Improvements
WM | Quartis R2022-2

Update Information

Improvements WM | Quartis R2022-2

At a Glance

WM | Quartis R2022-2 offers a wide range of improvements for special applications and areas of use.

WM | Quartis R2022-2 includes additional functions for **optical measurement** and **evaluation**. You create colored 3D comparisons between CAD model and CT data. Automatically generated scan paths simplify the scanning of point clouds.

WM | Quartis R2022-2 supports the WENZEL 3D line scanner **WM | LS 600** as another optical sensor in the extensive portfolio of laser triangulation sensors. You use the WM | LS 600 with the continuous Renishaw PHS-2 servo head and thus measure even large components quickly and reliably.

WM | Quartis R2022-2 executes **DMIS** programs with path-oriented **scanning** commands. Among other things, this also enables you to perform parameterized scanning using variables in the scan paths.

WM | Quartis R2022-2 improves the **measurement of geometric elements**. You measure conical components with a spiral distribution of probe points or scan paths. When using a Renishaw REVO 5-axis measuring system, spiral scanning of a cone is particularly efficient and time-saving.

WM | Quartis R2022-2 evaluates the **position tolerance** of a **pattern tolerance** either according to ISO GPS or ASME Y14.5. You use the additionally supported use cases.

WM | Quartis R2022-2 performs **probe and module changes** in the probe change rack faster. As a result, you benefit from shorter measurement times.

WM | Quartis R2022-2 includes improvements in the **statistical evaluation** of your measurement results. The statistics overview is visually refreshed and supplemented with additional information. Optimized operation avoids unnecessary waiting times.

WM | Quartis R2022-2 offers **updated CAD interfaces** as well as other useful improvements and enhancements, such as additional fields in the **expression editor** for program and feature information. You can read more about this on the following pages.

Note:

Some improvements are not included in the standard product WM | Quartis R2022-2 and require additional, chargeable modules. These are described in the document “Products and Modules WM | Quartis R2022-2”.

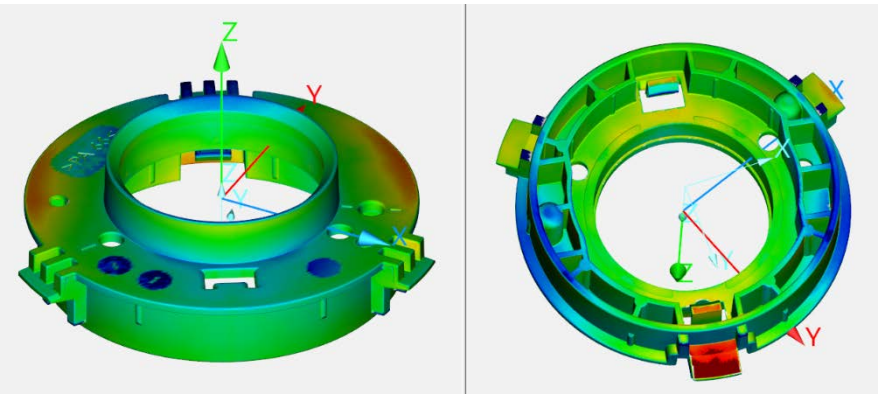
Optical Measurement and Evaluation

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

Colored 3D Comparisons between CAD Model and CT Data

With WM | Quartis R2022-2, colored images can be generated on the basis of triangulated point clouds, which show the part deviations. You can choose between nominal-actual or actual-nominal comparison.

The comparisons are displayed in the graphics window and can also be embedded in the measurement report and thus output on a PDF document.

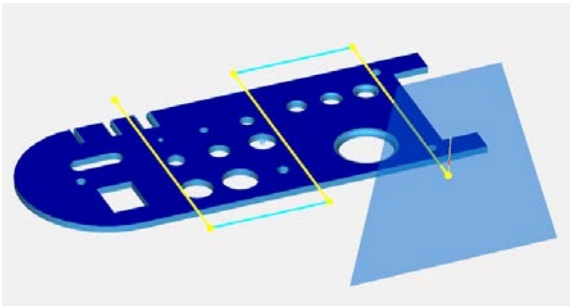


Automatic Scan Paths Simplify the Acquisition of Point Clouds

Previously, when measuring point clouds, you could define the scan paths by manually distributing them by clicking the start and end points of all paths.

With the new distribution method "Manual: Rectangle" you define a rectangle by three points over which the scan paths are calculated automatically. The sensor direction and the distribution parameters "Working distance", "Pre-/Post travel" and "Overlap" are taken into account.

The three points that define the rectangle can be defined either by clicking on the CAD model or by positioning the sensor on the coordinate measuring machine.



Transfer paths on which the line scanner does not pick up any points are drawn in blue in the distribution.

Transfer Paths in Manual Distributions

Transfer paths can now also be inserted for manually set scan paths. This can be done both by clicking on the CAD model and by positioning the sensor.

WENZEL Linie Scanner WM | LS 600 Supported on Renishaw PHS-2

With the optical 3D line scanner WM | LS 600 another WENZEL laser triangulation sensor is supported.

The WM | LS 600 has a maximum line width of 280 mm to 600 mm. This allows you to measure even large components quickly and reliably.

Run DMIS Scanning Programs

You execute DMIS programs which have been created on an offline programming system, for example. Or you use the variables and other high-level language constructs of the programming language for para-metric programs. The WM | Quartis R2022-2 offers new application possibilities with DMIS programs.

Path-Oriented Scanning Supported

Until now, WM | Quartis supported the DMIS standard 5.2 functions for the triggered tactile measurement of geometry. This is absolutely sufficient for customers who measure body sheet metal parts with DMIS programs.

You work with offline programming systems, like Siemens NX CMM, which generate DMIS programs for measuring probe systems like SP25 or even REVO. Or you switch from OpenDMIS to WM | Quartis and want to continue using existing DMIS scanning programs.

In WM | Quartis, DMIS programs can now also be executed with path-oriented scanning commands. Among other things, this also enables parameterized scanning using variables in the scan paths.

The following example shows how scanning in DMIS is basically structured.

```
F(CIR)=FEAT/CIRCLE,INNER,CART,75.178,16.822,40,0,0,1,8
P(CIR_PATH)=PATH/ARC,     CART,75.178,16.822,38,0,0,1,4,0,405,1,0,0

MEAS/CIRCLE,F(CIR),6
  PAMEAS/DISTANCE,1.,SCNVEL,MMPS,15,P(CIR_PATH),1,0,0
ENDMES
```

WM | Quartis R2022-2 supports the following DMIS commands for scanning:

- PATH/LINE for any elements, coordinate system CART and POL
- PATH/CURVE for any elements, coordinate system CART
- PATH/ARC for any elements, coordinate system CART and POL
- PATH/HELICAL for cylinders and cones, coordinate system CART and POL
- PAMEAS with minor keywords NODATA and REMOVE,ALL (for transfer scans)
- SCNVEL incl. MPM, MMPS, IPM, IPS and PCENT
- SCNACL incl. MPMM, MMPSS, IPMM, IPSS and PCENT

Loops with Variable Assignment within a Measuring Sequence

You use the DMIS programming language in WM | Quartis to write and execute e.g. parameterized programs. In a DMIS program, variable assignments (ASSIGN/) and loops (DO..ENDDO) are now also supported within an element measurement (MEAS..ENDMES).

```
F(1)=FEAT/CIRCLE,inner,CART,0,0,DEP,0.00000,0.00000,1.00000,DIA
MEAS/CIRCLE,F(1),NPT
   DO/I,1,NPT,1
   Xpos = ASSIGN / RR * Cos(DTOR(ANG * (I - 1)))
   Ypos = ASSIGN / RR * Sin(DTOR(ANG * (I - 1)))
   II   = ASSIGN / (COS(DTOR(ANG * (I - 1))))
   JJ   = ASSIGN / (Sin(DTOR(ANG * (I - 1))))
   PTMEAS/CART,(XCEN+XPOS),(YCEN+Ypos),dep,-II,-JJ,0
   ENDDO
ENDMES
```

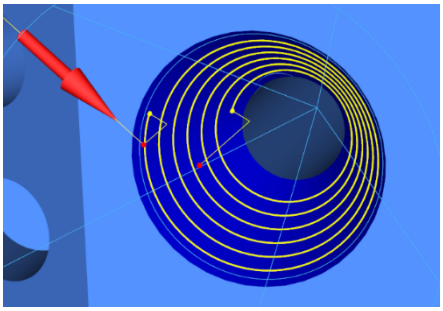
....

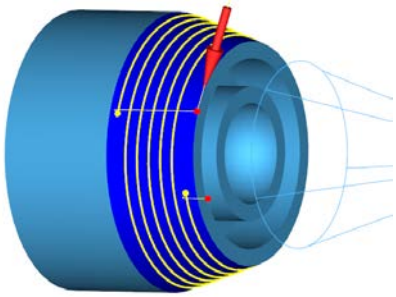
Improvements in Measuring Geometric Elements

Measure Cone with Spiral Distribution

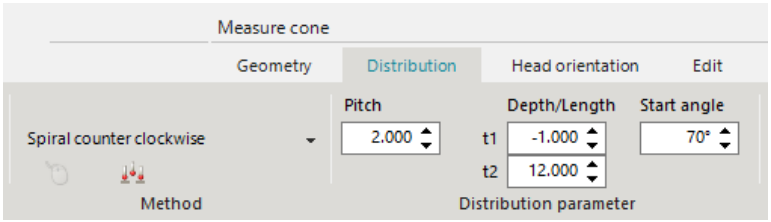
You measure components with conical surfaces and want to scan the shape and characteristics of the cones in a time-saving and efficient manner.

Especially when using a Renishaw REVO 5-axis measuring system, a spiral distribution of the probe points is ideal for this purpose. This eliminates the need for transfer paths between the circles or shell lines.





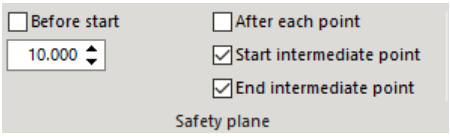
The two new distribution methods "Spiral clockwise" and "Spiral counterclockwise" are available for measuring cones.



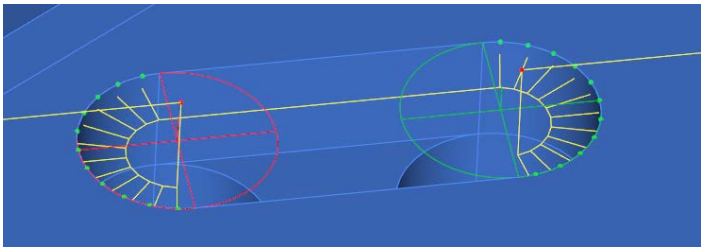
You also use the spiral distribution when measuring single points in the "Triggered" mode. Of course, any intermediate points required for a collision-free measurement are automatically inserted into the distribution. The new distribution methods are available on all supported measuring devices (WPC controllers and I++ DME servers).

Optional Safety Plane Approach at the Beginning and End of the Measuring Sequence

You create measuring programs with even shorter runtimes by individually deselecting the start and end end points that are automatically inserted into the measuring sequence, if required.



You can optimize the already collision-free measuring path with just a few clicks and thus reduce the measuring times. In the following example, the end intermediate point was deselected for the first semicircle and the start intermediate point for the second semicircle. This eliminates the unnecessary approach to the safety plane.



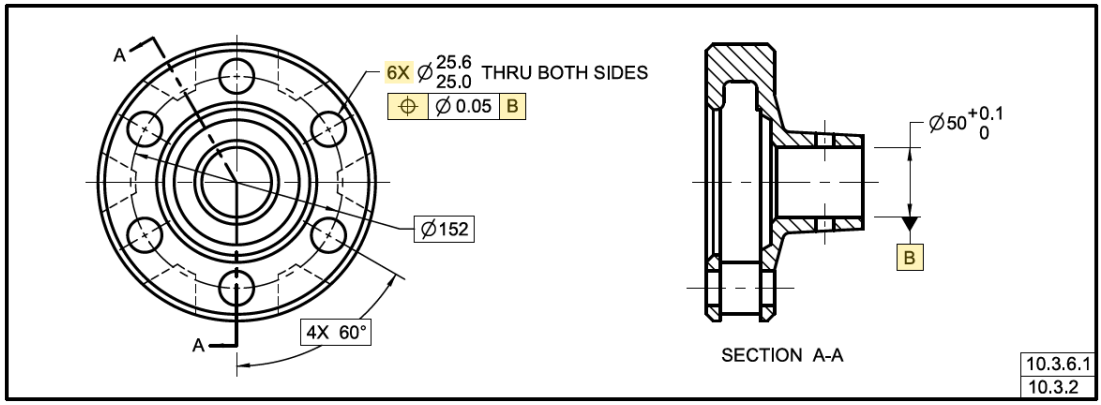
The new adjustment options are also extremely useful when measuring shafts or spirals (helixes worms) with a rotary table.

Improvements WM | Quartis R2022-2

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.

Evaluations according to ASME Y14.5 are now also supported. Here, the common tolerance zone without explicit indicator is the standard. In ISO GPS this is indicated by the modifier CZ (Common Zone).



WM | Quartis currently supports the following cases of position tolerance with pattern tolerance:

- ISO GPS case 5.0.0: reference is an axis, tolerance zone "cylindrical" and "parallel planes"
- ISO GPS case 3.0.0: reference is a plane, tolerance zone "cylindrical"
- ASME case 2.1: reference is an axis, tolerance zone "cylindrical" and "parallel planes"
- ASME case 3.1: Reference is a plane, tolerance zone "cylindrical"

Further use cases will be implemented in the next versions of WM | Quartis.

Faster Probe System Changes and Other Performance Improvements

You use your coordinate measuring machine for series monitoring or you generally attach importance to short measuring times.

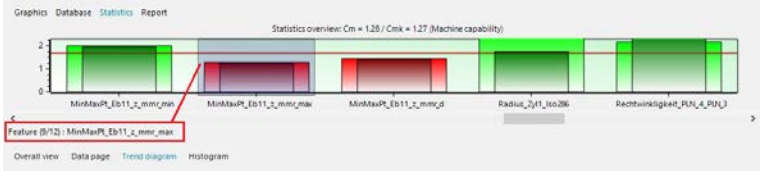
Faster Probe and Module Changes

The travel paths for placing and picking up a single probe component or a complete probe system in the probe changer have been optimized. As a result, you benefit from faster probe changes and shorter measuring times.

Optimized Operation in the Statistics Work Window

You evaluate your measurement results statistically in WM | Quartis. Now, when you open the statistics work window or switch to another workpiece, the statistics data are no longer automatically loaded from the database. This saves you unnecessary waiting time.

The statistics overview has been visually refreshed and supplemented with additional information.



Further Innovations Simplify Daily Work

New and Actualized CAD Interfaces

WM | Quartis R2022-2 supports the following CAD interface formats:

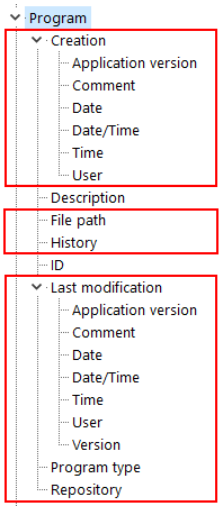
- CATIA V4 (4.1.9 to 4.2.4)
- CATIA V5 (R8 to **R2022**)
- CATIA V6 (to **R2022**)
- DXF (2000/2002 and R12)
- IGES (to 5.3)
- Inventor (V11 to 2022)
- Parasolid (9 to 34)
- Creo, ProEngineer (16 to Creo 8.0)
- Siemens NX (NX1 to **NX2007**)
- Solid Edge (18 to **SE 2022**)
- SolidWorks (2003 to **2022**)
- STEP (AP203, AP214, AP242)
- VDA (1.0 and 2.0)

The changed formats compared to WM | Quartis R2021-1 are shown in **bold** in the above list.

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

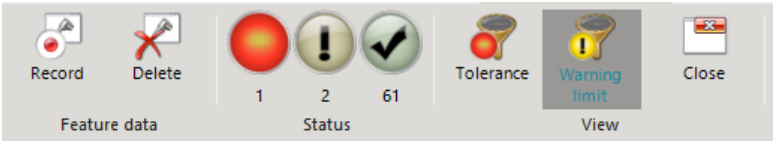
Additional Fields for Program Information

You want to print specific information about the used measuring program on the measuring report. For this purpose, additional fields are available in the expression editor.

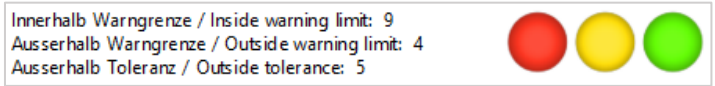


Feature Data Work Window: Additional Filters and Fields.

You monitor your measurement results already during the measurement process. The new "Warning limit" filter supplements the previous "Tolerance" display option.



With the help of the new feature data fields, you can create a descriptive summary of the tested features in the form of a traffic light image on the measurement report.



Renishaw Equator: new Windows 10 controller supported

You check your parts on a Renishaw Equator gauge.

The new Renishaw controller with Windows 10 is supported.

The Equator temperature, which is important for the decision to remaster, is now read out via the I++ function "ReadAllTemperatures()".

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