



Schneider

Measurement software

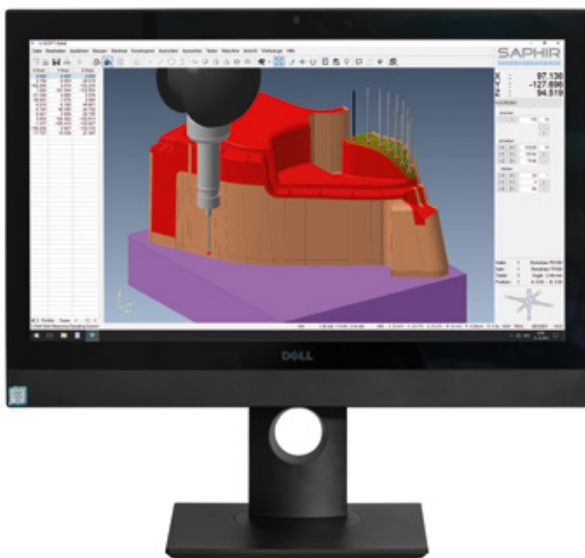


SAPHIR

SAPHIR 7

The 3D measurement and analysis software SAPHIR version 7 can now be used universally on all measurement devices and machines from Schneider Messtechnik.

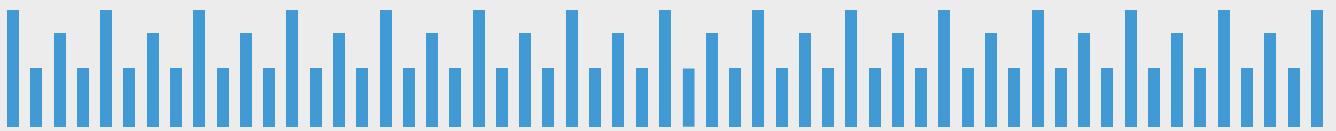
SAPHIR 7 – The control centre for your quality assurance.



SIMPLY PRECISE



SAPHIR

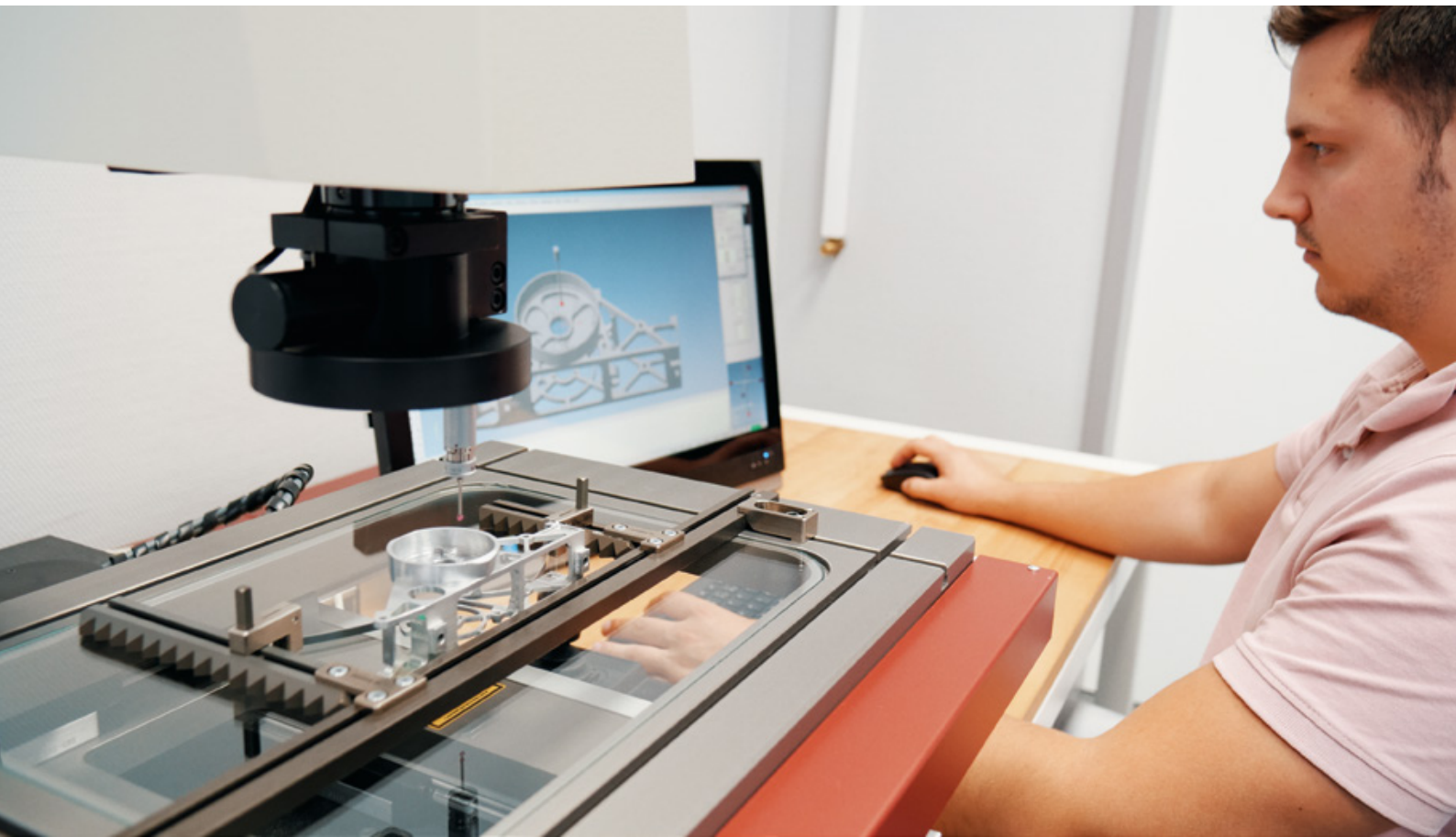


Nowadays, the SAPHIR 3D measurement and analysis software is one of the world's best known and most successful developments in the optical and tactile measurement technology sector. SAPHIR impresses with its clear structure and simple operation. Thanks to its structure, SAPHIR offers multisensor capabilities for universal applications in the control, sensor and data exchange sectors.

Version 7 includes comprehensive updates to the user interface. SAPHIR 7 is now even easier, intuitive and faster to operate. The SAPHIR 7 functions have been updated with the latest technology – numerous new functions have been implemented and/or improved. In particular the parameterisation and automation functions have been developed further and the QD functions have been fully integrated in SAPHIR 7. SAPHIR 7 is thus configured for all of our devices and machines and can be used for the full range of services.

Interface between man and machine

This interface was of the utmost importance during all past and future developments of the SAPHIR 3D measurement and analysis software. The implementation capability into the complete range of multisensor measuring machines, workshop microscopes, optical measurement devices and measuring and profile projectors and the complete integration into existing environments vouch for the high flexibility and adaptability of SAPHIR.



One of the strengths of SAPHIR is the workshop-based measurement process. Individual features on workpieces can thus be measured and recorded quickly and easily even without elaborate programming. Even if tasks become even more complex, this will not be a problem as SAPHIR is also optimally equipped for this purpose.

Extended title bar

Display of additional information about the workpiece, workspace and program being used.

Menu bar

Additional fast access to standard drop-down menu navigation.

Workpiece coordinate system

The following provides an overview to illustrate the fast orientation within the space by simply switching between the 3D model (left), live camera image (2D, right) and drawing view (not displayed). The workpiece coordinate system is displayed accordingly so that one image can be used to determine the current (relative and absolute) position of the workpiece.

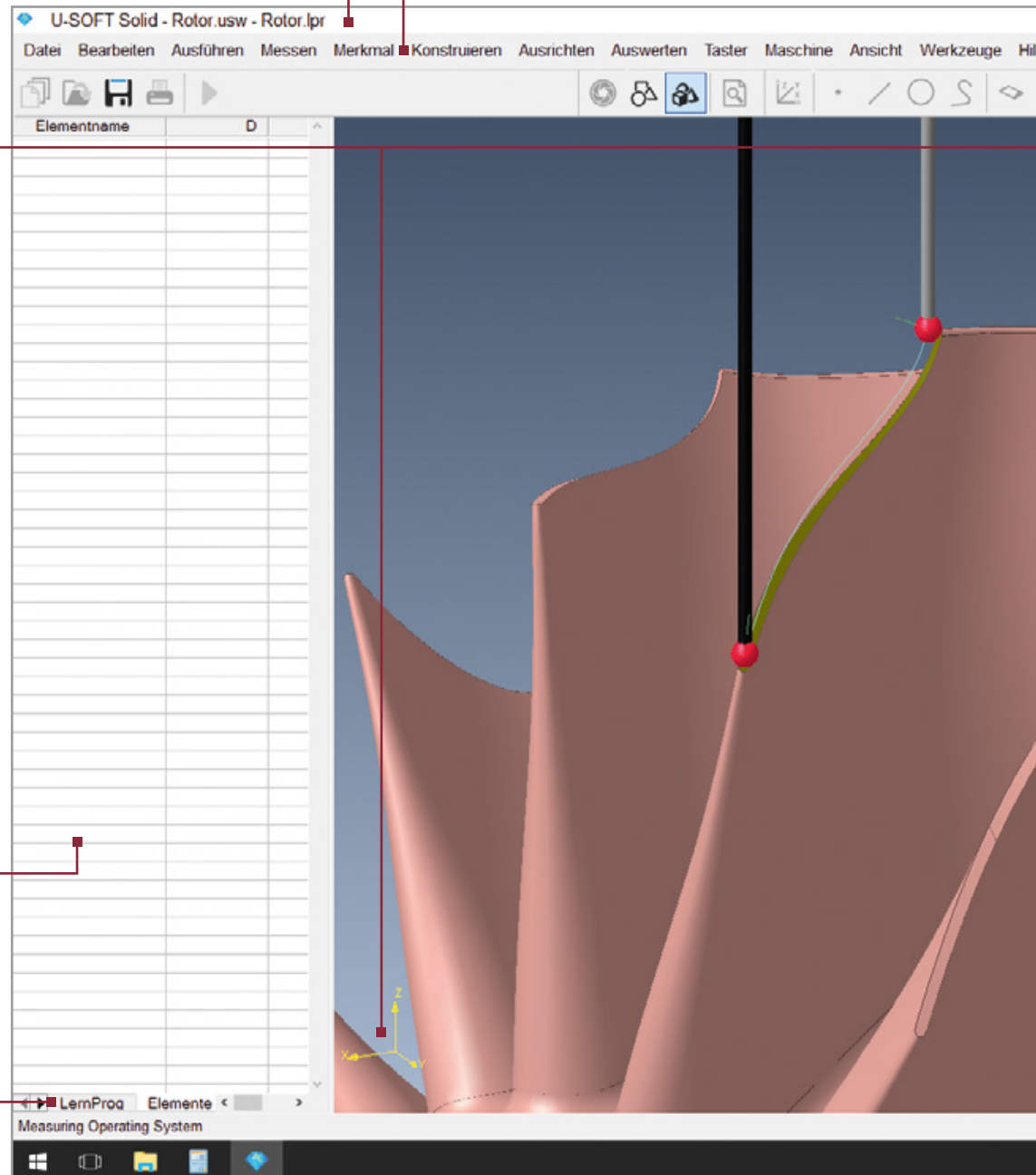
List area

Can be switched between horizontal and vertical display at any time thus making better use of the space.

Tabs

Selection of the tabs that are relevant for the current program status:

- Elements: Overview of all measured geometric elements in list format.
- Output: Measurement report.
- Points: List of probe points dependent on the elements.
- LearnProgram / 2nd LearnProgram: The appropriate program is automatically written during the manual measurement.
- Probes: List of calibrated probes and stylus data.

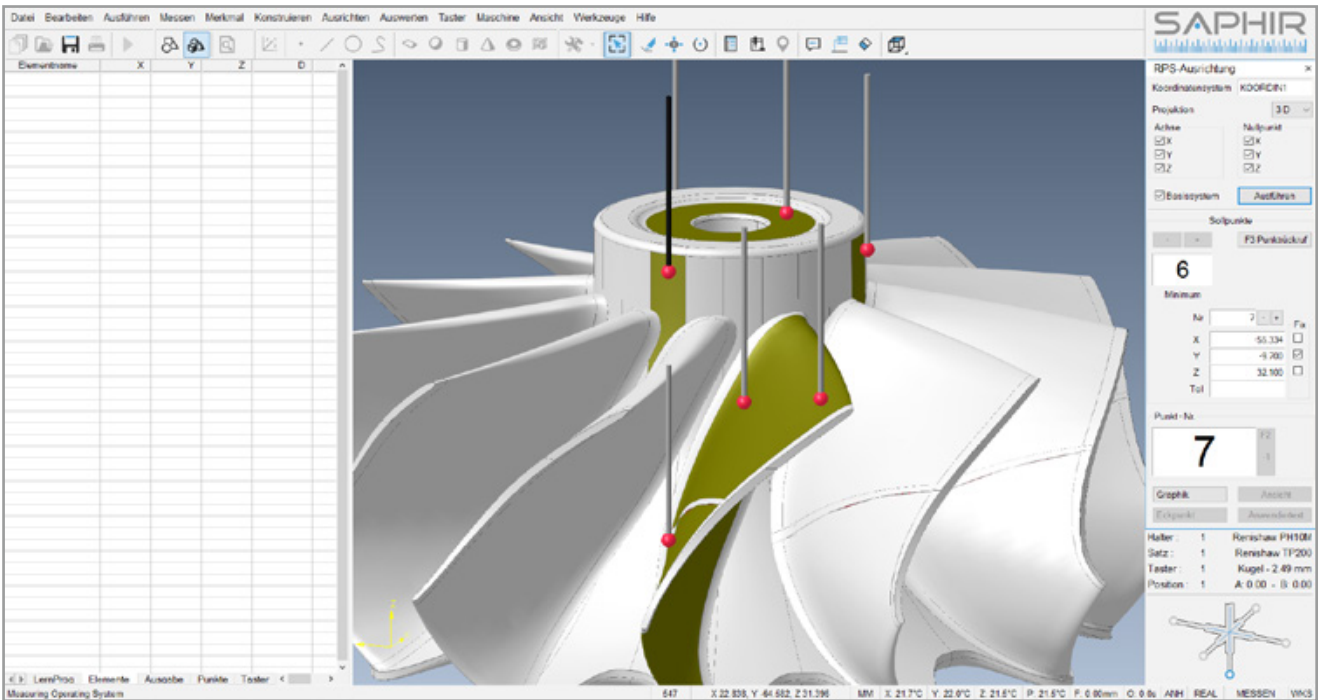


Accurately!

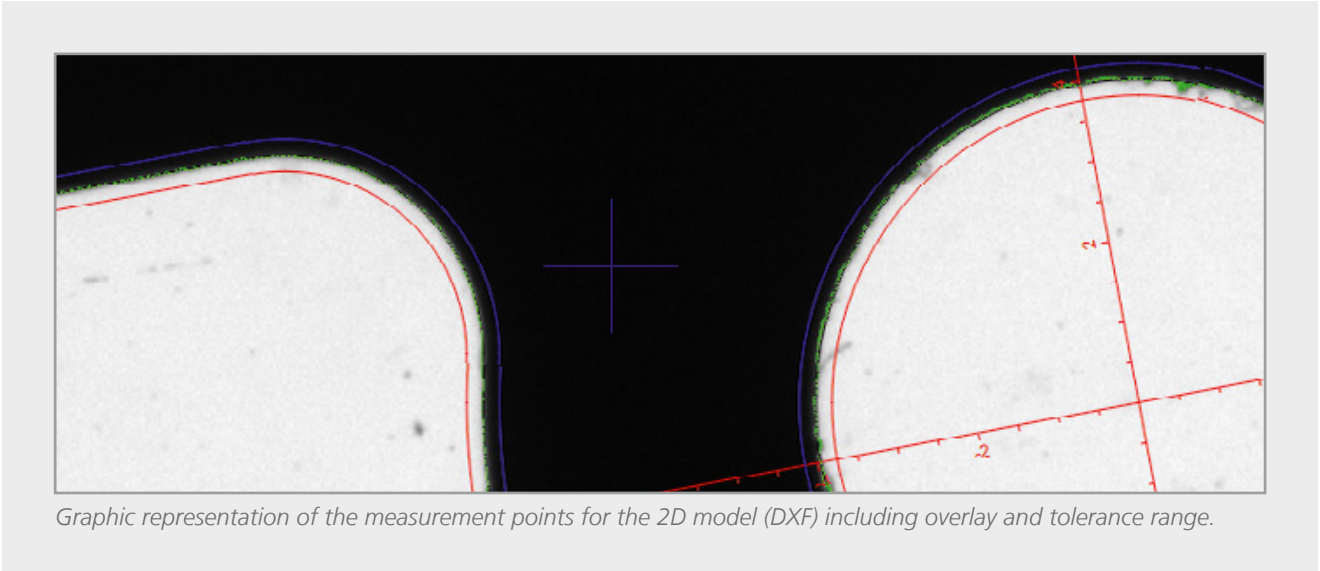
Too short at the back, too long at the front – with 2D and 3D BestFit, you always get things right. Optimum integration of the measured actual data into the target data specified by model. This allows you to make optimum use of the tolerances. The following 3D formats can optionally be imported:

DXF, STEP, Solid Works, Inventor, PDF, IGES, Direct X, Acis, Auto CAD (*.drw, *.dxf), Catia V4, V5, V6, Solid Edge, Pro/Engineer, NX, Parasolid, and many more.

A BestFit is possible with both the 2D model sections obtained and with summarised control geometries and 3D free-form surfaces.



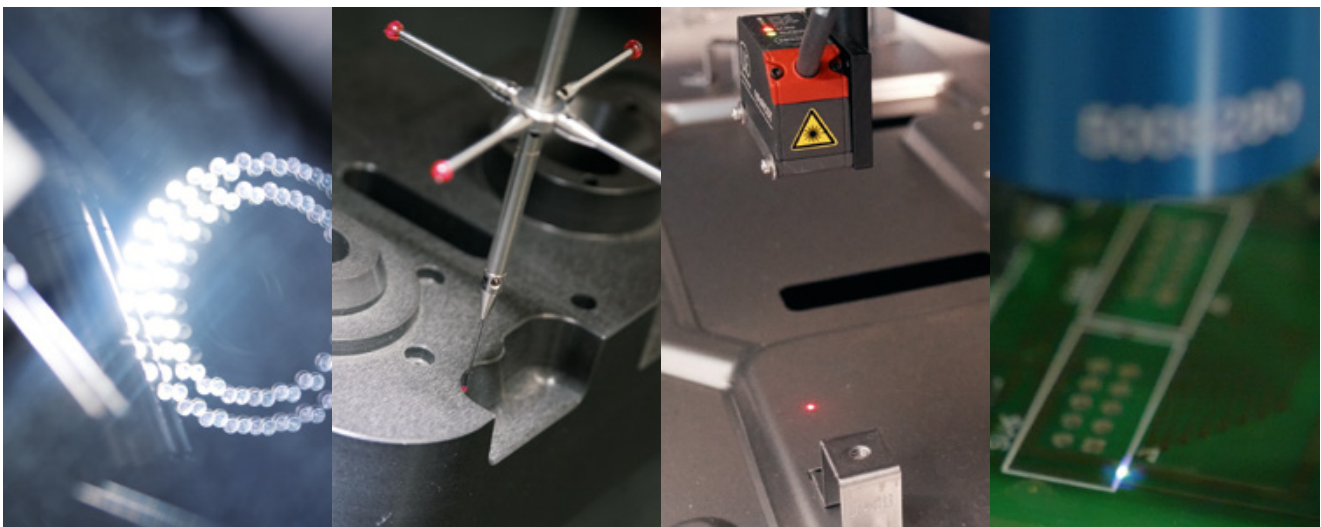
Recording target data for the RPS alignment.



Graphic representation of the measurement points for the 2D model (DXF) including overlay and tolerance range.

Cost reductions thanks to multi-sensor system

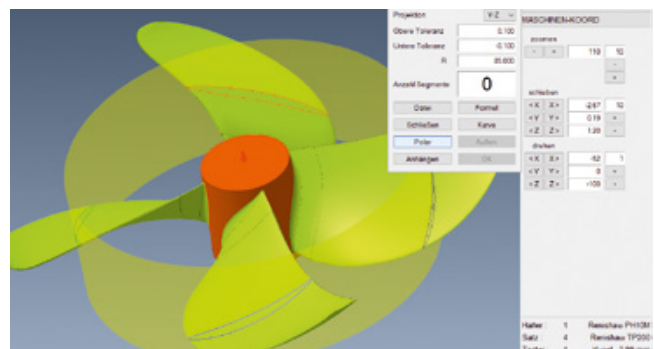
No matter whether you have to measure coarse or finely toleranced, matt or polished, bright or dark workpieces, the right sensor is available at all times. Black/white or colour camera for incident light and transmitted light measurement, programmable LED sector incident light illumination, tactile or scanning probes (alternatively with swivel head system), a high-precision measuring laser or a confocal white light sensor are the elementary preconditions for purposeful and cost-optimised use of the measuring machine. All the sensors can be automatically changed and employed during the measurement routine without having to stop or change the measurement program. One software for all sensors – efficient and user-friendly to allow the operator to concentrate fully on the measurement application.



Available sensors (from left to right): matrix camera with ring incident light illumination, probe (tactile or scanning), conoscopic measurement laser, confocal white light sensor.

Multi-axis control

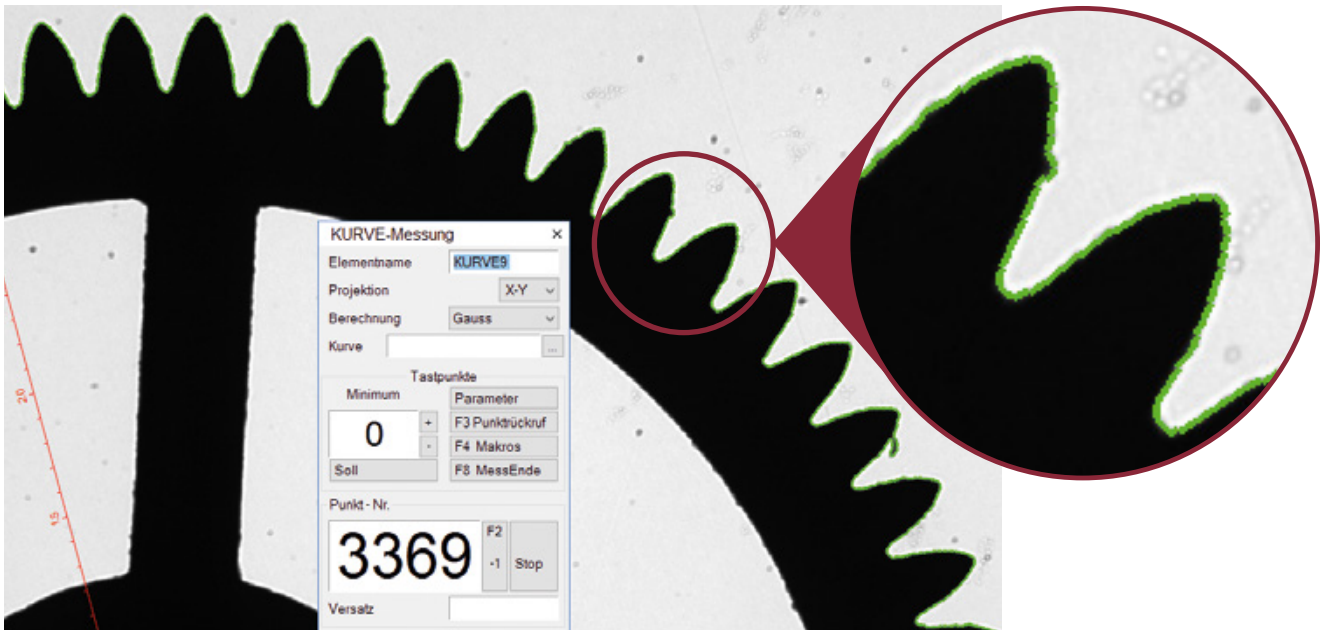
The simultaneous control of various axes within a coordinate measuring machine is an elementary prerequisite for path-optimised programming. SAPHIR not only manages the control system but also integrates all of the measurement points mathematically into the measurement. To ensure the measurement machine is suitable for universal applications, it is also possible to integrate a rotation and/or pivot axis in SAPHIR in addition to the three coordinate axes. The RPS alignment is used to determine the position of workpieces that either have no or few control geometries. The use of predefined measurement points, that are assigned to the 3D model as accurately as possible, ensures that the workpiece then has the same coordinate system as the model. Reference points can also be assigned at great distances. This means that the reference point for the module or final mounted product can feasibly be located at a distance of 1, 2, 5 m or even further away (e.g. in the vehicle coordinate system).



Regardless of how complex the workpiece is, none of the elements remain hidden when working with a 5-axis control system.

Unknown paths ...

... can cause problems for some, but are certainly not a mystery to SAPHIR. Automatic detection of known and unknown contours in the 2D area using the camera and in the 3D area using a sensing or scanning probe is a powerful tool that is complemented with 2D and 3D BestFit.

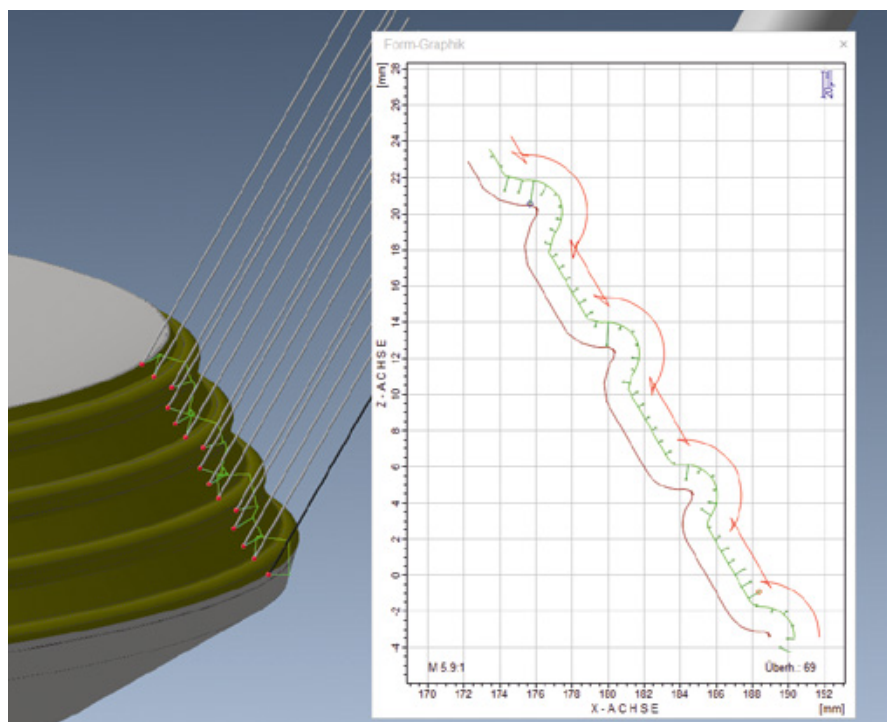


Fast and highly accurate – the contour is tracked on a pixel level using the maximum possible number of measurement points.

Offline programming

Programming times = downtimes for the machines? Definitely a thing of the past! Thanks to offline programming, you can create your measurement programs in your office without any downtimes for your machinery. The programs are then loaded on to the machine via the network and can then be opened and started.

This type of programming quickly pays for itself, especially when it comes to complex 2D contours and/or 3D models. And if a mistake happens to slip through the net, it can quickly be located and corrected using the integrated simulation mode.



The measurement and evaluation can both be programmed offline. This saves precious time and prevents machine downtimes.

Dynamic wobble compensation („rotation axis alignment“)

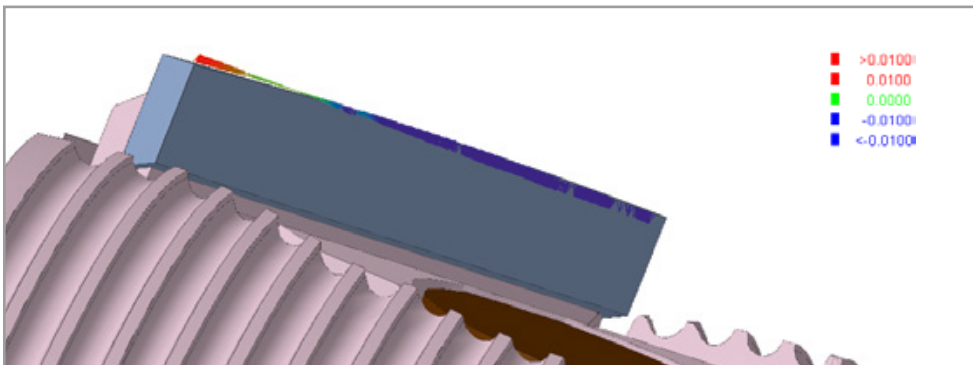
The determined workpiece axis is retraced as part of the spatial alignment process. The edge of the workpiece thus always remains in the focus of the camera or in the specified position. Thanks to this unique function, very accurate measurements (shape and position) can be completed without complex clamping of the workpieces. Even clamping on one side in a jaw chuck guarantees repeatable and accurate measurement results.

Flying contour measurement *

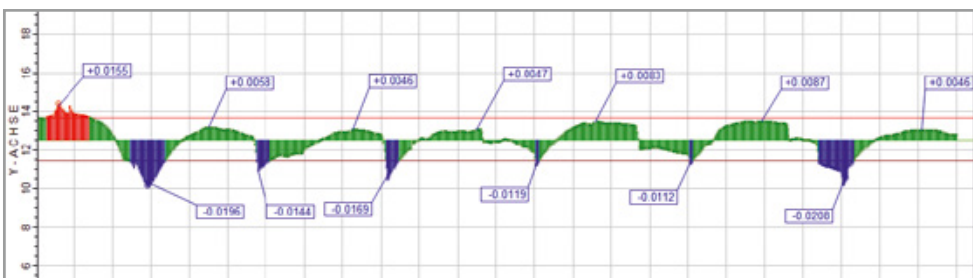
In conjunction with the dynamic wobble compensation („rotation axis alignment“), this function forms the basis for the high-precision measurement tool. While the workpiece is rotated, the maximum contour in relation to the workpiece axis is determined by means of the dynamic measurement. Any errors caused by the workpiece holder are eliminated by the dynamic wobble compensation.

Tool measurement *

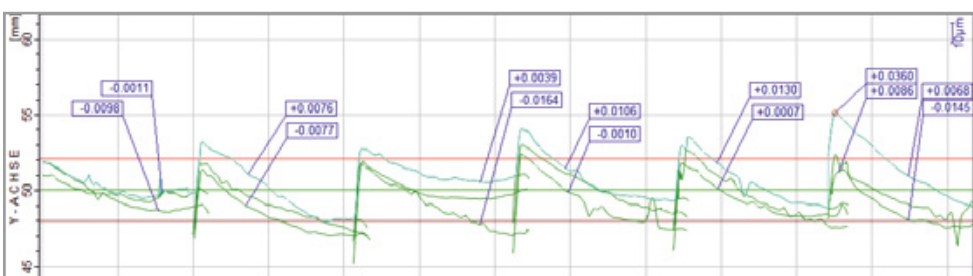
The cutting edge is automatically detected and measured during the rotation of a cutting tool that is being measured – the complete 3D information regarding the detected blade is provided in the result. The virtual cross-section of a level represents a section contour that is identical to the milling process. The milling contour of the tool can thus be determined accurately by being measured.



Measurement points on an individual blade on the 3D model. The points are colour-coded in accordance with the tolerance range.



Measured milling contour of the tool. The individual blades can be recognised and enable the subsequent milling result to be evaluated.



Overview of all the individual blades of the tool. This is used to evaluate any overlapping of the individual blades and the cutting action.

* The flying contour measurement and tool measurement are optional features of the SAPHIR 3D measurement and analysis software.

Do you just use tactile measurements? If you only use tactile measurement tasks, **U-SOFT SOLID ultra** offers the same programming features.

SAPHIR – software characteristics

Basic equipment

- Compatible with Windows 7® and Windows 10®, 32- and 64-bit versions
- Connection and construction of elements*, including graphically
- Input of theoretical elements
- Sections (polygon)
- Integrated CAD functions
- Flexible configuration of the test report
- First copy of test report
- 2D DXF data import/export
- Graphic report
- Graphic representation of the elements*
- Automatic generation of the intermediate point
- Management of measurement sensors including optics, laser system, tactile and scanning probe, confocal white light sensor
- Dynamic wobble compensation with probe and optics (the workpiece must always remain in visual focus)
- Geometric and positional tolerances
- Division measurement
- Macro and subprogram technology
- Simple loop measurement, conditional transfers, variables and calculation and construction functions
- Integrated tolerance table
- Simulation of programs
- Probe calibration including information relating to the quality of the calibration
- Debug and edit functions to optimise programs
- Coordinate system memory – classification of local and global systems
- Element output as DXF file (2D drawing)
- Program generator: The measurement program is generated automatically by dimensioning a drawing

Options

- SAPHIR shaft – the simple shaft measurement
- SAPHIR smart – the intuitive basic interface
- Flying contour measurement and tool measurement (cutting tools, compressor wheels, etc.)
- SAPHIR user management
- 2D digitisation – BestFit
- 3D digitisation – BestFit
- 3D data import
- Statistics export designer
- Mobile process analysis – MPA
- Parameter programming
- Cam/frequency evaluation
- Rolling analysis (crankshaft)
- CONFORMITY in accordance with 21 CFR part 11 FDA
- CAD import: CATIA, AutoCAD (DWG), 3D Studio (.3ds), Lightwave (.lwo), Step (.stp, .step), Raw Triangles (.raw), STL (.stl), VDA (.vda), VRML (.vrml, .wrl), Wavefront (.obj), PDF (.pdf, .ai, .eps) and TXT (.txt)

* Elements include the point, line, circle, cone, sphere, cylinder, plane, torus, ellipse