WM | SOFTWARE SOLUTIONS

EVERYTHING FROM ONE SOURCE

MESSSOFTWARE
FÜR ALLE ANWENDUNGEN

WENZEL – **INNOVATION MEETS TRADITION**

The WENZEL Group GmbH & Co. KG is a leading Manufacturer of innovative measuring technology solutions. The success of the largest family-run company in the industry is based on German quality, technology, flexibility and strong partnerships.

Founded in 1968, the name WENZEL stands today primarily for the highest precision, reliability and technological competence.

In recent years, measurement technology has changed a lot. The measuring tasks are performed in production as well as in the measuring room. In addition to high precision tactile measurement, optical sensors as well as new technologies such as computed tomography have found their place in metrology. We as WENZEL have brought numerous innovative solutions onto the market in recent years so as to offer our customers the right products. In addition to the product itself, we also supply you with turnkey solutions. This makes us flexible experts for innovative measurement solutions.

DR. HEIKE WENZEL AND PROF. DR. HEIKO WENZEL-SCHINZER

MANAGEMENT OF THE WENZEL GROUP

With our product range we are able to support all your measuring needs. As a family business, we strive to achieve long-term partnerships with our customers and for this we invest in the outstanding quality of our machines and offer you excellent service.

User-friendly - powerful - future-proof: with our software products you will find an optimal solution for every machine!
Dr. Heike Wenzel and Prof. Dr. Heiko Wenzel-Schinzer
Management of the WENZEL Group

About WENZEL

Founded in 1968, WENZEL is today the largest family-run measurement technology manufacturer.

More than 10,000 machines installed worldwide

WENZEL Worldwide

More than 600 employees worldwide

Subsidiaries & representatives in more than 50 countries

Our Headquarters

Wiesthal, Germany

Total area:	54.000 m²
of which buildings:	15.500 m²
air-conditioned:	5.000 m²

for each machine self-developed software solutions, which are optimally connected to the machine, the optical and tactile measuring heads and the controllers. We have strengthened this commitment in recent years and have added further solutions to our portfolio - e.g. for measuring gears and turbine blades. In addition, we have established strong partnerships with other software companies in order to be able to offer our customers the solution that best supports their requirements.

We also apply our high quality standards for the machines to the software. Software made by WENZEL shows itself in our three pillars: User-friendly - Powerful - Future-proof! WENZEL is your long-term partner for today and tomorrow

Enjoy reading and demand our flexibility: we are ready to be there for you!

TYPICAL APPLICATION AREAS

Automobilhersteller und -zulieferer
Luft- und Raumfahrt
Maschinenbau
Gießereitechnik
Metall und Kunststoff verarbeitende Industrie
Medizintechnik
Formen- und Werkzeugbau
Elektrotechnik/Elektronik
Messdienstleister
Forschung und Wissenschaft
...und viele mehr

OUR SCOPE OF SOLUTIONS

High Precision Metrology | LH
Shop Floor Metrology | SF
Large Volume Metrology | R; LHF
High Speed Metrology | CORE
Non-Destructive Metrology | exaCT

TYPICAL BUSINESS AREAS

General Part Inspection
Sheet Metal & Trim
Powertrain & Engine
Blade & Gear
Reverse Engineering

WENZEL METROLOGY SOFTWARE SOLUTIONS

The basic idea of the WENZEL software architecture is to offer SW solutions from WENZEL for all machines and applications, which have the same operating concepts but cover specialized functional scopes.
The importance of software has also increased enormously in mechanical engineering in recent years. WENZEL recognized this many years ago and established its own development site for core software in Switzerland with the acquisition of Metromec AG.
There, and at other locations, around 50 employees now work on WENZEL software solutions, which are installed at thousands of workstations.
But not only the importance, but especially the type and intensity of software use is constantly changing. According to the choice of a machine, WENZEL has the most suitable software solution for each machine in its portfolio.
In the meantime, however, the measuring tasks are also combined on different machines, e.g. when measuring gears or turbine blades on a classic CMM or when changing tactile probes and optical sensors.
The WENZEL software architecture is designed for this multiple and redundant integration into different solutions. Based on a common HW abstraction layer, the different application solutions are built up (see figure).

- The base – WM | Quartis
- The skyscraper – WM | PointMaster
- The process optimizers – WM | Sys Analyzer and WM | Generator
- The specialists – WM | Gear und WM | Blade Analyzer

The WENZEL SW family follows a similar concept as Microsoft. There are good reasons for the parallel existence of word processing, spreadsheet, e-mail and presentation software. However, similar interface concepts make it easier to familiarize oneself with and switch between solutions. This is exactly WENZEL's claim! The best possible solution for each application - from WENZEL and from a proven uniform concept.

Die Basis – our WM | Quartis

The versatile, reliable, modern and easy to use measurement software. A clear, flexible and results-oriented user interface for all industrial applications.
WENZEL - WM | Quartis - is presented in detail on the following pages.

The skyscraper – our WM | PointMaster

Our WM | PointMaster is distinguished by its processing of large data volumes of point clouds, polymeshes and voxels as well as a high degree of application flexibility. In 2018, the new interface solution was implemented along with a number of additional functions. PointMaster offers a wide range of modules that enable the user to process point clouds, model polymeshes, perform reverse engineering and create CAD models.
Furthermore, WM | PointMaster forms the basis for our special solutions in computed topography and styling.

The process optimizers

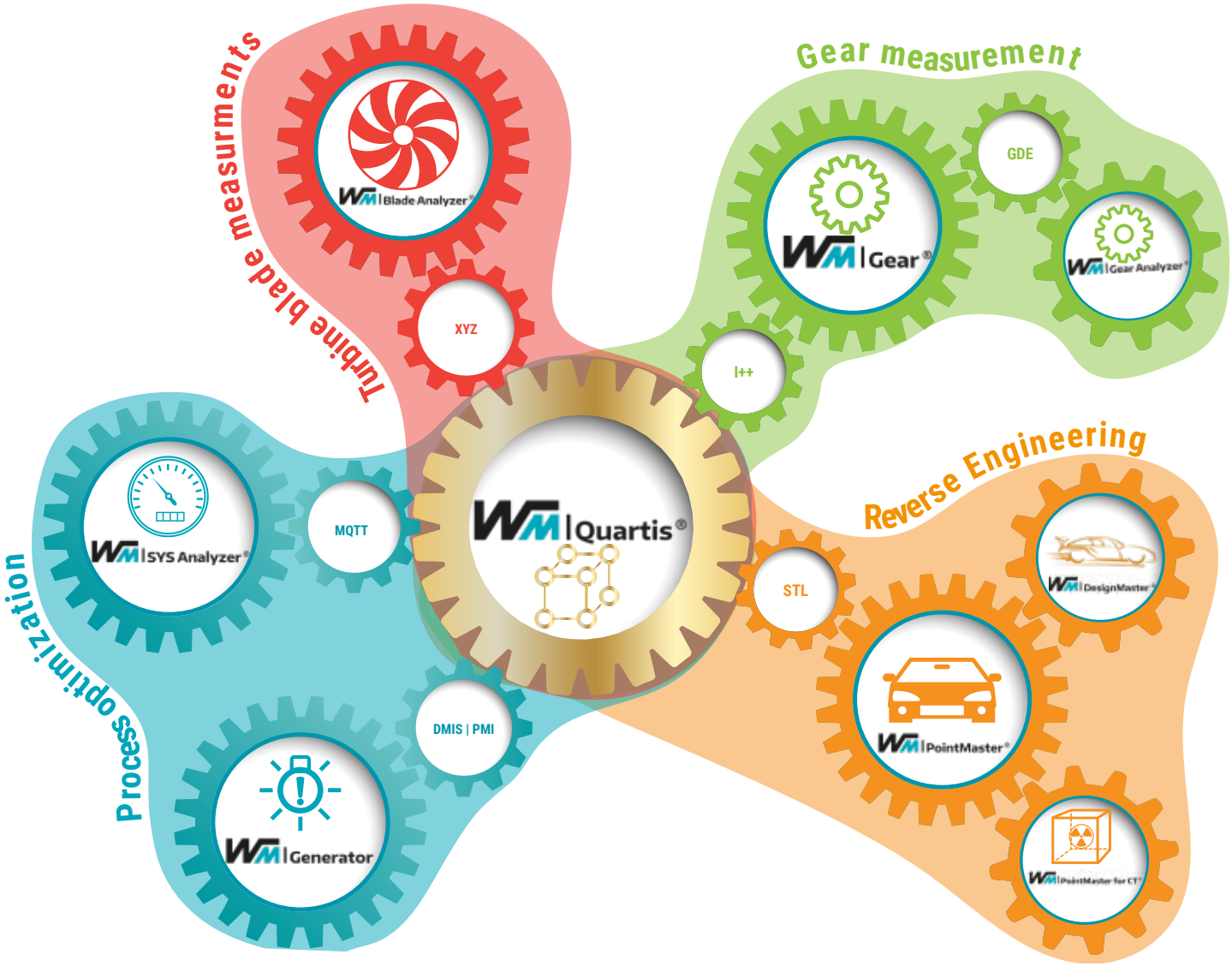
Automated measurement & evaluation – our WM | Generator

The WM | Generator is used to automatically generate measuring programs from measuring plans. The newest development at WENZEL, for customers who want to reduce the effort for generating measuring programs.

Transparency for operation and control – our WM | SYS Analyzer

The WM | SYS Analyzer offers all information around the operation and use of the installed WENZEL measurement solutions at a glance.

WM | Software Solutions®



The specialists

Measurement, analysis and visualization of gears - our WM | GEAR & GEAR Analyzer

The requirements for the evaluation of gears have increased enormously. The WM | GEAR & GEAR Analyzer solution, which is based on the open standard GDE, offers significantly more advanced options for analyzing and visualizing measurement results.

Evaluation of turbine blade measurements - our WM | BLADE Analyzer

In addition to standard parameters, the software also supports evaluations according to various manufacturer standards, various best fit algorithms for determining the blade position, as well as the evaluation of head and foot dimensions.

WENZEL Software Finder
HIGHEST FLEXIBILITY

Machine	WM | Software Solu		
	WM | Quartis®	WM | PointMaster®	WM | Gear® WM | Gear Analyzer
WM | MMA 	✓		
XO Series 	✓	✓*	✓
LH Series 	✓	✓*	✓
SF Series 	✓	✓*	✓
R Series 	✓	✓	✓
GT Series 	✓		✓
CORE Series 	✓	✓	✓
exaCT Series 	✓	✓	✓
Offline 	✓	✓	✓

* Only in conjunction with WPC controller
** Only in conjunction with UCC controller

WENZEL®

...tions			Partner products		
	WM Blade Analyzer®	WM SYS Analyzer®	Metrologic (Metrolog/ Silma)	Polyworks	Renishaw Modus
	✓	✓	K4 *	*	**
	✓	✓	K4 *	*	**
	✓	✓	K4 *	*	**
	✓	✓	K4 *	*	**
		✓			
	✓	✓			
	✓	✓			
	✓		SilmaX4		

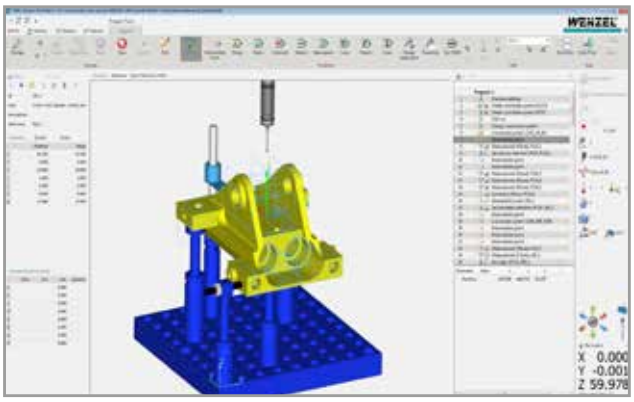
WM | Quartis

DIE UNIVERSELLE STANDARDMESSSOFTWARE

WM | Quartis is the versatile, reliable, modern and easy to use measurement software from WENZEL. With WM | Quartis WENZEL offers a new generation of innovative measurement software with a clear, flexible and result-oriented user interface for all industrial applications. Meaningful measurement reports can be generated even faster and easier. The user interface of WM | Quartis, based on Microsoft Office Fluent, significantly simplifies the application of the powerful functions. You can obtain correct measurement results, impressive test reports and meaningful statistics more quickly and easily. The optimized screen layout and the dynamic, result-oriented ribbons significantly speed up workflows and ensure greater efficiency in day-to-day business.

HIGHLIGHTS

WM | Quartis is the versatile, reliable, modern and easy-to-use measurement software from WENZEL. With WM | Quartis WENZEL offers a new generation of innovative measurement software with a clear, flexible and result-oriented user interface for all industrial applications. Meaningful measurement reports can be generated even faster and easier. The Microsoft Office Fluent™ based user interface of WM | Quartis significantly facilitates the application of the powerful functions. You get correct measurement results, impressive test reports and meaningful statistics faster and easier. The optimized screen layout and the dynamic, result-oriented ribbon bars significantly speed up workflows and ensure greater efficiency in day-to-day business.



WM | Quartis, die universelle Messsoftware

FEATURES

- Geometry, freeform and curves combined in one measuring software
- Supports manual and CNC measuring devices of various types
- Scanning with tactile and optical sensors and 5-axis measuring heads
- Form and position evaluation according to the latest ISO GPS and ASME standards
- DMIS 5.2 Standard complements the intuitive Quartis programming language
- Structured data management in relational database (MS Access / SQL-Server)
- Report generator for descriptive measurement reports
- Operator-friendly operation with quick selection panel, 1-click program start
- Ready for special applications thanks to numerous interfaces and add-ons

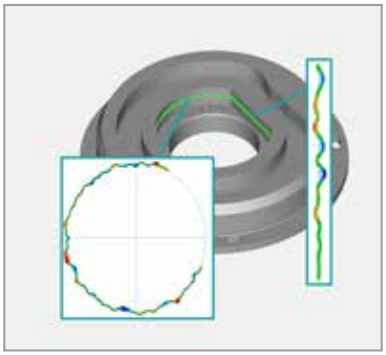
USER INTERFACE

The easy-to-use, task-oriented and individually configurable graphical user interface is suitable for every measuring task. The measuring programs can be started quickly and easily with just one click via the quick selection panel or by using of a barcode scanner. The relational database also ensures traceable measurement results. The nintegrated statistics package guarantees a rapid assessment of manufacturing processes. The CAD functionality of WM | Quartis is the basis for efficient measurement. The integrated live preview ensures the correct application of the standard-compliant evaluation according to ISO GPS and ASME. WM | Quartis supports 3D mice. The two-handed, simultaneous mode of operation additionally accelerates work in 3D Graphics WM | Quartis impresses with a result oriented, tidy user interface.

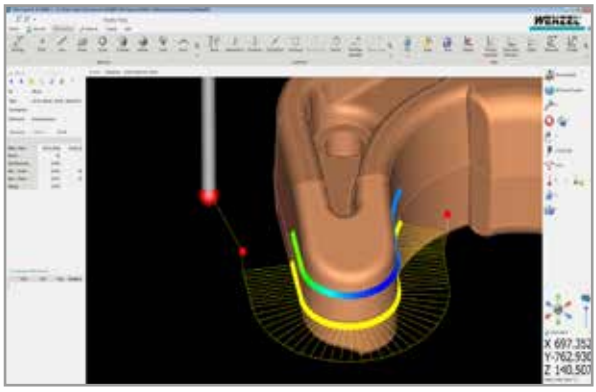
WM | Quartis convinces with a result-oriented, tidy user interface

MEASUREMENTS

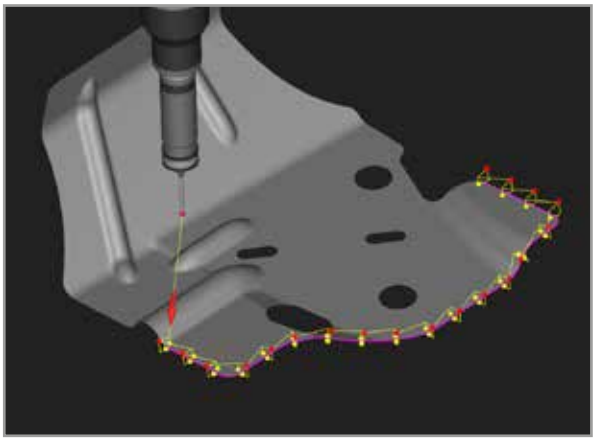
WM | Quartis measures geometric components, free-form and curves. With the proven Click 'n' Measure™ functionality, a dynamic measurement strategy library and numerous sophisticated tools, measuring tasks are quick and easy. The basis for measuring is the centrally arranged, large working window with the 3D graphics. The live preview shows the active measurement strategy and guides the user more quickly to the correct settings. Measurements can be made by single point acquisition, scanning and self-centering. Safety levels and collision checking prevent damage to the measuring device. With powerful alignment functions and a world-class best-fit, all alignment tasks can be performed easily. Standardized filters and outlier removal eliminate disturbances on the material surface.



Measure and evaluate curves. The "Extract" construction function generates circles and straight lines from measured curves



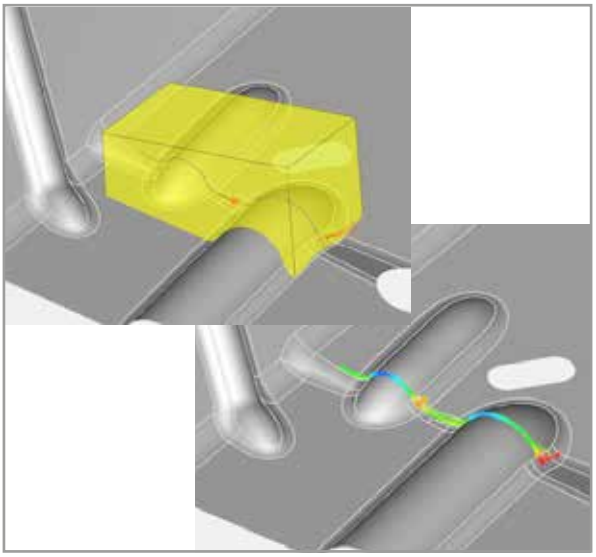
Measure and evaluate curves



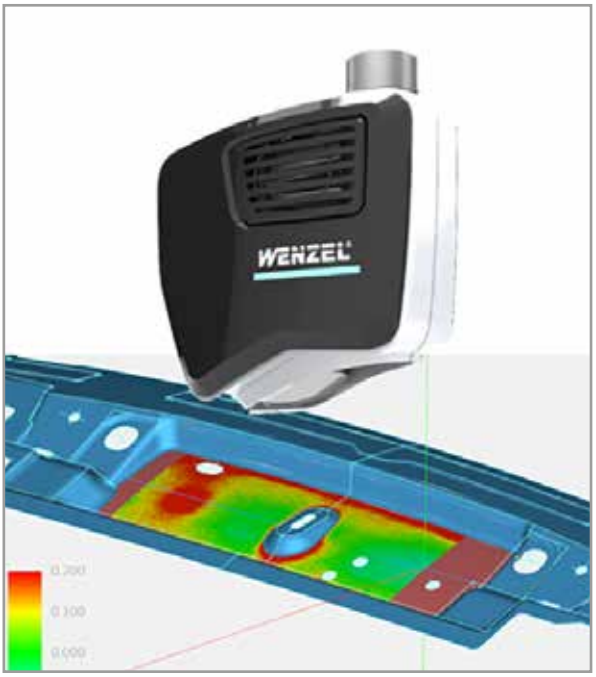
Measuring and evaluating edge points

MEASUREMENTS

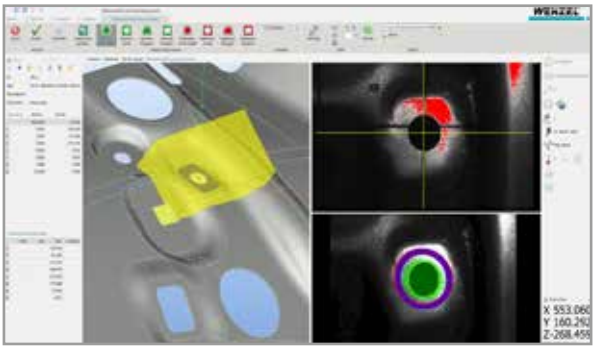
WM | Quartis supports manual and CNC measuring machines with tactile (touching) and optical (non-contact) sensors and is therefore predestined for automated multi-sensor applications. Scanning with high point density allows the acquisition and evaluation of surface shape tolerances as well as the color-coded representation of component deviations.



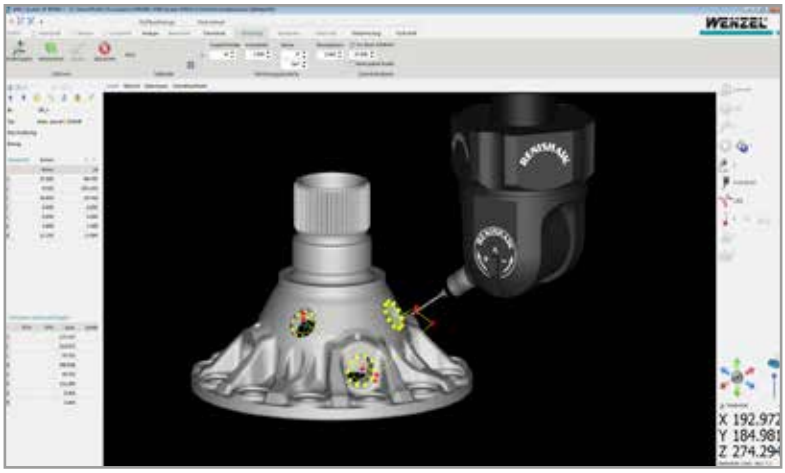
Profiles can be captured and evaluated with one image



Detection of surface shape with optical sensor and color-coded display of component deviations



Non-contact measurement with optical sensors

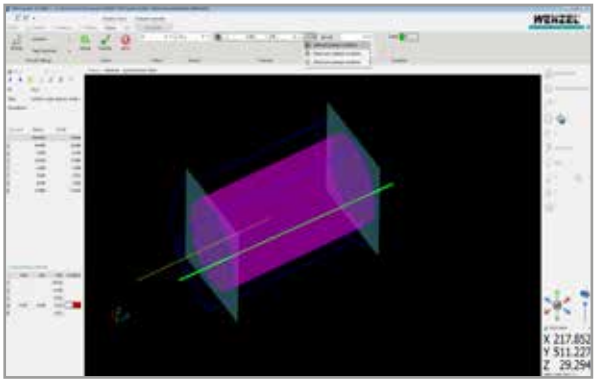


5-axis probes such as PH20 significantly increase measurement throughput

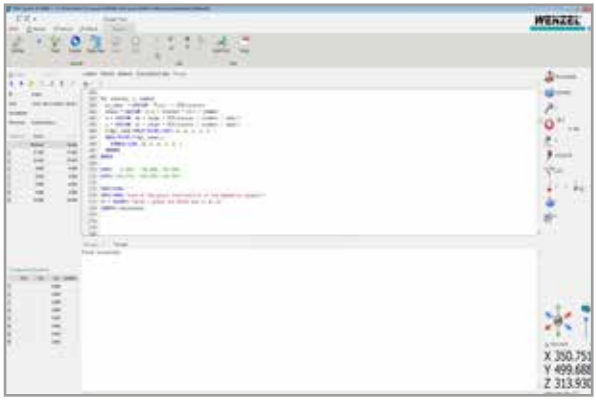
Renishaw REVO and PH20 5-axis probes increase measurement throughput with very high scanning speeds and point rates. Stepless rotation and swivel angles allow time-saving, through optimum alignment of the probe to the component. Measurement with the rotary axes leads to high system accuracy due to minimal traverse paths of the measuring device. In addition, the REVO system allows the measurement of roughness.

EVALUATION

Standard features such as dimension, position, distance, angle etc. are available to the user. Shape and position evaluations are evaluated according to the current ISO GPS / ASME Y14.5M standards. The live preview ensures correct application and avoids incorrect data input. The input fields in the menu band correspond to the drawing specification. WM | Quartis automatically selects the correct algorithms for standard-compliant evaluation with references and tolerated elements.



Evaluate characteristics according to standards



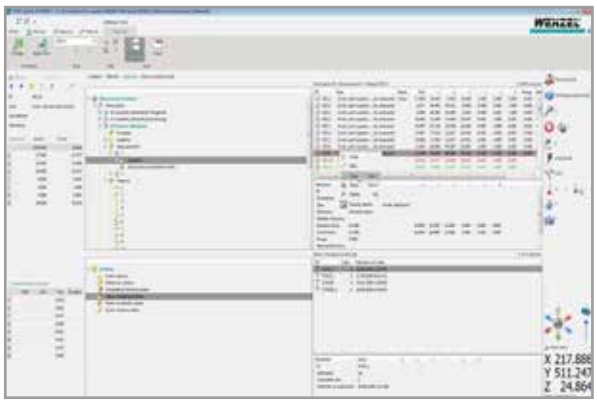
Powerful and flexible programming in DMIS for programming experts

PROGRAMMING

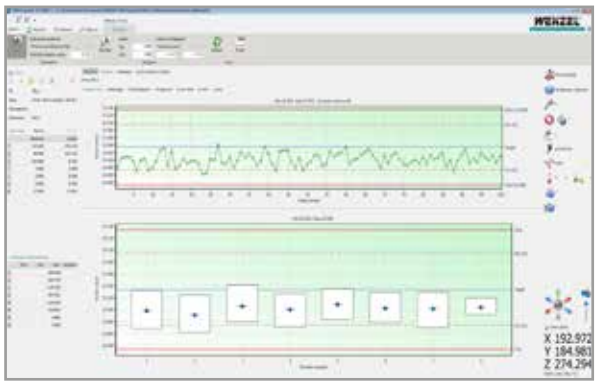
Measurement programming in WM | Quartis is intuitive and powerful. Measuring programs are efficiently created on the basis of CAD models, online directly on the coordinate measuring machine or offline on a virtual measuring machine. Various intelligent tools help the user to do this. Traverse paths are simulated, collisions are detected and avoided. Measurement sequences can be processed graphically-interactively and very efficiently. For correct programming cracks and even more advanced, flexible measuring programs with variables, formulas, conditional instructions and loops etc., the manufacturer-neutral programming language according to DMIS 5.2 standard is available.

DATA MANAGEMENT INCLUDED

Data (workpieces, measurements, programs, features, etc.) are secure, structured and in good hands in WM | Quartis thanks to the integrated Microsoft Access® database. This ensures traceability and, if necessary, later evaluation of measurements. For large data volumes and several measuring systems, the system can be scaled to a central Microsoft SQL Server® database. Data management is as clear and simple as in a Microsoft Windows® file explorer. The option of automatic data backup saves users from unpleasant surprises.



Secure, clear and structured data management



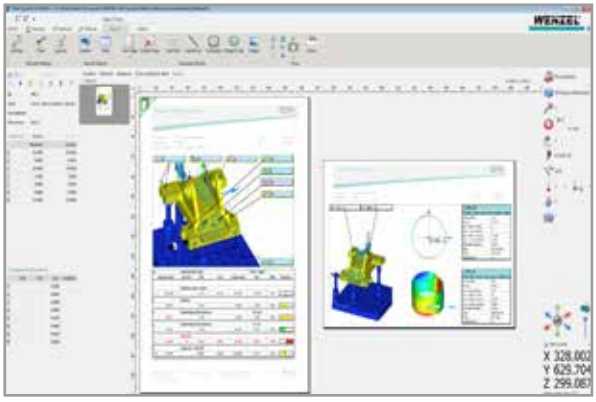
All important characteristic values at a glance with the built-in statistics

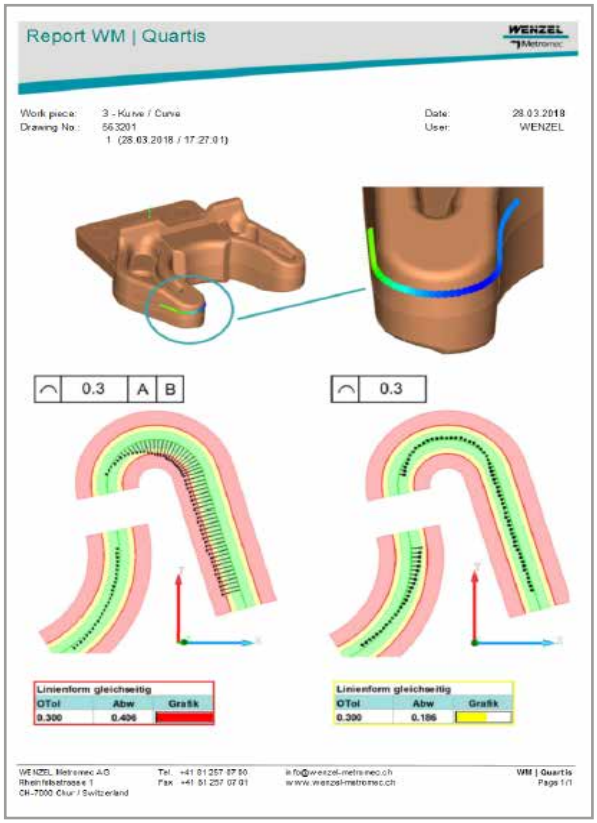
STATISTIC

The integrated statistics package guarantees a fast assessment of the manufacturing processes by machine and process capability (SPC), statistical data, trend diagram, histogram, X-, R- and s-card. The most important parameters are always at a glance in the overview window. Configurable views and diagram areas meet all requirements. Data can be exported in various formats for external evaluation.

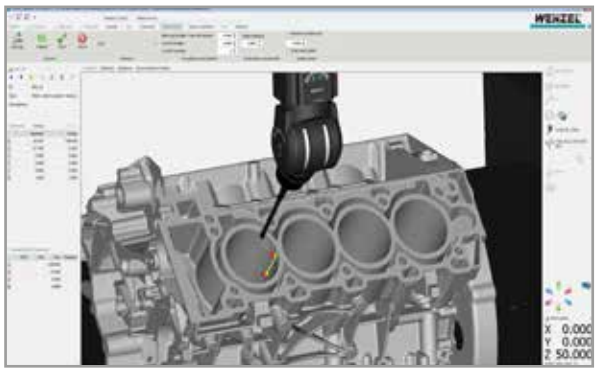
IMPRESSIVE REPORTS

The integrated report generator allows a free configuration of the measurement reports (table and graphic views with freely configurable data- and statistics boxes). With the extensive template-library you can create impressive presentations of measurement results in no time. Deviations can be displayed color-coded. With the powerful drawing tools, inserted images and texts, measurement reports can be completed. Language and units of measurement in the measurement report can be configured independently of operation. WM | Quartis also offers various export options (PDF, ASCII, MS Excel®).

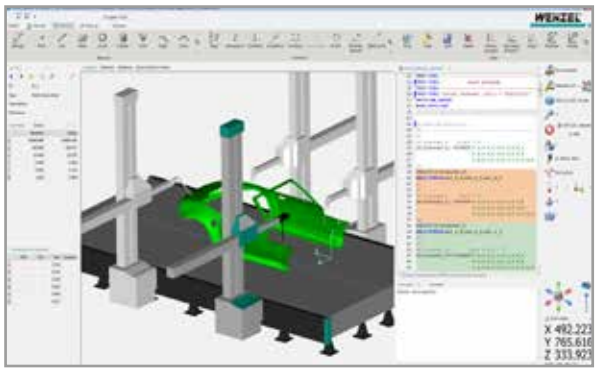




Geometry and freeform, graphics and tables can be displayed quickly and easily in a meaningful measurement report



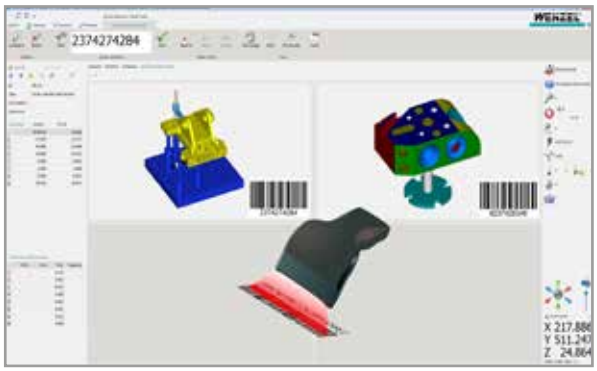
Measure roughness with Renishaw REVO SFP2 roughness sensor



Multi-device operation with up to 8 measuring devices

SPECIAL APPLICATIONS

- Measure and evaluate roughness with Renishaw REVO
- Use of third-party measurement software via WM | I++ DME Server based on WM | Quartis
- Virtual measurement on actual data from Computertomographs and optical scanners using WM | CTAnalyzer and WM | PointMaster
- Multi-column systems can be operated simultaneously and collision-free with up to 8 CNC measuring devices. This dramatically reduces the measuring cycle time
- Measurement of turbine blades in WM | Quartis and evaluation in WM | BladeAnalyzer on WENZEL CORE multisensor measuring devices
- Export of tool correction data, e.g. for eroding machines
- Automation and integration of the measuring system in the production process
- Use as a test device with the Renishaw Equator



Program start and data transfer from bar and data matrix codes

YOUR ADVANTAGES AT A GLANCE

- **Powerful, universal measurement software**
  Measurement of standard geometry, freeform and curves | For manual and CNC measuring devices | With tactile and optical sensor technology | For single point and scanning acquisition | Standard-compliant evaluation | Impressive measurement reports
- **Simple operation**
  User-friendly Microsoft Fluent Interface | Dynamic Ribbons | Structured Workspace
- **Low operating costs**
  Low training costs | Investment protection thanks to ongoing further development and regular updates | Software maintenance contract at a reasonable price | Volume discounts
- **Connectivity**
  Imports from all common CAD systems | Data transfer to external statistical software | Connection of various measuring machines | Automation solutions
- **Swiss Made Quality**
  Reliable | Precise | Innovative | Down-to-earth | Windows 10 compatible

Windows 10 Compatible

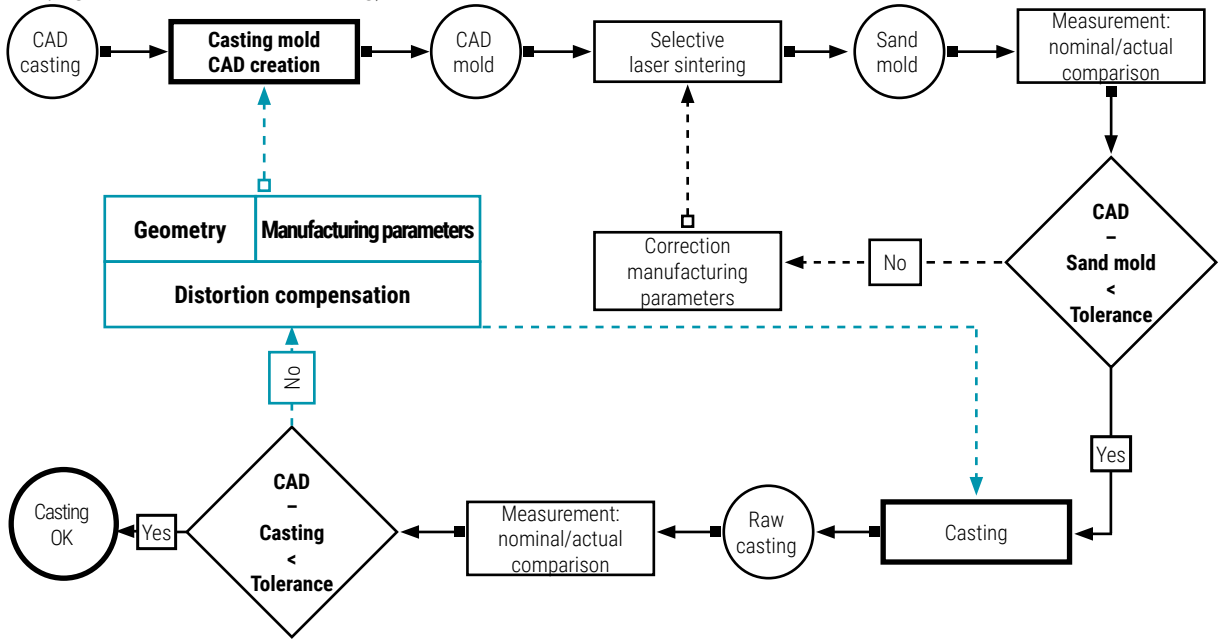
WM | PointMaster

THE ALL-ROUNDER FOR SCAN DATA PROCESSING

The processing of optically as well as tactile measured data is an indispensable and efficient tool in the development and manufacturing process in many industrial areas and applications, such as tool and mold making and quality control.
WM | PointMaster primarily supports users in the further processing of point clouds and poly meshes up to the process of reverse engineering and this almost in Strak quality. The innovative procedures and process chains are based on the WM | PointMaster geometry kernel and ensure excellent data quality and outstanding machining processes.

NEW COMPENSATE MODULE

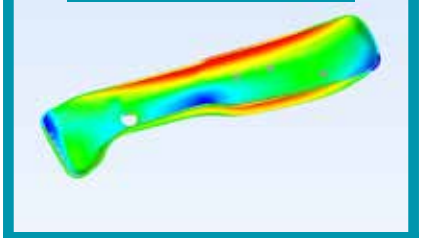
Fully automatic calculation of error-compensated new tool geometry taking into account a nominal geometry, the shrinkage factor of materials as well as the original tool geometry (represented in the process diagram for the compensation of shrinkage and warpage for tool and mould making).



1 Alignment

Alignment actual- to nominal component

2 Analysis



Analysis of the actual component by target/actual comparison of actual component to nominal component

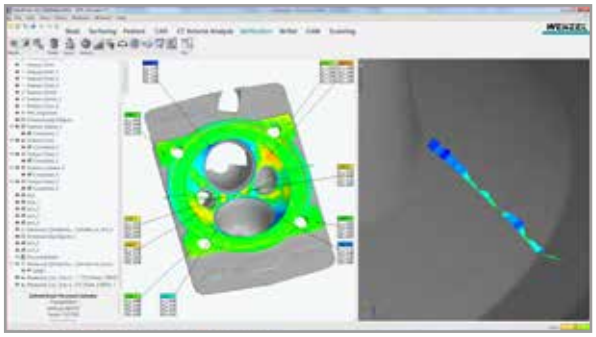
3 Strategy

Strategy of compensation represented by sections

Green section = Nominal geometry
Red section = Nominal geometry (Scan)
Blue section = Compensated geometry

REVERSE ENGINEERING

A surface boundary on the polymesh is sketched interactively. The Geometry Navigator then calculates the optimal boundary curves for this area and approximates the surfaces. At the press of a button, the entire surface structure is given continuous curvature surfaces (C2-continuity). A plus point of WM I PointMaster is the visual support by the interactive feature "Shading". Artifacts and discontinuities as well as the form guidelines important for the surface structure are displayed. New functions such as surface trimming using B-Spline curves, the transfer of surfaces created in CAD for reverse engineering and rule geometry recognition round off the range of functions.



NOMINAL/ACTUAL VALUE COMPARISON

The user transforms the measured data (scan data = actual data) into the coordinate system of the reference object (CAD data = target data), starts the analysis and receives a deviation color map as result. The measured deviations are displayed in a so-called deviation color map. Measuring points can be taken directly from the analysis object and transferred to a measuring protocol. Measuring programs created for a tactile measuring machine in WM I Quartis can be sent via I++ to WM | PointMaster. WM | PointMaster then functions as a virtual measuring machine, calculates the contact point from probe to component and then sends it back to WM I Quartis.

FEATURES

- **Shrinkage and distortion correction**
  For tool and die makers | Sophisticated functions and algorithms | Compensation of the formed or original components
- **Comprehensive format support**
  Handling scan and CT data | Support of all common scan, CAD, CT and CNC formats
- **Extensive functions**
  Creation of documents including presentation tools for measurement reports, documentation | Reports for order preparation | Freely available viewer
- **Support of numerous data types**
  Point clouds, polylines, polymasks | Surfaces and curves of higher order | Pixels and voxels |
  CNC traversing polyhedron

WM | GEAR & GEAR ANALYZER

THE ALL-ROUNDER FOR GEAR MEASUREMENT

WM | Gear, together with WM | Gear Analyzer, is the innovative software package for data acquisition, measurement and evaluation of involute gears on CMMs. Operators may use extensive possibilities of WM | Quartis (e.g. probe management, probe calibration, determination of workpiece coordinate system and rotary table axis) without additional training effort. Communication between WM | Gear and WM | Gear Analyzer is based on open GDE-Standard (VDI / VDE Guideline 2610).

APPLICATION AREAS

Spur and helical gears with involute profile, internal and external gears and bevel gears.

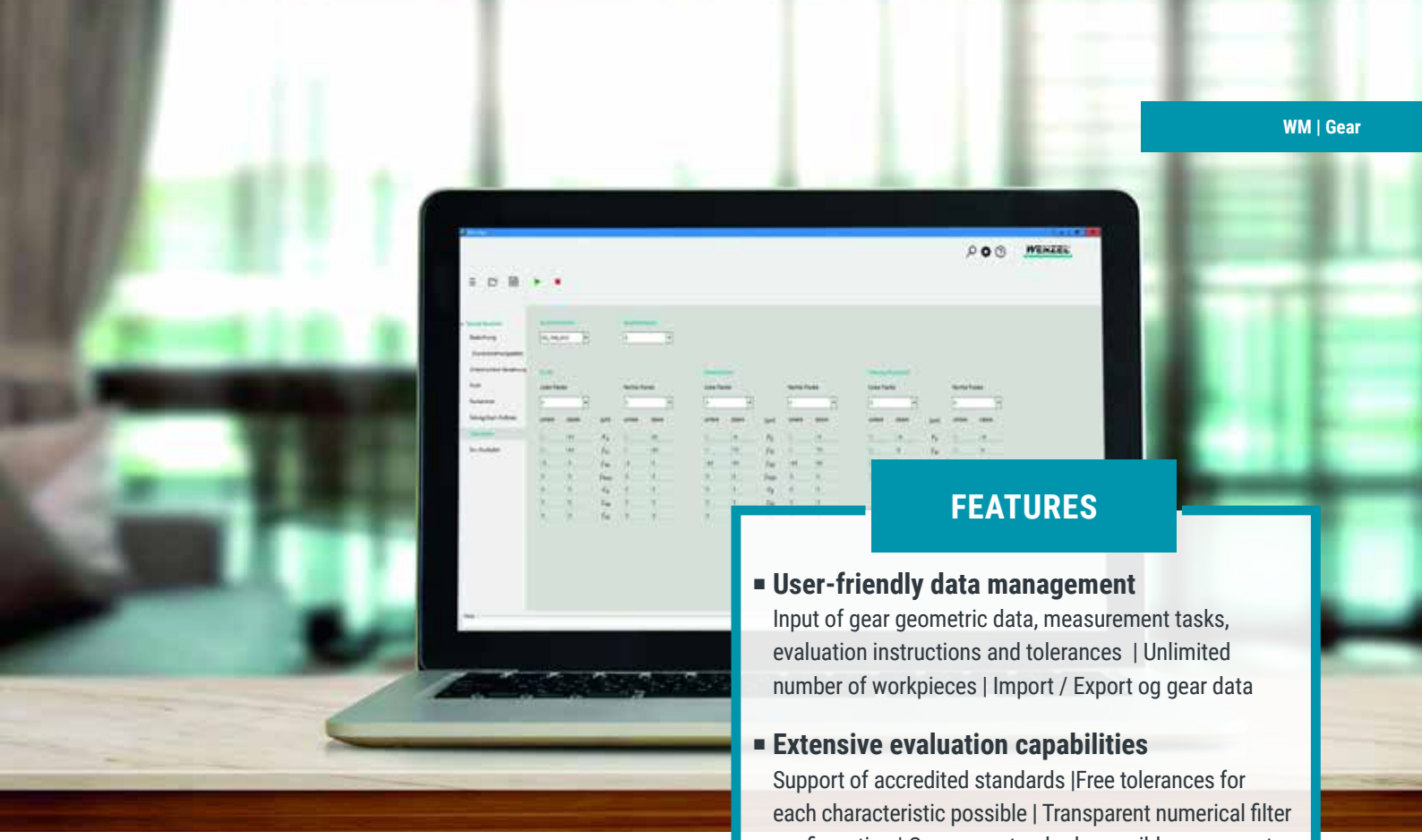
HIGHLIGHTS

Profile inspection

Extensive parameterization of measuring tasks. All common profile characteristics can be determined. Profile testing on any number of teeth possible. Multiple profile checks on one tooth. Profile modifications may be selected separately for each measuring position (profile crowning, tip- / root relief, profile slope modification, K-chart, design profile).

Lead inspection

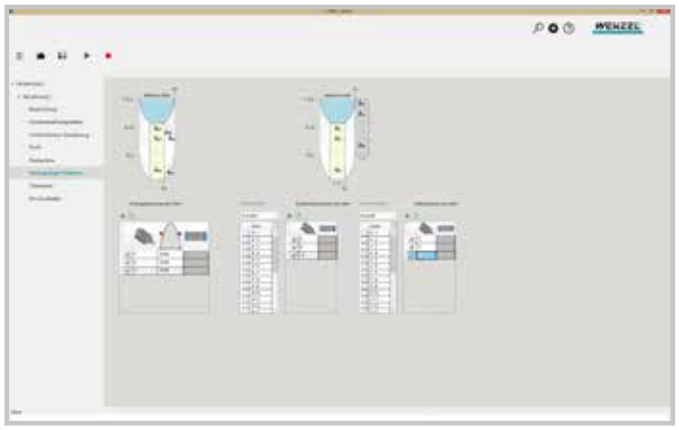
Extensive parameterization of measuring tasks. All common lead characteristics can be determined. Lead testing on any number of teeth possible. Multiple lead checks on one tooth. Lead modifications may be selected separately for each measuring position (lead crowning, end reliefs, lead slope modification, K-chart, design lead).



FEATURES

- **User-friendly data management**
  Input of gear geometric data, measurement tasks, evaluation instructions and tolerances | Unlimited number of workpieces | Import / Export og gear data
- **Extensive evaluation capabilities**
  Support of accredited standards |Free tolerances for each characteristic possible | Transparent numerical filter configuration | Company standards possible on request
- **Interactive measurement diagram**
  Magnification automatic / fix | Dilation automatic / fix | mm / inch switching | Subsequent modification of measurement sheet form | Temporary switching of presentation language | PDF file archiving of measurement results
- **High flexibility**
  Fully automatic measurement sequence | Evaluation and presentation parameters may be modified subsequently | Manufacturer–independent evaluation of measurement data available in valid GDE-format

Division inspection & absolute dimensions



PITCH AND RUNOUT INSPECTION

Extensive parameterization of measuring tasks.
All common pitch / runout characteristics can be determined. Up to three pitch tests at different tooth positions can be determined.

DETERMINATION OF ABSOLUTE DIMENSIONS

The following characteristics may be determined by up to three different tooth positions:

- Tip circle diameter
- Root circle diameter
- Dimension over one ball
- Dimension over two balls
- Dimension over one roll
- Dimension over two rolls
- Tooth span width
- Tooth thickness

WM | BLADE ANALYZER

EVALUATION OF TURBINE BLADE MEASUREMENTS

With the program WM | Blade Analyzer WENZEL introduces a new tool for the evaluation of turbine blade measurements. The software supports besides standard parameters like:

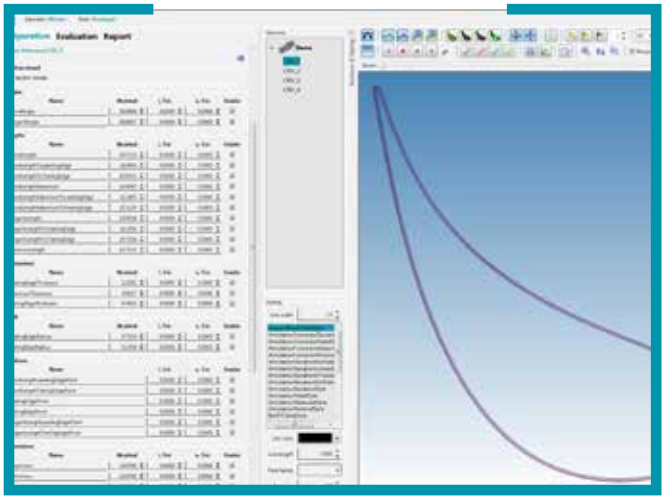
- Maximum thickness
- Leading and trailing edge radius
- Edge thickness
- Sheet length
- Blade angle

The software supports evaluations according to various manufacturer standards (GE, Safran, Rolls Royce, Pratt & Whitney). Various best fit algorithms for determining the blade position are also included in the scope of services, as is the evaluation of head and foot tolerances. A pre-defined workflow makes it easy for the user to create the measurement report. A generated report can be saved as a template and used for all further measurements. The measurement data is transferred in file format. Different formats such as vda, iges, csv and xml are supported. Besides manual use, the software can also be automated by command line parameters. For statistical recording of the results the data can be stored in different formats.

ALL STANDARD EVALUATIONS

All standard evaluations of blade sections are already integrated and can be individually selected or deselected for reporting.

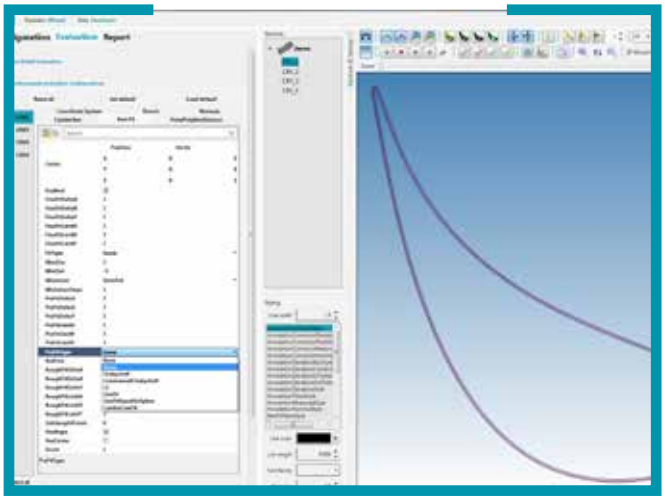
- Angles (chord, tangent)
- Lengths (chord, max., tangent,...)
- Thickness (leading edge, max., trailing edge)
- Radii (leading edge, trailing edge)
- Positions (leading edge point, trailing edge point, ...)
- Dimensions (max. extension X, max. extension Y)
- Deviations (max. devation, min. deviation)



BESTFIT OPERATOR

The Bestfit Operator can be applied to entire cuts as well as to individual cut segments. The supported algorithms include:

- Camberline Fit
- Spline Fit
- Gauss
- Chebycheff
- Constrained Chebycheff
- L1



FEATURES

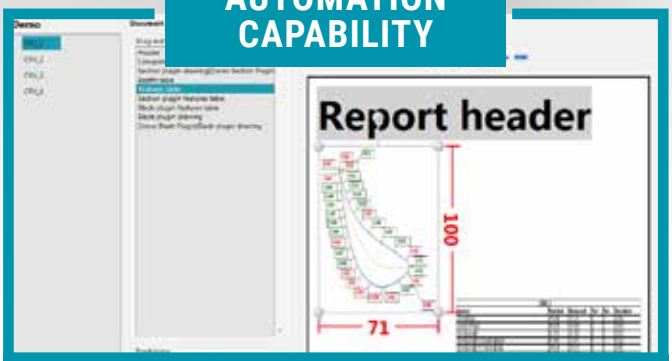
- **User-friendly data management**
  Input of parameters, evaluation specifications and tolerances | Any number of workpieces can be stored | Import / export of blade data including individual tolerances and evaluation specifications

- **Extensive evaluation possibilities**
  Support of recognized standards | Individual selection or deselection integrated standard evaluations | Bestfit operator for entire cuts or individual cut segments | Maximum flexible and configurable evaluation of point deviations

- **Interactive measurement report generation**
  Freely configurable report with display of any blade, foot or head section | Use templates for other blade types

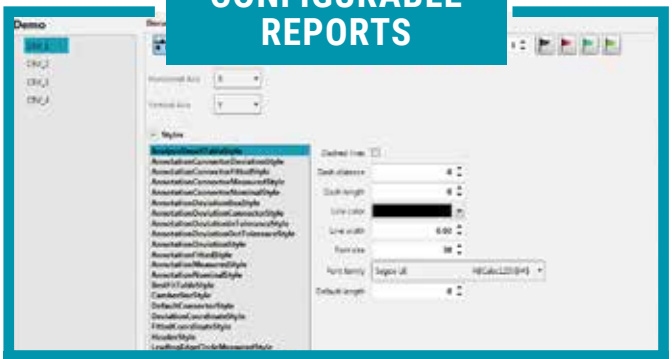
- **High flexibility**
  Fully automatic measuring sequence | Flexible solution for the analysis of sheet sections | Seamless integration into any environment - defined by measuring machine type, measuring program and software

AUTOMATION CAPABILITY



WM | Blade Analyzer projects can be opened completely automatically after creating a file containing measurement data, so that an automatic evaluation of these data can be performed using the specified options.

CONFIGURABLE REPORTS



The desired form of presentation as well as the information contained in drawings and tables can also be freely configured, to meet all of the customer's requirements.Furthermore, the format and layout of the report can be freely customised. The predefined views and tables configured according to customer requirements can be freely placed and fitted within a page preview.

TOLERANCE BANDS

For each nominal data point, a lower as well as an upper tolerance limit can be configured to allow a maximum flexible and configurable evaluation of point deviations.
In addition, a tool is provided to automatically segment these tolerance bands based on distances from the leading and trailing edges and to configure the configured limits.

WM | SYS Analyzer

TRANSPARENCY FOR OPERATION AND CONTROL

With the WM | SYS Analyzer software solution WENZEL offers extensive possibilities for controlling and analyzing measurement tasks and machines used. This allows the customer to have a "digital twin" of their part and analyze their measurement data in an intelligent and flexible way. The WM | SYS Analyzer offers total data transparency for measuring machines and their measuring environment. Authorized users are provided with all necessary information in real time through an attractive interface. The WM | SYS Analyzer consists of three software modules. The basic module "Monitoring" is installed on the machine's computer as standard on delivery. The advanced modules "Operations" and "Analytics" can be added at any time depending on the requirements of the machine.

FEATURES

- **Networking of local and global information** of all connected measuring machines
- **Intuitive** interface and usability
- **Automatic backup of all information,** e.g. machine data and data from the measuring environment
- Possibilities of **further analyses**
- **Platform independent** usage and encryption

VERSIONEN

	Monitoring	Operations	Analytics
Max. Number of CMMs	1	unbegrenzt	unbegrenzt
Machine status	++	++	+++
Error status	+	++	+++
Machine use spatially	0	+	++
Measurement program information	0	+	++
Service information	+	++	+++

+ = Basis, ++ = Extended scope, +++ = Maximum scope

FEATURES

- **High machine utilization**
  Monitoring of machine running times | Reduction of errors | Lower downtime
- **Transparency of information**
  Machine data | Measurement environment | Measurement sequences
- **Versatile use on all platforms**
  Smartphones | Tablets | Desktop Computers
- **Improvement of service**
  Wear indicator | Open maintenance | Avoidance of downtime
- **Backup and Reuse**
  Automatic storage | Versatile comparability | Automatic archiving

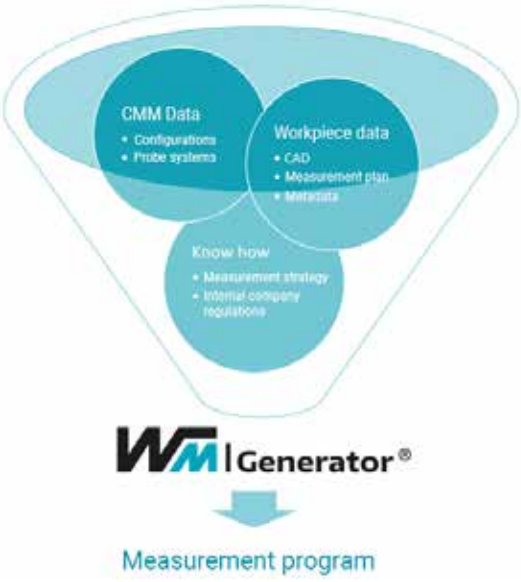
WM | Generator

AUTOMATED MEASUREMENT & EVALUATION

The WM | Generator is the basic tool for quickly and flexibly generating a measuring program in Quartis from CAD models with stored PMI information.

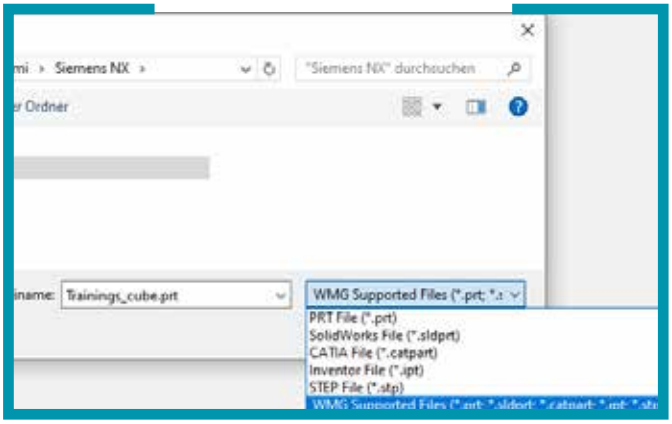
For this purpose, the WM | Generator has powerful import interfaces to common CAD programs and a descriptive PMI viewer for visualizing the drawings including the defined inspection characteristics and tolerances.

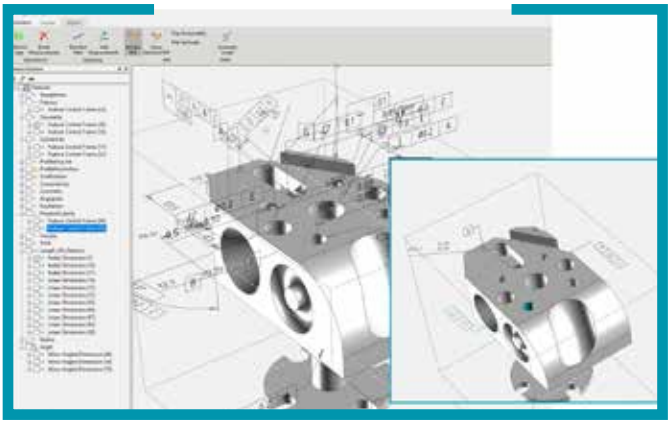
An inspection plan can thus be created quickly and flexibly and then automatically transferred to WM | Quartis, where these inspection plans are then integrated into predefined measuring program modules with just a few mouse clicks.



CAD FORMATE

- **Import CAD models including semantic PMI. CAD formats that support PMI (Product Meta Information):**
- Siemens NX
- CATIA V5
- Inventor
- SolidWorks
- STEP AP242

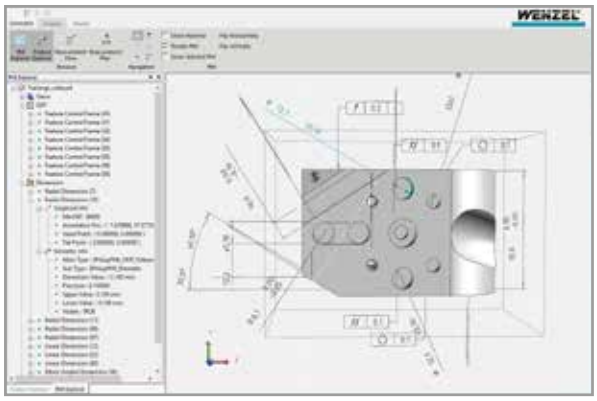




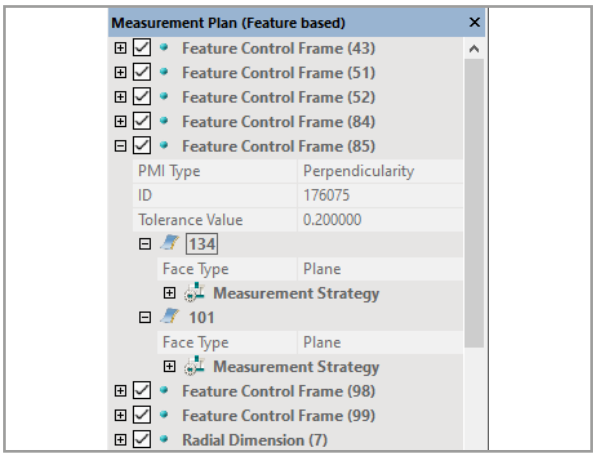
AUTOMATION

- Create measurement sequence with few user interventions
- View PMI data in PMI Explorer
- Keep track by optionally displaying only selected PMI in the graph.
- Add missing tolerances in the Feature Explorer / add incomplete tolerances
- Calculate time-optimized, collision-free measurement sequence

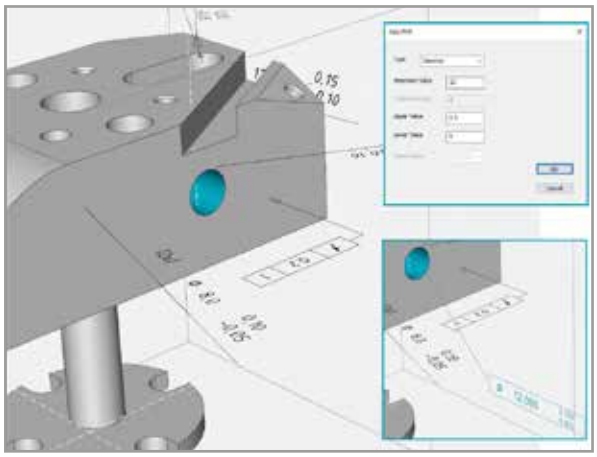
FUNCTION



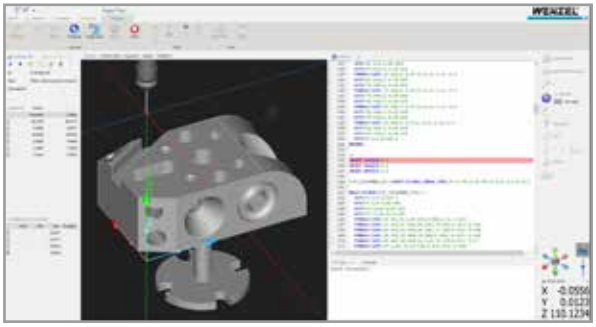
When importing the CAD model, not only the CAD data but also the semantic PMI are converted.



The measurement plan is automatically generated from the PMI - the basis for the measurement process. For the characteristics to be evaluated and the elements to be recorded accordingly, the measurement strategy can still be edited in the measurement plan if required. Characteristics that are not to be evaluated in the measurement process are deactivated.



If necessary, PMI can still be added or edited.



Based on the measurement plan, the measurement sequence is calculated, which is the preliminary stage for program generation.

FEATURES

- **Reduce the time required to generate measuring programs**
- **Improve resource utilization through time-optimized measurement program flow**
- **Electronic data exchange saves time and reduces transmission errors**
- **Create time for the essentials by automating processes that can be automated**

INNOVATION MEETS TRADITION

The WENZEL Group is one of the leading suppliers in the field of industrial metrology and styling solutions. WENZEL's product portfolio includes coordinate and gear measuring machines with tactile and optical sensors, multi-sensor systems, optical high speed scanning and 3D X-ray measuring technology based on computer tomography. In addition to these systems WENZEL also offers comprehensive metrology software, which is used by many thousands of users for the measurement and analysis of parts. WENZEL´s measuring solutions are used in various industries, including the automotive sector, aerospace, power generation and medical devices. Our solutions also support reverse engineering, inspection, and analysis for a variety of fields including power generation, vehicle electrification, and additive manufacturing. Over the years WENZEL has installed more than 10,000 machines worldwide. Subsidiaries and agencies in more than 50 countries support the sales and ensure the after sales service for our customers. The WENZEL Group employs more than 600 people worldwide.

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