


General Catalogue  
Measuring Technology





# Index

4   5	<b>With Wenzel into the future</b>
6   7	<b>Internationally present</b>
8   9	<b>Smart CMM</b>
10   11	<b>The LH series</b>
12   13	<b>LH features</b>
14   15	<b>The LH-Gantry CMM</b>
16   17	<b>The LHF series</b>
18   19	<b>The RSplus series</b>
20   21	<b>The RA series</b>
22   23	<b>The RAplus series</b>
24   25	<b>The RUF   RH series</b>
26   27	<b>Customized solutions</b>
28   29	<b>Evaluation systems and accessories</b>
30   31	<b>Probes, probe heads and tool changer systems</b>
32   33	<b>The Phoenix</b>
34   35	<b>Wenzel Software Metrosoft CM</b>
36   37	<b>DesCAD3D</b>
38   39	<b>Special Software   Gear Measurement</b>
40   41	<b>Quality Assurance   Calibration laboratory</b>
42   43	<b>Wenzel Training Centre   Wenzel worldwide</b>
44	<b>How to find us...</b>

# Insight with Foresight

Demands placed on metrology have fundamentally changed over past years; as well as the increasing demands placed on capital equipment, and its suppliers, for reliability, software and service support. WENZEL's vision and market knowledge recognized early on these trends and new developing market challenges and have reacted appropriately and are thus positioned accordingly.

Example: Our User-friendly and extensive software is being developed at three locations – in Wiesthal, Karlsruhe and Chur; each dedicated to Customer needs. As a supplement to our standard software, we offer specific application modules for virtually all specialised measurement tasks. Wenzel understand Customer needs when it comes to mechanics and

software and develop solutions as necessary. Our metrology solutions extend far beyond machine configuration: Our know-how is made available for product inspection planning or re-planning and we provide consulting on all matters pertaining to metrology, such as for the design of foundations or the proper climate



control. Our year on year constantly increasing market share proves in an impressive way how well we have succeeded in satisfying the demands of the market. At the base of our success is our ultra-modern production

facilities, a lean, agile and innovative management team and almost four decades of experience.

But above all, it is our extremely well-qualified and dedicated staff

which ensure that we - and therefore our Customers - are so successful. A perfect team.



Werner Wenzel

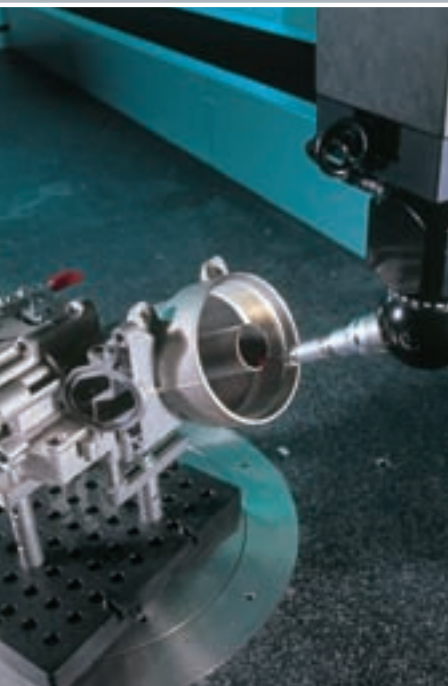


# With WENZEL into the future Ideas from experience

Metrology has been our profession since 1968 – which we have developed to absolute perfection over the years. Our Customers appreciate it: from small shops to international corporate groups WENZEL is considered a flawless quality partner with experience and knowledge. We act with a claim

for the future. This means for us to exceed limits, to continuously enlarge our horizon of experience and to constantly adjust to market requirements. We achieved this goal with the help of our Customers and a global distribution network which has made us part of the

world leaders in CMM Metrology. “Old” does not exist for us, but words like tradition still have the original meaning at WENZEL: A classic family business and reliable partner, run by the owner and among the TOP 100 medium-



sized companies in Germany with the direct commitment we feel indispensable for our and your success. WENZEL stands for highest quality achievements and

reliability – without forgetting that one can only exist if aiming at the future and permanently having his visions in front of one's eyes. Therefore product innovation and

long-term business development with a stable relationship network are part of our daily constants – you can depend on WENZEL.



Internationally present

## On top of Customer requirements

Whether it be Wiesthal, Shanghai or Detroit, it is absolutely essential that as an internationally oriented company, we have presence around the globe. Through our subsidiaries and marketing partners, as well as

through our extensive presence at international trade fairs, we are always at your disposal with personal contact. We accommodate our Customers with localised physical presence, and use the opportunity

to engage in intense dialogue with Customers and Users – an important prerequisite for us to continue developing in the areas of products and services in line with market conditions.





# Smart CMM

## Ergonomic, fast, compact

A small revolution in coordinate metrology – made by Wenzel.

- Shop-floor 3-D measuring device for measuring small and medium-sized components
- Intelligent and compact design for a large application range
- All guideways protected/enclosed for use even in severe environments
- Only an electricity outlet required (no air bearings)
- The measuring volume is freely accessible from 3 sides
- Flexible use through high temperature tolerance

### ❶ Light-weight

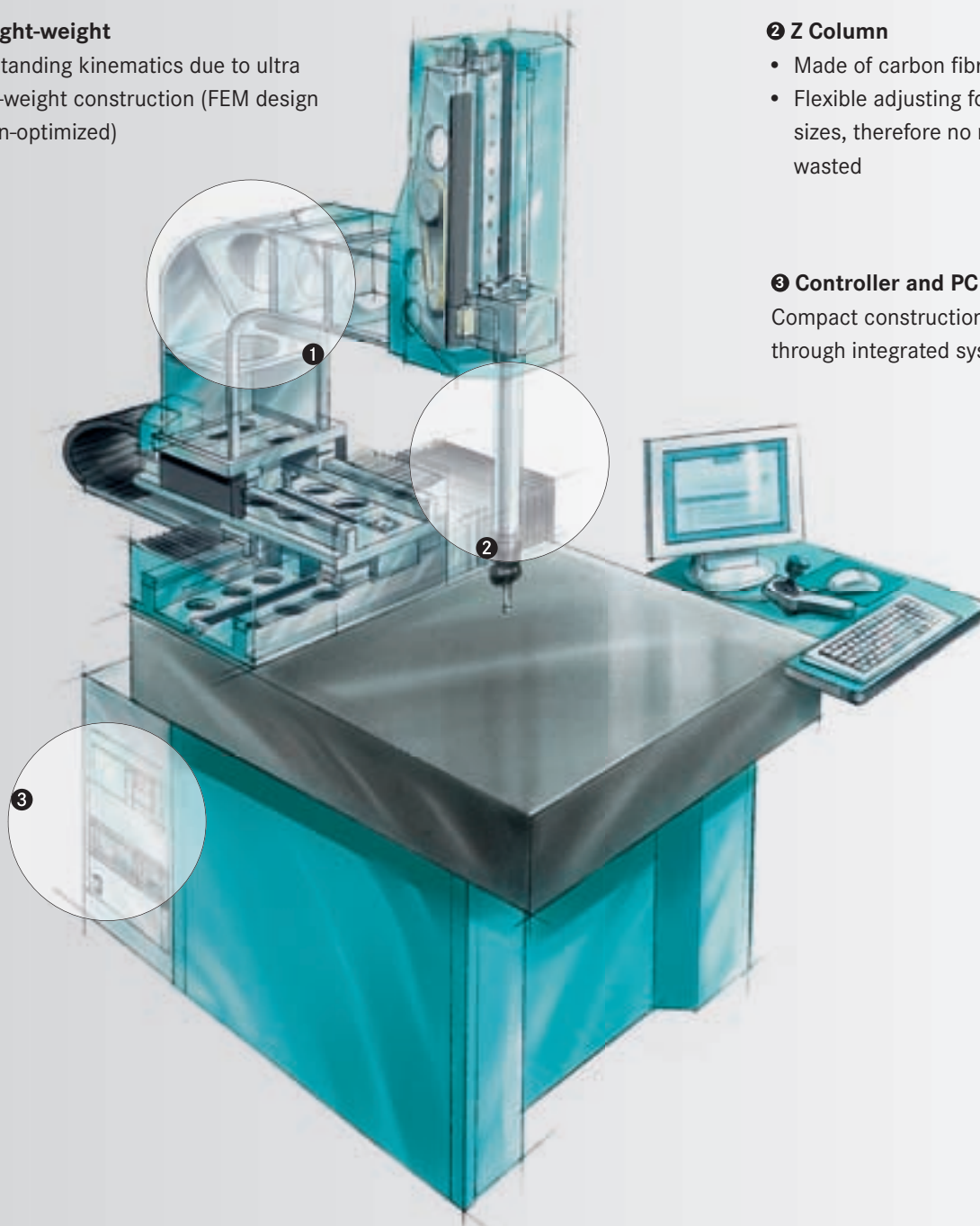
Outstanding kinematics due to ultra light-weight construction (FEM design strain-optimized)

### ❷ Z Column

- Made of carbon fibre
- Flexible adjusting for different probe sizes, therefore no measuring range wasted

### ❸ Controller and PC

Compact construction through integrated system





## Smart CMM

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
500/1000	450	400

Technical information available in specific data sheet.

## The LH Series

# Wide range of CMM models

We are not interested in coincidence – the success of our LH Series is mainly justified by a conclusive business plan and unconditional perfection in detail. The success principle of this series

is called mechanical accuracy and top mechanical engineering. The bridge machine has air bearing guideway elements in all axes which guarantee wear-free and

smooth operation. High-precision and User-friendly handling – all this rounded off by an intelligent service package – WENZEL cares. The machines may be equipped with a



LH 54

Effective range (mm)

X-Axis	Y-Axis*	Z-Axis
500	600/1000	400



LH 108

Effective range (mm)

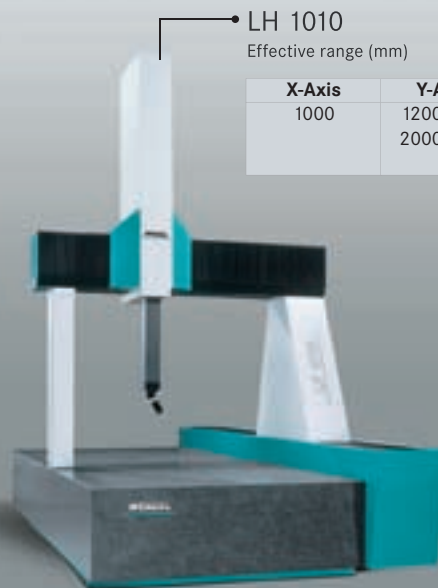
X-Axis	Y-Axis*	Z-Axis
1000	1200/1600 2000/2500	800



LH 1010

Effective range (mm)

X-Axis	Y-Axis*	Z-Axis
1000	1200/1600 2000/2500	1000



number of different probe head and scanner combinations. From fixed to motorized and adjustable probe heads. From simple measuring

probes to high-precision probe systems. The optimal solution for every measuring challenge – sensor technology by WENZEL.

• LH 65

Effective range (mm)

X-Axis	Y-Axis*	Z-Axis
650	750/1200	500

• LH 87

Effective range (mm)

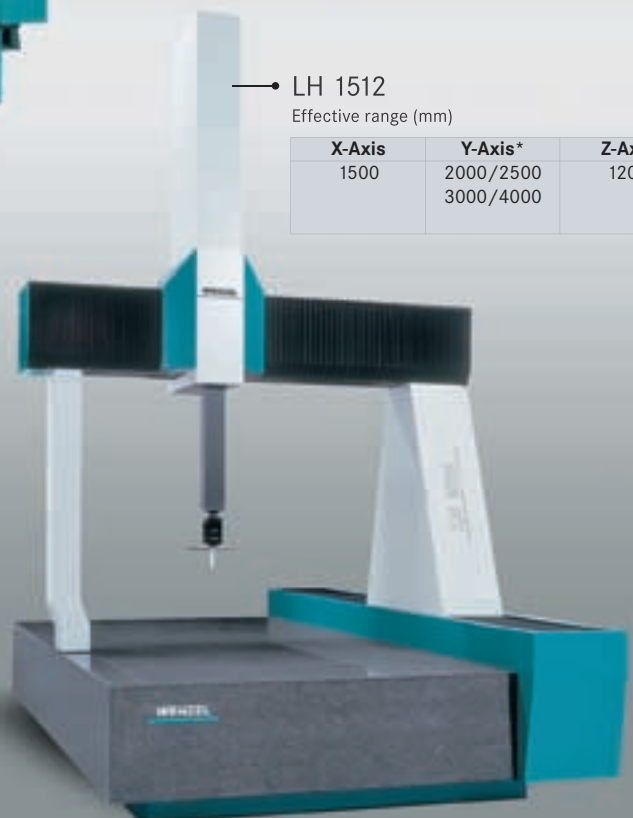
X-Axis	Y-Axis*	Z-Axis
800	1000/1500 2000	700



• LH 1512

Effective range (mm)

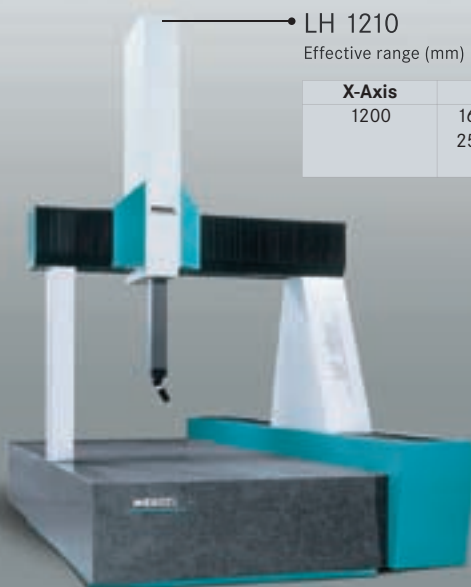
X-Axis	Y-Axis*	Z-Axis
1500	2000/2500 3000/4000	1200



• LH 1210

Effective range (mm)

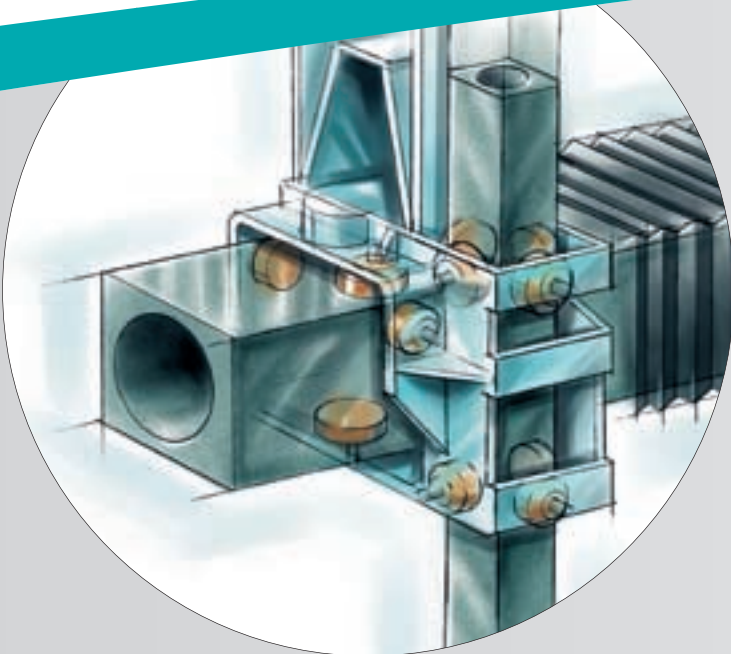
X-Axis	Y-Axis*	Z-Axis
1200	1600/2000 2500/3000	1000



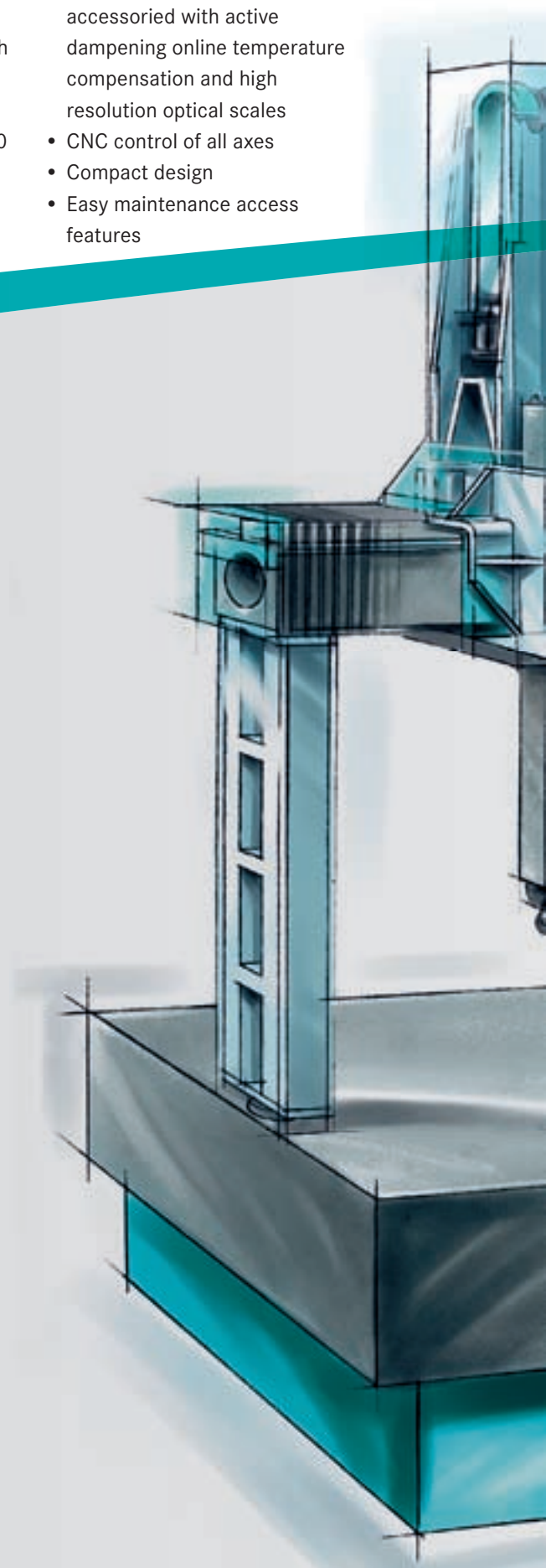
\*Max. deliverable Y measury range 5000 mm, other measuring ranges on inquiry. Technical information available in specific data sheet.

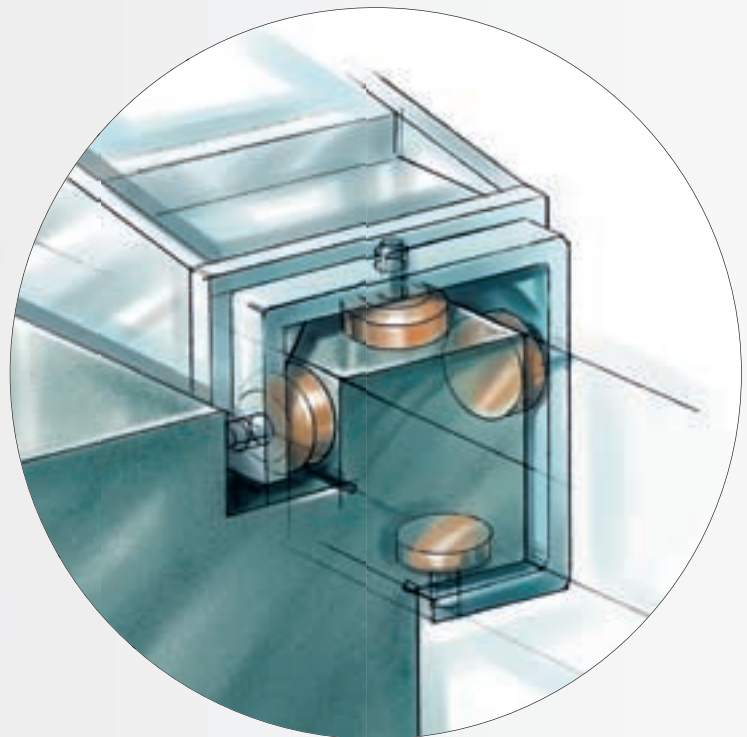
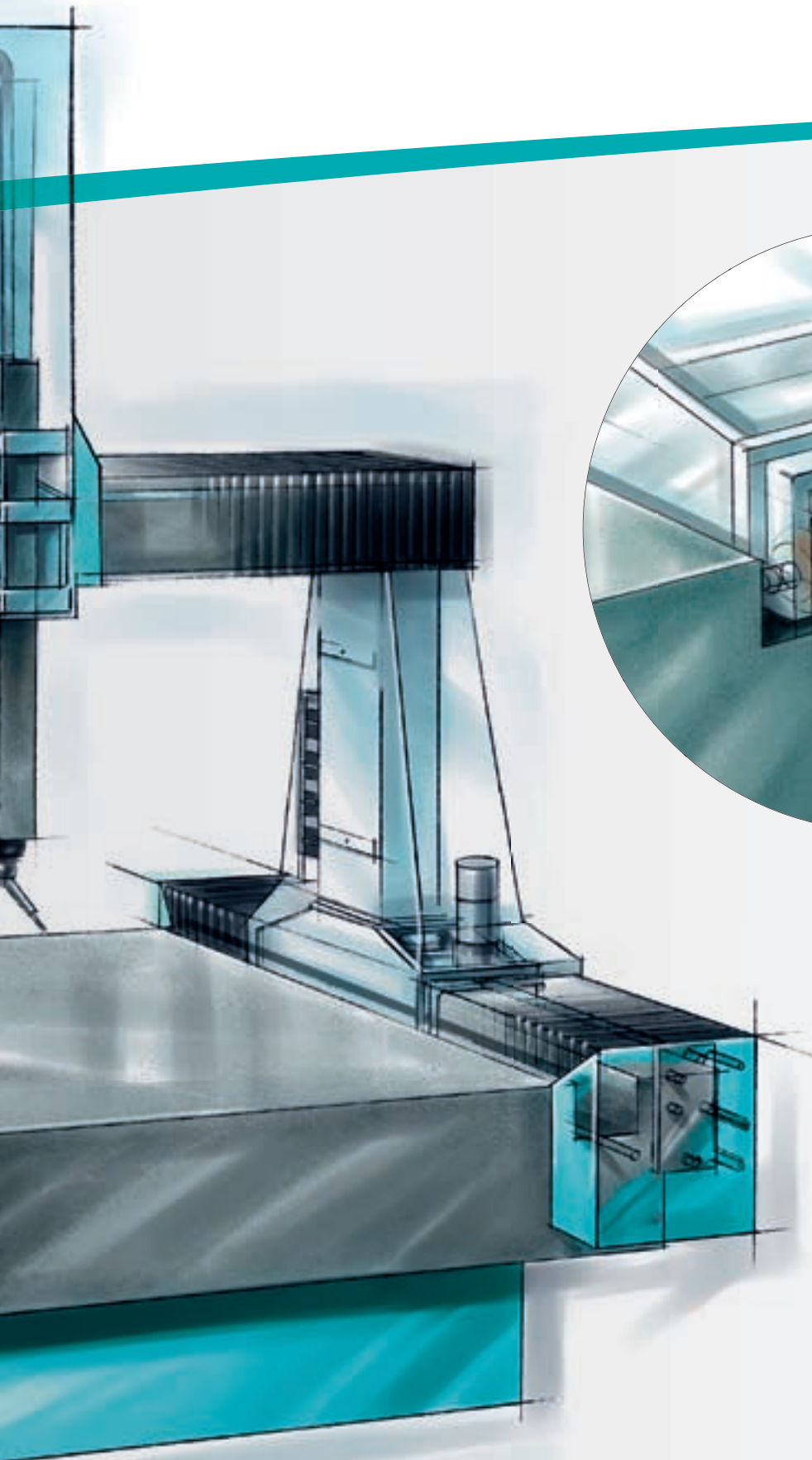
## Precise in detail LH features

- Base plate, cross-beam and quill are made of natural dark granite, guaranteeing identical, thermal conditions in all axes
- Y-axis guideway directly integrated in the base plate
- Weight compensation of Z-quill by regulated pneumatic cylinder
- Air bearing guideway elements in all axes for wear-free, smooth operation
- Usable area of the base plate finished according to DIN 876/0
- X and Y axis guideways covered by bellows
- Available in special sizes and accessoried with active dampening online temperature compensation and high resolution optical scales
- CNC control of all axes
- Compact design
- Easy maintenance access features



Symmetric guideway profiles with reduced wall thicknesses: optimal for calculable expansion behaviour with changing working temperatures. Bellows protect the cross-beam as well as the Y guideway against environmental and external influences.





FEM/CAD optimized components guarantee highest rigidity with reduced mobile masses

Pre-stressed, high accuracy, hand lapped air bearing guideways, the Y-axis is integrated in the granite base plate, a guarantee for excellent long-term stability.

## The LH-Gantry CMM

# Stable metrology with excellent dynamics

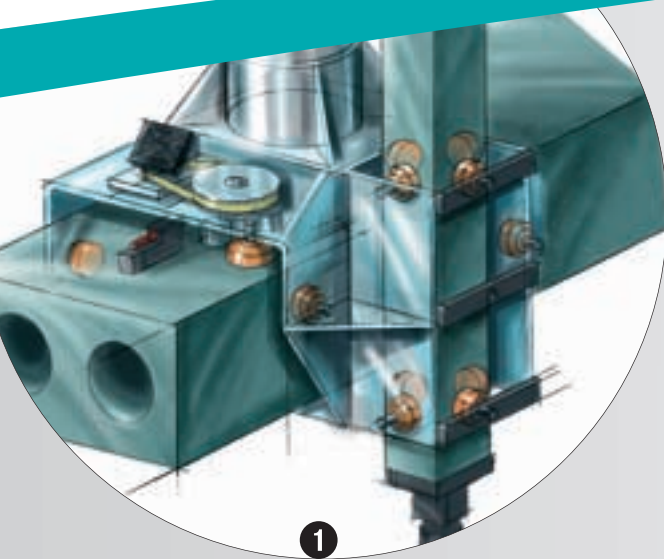
Air bearing guideway systems in all axes ensure wear-free operation and optimal guide characteristics in the LH Gantry.

The same thermal performance in all axes is guaranteed by means of a base plate, bridge and Z ram made of dark granite.

The rigid construction together with the dual drive of the Y axis also guarantees the best possible dynamics while maintaining stability.

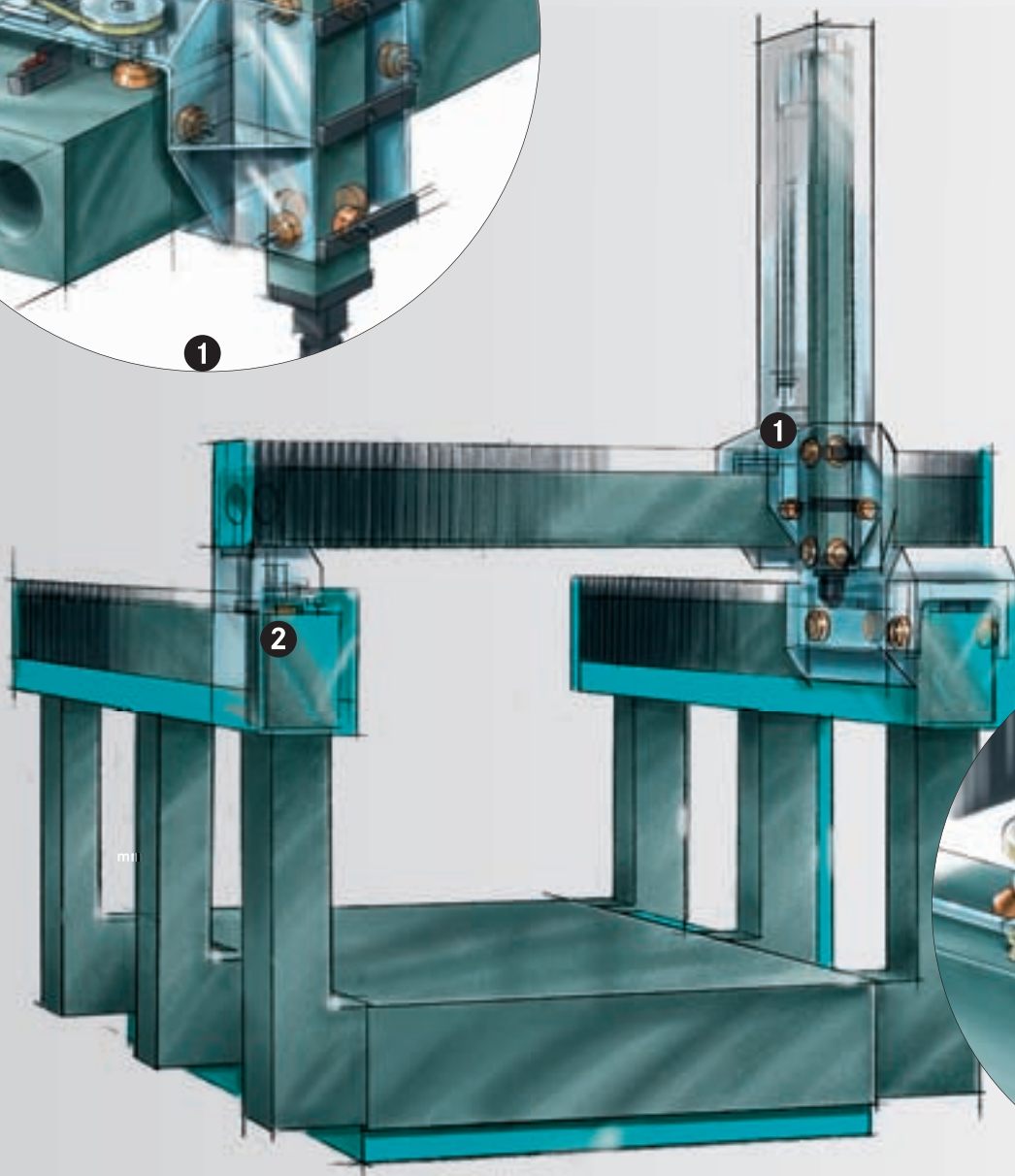
In summary the machine frame forms an inherently stable, homogeneous unit which can be

configured to special sizes and accessoried with active dampening on line temperature compensation and high resolution optical scales.



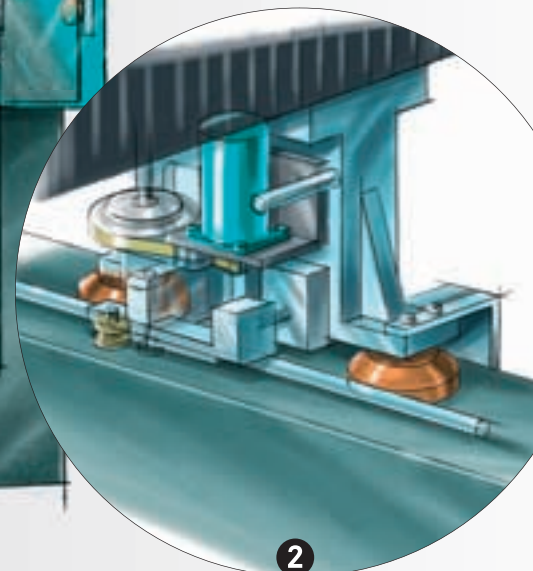
### Overall symmetry

- Optimized air bearings with "wide spread"
- Perfection in the details
- Easy to service
- Thermally encapsulated



### Dual drive in the Y axis

- High level of dynamics





**LH 1515**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
1500	2000/2500 3000/4000	1500

**LH 2015**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
2000	3000/4000 5000	1500

Other measuring ranges on inquiry. Technical information available in specific data sheet.

## The LHF series

# Open structure for large parts

**Air bearings on guide beam in the Y axis.** The ground-level design of the LHF enables outstanding access to a large measuring volume with optimum freedom of movement.

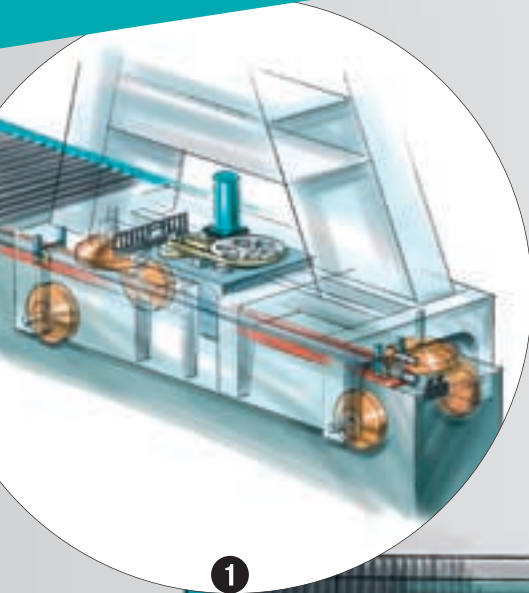
The dual drive in the Y axis of the LHF makes it unbeatable in terms of dynamics; this in addition to the unique stability of the guides.

Similar to the LH Gantry, the LHF air bearing guideway systems also guarantee wear-free operation together with precise guidance.

All materials used for structure and guideways have the same thermal performance.

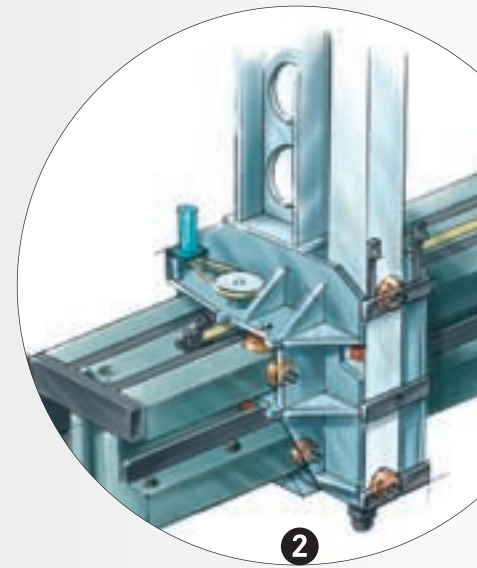
The LHF requires an inherently stable foundation to provide its

specified metrological performance. For normal conditions a standard, rigid foundation block is sufficient. In the case of strong vibrations, vibration damping elements are required under the foundation.



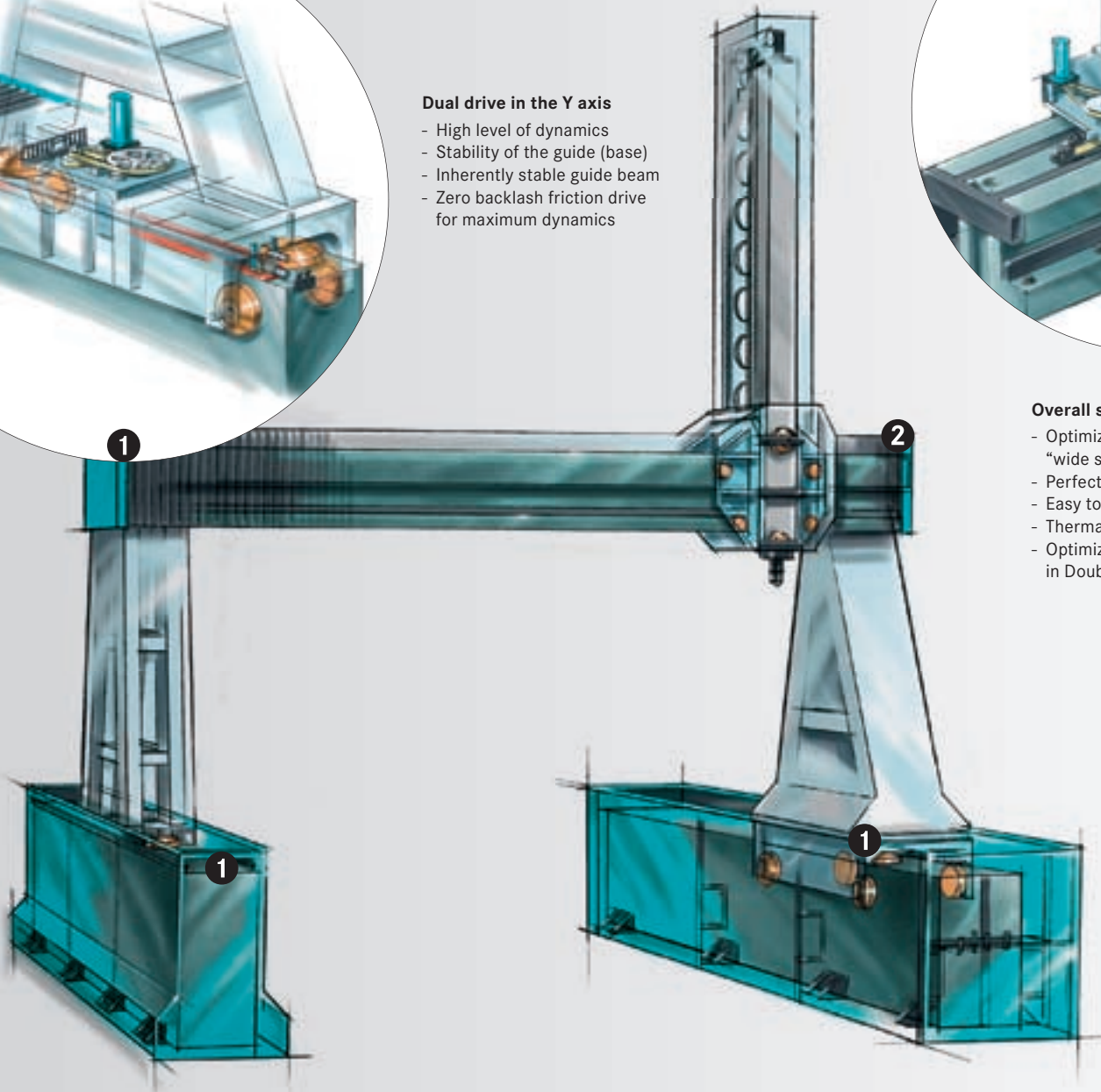
### Dual drive in the Y axis

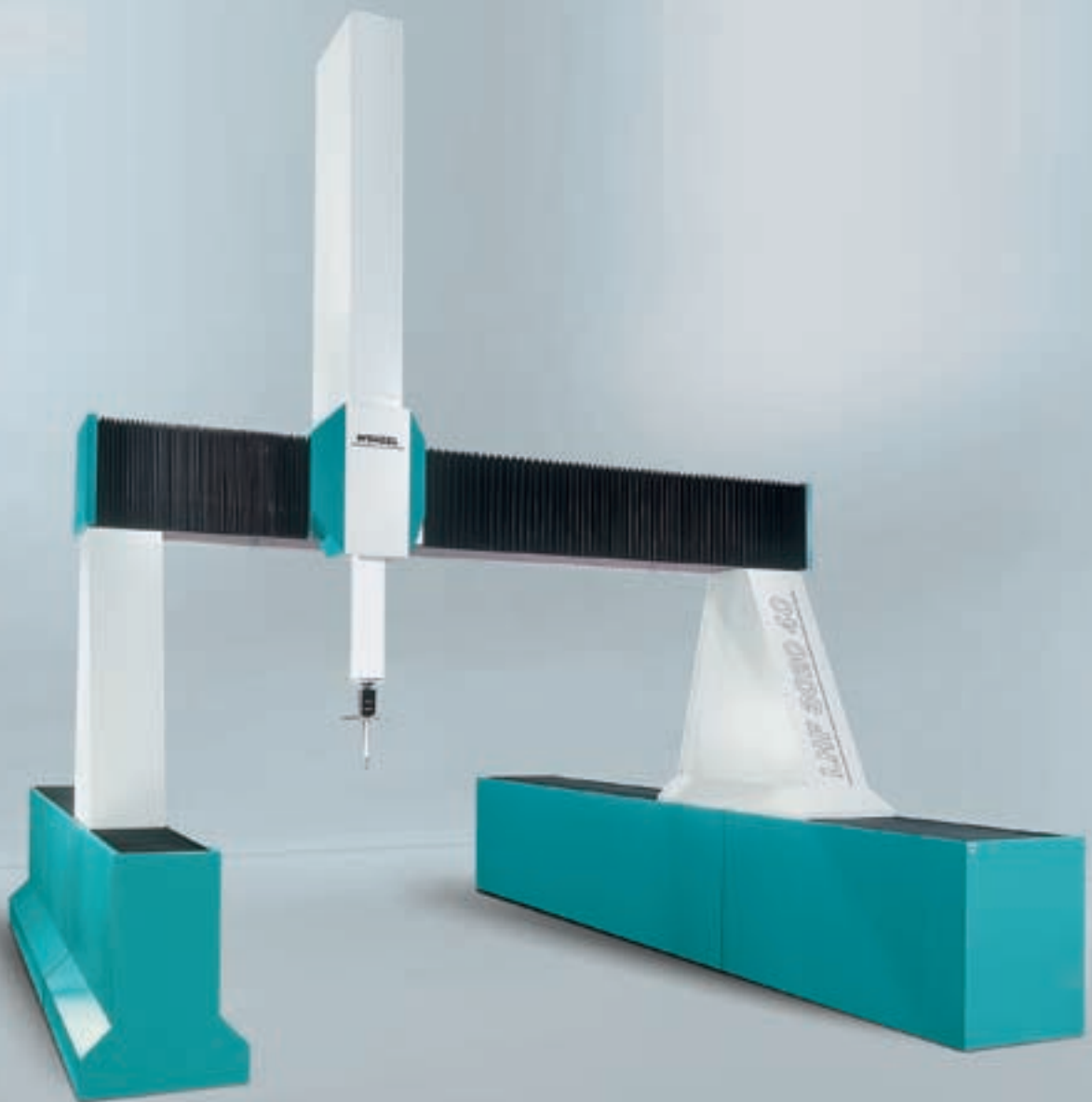
- High level of dynamics
- Stability of the guide (base)
- Inherently stable guide beam
- Zero backlash friction drive for maximum dynamics



### Overall symmetry

- Optimized air bearing with "wide spread"
- Perfection in the details
- Easy to service
- Thermal micro-encapsulation
- Optimized air bearing design in Double T-form





## LHF 3020

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
3000	4000/5000	2000
	6000	

Other measuring ranges on inquiry. Technical information available in specific data sheet.

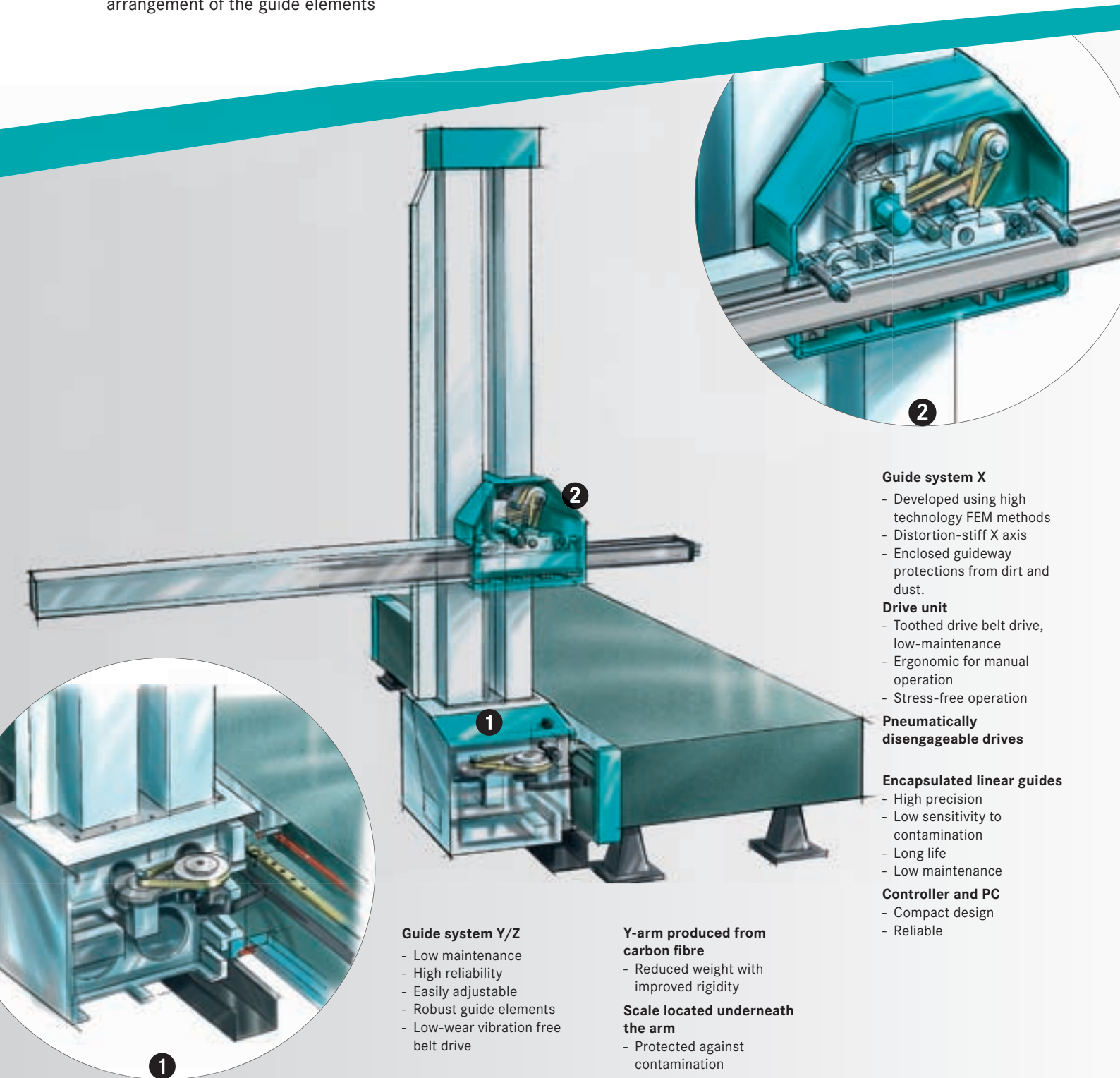
# The RSplus Series

## Open access from all sides

**Rail mounted on the side of the base plate.** Pre-loaded linear guides and precision roller bearings provide the highest level of speed and precision for the RSplus series of horizontal arm machines. The superior design and compact arrangement of the guide elements

of the X axis provide perfect accessibility for measuring and maintenance tasks from all sides. The base plate is standardly manufactured from special grey cast iron; it can also be supplied with a granite table.

Depending on the measuring task at hand, the machine is available in manual, motorized, CNC and manual/CNC with disengageable drives.



### Guide system X

- Developed using high technology FEM methods
- Distortion-stiff X axis
- Enclosed guideway protections from dirt and dust.

### Drive unit

- Toothed drive belt drive, low-maintenance
- Ergonomic for manual operation
- Stress-free operation

### Pneumatically disengageable drives

### Encapsulated linear guides

- High precision
- Low sensitivity to contamination
- Long life
- Low maintenance

### Controller and PC

- Compact design
- Reliable

### Guide system Y/Z

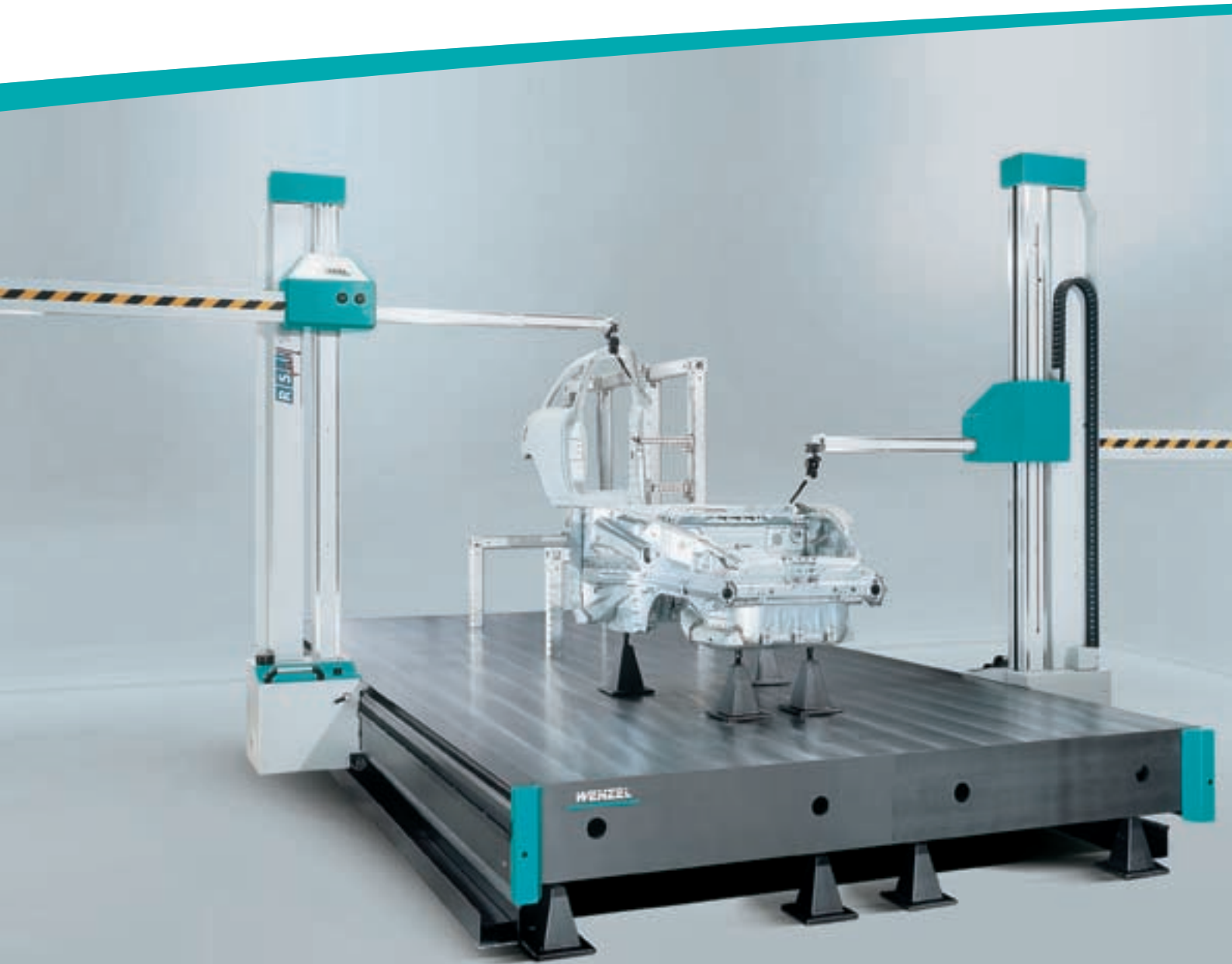
- Low maintenance
- High reliability
- Easily adjustable
- Robust guide elements
- Low-wear vibration free belt drive

### Y-arm produced from carbon fibre

- Reduced weight with improved rigidity

### Scale located underneath the arm

- Protected against contamination



**RSplus 1012**  
Effective range (mm)

X-Axis	Y-Axis	Z-Axis
2000	1000	1200

**RSplus 1215**  
Effective range (mm)

X-Axis	Y-Axis	Z-Axis
3000	1200	1500

**RSplus 1621**  
Effective range (mm)

X-Axis	Y-Axis	Z-Axis
4000	1600	2100

**RSDplus 3018**  
Effective range (mm)

X-Axis	Y-Axis	Z-Axis
5500	3000	1800
6000		
6500		

**RSDplus 3021**  
Effective range (mm)

X-Axis	Y-Axis	Z-Axis
5500	3000	2100
6000		
6500		

**RSDplus 3025**  
Effective range (mm)

X-Axis	Y-Axis	Z-Axis
5500	3000	2500
6000		
6500		

## The RA series

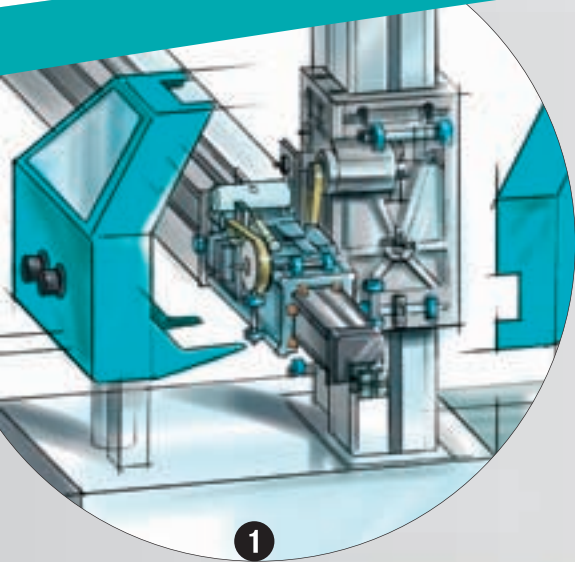
# Durable, floor level for large part measurements

Linear guideways guides ensure precise movement in the X axis; precision rollers support the Y and Z axes. The machines are available in duplex configuration (RAD) increasing the Y-measuring volume. The individual arms can work individually or in a joint coordinate system. The guide system of the X axis is completely protected by an accessible covers, allowing installation at floor level.

The extremely stable steel band protection system render the RA measuring centers very long-lasting.

The extremely stable steel band protection system render the RA measuring centers very long-lasting.

The extremely stable steel band protection system render the RA measuring centers very long-lasting.



### Guide system X

- Developed using high technology FEM methods
- Distortion-stiff X axis

### Drive unit

- Collision and Overload protection by means of frictional wheel drive

### Pneumatically disengageable drives

- Eliminate undesired heat sources

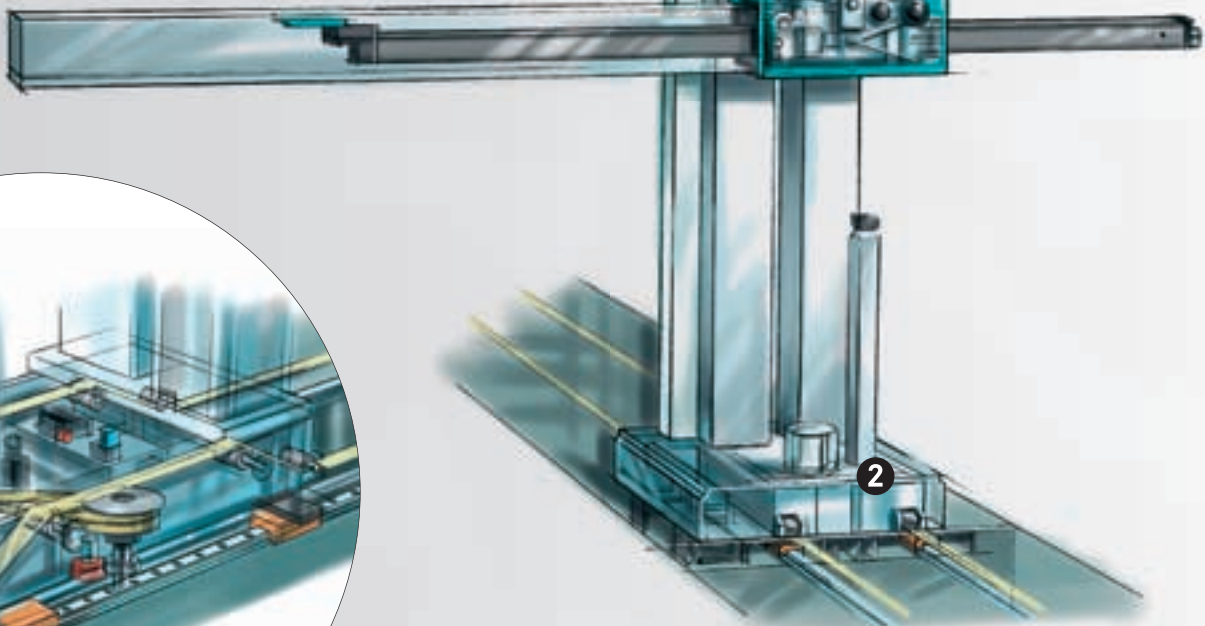
### Encapsulated linear guides

- High precision

- Low sensitivity to contamination
- Long life
- Low Maintenance

### Steel band covers

- Steel covers on the X axis (accessible)
- Stainless steel drive bands
- Optimally self cleaning



### Guide system Y/Z

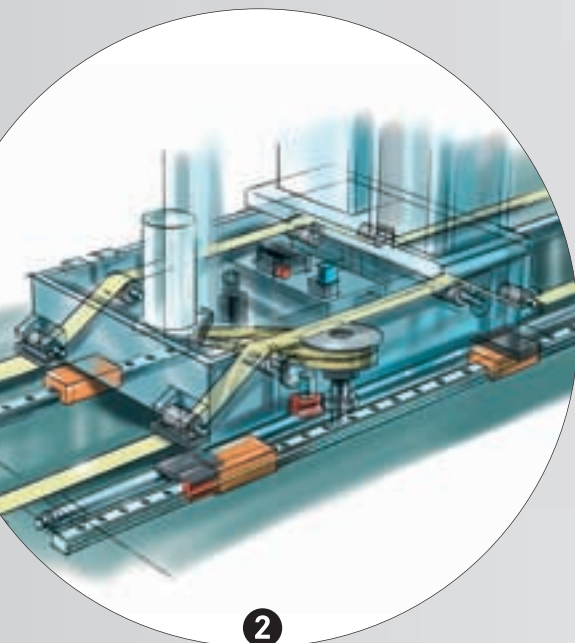
- Rapid replacement design providing – minimal down time
- Easily adjustable
- Robust guide elements

### Y arm produced of carbon fibre

- Reduced weight with improved rigidity

### Scale located underneath

- Protects against contamination



ing and minimize maintenance expense. According to the measuring task at hand, the machine is avail-

able in manual, motorized, CNC and manual/CNC with disengageable drives.



**RAF 1012**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
4000	1000	1200
5000		
6000		

**RAF 1215**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
4000	1200	1500
5000		
6000		

**RAF 1621**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
4000	1600	2100
5000		
6000		

**RAD 3018**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
5500	3000	1800
6000		
6500		

**RAD 3021**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
5500	3000	2100
6000		
6500		

**RAD 3025**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
8000	3000	2500
10000		
12000		

All machines are available in cast iron up to X= 40.000 mm, steps 500 mm, other measuring Y-Z ranges on inquiry. Technical information available in specific data sheet.

## The RAplus series

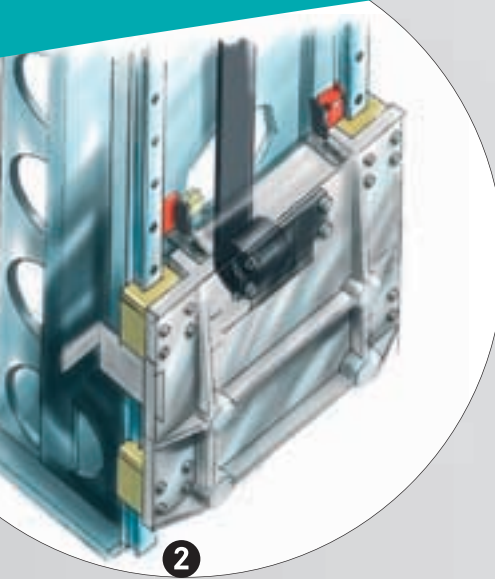
# Precise with high dynamics

The RAplus series meet the highest requirements for speed and precision. Highly dynamic CNC for extremely fast measuring cycle times.

The RAplus extremely precise movements are due to the special X axis linear guideways. Precision

Rollers support the carbon fibre composite Y arm. The machines are available in duplex configuration (RAD) increasing the Y-measuring volume. The individual arms can work individually or in a joint coordinate system. The guide system of the X axis is completely protected

by an accessible cover, allowing installation at floor level. The Z axis is also protected from outside influences by a bellows.



### Guide system X

- Rigid "chassis"
- Central drive
- Form fitting drive and DC servomotor for maximum speed and acceleration

### Drive unit

- Vibration free toothed drive belt, low-maintenance
- Floating position without influence on geometry.

### Steel band covers

- Steel covers on the X axis (accessible)
- Stainless steel drive cover bands
- Optimally self cleaning

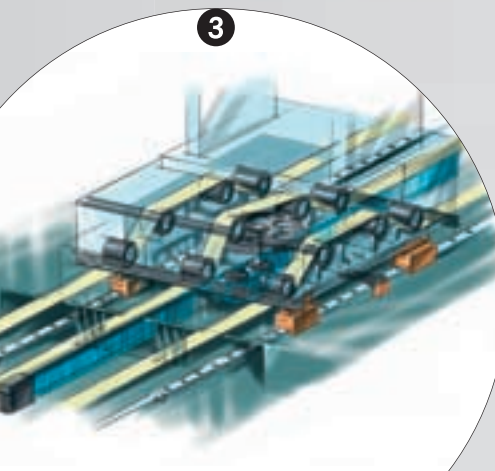
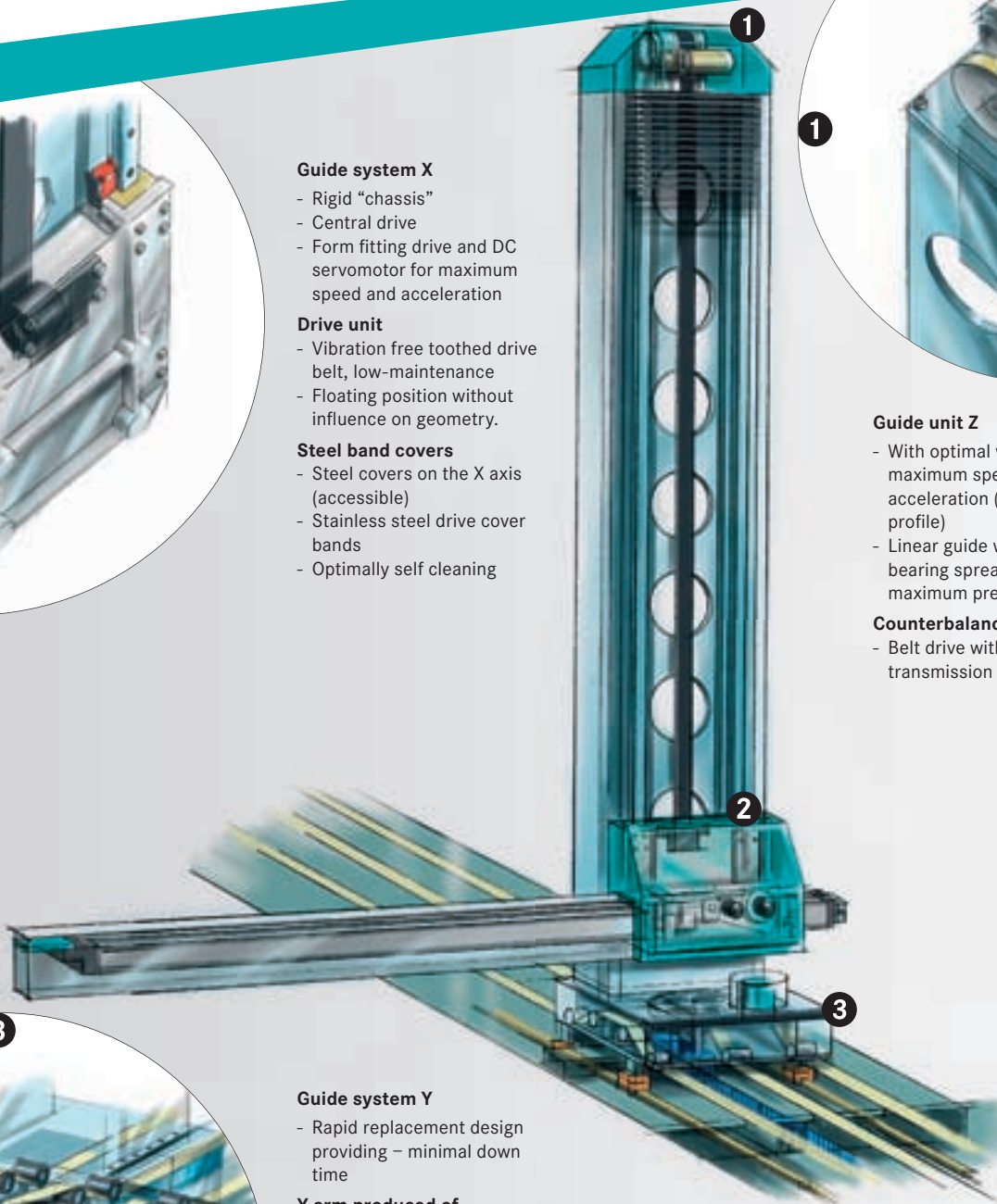


### Guide unit Z

- With optimal weight for maximum speed and acceleration (laser-cut profile)
- Linear guide with wide bearing spread for the maximum precision

### Counterbalance

- Belt drive with central power transmission



### Guide system Y

- Rapid replacement design providing - minimal down time

### Y arm produced of carbon fibre

- Reduced weight with improved rigidity

### Scale located underneath the arm

- Protects against contamination



**RAFplus 1621**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
4000	1600	2100
5000		
6000		

**RAFplus 1625**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
4000	1600	2500
5000		
6000		

**RADplus 3021**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
5500	3000	2100
6000		

**RADplus 3025**

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
8000	3000	2500
10000		
12000		

## The RUF Inspection from below

The RUF underfloor measuring machine is the ideal supplement to the RAD and RADplus measuring centres when workpieces also need to be measured from below.

The underfloor measuring machine

combine a high level of precision with superb robustness.

The measuring area of the RUF generally derives from the size of the associated RAD machine.



Both RA and RAplus series can be supplemented with the RUF allowing the workpieces to be measured from underneath.

## RH series

# A shop-floor bridge CMM with mechanical bearings

The bridge machine is equipped with an efficient dual drive system, has linear guides in the X and Y axis and is roller-mounted in the Z axis, which guarantees backlash free operation due to pre-defined pre-loads.

The X and Y guides are covered with bellows to protect against contamination and minimize thermal effects. Available with optional vibration damping, which makes it ideally suited for

installation close to production operations. The base plate made of grey cast iron is machined in accordance with DIN 876/2.



### RH 2016

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
2000	3000	1600
	4000	
	5000	

### RH 2020

Effective range (mm)

X-Axis	Y-Axis	Z-Axis
2000	3000	2000
	4000	
	5000	

Other measuring ranges on request. Technical information available in specific data sheet.

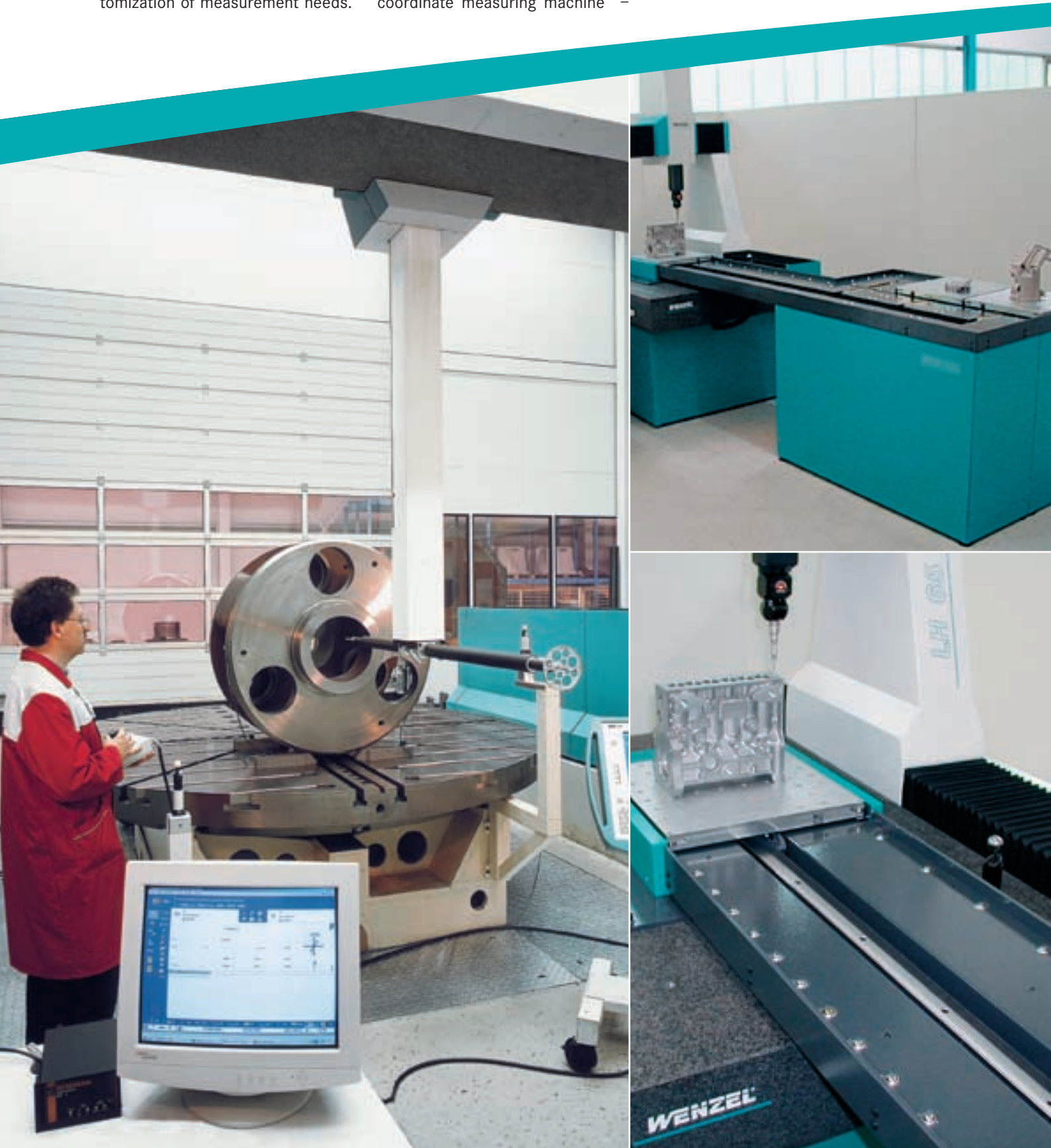
# Customized solutions

## Customized

Modular designed systems are WENZEL's strength. Individual solutions based on discussions with Customers can be offered, which allows an optimum customization of measurement needs.

Whether it is special probe extensions made of carbon fibre composite materials, automatic workpiece palletizing systems or a special design of high-precision coordinate measuring machine –

WENZEL is your qualified partner for providing complete systems: From extensive planning, to design, to application support.





# Evaluation systems and accessories

## Precision in detail



**HT400**  
Standard teach pendant

**HT400 RC**  
Wireless teach pendant including receiver. The ergonomic design provides multi-functional and comprehensive CMM operation functions.

### Manual evaluation system

- WPZ 100 digital counter
- PC system
- WENZEL Metrosoft CM
- Computer trolley

### MOT/CNC design

- Controller
- Control panel HT400/HT400 RC
- PC system
- WENZEL Metrosoft CM
- Computer trolley



### WPZ 100 digital counter

3-axis digital counter with large, red LED display with 8 decades. Reset and preset for each axis. Connections for foot switch, fading rate input, diameter-radius changeover. Diameter input for fixed probes, interpolation factor up to 200-fold, reference mark evaluation.

### Accompanying device holders

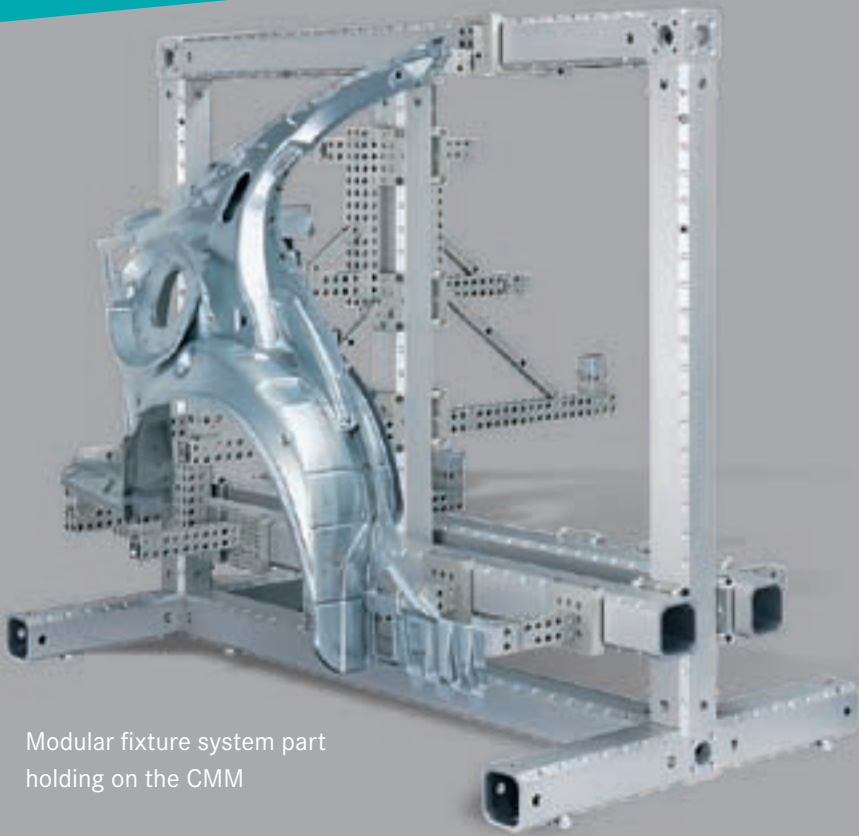
15" LCD flat screen, secured to a swiveling fixture on the machine stands with keyboard, trackball or mouse.



### Tablet PC with WLAN

Portable PC for operating the evaluation software – allowing increased mobility of the operator.





Modular fixture system part holding on the CMM

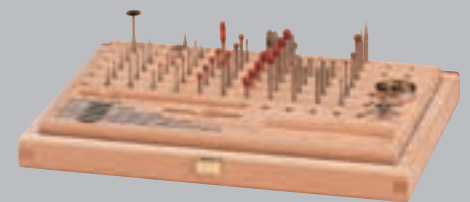


**Rotary Table**

Air-bearing design, can be installed flush in the CMM base plate if desired

The accessories illustrated here are a small selection from our extensive product range.

For more information, please contact your local WENZEL representative.



**Stylus sets**

18 or 49-pieces sets

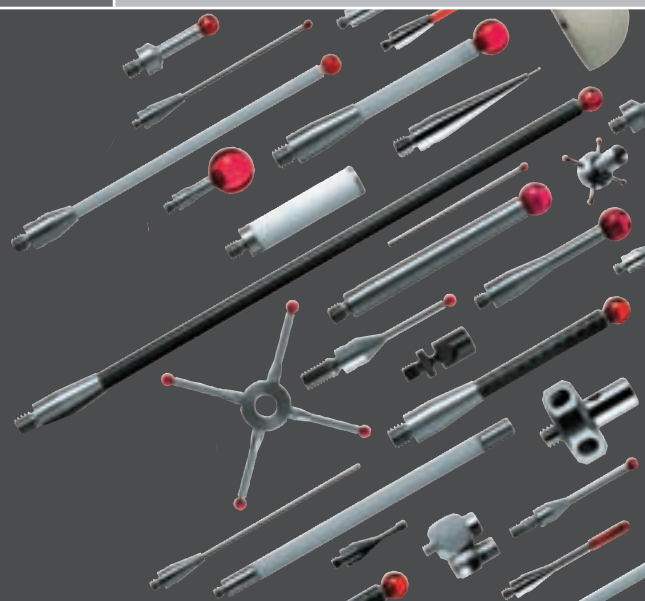
**Reference sphere**

$\varnothing$  25 mm, height 100 mm, up to 3 extensions are possible each of 70 mm



**Styli**

Extensive range of stylus inserts for every application



# Probes, probe heads and tool changer systems



## PH 6 probe head

Compact probe head for 3D probe mounting

### Our standard packages

#### PH6 probe Set

PH6, TP20, stylus Ø 4 mm, extensions of 50/100 mm, case

#### MIH Set

MIH, TP20, stylus Ø 4 mm, extensions of 50/100 mm, adapter PAA1, case

#### PH10T/PH10M – TP20 Set

PH10T or PH10M, TP20, Stylus Ø 4 mm, extensions of 50/100/200 mm, control unit PHC10, control software, case

#### PH10T/PH10M – TP200-Set

PH10T or PH10M, TP200 with Interface PI200, stylus Ø 4 mm, extensions of 50/100/200 mm, control unit PHC10, control software, case

#### PHS – Set

PHS, Extensions of 330/500 mm, Probe changer with 4 stations, PHS interface, control software

#### PH10M / SP25M – Set

PH10M, SP25M with Scanning Kit with probe lengths of 20-200mm, stylus Ø 4 mm, TP20 module, Interface PI 200, Interface card, connecting cable, case



## Manual indexing head (MIH)

Manually indexable probe head in 7.5° increments. The respective position is shown in an LCD display. For manual measuring machines.



## PH10T/PH10M motorized indexing head

Automatically indexable probe head in 7.5° increments. Extensions up to 300 mm.



## PHS servo positioning head

Can be swivelled continuously. Minimum probe calibration efforts. Extensions of up to 750 mm possible.



## SP 80 high-precision scanning probe

Passive probe, equipped with a high resolution digital length-measuring system (0.02 µm), which ensures outstanding measuring precision even when using long stylus inserts (up to 500 mm).



## TP20 probe

Touch probe with stylus change modules. Combines the robustness of the TP2-5W with the flexibility of the TP200.



## TP200 probe

Highest precision touch probe with stylus change modules. Styli of up to 100 mm can be used.



## SP25 M probe

Most compact and versatile probe system for scanning in the world. Stylus solutions up to 200 mm.



## SP 600 probe

Universal, robust probe with scanning functions.



**SCR 200 Autochange rack**

Stylus changer system used in conjunction with TP200 probe.



**SCP 80 Autochange rack**

Storage module for automatic changer for SH80 probe insert holders.



**ACR 3 Autochange rack**

Autochange rack for automatic probe change during the measuring program. 4 or 8 change stations. (For PH10M, PH6M, PHS).



**ACR 2 Autochange rack**

Automatic changer for the PHS1 servo positioning head system.



**FCR25 Autochange rack**

Autochange rack for all system components with 3 stations (6, 9, 12 and 15 stations also possible) (for PH10M-SP25).

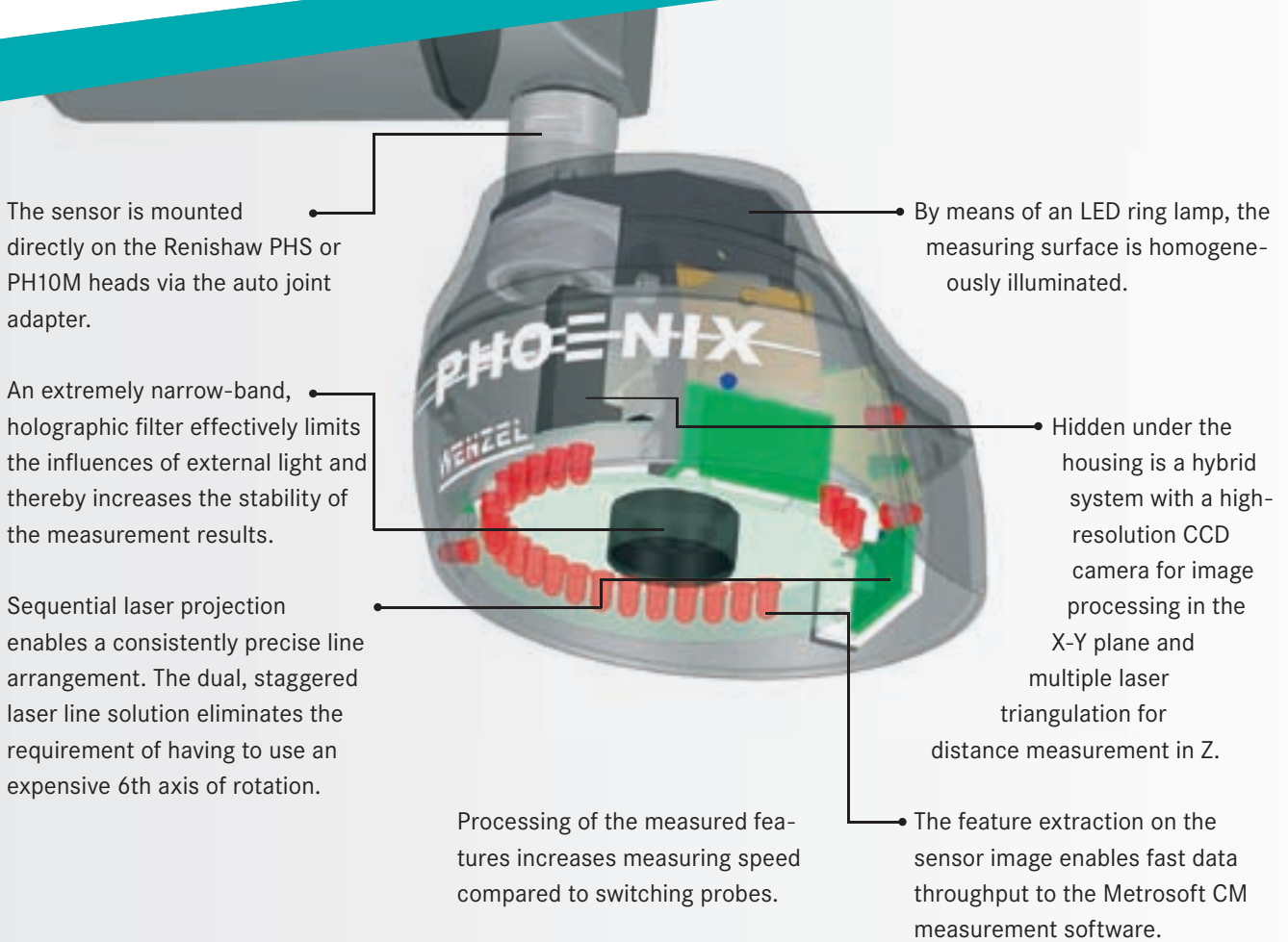
# Phoenix

## The Optical Sensor

The Phoenix optical sensor utilizes an innovative design principle, which is tailored to the application of “contact-free measuring of

points and geometry”, and offers increased measuring speed and improved precision over tactile sensors.

Compared to other optical sensors, the Phoenix offers greater flexibility and speed.



### Phoenix

<b>Measurements</b>	Ø 120 x 90 mm
<b>Operating distance</b>	100 mm
<b>Measuring window</b>	30 mm x 40 mm
<b>Image processing</b>	< 0,65 s
<b>Measurement uncertainty</b>	± 25 µm



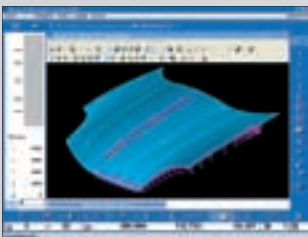
# We take care of it Wenzel software

Metrosoft CM. Already at an early stage we had opted for quality software which we develop ourselves at our subsidiary Metromec in Switzerland. In close cooperation with leading companies in the automotive, mechanical

engineering and aerospace industry, hands-on packages for the whole application spectrum have been developed, from cylinder block to turbine vanes, from models to car body. One may measure tactile or non-contact with optical sensors.

All Metrosoft CM packages stand out through logical and simple operator guidance, supported by self-explanatory graphics. In short: a typical WENZEL product, reliable and User-oriented.

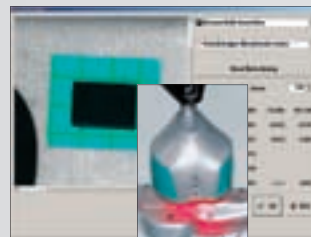
## Measure



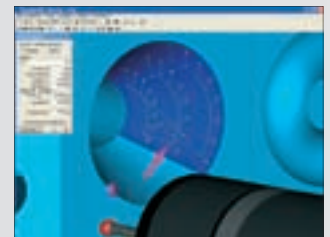
Measurement of edge and offset curves



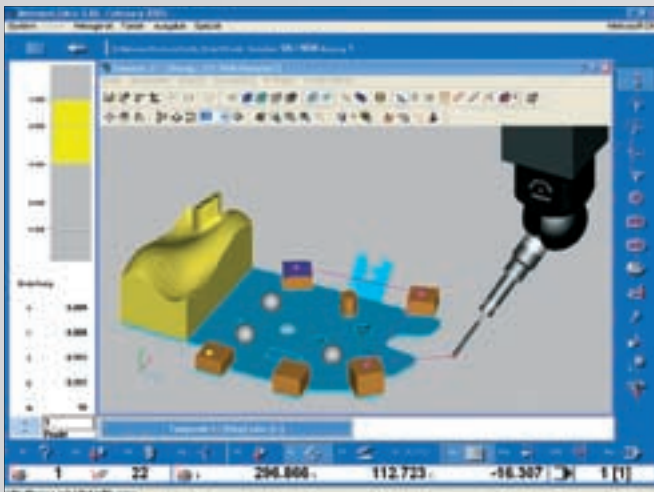
Measuring with direct comparison against CAD model data



Complete integration of Optical CMM Sensor PHOENIX in Metrosoft CM



Integrated Offline Programming System GRIPS for geometry and freeform surfaces



Click'n'Measure Automated measuring including collision detection



Automatic selection of part inspection programs with quick selection table

# Metrosoft CM

The advantages at one glance:

- Intuitive and easy to use
- Universal for euclidean elements, complex geometries and sculptured surfaces
- Extensive data mangement and Access® Data Base
- Software packages and modules optimally harmonized with the applications, seamless interface
- Compatible with most contact, non-contact measuring systems
- Large spectrum of available probing systems
- Available in 12 languages

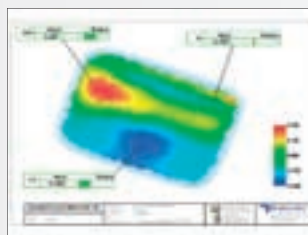
## Analyse



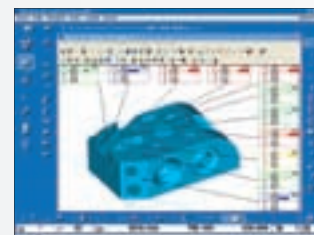
Graphic inspection report of prismatic parts with configurable point boxes



Graphic inspection report with CAD model and measured points



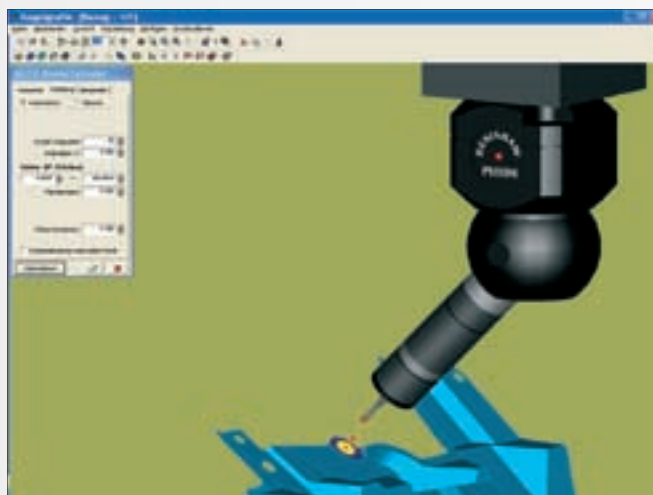
Color Mapping of dimensional deviations on Free Form Surfaces



Graphic inspection report with coloured identification of deviations



Configurable statistics: Overview, Trend diagram, SPC diagrams, Frequency distribution, Process capability etc.



Graphic interactive configuration of Probe systems with components catalogue

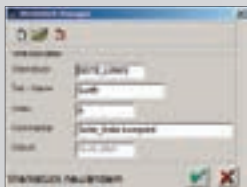
# DesCAD3D

## The visible added benefit

Descad3D is a software package which implements a series of functions in connection with WENZEL coordinate measuring machines apart from the typical quality assurance tasks. Essential components include the recording of geometric elements and surface data on

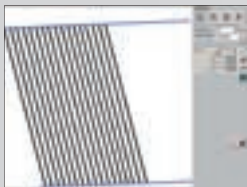
workpieces and models, as well as analyzing, processing and CAD exporting. The data is then available to the computer-supported systems such as CAD, CAM and CAQ in the form of element values, points, sections, contour lines or free-form surfaces.

The system also allows for the exact transfer of forms and contours to workpieces and models by means of milling and drilling.



### Administration

- Project administration
- Workpiece administration
- Settings
- Sensor initialization



### Digitizing

- Points
- Sections
- Line features



### Scanning

- Intersections
- Point Clouds
- Edges



### Measuring

- Geom. Elements
- Merging
- Design
- Evaluation



### Data processing

- Mirroring
- Merging
- Smoothing
- Correcting ... and much more

### OLS 100 Laser-Scanner

Line laser for recording clouds of points on unknown surfaces. Range area max. 100 mm, dot field width 52 mm.



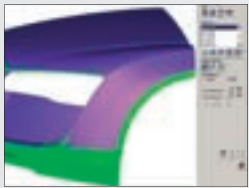
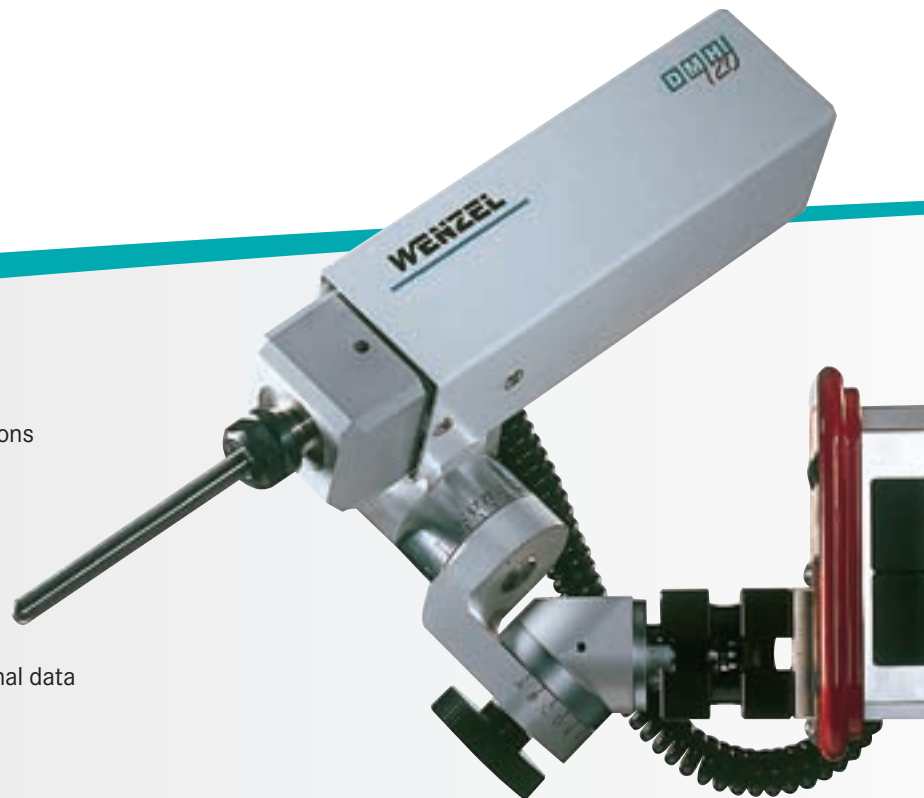
### OTM3 Continuous Laser Scanner

Laser scanner for digitizing unknown surfaces and edges. Scan distance 100 mm, range area +/- 10 mm



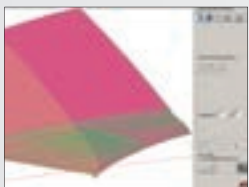
### OTP6M Point to Point Laser

For measuring unknown surfaces via DesCAD3D



**Free-form surfaces**

- Generation from sections
- Selection
- Evaluation



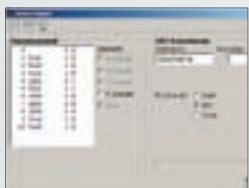
**Milling programs**

- Programming to internal data
- External formats
- Correcting
- Simulating



**Milling**

- Spacial 3-axis milling
- Simultaneous milling
- Remote monitoring



**Import/Export**

- VDAFS/IGES
- STL
- Direct: Catia V5, Unigraphics, ProE etc.



**Output**

- Graphics
- Lists



**Drilling and milling head (DMH 120)**

For milling in soft materials (foam, clay, ...), spindle capacity 120 watts, max. speed 3000 l/m, convertible to CMM.



**Scanbox DAQ**

For scan data acquisition according to the OSIS standard with multi-sensor functionality.

## Special software

# Individual solutions to metrology problems

A variety of specific measuring tasks are covered by software packages that were developed especially for the purpose.

Development is therefore always

oriented toward the requirements of our Customers, on the condition of wide application on the market.

Engineering services are also offered within this framework, which

entails working out complete system solutions including machine, process, sensor technology and software. The most important special solutions:



### PipeMeas

Software for measuring and evaluating pipes and pipe gauges, including branching and pipe bundles as well as geometric elements applicable to pipes. With variable adjustment via evaluated points, graphic and numeric evaluation display as well as label graphics.

Measurement of unknown pipes and calculating of all pipe-bending data. For use on the measuring machine with recording of measured values or offline as evaluation software with measured data transfer. Can also be used on external machines through retrofitting.

### KonturScan

Software for 2-D digitalizing of mould contours (e.g. for paving stones) and evaluation of scanned data. Contour database for the nominal contours, project and workpiece administration, importing the nominal contours and contour positioning in the plate by

means of DXF. Output of CNC milling and drilling programs for adapted pressure plates with load drillings, CNC milling programs, measuring reports based on defined main measurements, ASCII and DXF reports and files, etc. Can be used on WENZEL CMM machines with Renishaw SP600/SP25.



### BladeAnalyser

Evaluation software for turbine blades based on nominal data and measuring points recorded on different sections. Determining the position of the vacuum side and pressure side, as well as the inlet and outlet edges

by means of best fit, selected tangents on the profile, the profile depth and the position of the profile skeleton line. Graphic and numeric display and output of results. Usage depends on the type of measuring machine.

### CurveAnalyser

Evaluation software for radial and axial curves with a number of curve-specific evaluation options. Tolerance ranges separated by angle definition for dimension and form tolerances, adjustment with

tolerance specifications or open, transition tolerance for bends or straight lines. Graphic and numeric evaluation report. Usage depends on the type of measuring machine.



### BiCAD

Software for recording of measured values and processing 2D tasks. With extensive functions for processing the recorded data in 2D, such as adjustment of straight

lines and bends in poly lines, various manipulation functions of the data such as trimming, blending, expending, etc. as well as generating DMIS measuring programs.

# Gear Measurement by Wenzel Couldn't be more accurate

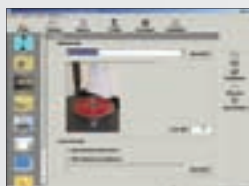
Exact measuring results in gear measurement applications are not achieved by accident, but are the result of the combination of leading Wenzel gear software with high precision measuring machines.

The software is compatible with all Wenzel measuring systems, as a gear measuring instrument as well as in combination with the universal measuring software Metrosoft CM. The ergonomic User interface with

integrated database stands for a high level of usability and simplicity.



## General Features



### Database

- Workpiece management
- Basic settings
- Data management



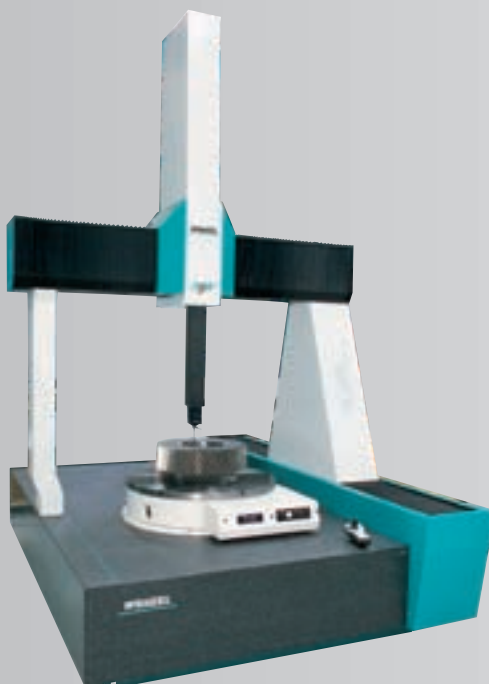
### Data input

- Separated into logical blocks
- Graphical support
- Windows helpfiles



### Macro programming

- Simple combination of single measurements in one Macro, e.g. shaft with several single gears.



## Wenzel GearTec Software

### TGear

Measurement of toothed wheel gearing

### TAmo

Calculated determination of axis position

### TRoot

Measurement of gear tooth base radii

### TBevel

Measurement of bevel wheel gearing

### TWorm

Measurement of screws and worm wheels with integrated database stands for the highest level of User-friendliness.

### TShaft

Measurement of cyl. Shafts (dimensional, form and position)

### TAbd

Measurement of downward slopes

### TSpline

Measurement of plug-type gearing

### THob

Measurement of hob (cutters)

### TShava

Measurement of scraping wheels

### TShape

Measurement of pinion-type cutters

### TAxprofi

Measurement of profile contours

### TCam

Measurement of cams, camshafts

### TStrom

Measurement of lifting bows

**and other software programs**

## Quality Assurance

### Process oriented and product relevant

Quality Assurance means more to WENZEL than just ensuring the quality of the products! We try to achieve a complete approach and therefore have built up a comprehensive Quality Management System which sees that all customer need are taken into

consideration and are converted into the performance required. The obtained ISO 9001 Certificate is for us a step along our way to Total Quality Management. Not only our Customers are included into our thoughts, but also our Suppliers, Employees

and the Environment. We know "real" Quality only develops if all aspects are taken into consideration and if the complete process chain is optimised.



## Wenzel calibration laboratory DKD-K-33401

# Accredited according to DIN EN ISO/IEC 17025

DIN EN ISO/IEC 17025 is the world-wide standard for the competence and quality of a calibrating laboratory. Our calibration laboratory has

been accredited by the accreditation centre of the Deutsche Kalibrierdienst (DKD) (German Calibration Service) for the measurement

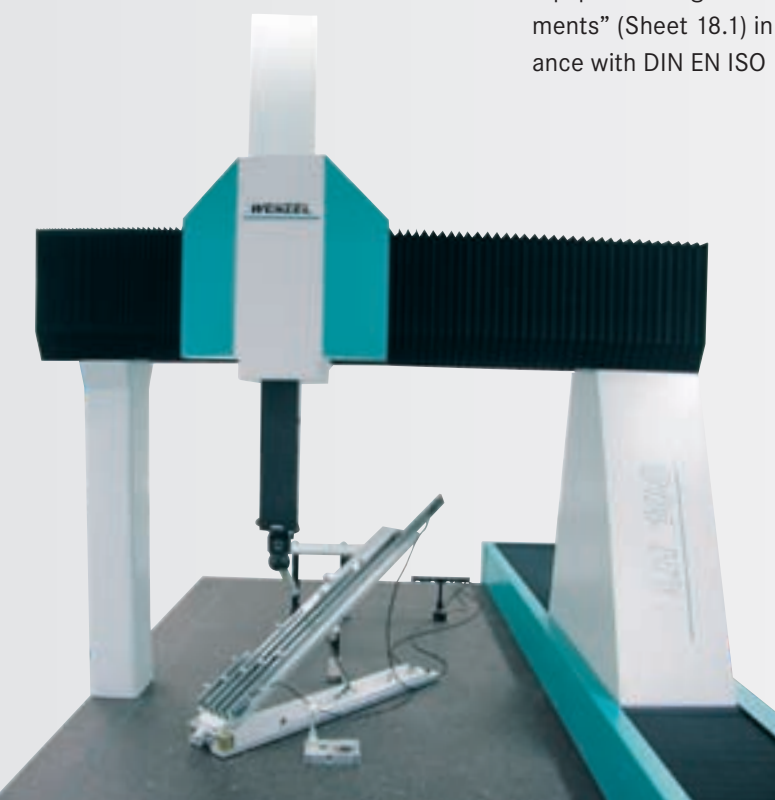
of length (in the field of coordinate measuring devices).



Calibrations of measurement properties by coordinate measuring devices are undertaken in accord-

ance with the guideline “DKD-R-43 Calibration of measurement equipment for geometric measurements” (Sheet 18.1) in accordance with DIN EN ISO 10360 and

VDI/VDE 2617 and carried out on portal, bridge and column-type machines on site at Customer locations.



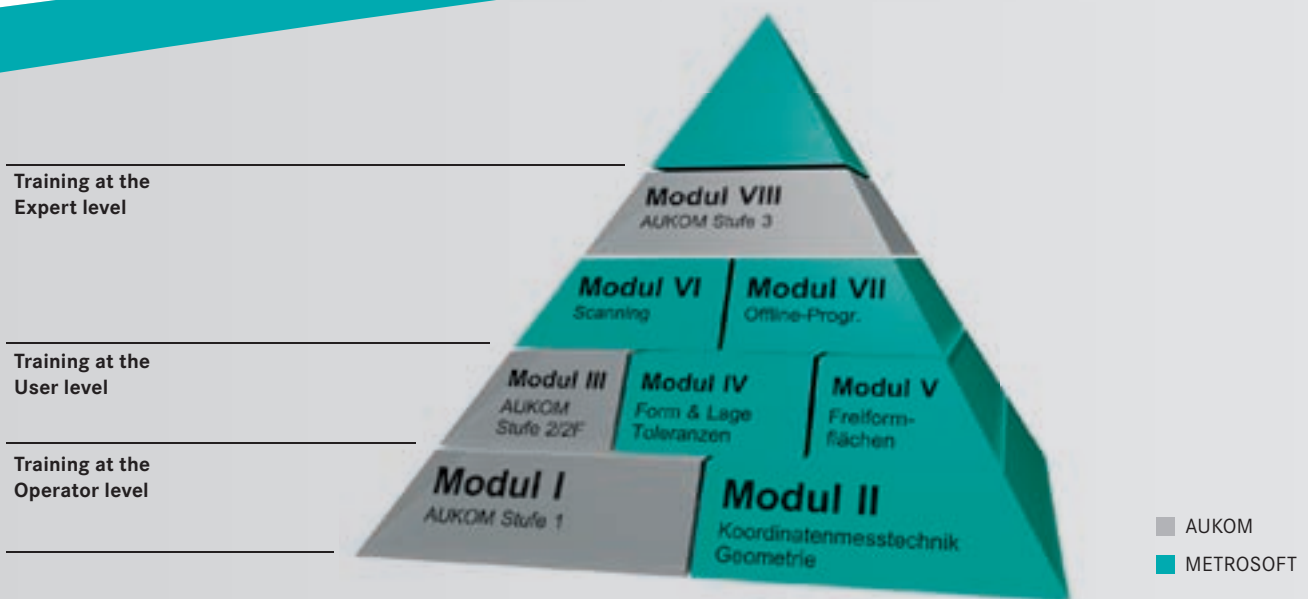
# Wenzel Training Centre

## The integrated training program

WENZEL is a leader in the conceptual training of coordinate measuring technicians. Our training offerings comprise a unique, integrated training concept that combines

the theoretical and practical aspects of coordinate measuring technology. Our training program consists of a modularly built qualification pyramid – well thought-out

and intelligent. Theory oriented AUKOM modules are supplemented by software-specific training modules (Metrosoft CM).



### AUKOM modules:

The AUKOM training is the industry standard for equipment neutral training in coordinate measuring technology. The training is certified and serves as the professional basis for coordinate measuring technicians.



### Software modules:

The software modules are based on the Metrosoft CM software and provide the software specific, practical knowledge that the coordinate measuring technician needs to solve his measuring tasks.



Villa Marburg in Heigenbrücken - our training centre and part of the Wenzel Group.



## We are there for you

# Wenzel worldwide

Today WENZEL is the world's largest and most successful family owned company in the area of coordinate measuring technology. With branches in Switzerland, France, England, the Netherlands, Italy and USA. Sales and

Service partners take care of WENZEL Customers in over 50 countries around the globe. A global player employing more than 300 people worldwide and delivering more and than 400 precision measuring machines every year – and

growing. Never a dull moment: We constantly push our global activities with long-term strategic projects – whatever we do, we do it right, typical WENZEL...

### **WENZEL PRÄZISION GmbH**

Wenzel-Präzision-Straße  
D-97859 Wiesthal

Telefon: +49 6020 201-0

Telefax: +49 6020 201-1999

info@wenzel-cmm.com

www.wenzel-cmm.com

### **WENZEL GearTec GmbH**

Im Mittelfeld 1

D-76135 Karlsruhe

Telefon: +49 721 170 87-0

Telefax: +49 721 170 87-200

info@wenzel-geartec.de

www.wenzel-geartec.de

### **METROMECH Software AG**

Rheinfelsstraße 1

CH-7007 Chur

Telefon: +41 81 257 07 00

Telefax: +41 81 257 07 01

metromec@metromec.ch

www.metromec.ch

### **WENZEL-WKP B.V.**

Sourethweg 5c

NL-6422 PC Heerlen

Telefon: +31 455 66 00 66

Telefax: +31 455 41 74 90

info@wenzel-wkp.nl

www.wenzel-wkp.nl

### **WENZEL France SAS**

23, rue Magellan

ZAC Les Portes de Sucy

F-94373 SUCY EN BRIE

Telefon: +33 1/49 82 06 20

Telefax: +33 1/49 82 08 40

info@france.wenzel-cmm.com

### **WENZEL EOS S.r.l.**

Via al Sesia, 6

I-13019 Varallo

Telefon: +39 0163 564 573

Telefax: +39 029 544 1278

info@italy.wenzel-cmm.com

### **WENZEL UK Ltd.**

Unit 3, Grove Industrial Estate

Gloucester Road, Patchway

GB-Bristol BS34 5BB

Telefon: +44 117 969 55 51

Telefax: +44 117 969 55 52

info@uk.wenzel-cmm.com

### **WENZEL America Ltd.**

46962 Liberty Drive

USA-Wixom, MI 48393

Telefon: +1 248 596 11 93

Telefax: +1 248 596 11 94

info@america.wenzel-cmm.com



Award for innovative  
technical achievements



DIN EN ISO 9001:2000 and  
DIN EN ISO 14001:1996



Innovative middle-size  
companies

# How to find us...

**By car:** motorway A3/exit Weibersbrunn direction Heigenbrücken (approx. 12 km).

**In Heigenbrücken:** direction Partenstein-Neuhütten (approx. 2 km).

Before you reach Neuhütten turn left/ direction Wiesthal (approx. 2 km). Passing through a railway bridge you see WENZEL on the right.

Continue in direction Lohr. 100 m after the crossroads you see the entrance to our plant.

