

New Features

**WinWerth<sup>®</sup>**

**Version Information 10.46**

The measurement software for all tasks on the shopfloor and in the laboratory

# Foreword

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## WinWerth® Version 10.46

Dear Sir or Madam,

We are pleased to present the new version 10.46 of our 3D measurement software WinWerth®.

This year, the focus is on further improving the ease of use. The new WinWerth® Tutorial accompanies the user step by step, for example when performing a tomography scan. Dialogs with text and images explain the individual operating steps, supported by highlighting of the relevant control fields. The CT tool and the dialog for 3-2-1 alignment have been made simpler and clearer. The evaluation of complex geometrical deviations is now graphically supported by corresponding pictograms.

In 3D graphics, the arrangement and display of control elements and element groups can now be personalized and saved for each user. Point clouds in STL format and color-coded deviation plots are displayed more plastically, making it easier to identify structures on the workpiece surface. A ViewCube enables quick adjustment of the perspective.

Have we sparked your interest? You will find detailed descriptions and further innovations in this information brochure. If you have any questions or are interested in one of our products, please do not hesitate to contact our worldwide service centers or our headquarters in Germany by phone at +49 641 7938-519 or by e-mail at [vertriebsinnendienst@werth.de](mailto:vertriebsinnendienst@werth.de).

We wish you continued success in your work with WinWerth®.

Yours sincerely

Your Werth Messtechnik GmbH team

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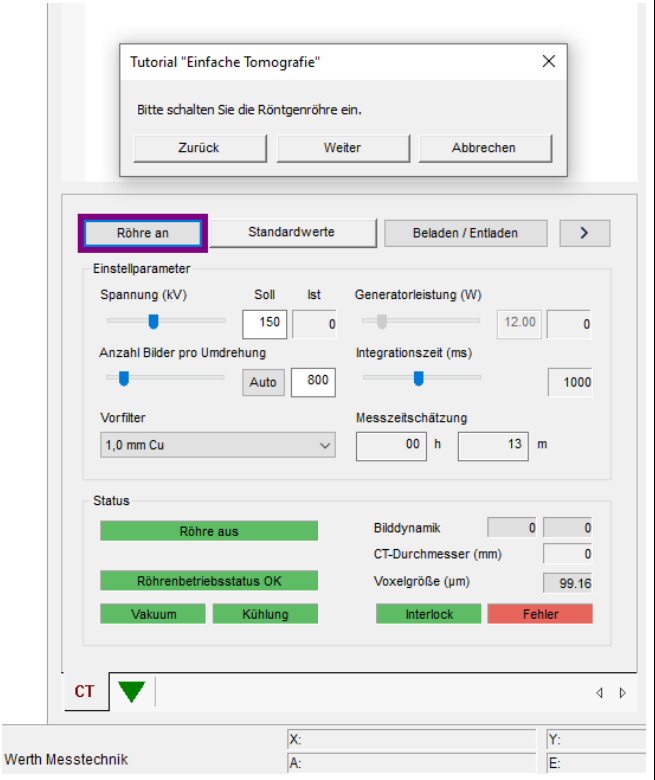
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**WinWerth®**  
General functions  
(Standard)

**WinWerth® Tutorial**  
Interactive WinWerth® tutorials accompany the user step by step, e.g. when performing a tomography scan.

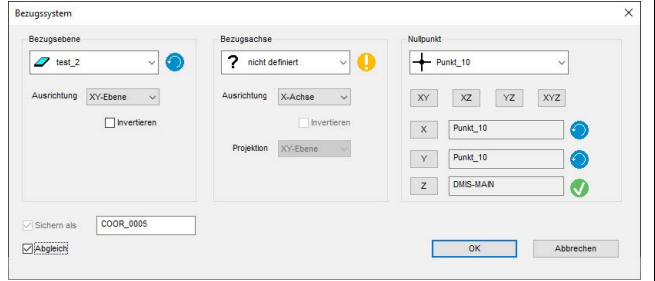
- Display of dialogs with text and images for explanation
- Highlighting of the relevant control fields
- Tutorials can be started or canceled at any time.
- Start list with short description of available tutorials is opened via icon in the sensor bar

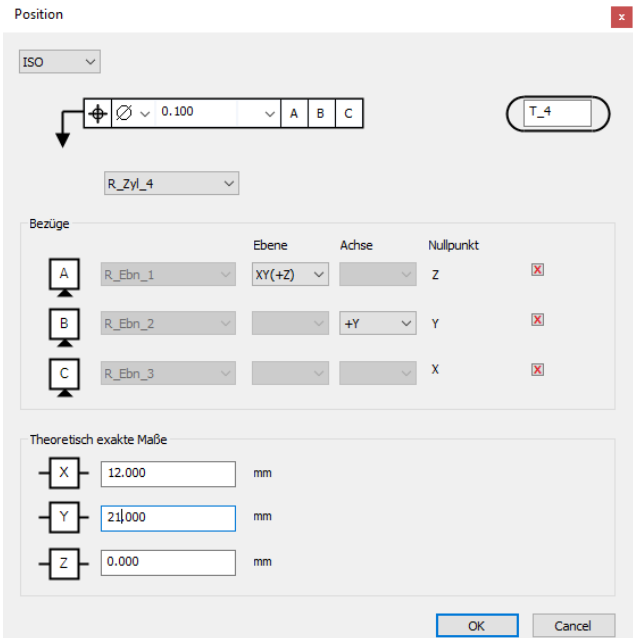
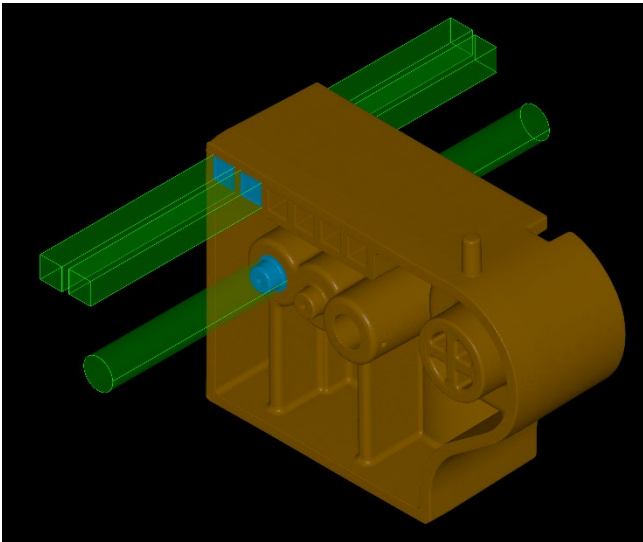
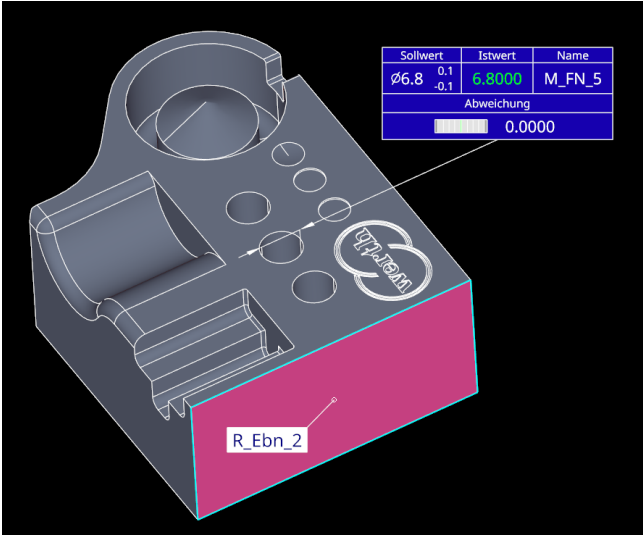


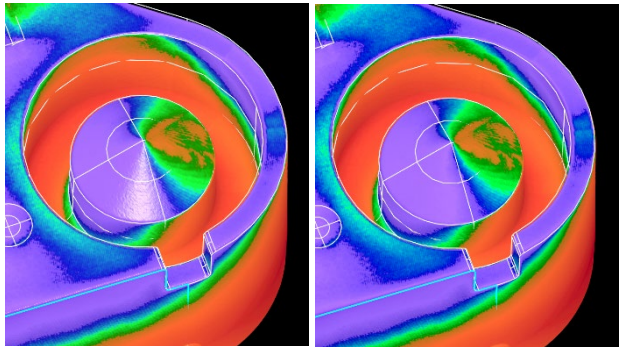
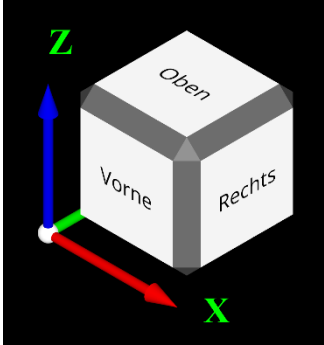
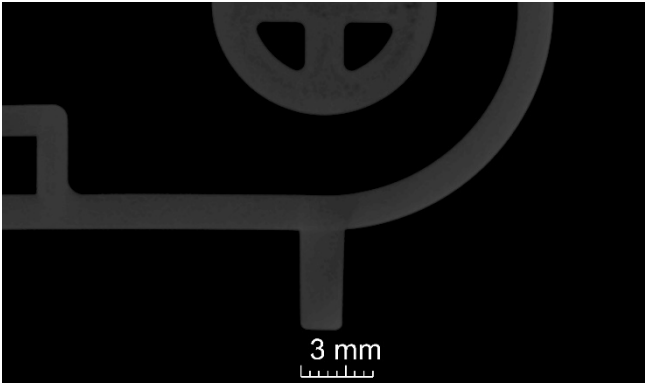
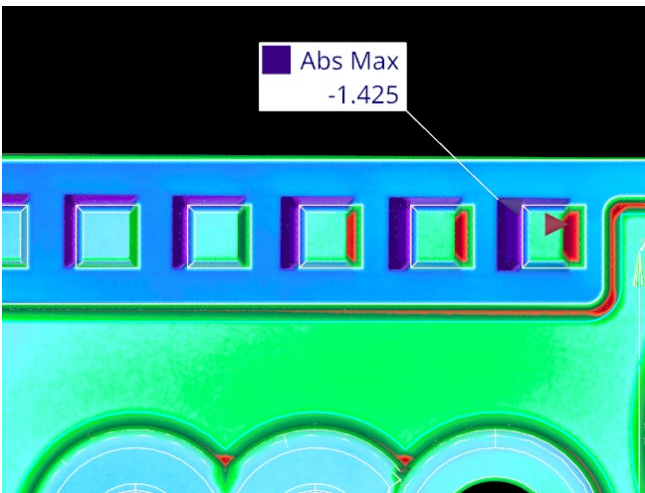
**WinWerth®**  
General functions  
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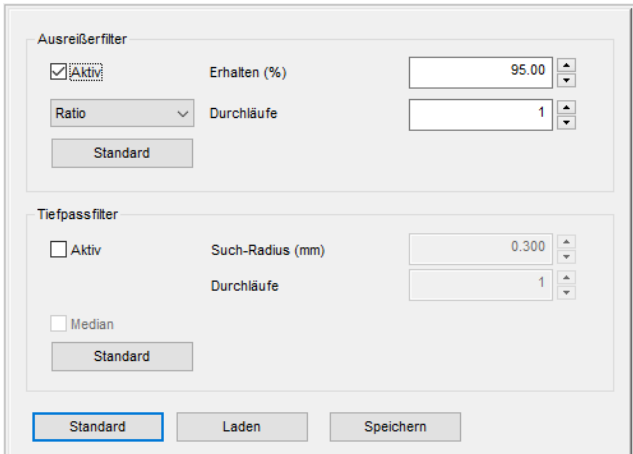
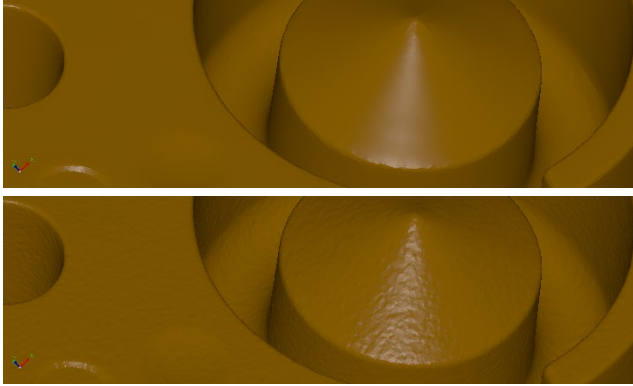
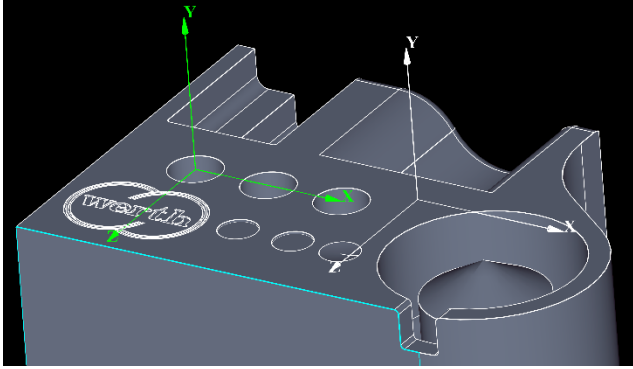
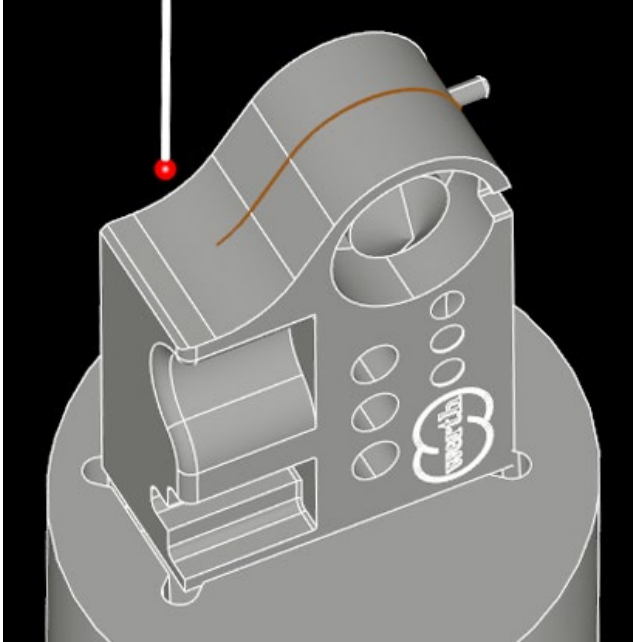
**Quick alignment**  
A new dialog enables quick 3-2-1 alignments with operator guidance.

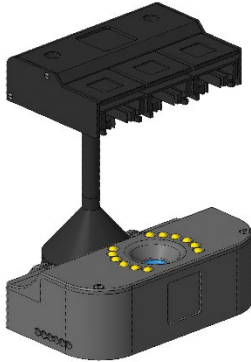
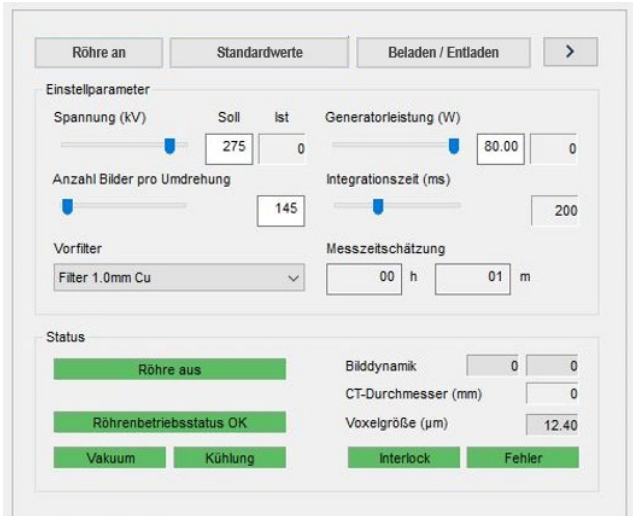

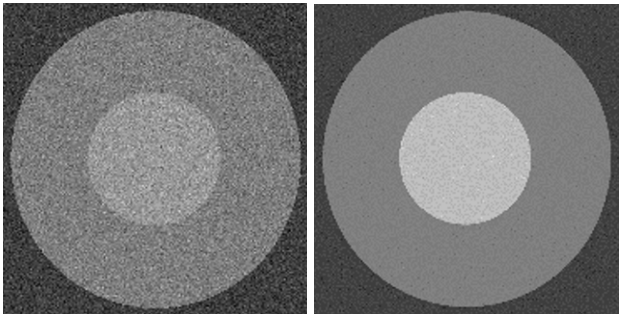
- Preselection of suitable elements in the feature tree or selection via lists in the dialog
- The correct sequence is specified by the arrangement of the reference plane, reference axis and reference point.
- Changed features are marked and the initial state can be restored by clicking with the mouse.
- Messages on incomplete or incorrect definition of the coordinate system
- The coordinate system can be saved with a click and aligned with the CAD model.



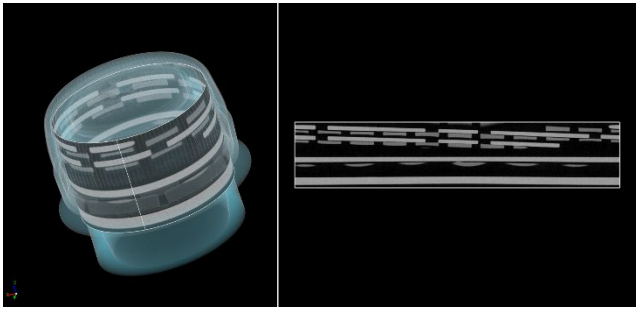
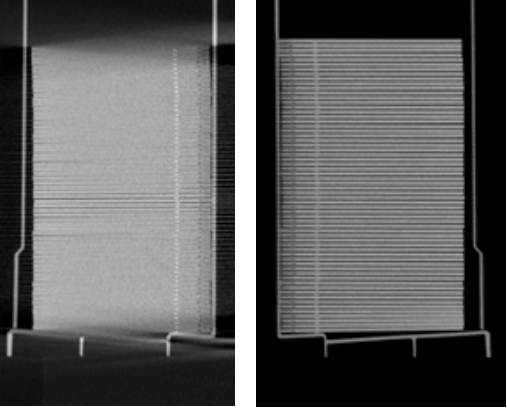
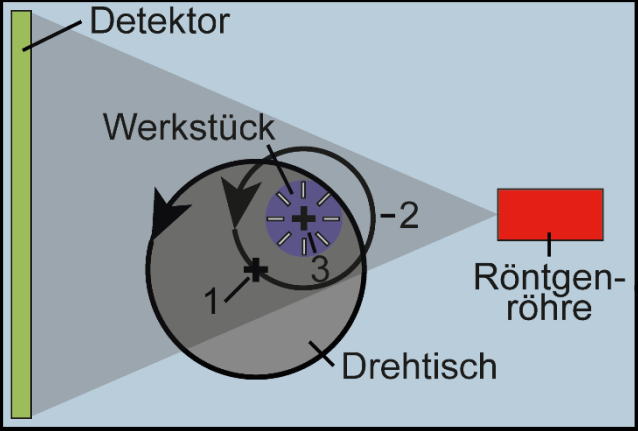
<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>Automatic evaluation of geometrical deviations</b> According to the drawing entry in WinWerth®, even complex geometrical deviations are evaluated automatically.</p> <ul style="list-style-type: none"> <li>• Simple, time-saving operation and subsequent editing, even for inexperienced users</li> <li>• Clarity in feature tree and 3D graphics improved, as auxiliary elements do not appear</li> </ul>										
<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>Use of multiple selection windows</b> Different selection windows can now be applied simultaneously to volumes and point clouds.</p> <ul style="list-style-type: none"> <li>• Crop to or remove selected areas</li> <li>• Crop to an area while simultaneously removing parts of it (e.g. voids)</li> <li>• Significant time saving also when filtering</li> </ul>										
<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>Optimization of 3D graphics</b> The user interface of the 3D graphics and the display can now be personalized and the settings saved.</p> <ul style="list-style-type: none"> <li>• Clarity of the control elements improved</li> <li>• User-defined arrangement of the control elements</li> <li>• User-configured display of element groups and individual features <ul style="list-style-type: none"> <li>○ Measurement, calculation and manual elements</li> <li>○ CAD models and point clouds</li> <li>○ Dimension and deviation flags</li> </ul> </li> </ul>	 <table border="1" data-bbox="1235 1441 1463 1533"> <thead> <tr> <th>Sollwert</th> <th>Istwert</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>Ø6.8</td> <td>6.8000</td> <td>M_FN_5</td> </tr> <tr> <td colspan="2">Abweichung</td> <td>0.0000</td> </tr> </tbody> </table>	Sollwert	Istwert	Name	Ø6.8	6.8000	M_FN_5	Abweichung		0.0000
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<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>Gloss level in 3D graphics</b> A higher gloss level is now available for the display of point clouds and deviations.</p> <ul style="list-style-type: none"> <li>• Point clouds: More plastic representation for better recognizability of the surface structures of STL point clouds with a high degree of gloss.</li> <li>• Deviations: Better comparison with the color scale with low gloss level, high gloss level possible</li> </ul>																																																																																									
<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>ViewCube for 3D graphics</b> By clicking on surfaces, edges and corners of the view cube, a quick view change between main planes and ISO views in the workpiece coordinate system is possible.</p>																																																																																									
<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>Scale in 3D graphics</b> The scale allows to estimate the size of the geometric elements displayed.</p>																																																																																									
<p><b>WinWerth®</b> General functions (Standard))</p>	<p><b>Showing and hiding the color display</b> The color display (e.g. for form errors) can now be shown or hidden in the output window by ticking the tolerancing checkbox. The default setting is still defined in the Settings / Feature / 3D parameters menu.</p>	<table border="1"> <thead> <tr> <th>Name</th> <th>Info</th> <th>SYM</th> <th>Istwert</th> <th>Sollwert</th> <th>OTol</th> <th>UTol</th> <th>Abweichung</th> <th>Grafik</th> <th>Bezeichnung</th> <th>Farbdarstellung</th> </tr> </thead> <tbody> <tr> <td>R_Krs_1</td> <td>X</td> <td></td> <td>3.686</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>R_Krs_1</td> <td>Y</td> <td></td> <td>-3.646</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>R_Krs_1</td> <td>Z</td> <td></td> <td>0.002</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>R_Krs_1</td> <td>PHI</td> <td></td> <td>0.000°</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>R_Krs_1</td> <td>THETA</td> <td></td> <td>90.000°</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>R_Krs_1</td> <td>D</td> <td></td> <td>0.324</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>R_Krs_1</td> <td>FT</td> <td></td> <td>0.030</td> <td>0.000</td> <td>0.050</td> <td>0.000</td> <td>0.030</td> <td>***</td> <td>T_1</td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table>	Name	Info	SYM	Istwert	Sollwert	OTol	UTol	Abweichung	Grafik	Bezeichnung	Farbdarstellung	R_Krs_1	X		3.686							<input type="checkbox"/>	R_Krs_1	Y		-3.646							<input type="checkbox"/>	R_Krs_1	Z		0.002							<input type="checkbox"/>	R_Krs_1	PHI		0.000°							<input type="checkbox"/>	R_Krs_1	THETA		90.000°							<input type="checkbox"/>	R_Krs_1	D		0.324							<input type="checkbox"/>	R_Krs_1	FT		0.030	0.000	0.050	0.000	0.030	***	T_1	<input checked="" type="checkbox"/>
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<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>New filter for best-fit elements</b> An outlier filter is available for the calculation of geometry elements from point clouds.</p> <ul style="list-style-type: none"> <li>• 95% filtration according to ISO 10360-8</li> <li>• Subsequent filtration also possible</li> <li>• Use e.g. for Gaussian elements, SurfaceScan Predefined and Segmentation</li> </ul>	
<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>Improved smoothing filter for point clouds</b> Structures and edges are retained despite smoothing. The new smoothing filter can be used together with triangulation.</p>	
<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>CAD alignment during teach-in</b> The CAD model can now be prepared directly during the teach-in of the measurement sequence to save time. The last loaded or selected CAD model can be aligned via the "Coordinate system" menu.</p>	
<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>Selection of CAD model for probe sphere correction</b> The CAD model for the probe sphere correction can now be selected from several models.</p>	

<p><b>WinWerth®</b> General functions (Standard)</p>	<p><b>General WinWerth® optimizations</b> In addition to other speed and stability improvements, the start and exit of WinWerth in particular have been accelerated.</p>	
<p><b>Multisensor systems</b> General functions (Standard)</p>	<p><b>Acceleration of probe change</b> The speed of the changing process has been optimized for machines with a changing rack.</p> <ul style="list-style-type: none"> <li>• Saving of measurement time, especially for measurements with many different styli</li> <li>• Fast movement into the changing rack, slow pick-up of the stylus</li> </ul>	
<p><b>X-ray tomography</b> General functions (Standard)</p>	<p><b>Simplified CT tool</b> The tool for performing tomography scans has been reduced to the most important functions and shaped more clearly.</p> <ul style="list-style-type: none"> <li>• Step width of the sliders optimized</li> <li>• Reasonable number of rotary increments can be calculated automatically</li> <li>• Expert dialog can be folded out</li> </ul>	
<p><b>X-ray tomography</b> General functions (Standard)</p>	<p><b>Monitoring and status display improved</b> The available maximum X-ray voltage is shown in the status display of the CT tool. The monitoring of the conditioning and the display of the conditioning status are also new.</p>	
<p><b>X-ray tomography</b> General functions (Standard)</p>	<p><b>Edge-preserving smoothing filter for CT volumes</b> The new filter achieves lower measurement uncertainty by reducing noise while maintaining structural resolution.</p>	
<p><b>X-ray tomography</b> General functions (Standard)</p>	<p><b>WinWerth® SmartRefresh</b> By increasing the operational stability of X-ray sources with high acceleration voltage, even higher availability has been achieved.</p>	



<p><b>X-ray tomography Module</b></p> <p><b>Volume Section Sensor (Option)</b></p>	<p><b>Flexible volume sectioning</b></p> <p>In addition to planar CT volume sections, cylindrical CT volume sections are now also possible for reliable measurements with Werth Contour Image Processing.</p> <ul style="list-style-type: none"> <li>• The base area of the cylinder is not limited to circles and can take on any form.</li> <li>• The result is both a 3D view of the cut surface and the unrolled 2D lateral surface of the cut cylinder.</li> <li>• An application example is the thread measurement of bottle caps to determine the thread angles and distances.</li> </ul>	
<p><b>X-ray tomography Module</b></p> <p><b>ClearCT (Option)</b></p>	<p><b>Werth ClearCT</b></p> <p>The Werth ClearCT is based on a special combination of the movement of the rotary axis and linear axes.</p> <ul style="list-style-type: none"> <li>• Almost artifact-free CT volumes for reliable automatic inspection</li> <li>• Higher measurement speed with the same measurement uncertainty</li> <li>• Lower measurement uncertainty with the same measurement time</li> </ul>	
<p><b>X-ray tomography Module</b></p> <p><b>Eccentric CT (Option)</b></p>	<p><b>Eccentric CT improved</b></p> <p>The optimum center of rotation for Eccentric CT can now be determined automatically on the intensity image using Werth Contour Image Processing.</p>	

<p><b>X-ray tomography Module</b></p> <p><b>Workpiece changer TomoScope® XS series</b> (Option)</p>	<p><b>Assignment of measurement sequences for fixture stacks</b> When measuring different workpieces together in different fixtures at different positions in a stack, it is now possible to automatically assign the respective measurement sequence for evaluation.</p> <ul style="list-style-type: none"> <li>• Geometry description of different fixture stacks is stored</li> <li>• WinWerth® automatically adjusts the coordinate system for each measurement sequence.</li> <li>• Geometry description is taken into account during automatic collision control</li> </ul>																													
<p><b>X-ray tomography Module</b></p> <p><b>Two-source measuring system</b> (Option)</p>	<p><b>Improvement of two-source measuring systems</b> The filter changers with the various hardware filters can be clearly assigned to the respective source in WinWerth®.</p>	<p>Aktive Vorfilter</p> <p>Filterwechsler 1 <span style="float: right;">Röntgenröhre 1</span></p> <p>Filterwechsler 1</p> <p>Filterwechsler 2</p> <table border="1"> <thead> <tr> <th>Position</th> <th>Bezeichnung</th> <th>Material</th> <th>Dicke (mm)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>No Filter</td> <td>Luft</td> <td>0.000</td> </tr> <tr> <td>2</td> <td>1.0 mm Al</td> <td>Aluminium</td> <td>1.000</td> </tr> <tr> <td>3</td> <td>3.0 mm Sn</td> <td>Zinn (beta)</td> <td>3.000</td> </tr> <tr> <td>4</td> <td>1.0 mm Sn</td> <td>Zinn (beta)</td> <td>1.000</td> </tr> <tr> <td>5</td> <td>0.5 mm Sn</td> <td>Zinn (beta)</td> <td>0.500</td> </tr> <tr> <td>6</td> <td>1.0 mm Cu</td> <td>Kupfer</td> <td>1.000</td> </tr> </tbody> </table>	Position	Bezeichnung	Material	Dicke (mm)	1	No Filter	Luft	0.000	2	1.0 mm Al	Aluminium	1.000	3	3.0 mm Sn	Zinn (beta)	3.000	4	1.0 mm Sn	Zinn (beta)	1.000	5	0.5 mm Sn	Zinn (beta)	0.500	6	1.0 mm Cu	Kupfer	1.000
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<p><b>X-ray tomography Module</b></p> <p><b>Multi-Spectra CT</b> (Option)</p>	<p><b>Improvement of Multi-Spectra Tomography (MSP-CT HR)</b> Operation of the MSP-CT HR for high-resolution, low-artifact measurements of workpieces or assemblies that are difficult to scan has been simplified.</p> <ul style="list-style-type: none"> <li>• 2D contour can be used for designation of the material boundary to be optimized</li> <li>• Any sequence of source elements</li> <li>• Simplification of the expert dialog</li> </ul>	<p>MSP-CT High Resolution Korrektur <span style="float: right;">✕</span></p> <p>Iterationen</p> <p><input type="text" value="2"/> <span style="float: right;">▲ ▼</span></p> <p>Auflösungsoptimierung</p> <p><input checked="" type="checkbox"/> Artefaktkanten ausblenden</p> <p style="text-align: right;">Standardwerte</p> <p><input type="button" value="OK"/> <input type="button" value="Abbrechen"/></p>																												



# Coordinate Measuring Machines with Optics, Computed Tomography and Multisensor Systems



**Werth Messtechnik GmbH**  
Siemensstrasse 19  
35394 Giessen, Germany

[www.werth.de](http://www.werth.de) · [mail@werth.de](mailto:mail@werth.de)  
Telefon +49 641 7938-0