R12)
- IGES (to 5.3)
- Inventor (V11 to 2023)
- Parasolid (9 to 35)
- Creo, ProEngineer (16 to Creo 9.0)
- Siemens NX (NX1 to **NX2212**)
- Solid Edge (18 to SE **2023**)
- SolidWorks (2003 to **2023**)
- STEP (AP203, AP214, AP242)
- VDA (1.0 and 2.0)



The changed formats compared to WM | Quartis R2023-1 are shown in **bold** in the above list.

You also benefit from general improvements, optimizations and error corrections in the CAD interfaces.

Time-Optimized Calibration of REVO RSP3 Scanning Probes

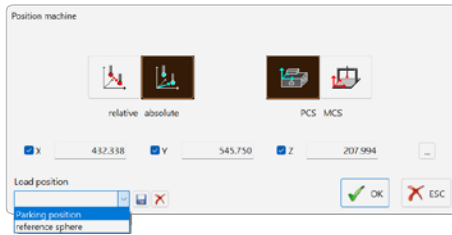
You can save considerable time by time-optimizing the calibration of the required positions of a REVO RSP3 sensor.

The probe system setting "Time-optimized calibration of measuring probe systems" now also affects the calibration of a scanning probe system on a Renishaw UCCserver.

Windows Display Scaling for High Resolution Screens Supported

You are using a high DPI screen with a higher resolution than the recommended screen resolution of 1920 x 1080 (Full HD) for optimal operation. Windows display scaling can now be used. As a result, the controls on the WM | Quartis user interface are enlarged accordingly, making them more legible.

Position Measuring Machine: Save and Reload Positions



Positions on your coordinate measuring machine that you move to again and again can now be saved and reloaded in the "Position measuring machine" dialog.

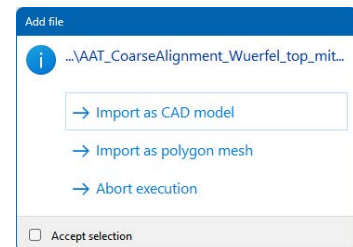
You save time by not having to enter the coordinate values of each position and the other settings each time.

Scanning with Rotary Table: Pre-Scan and Post-Scan Distances Supported

When scanning with a rotary table as the measuring fourth axis, the pre-scan and post-scan distances are now also supported. This allows you to eliminate any "noise" that may occur during acceleration and deceleration.

Drag and Drop to Open and Import Files

To quickly open and import files, you can now simply drag and drop them from the Windows File Explorer into the WM | Quartis main window. This opens the file type-dependent import dialog or opens the file immediately.



Mouse Wheel Zoom in Graphics Window Optimized

When turning the mouse wheel, zooming in or out is now performed from the position of the mouse pointer. This means that zooming with the mouse wheel corresponds to the intuitive behavior that is common in many CAD and graphics programs.

Calling Subprograms Parameterized

You use subprograms and call them parameterized. To do this, the ID of the subprogram is defined via the expression editor. This is useful, for example, in automation projects and for parameterized measurement sequences.

Measuring Machine Display: Additional LH and LHF Models Available

In the WM | Quartis configuration, you can additionally select the following measuring machine models for the display in the 3D graphic:

- WENZEL LH (3G) 1210 (4000)
- WENZEL LH 1515 (2000 / 3000 / 4000)
- WENZEL LH (3G) 2015 P (3000 / 4000 / 5000)
- WENZEL LH 2317 (4000 / 5000 / 6000)
- WENZEL LHF (3G) 3025 (5000 / 6000)





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Improvements_WM_Quartis_R2023-2_EN_20BC07
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Subject to technical modification and to changes in scope and design.