

Improvements

# WM | Quartis R2023-1

Update Information

# WM | Quartis



# Improvements WM | Quartis R2023-1

## At a Glance

WM | Quartis R2023-1 offers a wide range of improvements for special applications and areas of use.

WM | Quartis R2023-1 includes additional functions for **optical measurement** and **evaluation**. You decorate the colored 3D comparisons between CAD model and CT data with deviation flags. Automatically created scan paths based on the CAD model save valuable measurement time when scanning point clouds.

WM | Quartis R2023-1 contains the new "**Coarse Alignment**" function. This function allows you to coarsely align point clouds, polygon meshes or workpieces to the CAD model with just a few clicks or by probing the actual values on the coordinate measuring machine.

WM | Quartis R2023-1 measures planar curves (section with plane) and axial curves (section with cylinder) optionally as **3D curves**. This creates the basis for measuring any curves in 3D space, such as offset curves, polyline curves or free CAD curves.

WM | Quartis R2023-1 imports **CAD models with PMI** (Product Manufacturing Information). The PMI (GD&T - dimensions and tolerances) are visualized in the 3D graphic.

WM | Quartis R2023-1 **evaluates** further **geometric features** according to standards. You evaluate **distances** of two parallel planes optionally with the specification operator (LP, GG, GC, GN, GX or E). The **position tolerance** of a **pattern tolerance** according to ISO GPS or ASME Y14.5 supports further application cases.

WM | Quartis R2023-1 allows easy access to the **probe system calibration data**. You can use it to **monitor** or **document** the stylus systems used, among other things.

WM | Quartis R2023-1 includes an optimized interface to the **WM | Gear** gear measuring software and a direct operation of the motorized counter holders on WENZEL GT gear measuring machines.

WM | Quartis R2023-1 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 R2023-1 and require additional, chargeable modules. These are described in the document "Products and Modules WM | Quartis R2023-1".

## Optical Measurement and Evaluation

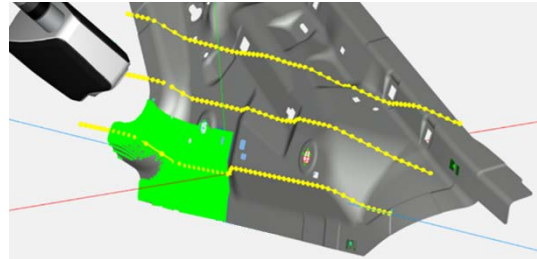
You measure optically by capturing point clouds with a line scanner or scan the part geometry with a CT scanner (computer tomography).

### Automatic Distribution of Scan Paths across CAD Surfaces

Your laser line scanner automatically captures point clouds on the surfaces previously selected on the CAD model.

The scan paths optionally follow the workpiece surface. In addition, the starting point of the distribution is influenced by the current position of the sensor.

All this makes your CNC coordinate measuring machine even more efficient and saves valuable measuring time.



### Point Clouds with Directional Information

Point clouds that you import or capture with handheld or CNC laser scanners now contain directional information. This makes it easier for you to further process the point clouds. In addition, you can see in the 3D graphics whether you are looking at the front (glossy) or at the back (dull) of the part.



Point cloud without direction

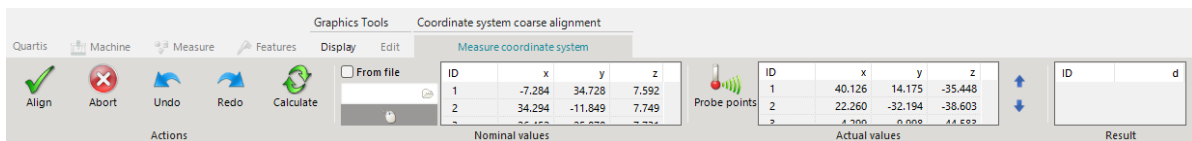


Point cloud with direction: from front (glossy) and from back (dull)

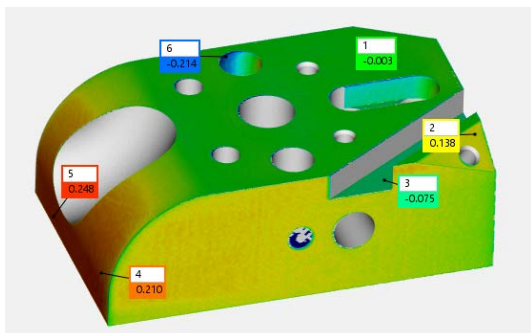


### Coarse Alignment of Point Clouds, Polygon Meshes and Workpieces to the CAD Model

With the new "Coarse alignment" function, you can bring point clouds, polygon meshes or workpieces into line with the CAD model with just a few clicks or by probing the actual values on the coordinate measuring machine.



### Colored 3D Comparisons with Deviation Flags



The comparisons available since WM | Quartis R2022-2 can now be decorated with deviation flags. You can see the numerical deviation values in them.

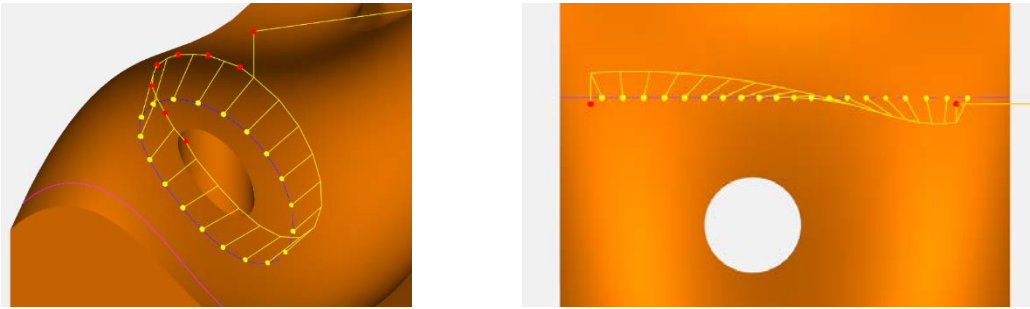
The colored images with the component deviations generated on the basis of triangulated point clouds are thus even more informative.

The comparisons with deviation info boxes are displayed in the graphics work window and can also be embedded in the measurement report and thus output in a PDF document.

# Improvements WM | Quartis R2023-1

## 3D Curves Measurement, Processing and Evaluation

When measuring a curve, the "3D, direct" calculation method is now available. You can use this method to measure both planar curves (section with plane) and axial curves (section with cylinder). With the 3D curve, the residuals are perpendicular to the nominal curve and do not lie in a plane or on a cylinder surface.



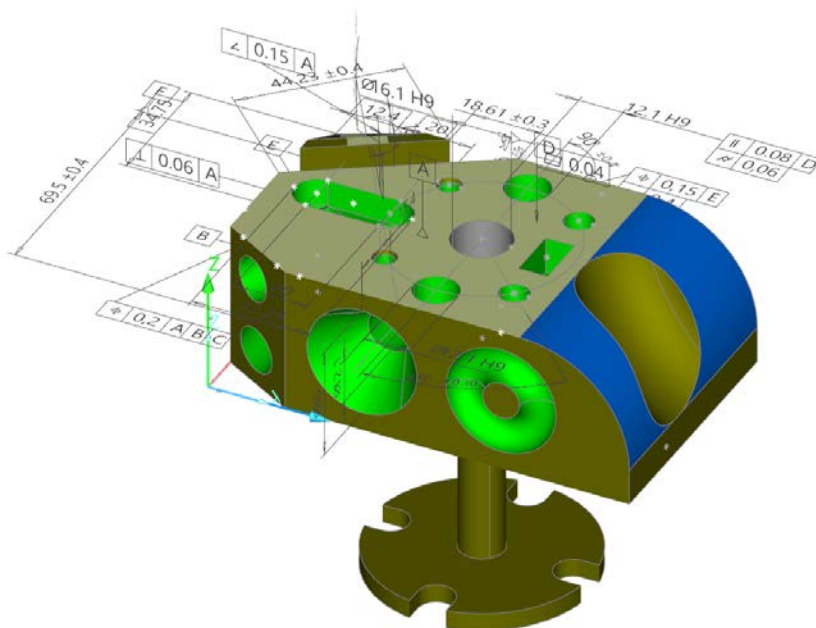
Of course, with the new 3D curve, all the alignments, constructions and features that can already be used for the curve planar or axial are available to you.

**Advance notice:** With WM | Quartis R2023-2 you will insert real 3D curves as auxiliary elements on the CAD model. 3D curves will be able e.g. to be inserted as offset curves to surface boundaries.

## Import CAD Models with PMI and Visualize them in 3D Graphics

You dimension your parts directly in the 3D CAD model and want to see the GD&T information also in WM | Quartis.

CAD models with PMI (Product Manufacturing Information) can be imported directly and visualized in the 3D graphics. Supported CAD formats are CATIA, Creo, Siemens NX, SolidWorks and STEP in the latest PMI version.



## Evaluate further Geometric Features in Accordance with Standards

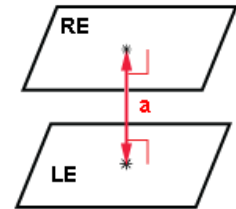
### Evaluate Distance between two Parallel Planes with Specification Operators

You select the specification operator (LP, GG, GC, GN, GX or E) when evaluating the distance between two parallel planes.

For the calculation, a parallel pair of planes is fitted into the points of the two planes.

As with the "Size (diameter)" feature, two values (maximum and minimum rank-order size) are calculated for the two-point measure (LP) and the envelope condition (E) and output on the report.

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



Calculate	Actual	Nominal	Tolerance			Deviation	
Ⓔ	70.062 69.944	70.000	UTol 0.100	LTol -0.100	ISO 286	0.062 -0.056	62% -56%
<b>2 Distance plane - plane (E), outside</b>							
GN	70.000		0.100	-0.100	70.062	0.062	62%
SN	70.000		0.100	-0.100	69.944	-0.056	-56%

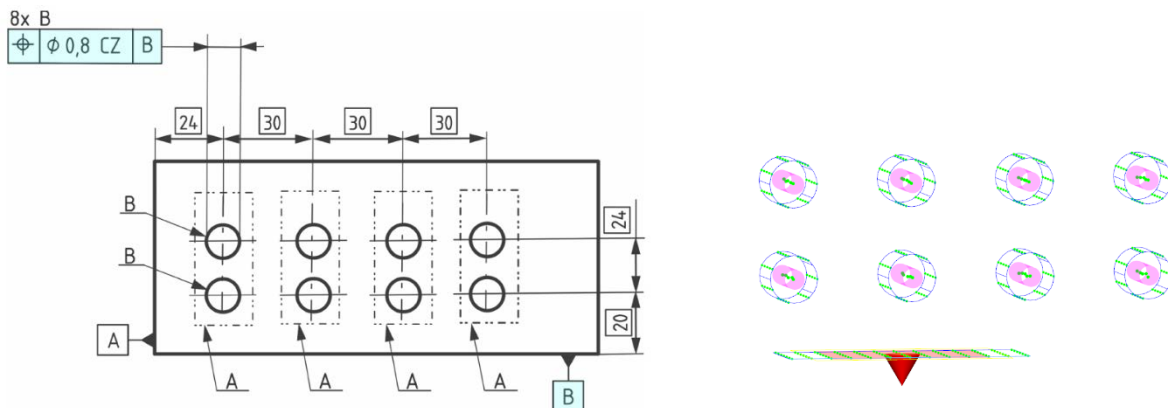
### Evaluate Position Tolerance with Pattern Tolerance

You evaluate position tolerance of a pattern tolerance in which the common position of several elements in an open reference system is tolerated.

WM | Quartis R2023-1 supports the following additional cases of position tolerance with pattern tolerance in addition to those already available:

- ISO GPS case 3.0.0: Reference is a plane, tolerance zone "parallel planes".
- ISO GPS case 3.0.0: Reference is a plane, tolerance zone "parallel cylindrical".
- ASME case 3.1: Reference is a plane, tolerance zone "parallel planes".
- ASME case 3.1: Reference is a plane, tolerance zone "parallel cylindrical".

Among other things, the following pattern tolerance can now also be evaluated. The element group here can consist of circles or cylinders.



### General Tolerances for Plastic Moulded Parts According to ISO 20457 Integrated

The general tolerance tables for plastic moulded parts according to ISO 20457 are now available in WM | Quartis. The application is identical to the already existing DIN 16742.

# Improvements WM | Quartis R2023-1

## Query and Document Probe System Calibration Data

You want to monitor and document the calibration data of the probe systems or use them in the program for sequence control.

Using the expression editor, you can now easily and conveniently access all database fields of the probe systems.

You can use this data in characteristics, for the output on the measuring report or in the conditions of the measuring program branches.

Application examples:

`ProbeSys('1102').Probe[2].Dim`

Output of the diameter of stylus 2 of the probe system with ID "1102".

`(ProbeSys('1101').Probe[1].Range) < 0.002`

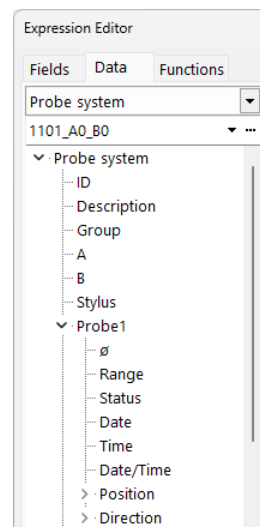
Check if the range of stylus 1 of the probe system with ID "1101" is smaller than 0.002mm.

`(Val(ProbeSys('1101').Probe[1].DateTime) + 2592000) < Val((System.DateTime))`

Check if the calibration date of stylus 1 of the probe system with ID "1101" is older than 30 days (2'592'000 seconds).

`ProbeSys(ActualProbeSys()).Probe[1].Range`

Output of the range of stylus 1 of the currently loaded probe system.



## Gear Measuring Technology

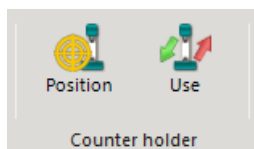
### Optimized Interface to WM | Gear Measurement Software

You benefit from numerous improvements and enhancements when measuring and analyzing gears. The I++ DME interface to the WM | Gear gear measuring software has been optimized and operation simplified.

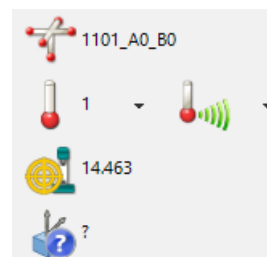
### Operate Manual and Motorized Counter Holders of WENZEL GT Gear Measuring Machines.

You use WENZEL GT gear measuring machines. For easy clamping of shafts, the gear measuring machine can optionally be equipped with a counter holder for clamping the workpieces between centers.

You operate the motorized counter holders directly from the WM | Quartis user interface.



The position of the counter holder is displayed in the status window.



## Further Innovations Simplify Daily Work

### New and Actualized CAD Interfaces

WM | Quartis R2023-1 supports the following CAD interface formats:

- CATIA V4 (4.1.9 to 4.2.4)
- CATIA V5 (R8 to R2022)
- CATIA V6 (to R2022)
- 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 **NX2206**)
- Solid Edge (18 to SE 2022)
- SolidWorks (2003 to 2022)
- STEP (AP203, AP214, AP242)
- VDA (1.0 and 2.0)



The changed formats compared to WM | Quartis R2022-2 are shown in **bold** in the above list.

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

### Operating ROMER Hexagon Measuring Arms with RDS Version 6

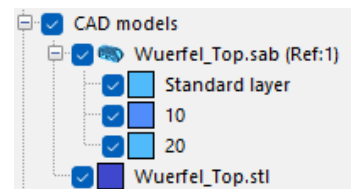
You are working with a measuring arm that is operated via the Hexagon RDS interface.

WM | Quartis R2023-1 now also supports Hexagon RDS version 6.2 (previously V 5.4).

### Graphics Window: Display Options Extended and Integrated on User Interface.

After triangulating a CAD model, the resulting nominal polygon mesh (\*.stl file) is displayed grouped to the CAD model in the display options.

The display options window is now docked to the right of the graphics work window and is no longer freely movable. This gives you easier, clearer access to the settings.



### Remote Control Interface Expanded

You operate the WM | Quartis from another software using the MQTT-based remote control interface. This has been extended with the following functionality:

- Authentication at the MQTT broker with login
- Error handling via remote control interface
- Transfer program dialogs via remote control interface

### Other Useful Improvements

- Virtual measurement with WM | PointMaster: Improved error handling when individual points of an element are not found.
- Determination of volumetric probing deviation (capability): Updated according to ISO 10360-5.
- WM | Quartis restart: The previously active program (of all open programs) is activated.
- Configuration: The WENZEL WPC 2050 controller can be selected as measuring device.



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