14th LATAM / MEA CONFERENCE 2023
ZEISS Industrial Quality Solutions

Jochen Weinisch
Head of Sales Latin America,
Middle East & Africa

30th June 2023

ZEISS

ZEISS Industrial Quality Solutions
Your Global Partner

ZEISS

Sales & Service Organizations

38

Salespartners Worldwide

245

Locations

11

Employees

4,600

ZEISS Metrology Excellence Centers

63

**Headquarters:
Oberkochen, Germany**

ZEISS Industrial Quality Solutions
Markets // FY 2021/22

Germany
12,500 inst. Systems
10 QEC
180 FSEs

EMEA
13,000 inst. Systems
20 QEC
200 FSEs

Americas
14,500 inst. Systems
10 QEC
220 FSEs

APAC
18,500 inst. Systems
18 QEC
240 FSEs

Revenue in € billion
1.150

Order entry in € billion
1.250

EBITA
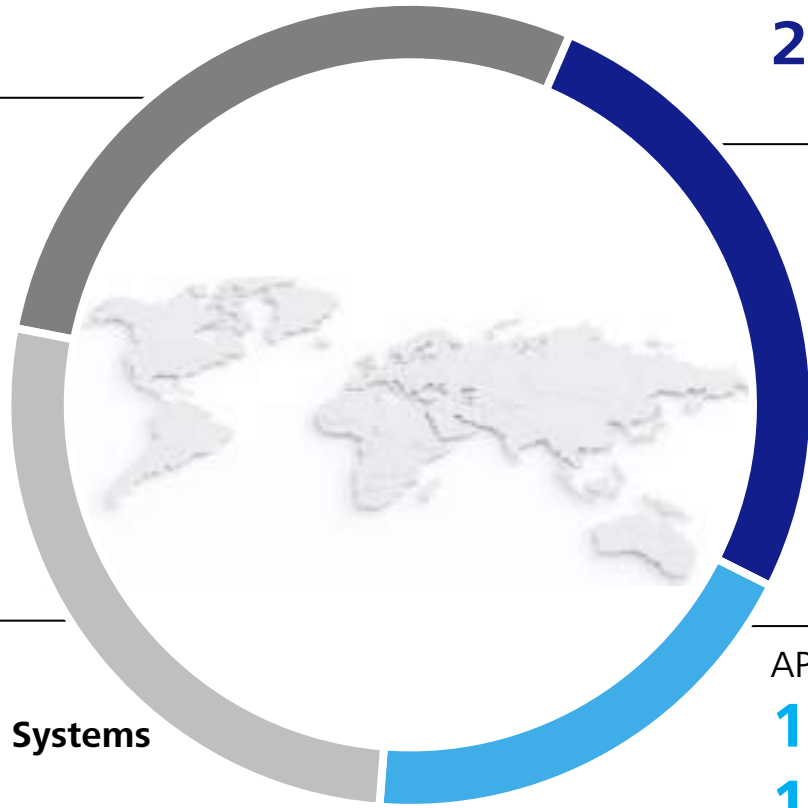
Our DNA is:

Innovation in software, systems and services!

Our mission:

We support our customers realizing their ambitions in decarbonization and digitalization

ZEISS Industrial Quality Solutions

2022
All sites with green energy

2025

-20% energy consumption

-15% water consumption

-10% waste

ZEISS PerformanceFit
Award-winning innovation
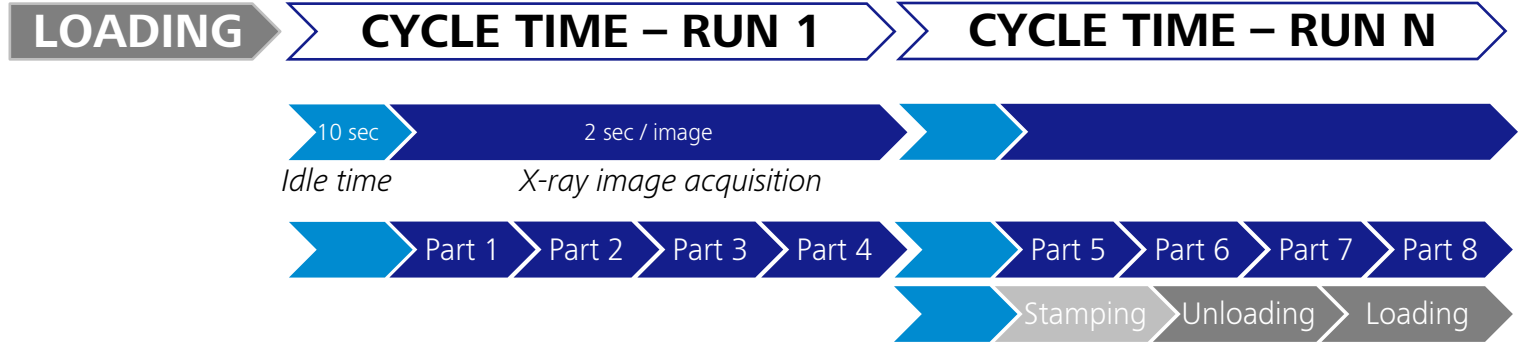to save CO_2

Day 1: X-ray Technology
Monday, 26th of June 2023

High-speed X-ray system for 100% automated inline inspection
ZEISS BOSELLO OMNIA

LOADING	CYCLE TIME – RUN 1	CYCLE TIME – RUN N

10 sec	2 sec / image		
Idle time	*X-ray image acquisition*		

	Part 1	Part 2	Part 3	Part 4		Part 5	Part 6	Part 7	Part 8
						Stamping	Unloading	Loading	

- Four parts fit on one pallet
- 16 x-ray images per part required

  → 16 x 2 sec. x 4 parts + 10 sec idle
  = 138 sec. / pallet
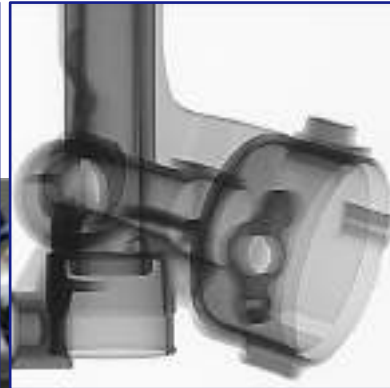 = approx. 35 sec. / part
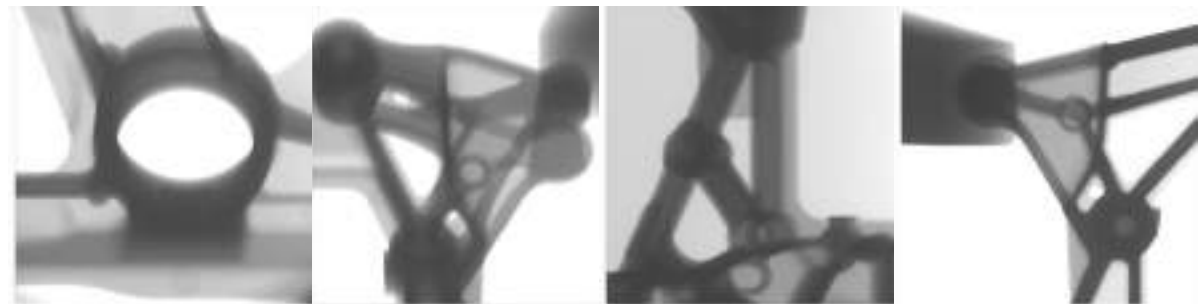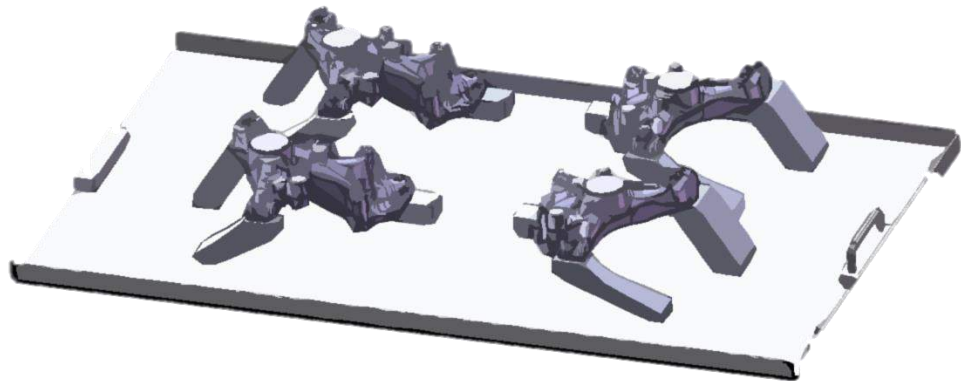
2D X-ray images for different angles
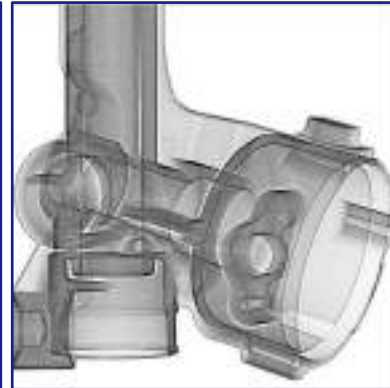
The one for many x-ray applications
ZEISS BOSELLO MAX
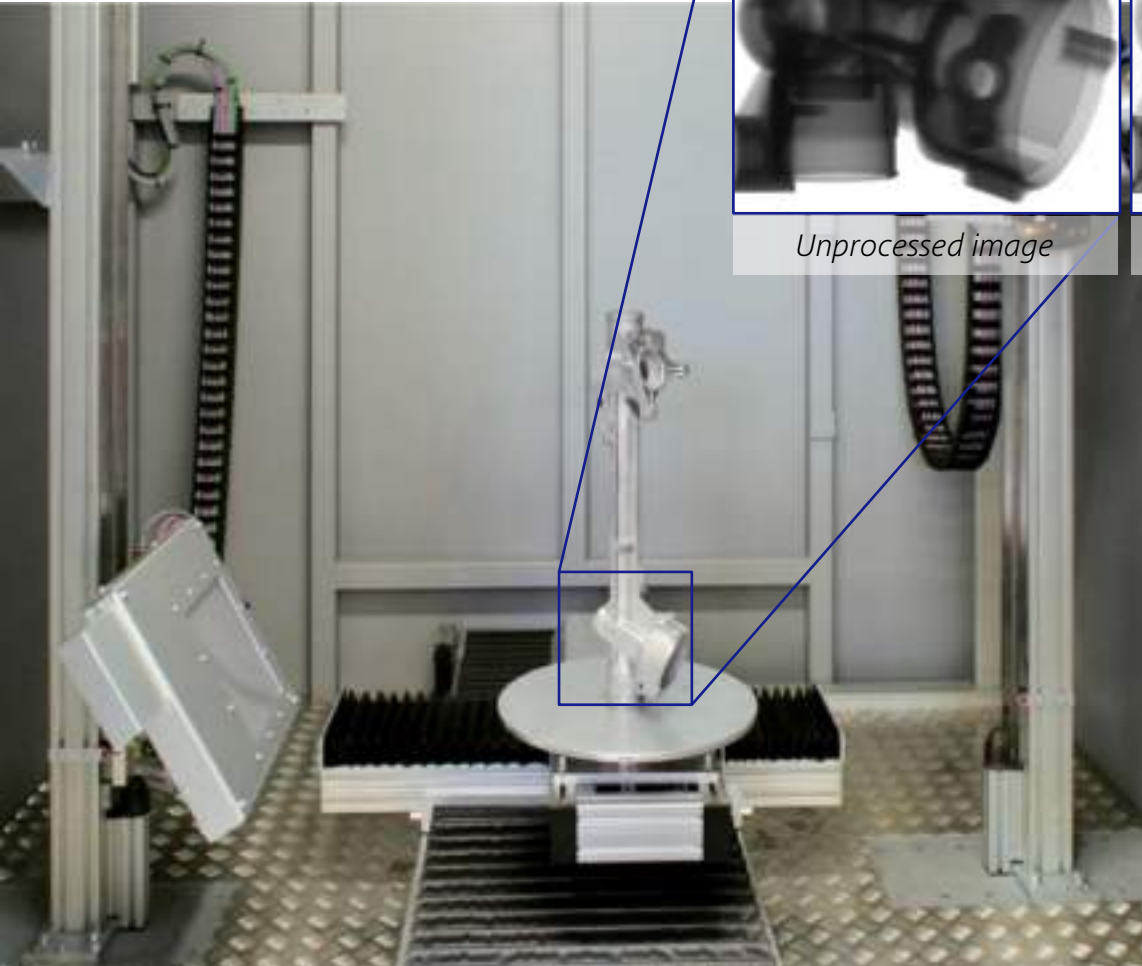
Unprocessed image

Light filtering

Strong filtering

The unique image processing algorithms of our software guarantee best 2D image quality.

High flexibility and many configuration options make ZEISS BOSELLO MAX the perfect match for different types and sizes of castings.

All ZEISS BOSELLO MAX systems are CT ready, which means you can easily capture a set of images to generate 3D model
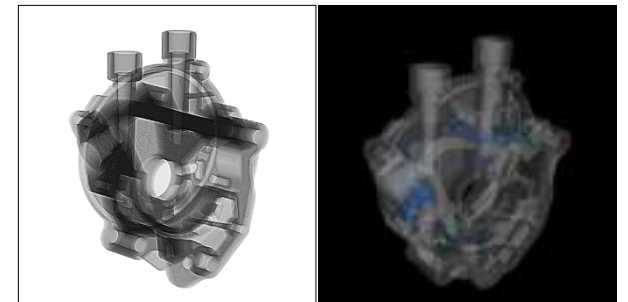
3d Computed Tomography Option

Day 2: Large Machines
Tuesday, 27ᵗʰ of June 2023

Your solution for large volume parts
ZEISS MMZ family

**Welded steel structure as base with enclosed steel scales**

- Long-term stability, high static & dynamic rigidity with low weight
- Minimized influence of the ambient temperature by homogeneous materials
- Same temperature expansion coefficient as base

Axis positioning with ball screw drives

- Excellent positioning and synchronous behavior by precise spindles and nuts
- Long-term stability and minimum wear as a result of generous design safety margins
- Robust drive type, mostly used in machine tools, presses, casting machines

Linear guides and recirculating ball guide shoes in all axes

- Insensitive against ambient influences
- Large bearing base for high repeating accuracy
- Most used in machine tools
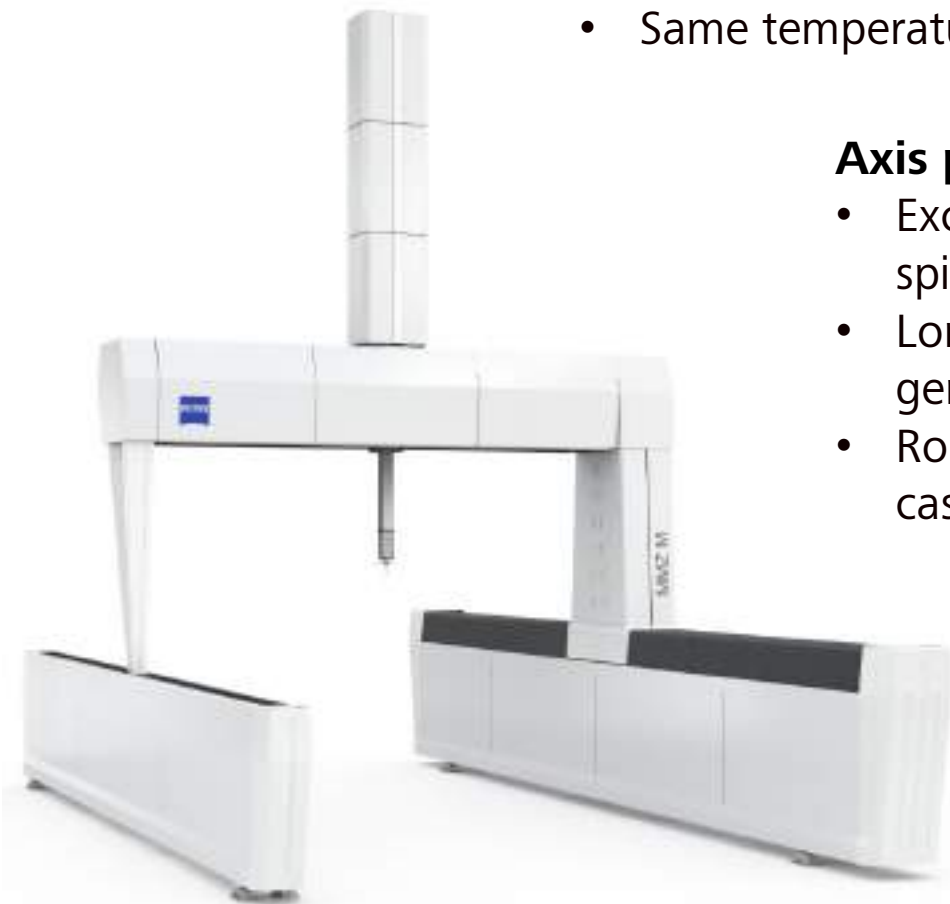
Welded steel structure

Z-drive, double spindle

Linear guiding & roller bearing

More than a Robot – The Hambot
ZEISS CALENO

The new wording Hambot combines two different needs in metrology

- The experience with **HAM**, that it is ideal for sheet metal metrology and provides high and absolute accurate measurements
- The requirement for high productivity, which is linked with the wording ro**bot**

Hambot will be used instead of Horizontal Arm Machine to underline the new class of CMMs with optical sensors.
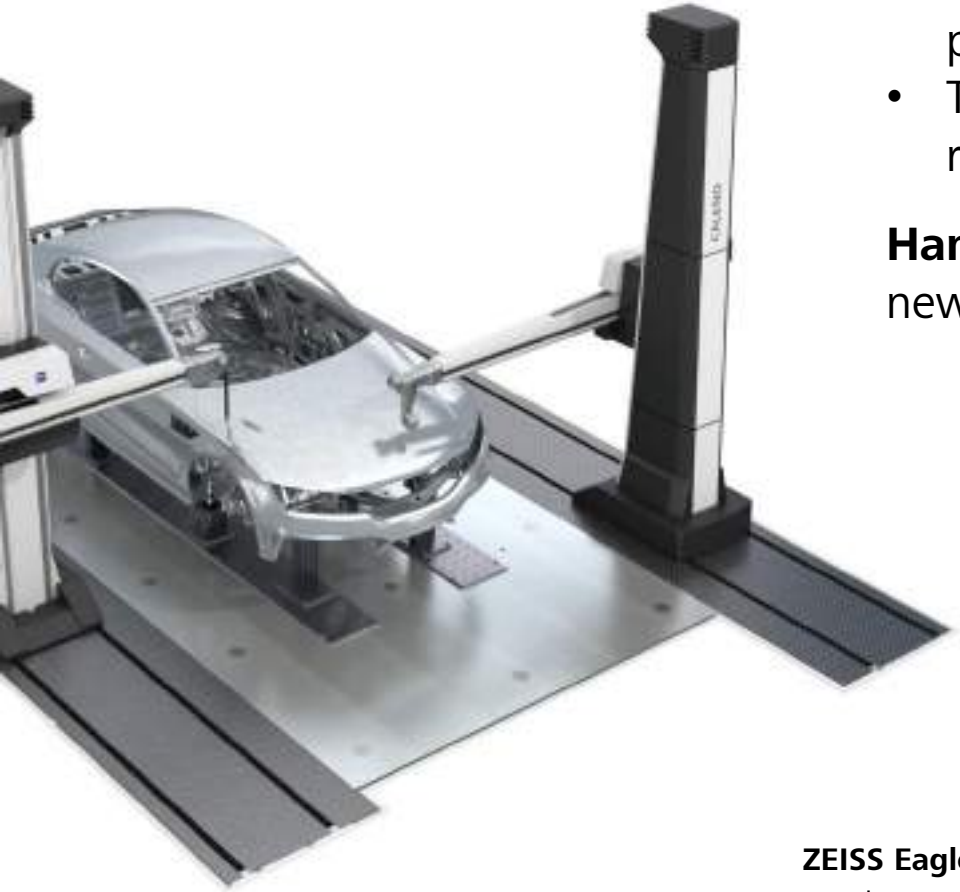
ZEISS EagleEye
Fast laser sensor with integrated 6th axis

ZEISS DSC
Highly dynamic, non indexing sensor carrier for multi-sensor applications

ZEISS RST-P
Tactile reference sensor with piezo technology

When Precision Matters the Most
ZEISS PRISMO family

For 30 years the ZEISS PRISMO is synonymous around the world for high-speed scanning and maximum accuracy

Accuracy you can trust
- MPE-E0 starting from 0.5+L/500 µm

Increase productivity
- VAST nagivator allows increased scanning speed without losing accuracy
- VAST probing for faster single point measurement
- With FlyScan the styli can move over gaps
- QuickChange achieves faster automatic stylus changes

ZEISS Acceleration Mode
- ZVR (ZEISS VAST rotary table):   Fast rotary table movement
- ZVRA (ZEISS VAST rotary table axis): Fast rotary table axis definition

Time saving up to -70%

ZEISS mass (multi application sensor system) Technology
When flexibility matters most

Active Scanning			Roughness	Articulating Tactile	Tactile	Optical			Carrier
VAST XTR gold	VAST XT gold	VAST gold	ROTOS	Articulating Stylus	VAST XXT	DotScan	ViScan	LineScan	RDS

Technical explanation

ZEISS mass enables both contact and optical measuring on the same machine. Due to a common interface for all sensors, they can be changed out in just a few steps

Benefit for customer

- Future proof – new sensors are easily added

- Electrical and mechanical prepared for all sensors

- Possibility of tactile and optical measuring

- One coordinate measuring machine for many measuring tasks

- All options:
  ZEISS VAST gold for high accuracy (with ZEISS Articulating Stylus for flexibility)
 ZEISS RDS for high flexibility

When accurate CT technology meets industrial performance
ZEISS METROTOM family

Benefits of using Computed Tomography technology:
- Visualize internal characteristics without destroying the part
- Combine inspection, metrology and assembly control in one process
- Increase metrology productivity by batch scanning
- Collect all results in a database for statistical evaluation and trends
- Digitalization of parts for archiving and back tracing possibility

| Part fixturing | Image Acquisition | Reconstruction | Evaluation | Reporting |
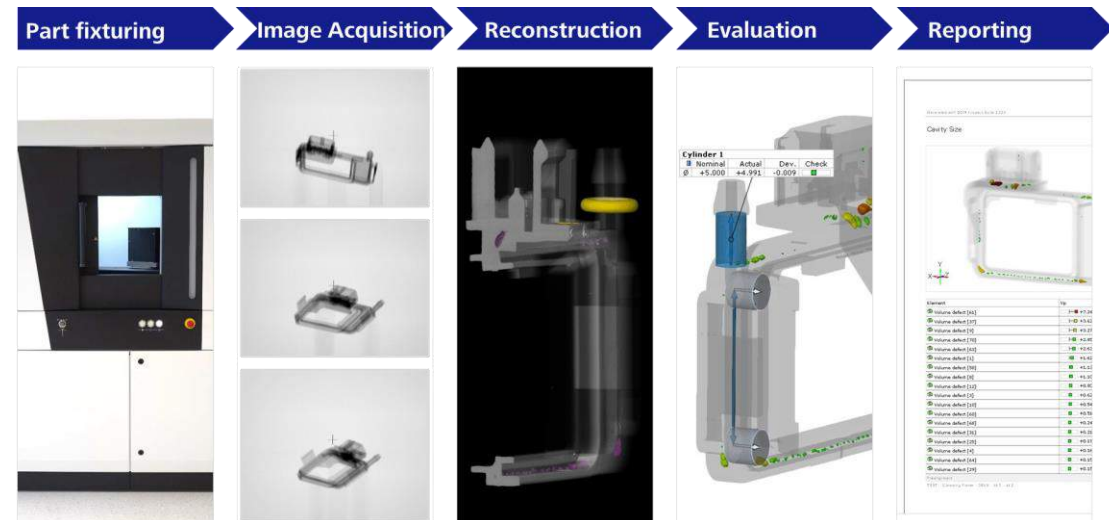
Everything in one workflow

Inspection, metrology and assembly control in one system
ZEISS Computed Tomography
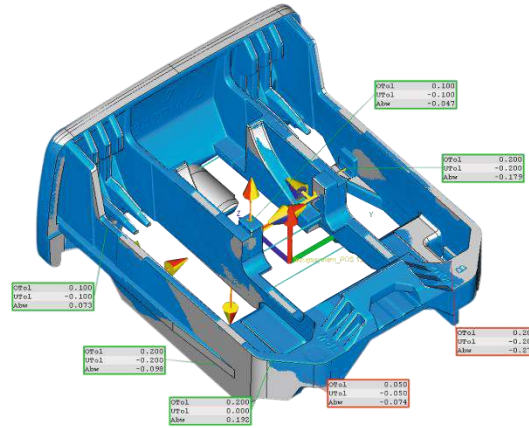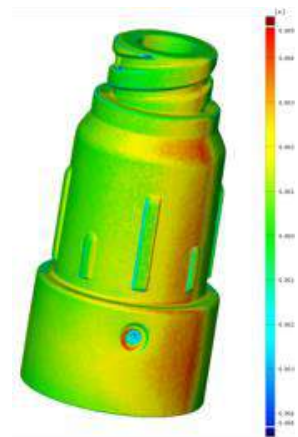
Inspection

- Defect- and pore detection
- Crack analysis
- Foreign substance inspection
- Assembly control

CAD comparison

CT systems can also capture internal contours and undercuts.

- Nominal-Actual comparison
- Actual-Actual comparison

Metrology

- Metrology in 2D and 3D directly in the volume data without STL conversion
- Initial sampling of parts
- Metrology of any kind of feature

Reverse Engineering

If deviations from a reference are known, they can be used specifically for the geometric correction of the mold/ tool.

Assembly Control

Make sure that the parts are assembled in a correct way, so the functionality is not limited.

- Single material
- Multi material

Day 4: Technology Day
Thursday, 29th of June 2023

Entering the world of active scanning
ZEISS VAST (XT) gold

Technical explanation

Scanning technology means a multitude of single points are recorded. More points allow for greater certainty and a higher-quality measured characteristic.

For single point measurements, a deviation within an element can sometimes be perceived, but not always. Scanning allows for much higher measurement data density, whereby deviations in the element are always recorded.
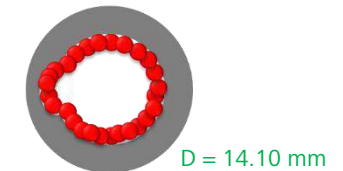
6 vs 24 pt.
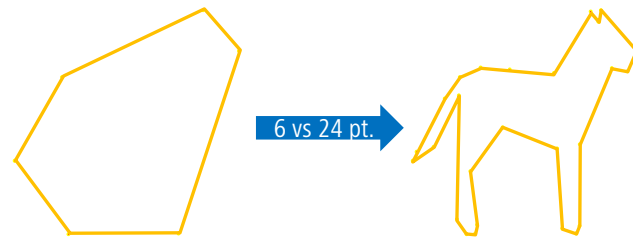
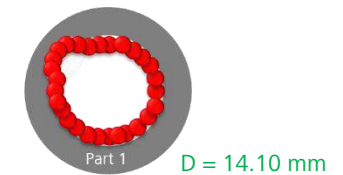### Benefit for customer

- In a comparable amount of time, more informative data quality about the measured part is obtained.

- The measurement is more reliable and repeatable because measurement errors via single point measurement are eliminated.

- Next step in your quality department.

Single points

Part 1   D = 13.85 mm

D = 14.25 mm

Scanning

Part 1   D = 14.10 mm

D = 14.10 mm
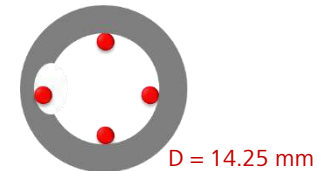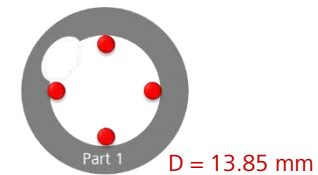
When flexibility matters the most – Articulating Sensor Head
ZEISS RDS with CAA

Technical explanation

Step range of 2,5° in A and B axes enables 20,736 possible positions as well as movement in all axes – in 12 minutes!

CAA (computed aided accuracy) allows an interpolation of positioning qualification.

Benefit for customer

- Cost effectiveness

- Reduction of operating time by an exponential factor due to the RDS probe head with integrated CAA, which requires no single angle qualification.

- Tactile scanning- and optical sensors possible

	Competitor B	Competitor A	ZEISS RDS D CAA
Steps & Positions	7.5° → 720	2,5° → 12,240 (A axis: +/- 105° B axis: +/- 180°)	2,5° → 20,736
Calibration time of 100 positions	Over 120 minutes	Over 120 minutes	12 minutes with CAA calibration
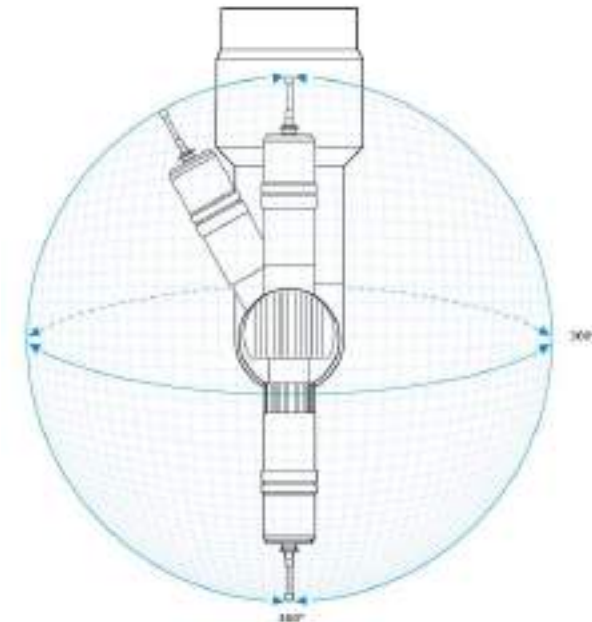
→ 10 times faster!

Adding a 4th scanning axis
ZEISS Rotary Table

Technical explanation

ZEISS rotary tables provide an additional axis, thus simplifying the measurement of rotationally symmetric or prismatic workpieces and allowing the use of simple stylus combinations and extending the available measuring range.

In combination with the ZEISS Articulating Stylus a five-axes-measurement is possible.

Option: ZEISS Tailstock for clamping of wave-like measurement objects
Typical applications are:

Benefit for customer

- Shorter setup times, more flexibility and productivity
- Cost saving due to fewer and easier stylus configurations (fewer adapter plates)
- Small positioning error
- The effective measuring volume of the coordinate measuring machines increases
- Travel paths are shorter leading to a reduction of temperature influences
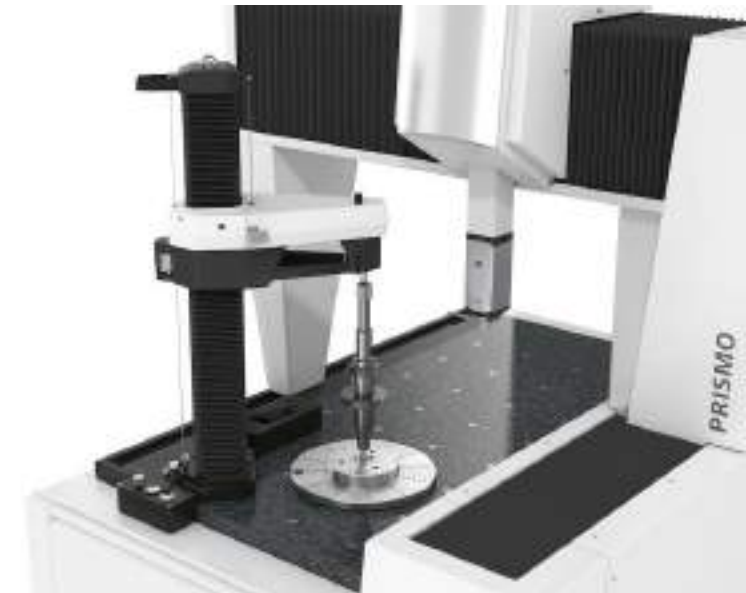- Parts programming is simplified

Gear shaft   **Crankshaft**   **Worm shaft**   **Bevel gears**   **Milling cutter**

Visual Measuring Machines (VMM)
Tactile and optical multisensory systems

01 **Tactile ZEISS VAST XXT**
Scanning Sensor
Smallest stylies – radii 40 µm
Lowest probing forces, one-digit mN

02 **Optical ZEISS Camera Sensor**
12x Zoom-Optic
Top-, Coax-, Ring- & Backlights)
Navigation-Laser

03 **ZEISS DotScan**
Chromatic-confocal white light sensor
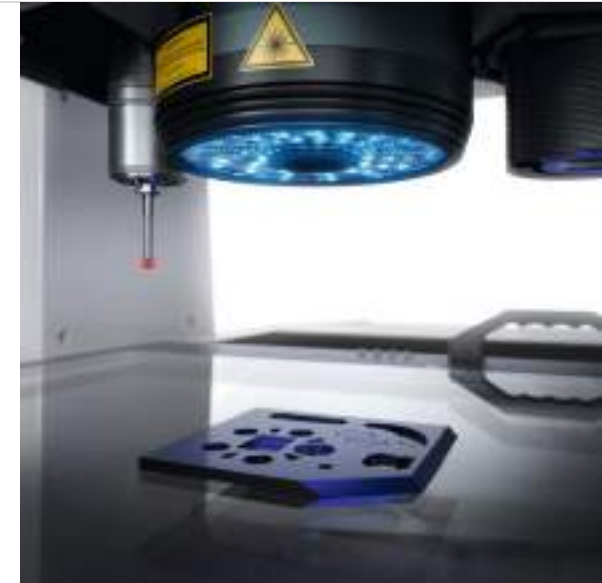Contactless and fast scanning of unknown contours

04 **ZEISS Rotary Table**
4th axes scanning in the same measuring run

05 **Pallet & Fixturing**
Optimize throughput using batch measurements and AutoRun

Shopfloor Measuring Machines
ZEISS DuraMax can replace all manual measuring tools in the workshop

Replace all your gages

Technical explanation and example

The ZEISS DuraMax family can replace all known manual measuring tools in the workshop, e.g. caliper, dial gauge or plug gauge (If CAD data is not available).

01 **Covers** against temperature influences

02 **ZEISS VAST® XXT probe** suitable for scanning (multiple-point acquisition) and single-point measuring (many-point acquisition)

03 **Passive vibration damping as standard**

04 **Bellows** to protect against contamination such as dust, dirt and solvents.

05 ZEISS base for ergonomic operation

06 ZEISS **Rotary table package** for extended application

Tech-Support   Consistency & Connectivity

Transform measurement data into meaningful results
ZEISS PiWeb product family

"WHAT can I do?"

An integrated option to **visualize** results, **create** custom reports, **interact** with data via CAD models, images, form & statistic plots.

Functionality delivered to customer
- Store up to 1000 measurements per part program
- Customize reports for the specific application
- Visualize single part reports, GR&R (gage repeatability & reproducibility) and SPC (statistical process control) reports
- Available as a software option, e.g. in ZEISS CALYPSO, CALIGO, …

server Network software to coordinate communication between modules and database, as well as control access to data.

monitor Module to visualize reports, interact with data and record data for example from manual gages.

planner Administration module to manage parts, nominal data, measurements, user access rights and database configuration.

designer Module to design reports and elements. Create tables, custom forms, integrate CAD models for monitor users.

Customized Installation
From planning via programming to running quality gate

ZEISS Team
The global ZEISS team and its partners offer technical support and personal consultation for all of your applications.

Measuring and Inspection Systems
Coordinate measuring machines, computer tomographs, contact, optical and multi-sensor measuring systems and sensors.

Engineering
Process automation, manual and automatic loading, component and sensor handling, measuring robots and cells

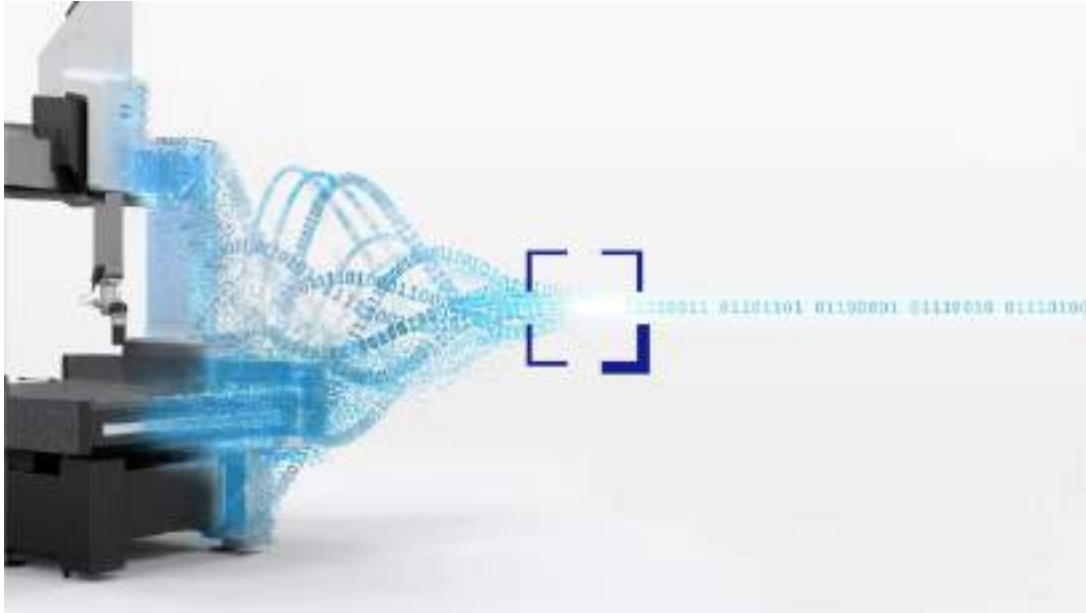**IT-Integration and Programming**
Measuring software and data quality management as well as automation solutions

Accessories and Services
Training courses, services and accessories such as clamping devices, measuring lab monitoring, stylus systems, stylus holders, etc.

Digital Services & Tailored Solution

ZEISS Metrology Care CMM
Technical Services for Operational Confidence

With the service packages from ZEISS Metrology Care CMM, you can rely on your coordinate measuring machines – every single day.

ZEISS Smart Services Dashboard

Users can monitor and analyze the status and utilization of their ZEISS coordinate measuring machines in **real time** - **from anywhere.**

ZEISS

Day 5: Industrial Microscopy
Friday, 30th of June 2023
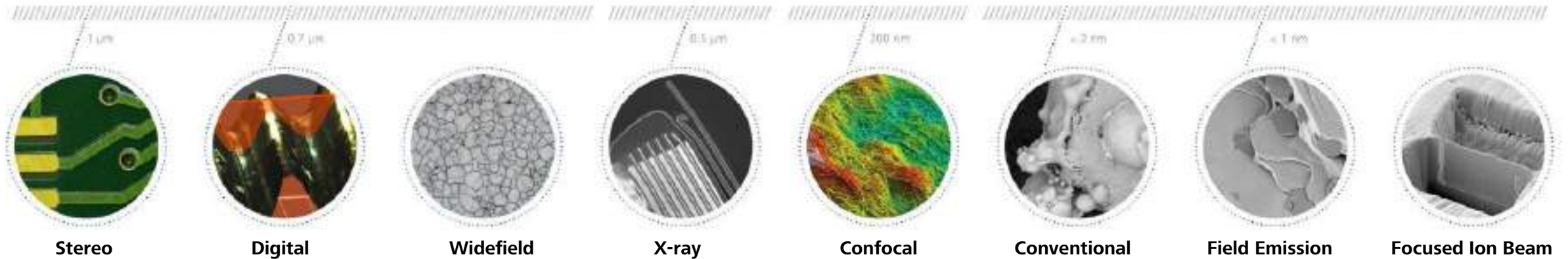
From micrometer to nanometer
Industrial Microscopy solutions tailored to your manufacturing process

Light/Confocal **X-ray/CT** **Light/Confocal** **Scanning Electron**

| Stereo | Digital | Widefield | X-ray | Confocal | Conventional | Field Emission | Focused Ion Beam |

ZEISS Stemi 508
Go from largest overview into the smallest details

ZEISS Axio Zoom.V16
ZEISS Smartzoom
ZEISS Visioner 1
Reduce image acquisition times to speed up analysis

ZEISS Axio Imager 2
ZEISS Axioscope
ZEISS Axiolab 5
Be open for advanced material research

ZEISS Xradia Series
Industrial X-ray microscopy: Extreme resolution & contrast

ZEISS Smartproof 5
ZEISS LSM 900
Fast and robust confocal technology for trusted results

ZEISS EVO
Best qualified SEM to support industrial quality and failure analysis

ZEISS GeminiSEM
ZEISS Sigma
Field emission SEM for the highest demands in imaging and analytics

ZEISS Crossbeam
FIB-SEM for high throughput 3D analysis and sample preparation

Identify the root cause. Make the right decision faster.
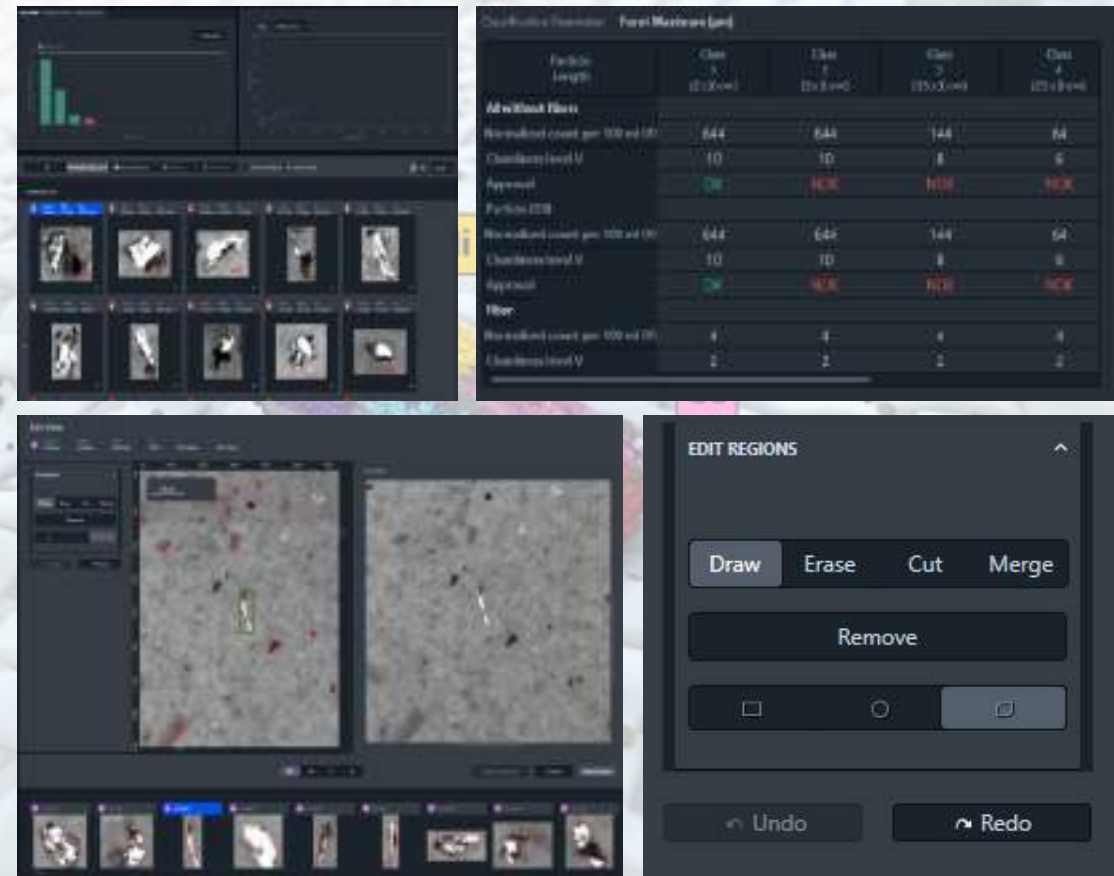## ZEISS Technical Cleanliness Solutions

Contamination control is a key issue in manufacturing & production units. To assure function, quality and lifetime of products enormous costs arise if products must be recalled due to quality or technical problems.

Particle inspection
- approval related particle inspection and interaction
- particle-based visualization of the measurement results
- fast inspection and revision of particle types
- Scatter plot with product finger print

Particle Verification
- Particle Gallery for rapid particle retrieval in live view
- Particle Revision: separating, combining, editing of particles particle type change
- Typical use cases:
  - o Merging of fiber fragments
  - o Separation of particles lying close together

Seeing beyond