

Bruker alicona μCMM NEO



Benchmark Precision in Optical
Dimensional Measurement

BUILT ON
25 YEARS
OF OPTICAL
METROLOGY
EXPERTISE



HIGH-END OPTICAL METROLOGY FOR HIGH-END MANUFACTURING

1

Surface-First Metrology.

More Information per
Measurement Minute.

Profiles and surfaces in
one measurement. From
dimensional values to
functional understanding
of the component.

2

Engineered for Microns and Beyond.

Designed to measure the
smallest geometries with
unmatched non-contact
precision — built for
high-end precision
components.

3

One Platform. One Run.

Dimension, position, form,
and roughness in one
platform in a single
measurement run.
Replaces multiple
measurement systems.
No repositioning.

4

Accuracy without Compromise.

Five precision axes for
highest dimensional
and positional accuracy.
Reliable over the entire
measurement volume.



5

The Benchmark for Micro Hole Measurement.

The only solution for
reliable measurement
of micro holes and deep
features.

BENCHMARK PRECISION IN OPTICAL DIMENSIONAL MEASUREMENT

When your components demand the highest precision, your metrology should too.

The μCMM NEO combines more than 25 years of optical metrology expertise in one platform, built for manufacturers requiring the highest precision. Compared to the previous generation, the purely optical coordinate measuring machine delivers enhanced accuracy across five precision axes, increased measurement speed and a completely redesigned industrial architecture.

Surface-first metrology enables full-field 3D measurement of functional features – delivering real surface-based understanding where conventional approaches reach their limits. Five precision axes

ensure highest accuracy across the entire measurement volume, while non-contact optical measurement enables reliable inspection of micro geometries, micro holes and deep features without influencing the component.

Dimension, position, form, and roughness are evaluated together in one platform and within one measurement run, replacing multiple conventional measurement devices and reducing setup complexity.

A modern intuitive interface, wear-free axes and production-proven robustness make the μCMM NEO the solution for manufacturers who cannot compromise on precision.

ACCESSORIES



**AdvancedReal3DUnit
G3 with 3-Jaw
Scroll Chuck**



RingLightHP



**Long Working
Distance Objective
1500 WD130**



Chuck Adapter



Centric Clamper



**AdvancedReal3DUnit
3R**



**AdvancedReal3DUnit
EROWA**



Pick & Place

AUTOMATED MEASUREMENT MADE SIMPLE.

The μ CMM NEO reaches its full potential with MetMaX, the intelligent optical 3D metrology platform

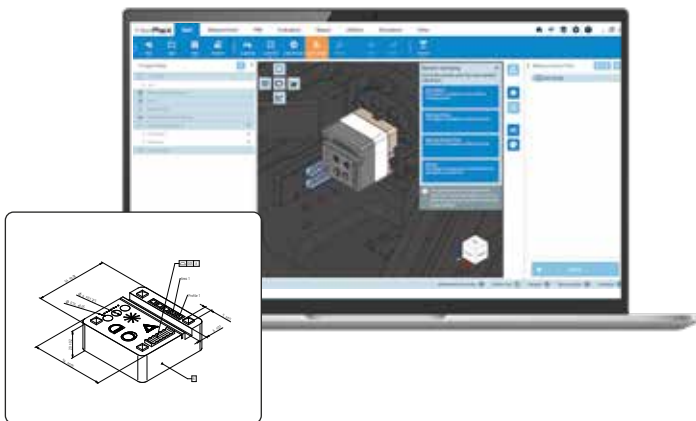
Load the CAD model, select the required GD&T or PMI features and start measuring. MetMaX creates an intelligent measurement strategy automatically and delivers fast, consistent and traceable results – across users, components and production environments

FROM CAD MODEL TO MEASUREMENT REPORT IN JUST 4 STEPS

STEP 1

Load CAD and PMIs

Load the CAD and the dimensioned technical drawing of a component to be measured and align the real component virtually with the digital twin.



STEP 2

Select inspection features

Select the required GD&T or PMI features directly on the CAD with just one click.



STEP 3

Intelligent measurement planning

MetMaX generates an optical measurement strategy offline, including probing directions, tilt- and rotation angles, and collision-free travel paths. Start the measurement with a single click.



STEP 4

Automatic report generation

Receive a complete, traceable measurement report with automatic evaluation and clear OK/ NOT OK results.

Measurement Report

Keywords	
Operator	Jane Doe
Part number	458
Project Name	Precision Tool
Timestamp	2026-04-24T110101

Description:

Part 458
Measurement of Profile of a Surface
Dimensions (Distances)
Roughness

Measurement Results

Ø Diameter 6	6.0000 mm
Ø Diameter Ø	2.7773 mm
Areal 1 Sa	0.0005 μ m
3a	0.0001 μ m
3q	0.0001 μ m
3p	0.0001 μ m
3r	0.0001 μ m
3t	0.0001 μ m
3l	0.0001 μ m
3k	0.0001 μ m
3m	0.0001 μ m
3n	0.0001 μ m
3o	0.0001 μ m
3p	0.0001 μ m
3q	0.0001 μ m
3r	0.0001 μ m
3s	0.0001 μ m
3t	0.0001 μ m
3u	0.0001 μ m
3v	0.0001 μ m
3w	0.0001 μ m
3x	0.0001 μ m
3y	0.0001 μ m
3z	0.0001 μ m
3a	0.0001 μ m
3b	0.0001 μ m
3c	0.0001 μ m
3d	0.0001 μ m
3e	0.0001 μ m
3f	0.0001 μ m
3g	0.0001 μ m
3h	0.0001 μ m
3i	0.0001 μ m
3j	0.0001 μ m
3k	0.0001 μ m
3l	0.0001 μ m
3m	0.0001 μ m
3n	0.0001 μ m
3o	0.0001 μ m
3p	0.0001 μ m
3q	0.0001 μ m
3r	0.0001 μ m
3s	0.0001 μ m
3t	0.0001 μ m
3u	0.0001 μ m
3v	0.0001 μ m
3w	0.0001 μ m
3x	0.0001 μ m
3y	0.0001 μ m
3z	0.0001 μ m

MEASURE WITH YOUR PRODU

PRECISION DIES

Control the Micro Geometry Behind Millions of Parts.

Precision dies transfer their geometry directly into every stamped part. Verify geometries, microstructures and datum alignment reliably – ensuring consistent performance of ultra-fine stamped structures.

- Verify **shaping geometries** relative to mounting and reference surfaces
- Measure **dimensional accuracy** and **position with direct 3D comparison to CAD**
- Compensate clamping errors with automatic alignment methods.

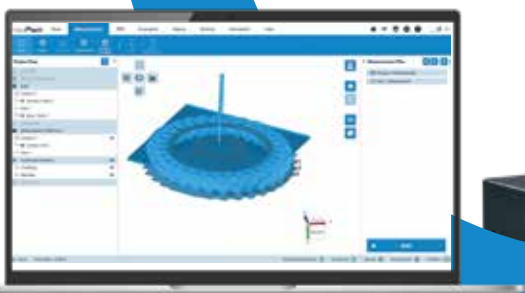


FREEFORM INJECTION MOLDS

Verify the Surfaces that Shape your Final Product Quality.

Freeform molds determine geometry, appearance, and function of injection-molded plastic components. Measure complex cavities, steep transitions and polished mold surfaces reliably – directly on functional areas.

- Measure **freeform contours** and **transitions** with **form tolerances down to < 5 µm**
- Capture steep flanks and **multi-cavity tools** in full 3D
- Evaluate **polished mold surfaces** including roughness on functional areas



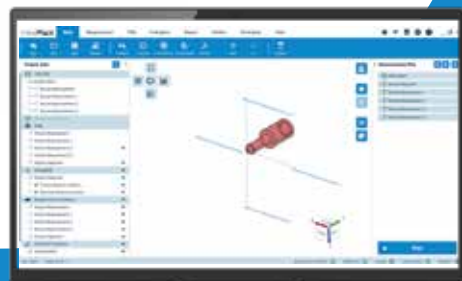
HAT DEFINES JECT QUALITY

INJECTION NOZZLES & VALVE SEATS

Measure Micro-Holes Where Efficiency Begins.

Injection nozzles and valve seats depend on micro-holes, sealing geometries and precise feature alignment. Capture even the smallest flow-critical features reliably – beyond the limits of tactile probing.

- Measure micro holes down to diameters of 0.08 - 0.3 mm
- Verify valve and seat geometry, **coaxiality** and positional relationships to functional **datums**
- Evaluate sealing surfaces and roughness in full 3D

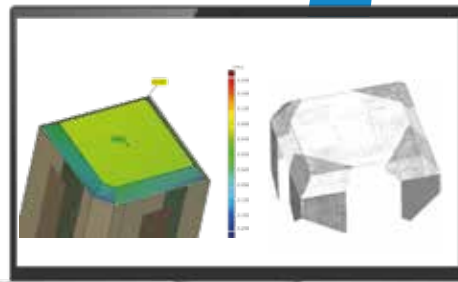
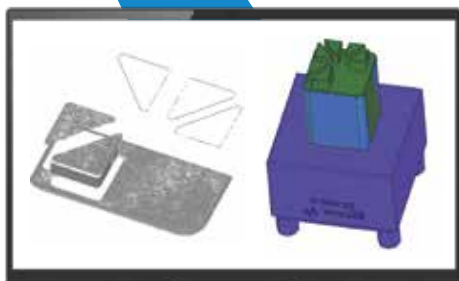


EDM ELECTRODES

Inspect the Electrode Before your Cavity is Created.

EDM electrodes directly determine the final form of your cavity. Measures **complex freeform and negative geometries** reliably – even on fragile **graphite electrodes** and critical micro geometries.

- Capture **freeform surfaces, flank angles, slot-like structures**, and **micro-radii** in full 3D
- Verify position and **symmetry** of electrode features relative to **datums**
- Measure both electrode and eroded mold geometry for reliable process verification



MARKET EXPERIENCE

Automotive



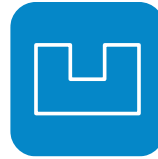
Aerospace



Cutting Tooling



Die & Mold



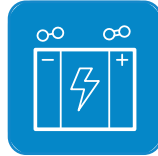
Medical



Electronics



Precision Mechanics



Power Generation



Research & Development



And many more

Michael Stepper

Owner/CEO Fritz Stepper GmbH



“From its very first generation, Bruker Alicona’s μ CMM was a true high-end measuring system for high-precision manufacturing. Stepper has always stood for maximum precision and productivity – making the decision to trust the μ CMM with quality assurance a natural one. We’re proud to have been the very first μ CMM customer back in 2018, and eight years later, we continue this success story as the first to adopt the μ CMM NEO – another milestone in our shared journey of precision.”



SANDVIK
coromant

sutton



femto-st
SCIENCES & TECHNOLOGIES



TECHNICAL SPECIFICATIONS

General specifications

Measurement principle	non-contact, optical, three-dimensional; Technologies: • Advanced Focus-Variation • Focus Probing • Vertical Focus Probing • Real3D
Number of measurement points	single measurement: X: 2160, Y: 2160, X x Y: 4.6 million multi measurement: up to 500 million
Positioning volume (X x Y x Z)	310 mm x 310 mm x 310 mm = 29 791 000 mm³
Compressed air	maintenance-free with compressed air according to specification, 7 bar consumption 80 NI/min. (continuous)
Travel speed of axes	up to 100 mm/s
Coaxial illumination	LED coaxial illumination (color), high-power, electronically controllable
3D data	monochrome, optional color data available
Objective changer	automatic pneumatic four-place objective changer rack
System monitoring	8 temperature sensors (accuracy: ± 0.1 K), 1 humidity sensor, internal current and voltage monitoring, incl. long-term logging, retrievable
ControlServerHP	20 Core, 32 GB DDR5, 1TB NVMe SSD, Windows 11 IoT Enterprise, 64bit, 2x 27" Full HD monitor

Dimensions

Dimensions (W x D x H)	measurement instrument: 970 x 1159 x 1943 mm (up to 2253mm); ControlServerSF: 180 x 440 x 500 mm
Weight	measurement instrument: 1250 kg (incl. steel stand); ControlServerSF: <20 kg

Measurement object

Max. weight	up to 30 kg; more on request; 5-axes max. sample weight: 4 kg
Max. dimensions	width: 680 mm, height: 375 mm
Max. measurable slope angle	Focus-Variation: 87° / Vertical Focus Probing: >90° (depending on application)

Objective specific features

Objective		1900WD30	1500WD130	1500WD70	800WD17	800WD37	400WD19	150WD11	80 WD4 ^(*)
Working distance	mm	30	130	69.4	17.5	37	19	11	4.5
Measured area in a single measurement (X, Y) (X x Y)	mm mm²	3.8 14.56	3.12 9.73	3.12 9.73	1.6 2.43	1.6 2.43	0.8 0.61	0.3 0.1	0.16 0.02
Measurement point distance	µm	1.77	1.45	1.45	0.72	0.72	0.36	0.14	0.07
Measurement noise (¹)	nm	30	90	70	4	25	2	1	1
Vertical resolution (²)	nm	85	255	200	30	71	20	10	10

(¹) The values given are based on ISO 10360-8 and VDI 2617 sheet 12.2.

(²) Vertical Resolution: Defined in 'Optical Measurement of Surface Topography' (ISBN 978-3-642-12012-1) and the Fair Datasheet V1.2.

(³) Recommended vibration limit for this objective: <50µg (RMS values of spectrum between 3 and 100 Hz)

Accuracy

3D accuracy ISO 10360-8 (¹)	$E_{\text{Uni}, \text{Tr}, \text{ODS}, \text{MPE}} = (0.7 + L/600) \mu\text{m}$ (L in mm) ^(²) $E_{\text{Uni}, \text{Z}, \text{St}, \text{ODS}, \text{MPE}} = (0.15 + L/50) \mu\text{m}$ (L in mm) ^(³)	
Flatness deviation	1.3 mm x 1.3 mm with objective 800 WD17	U = 0.1 µm
Profile roughness	Ra = 0.1 µm Ra = 0.5 µm	U = 0.012 µm, σ = 0.001 µm U = 0.02 µm, σ = 0.001 µm
Area roughness	Sa = 0.1 µm Sa = 0.5 µm	U = 0.01 µm, σ = 0.001 µm U = 0.015 µm, σ = 0.001 µm
Wedge angle	β = 70° - 110°	U = 0.075°, σ = 0.01°
Edge radius	R = 5 µm - 20 µm R > 20 µm	U = 1.5 µm, σ = 0.15 µm U = 2 µm, σ = 0.3 µm

(¹) The values given are based on ISO 10360-8 and VDI 2617 sheet 12.2.

(²) Accuracy of axes based on ISO 10360-8, appendix B.4.3.4. Valid for measuring room of quality class 2 according to VDI 2627, further accuracy values available for other environments.

(³) Valid for single measurements, height step measurement

Bruker Austria GmbH

Dr. Auner Straße 19 | 8074 Raaba/Graz | Austria

Phone: +43 316 403010 700 | sales.alicon@bruker.com

alicon.com

