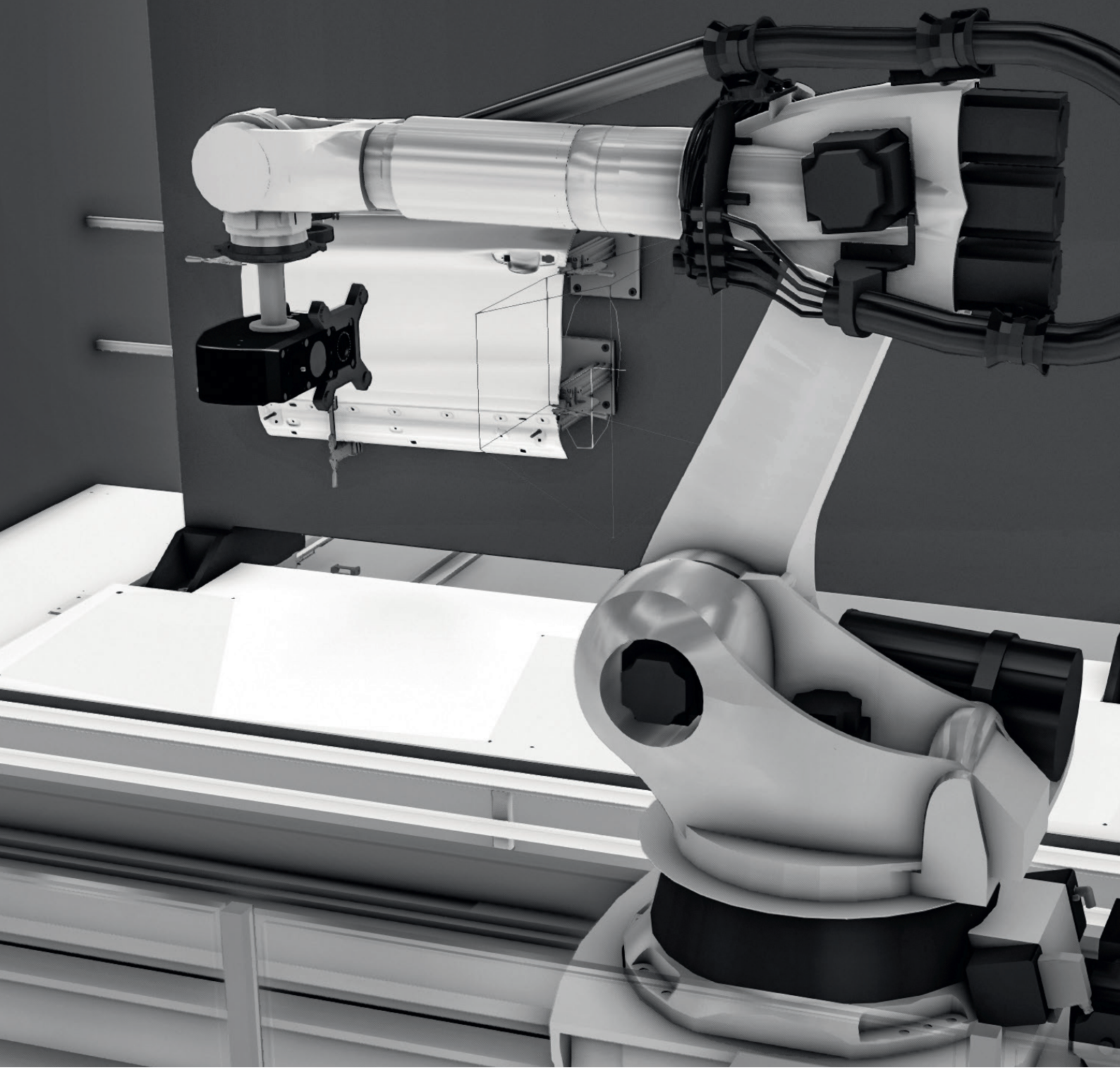


ZEISS T-SCAN Automated / COMET Automated

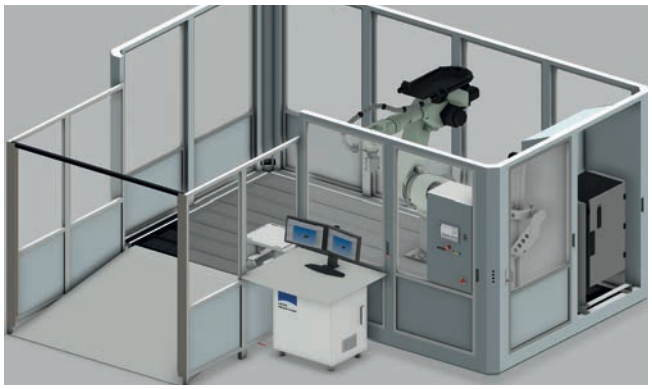
3D Digitization – Laser Scanning / Fringe Projection

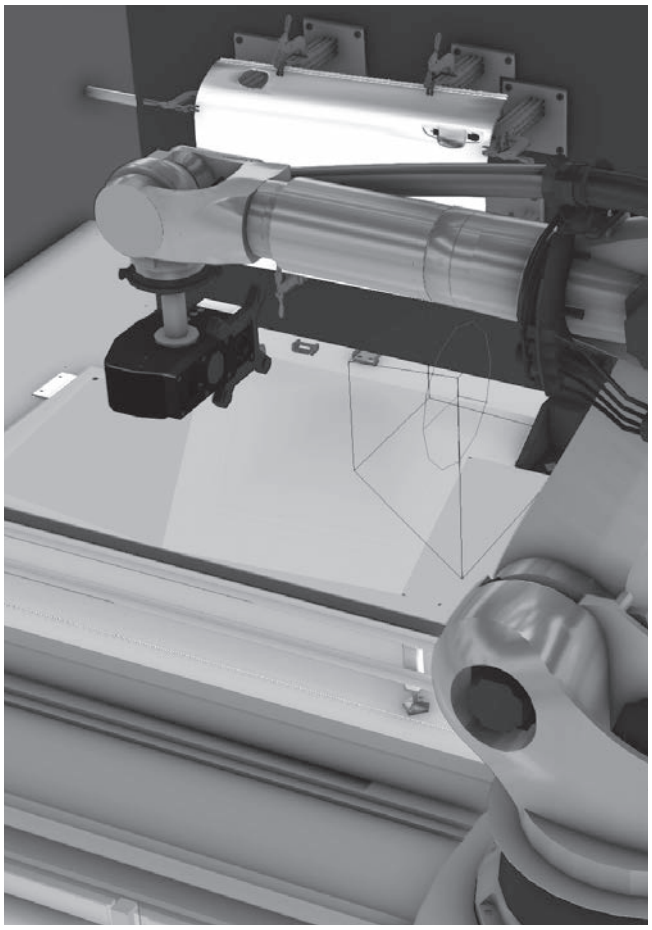
Automated solutions for efficient 3D data capture

ZEISS 3D Digitization

Automated solutions for efficient 3D data capture

Saving time through the fast surface capture of geometry or surface data when performing recurring measurement jobs for a large quantity of different components is now one of the most important criteria for production-related quality assurance processes.
Optimize your measuring runs with automated solutions for highly efficient 3D data capture and diverse evaluation functionalities.





All-in-one optical sensor technology and automation
Thanks to our many years of experience in optical metrology and our core competence in developing adaptable automation systems with standardized sensors, ZEISS Optotechnik offers comprehensive solutions from a single source.

Customized and complete solutions for optimal integration
Many different combinations and layouts – including components such as sensor technology, software, robots (incl. portal layouts) and safety engineering – provide an application-specific and customer-oriented adaptation. The operator can utilize all the advantages of the automation systems designed specially for their specific application and benefits from a fast, safe and innovative complete solution which can be optimally integrated into existing processes.

Highlights

- Optimization of recurring measuring tasks in quality assurance (random sampling / production)
- Flexible, customer-oriented system designs from a single source
- Large part spectrum capability / offline programming
- Robot combination with all available sensor types
- Open interfaces for sensor, robotics and analysis software

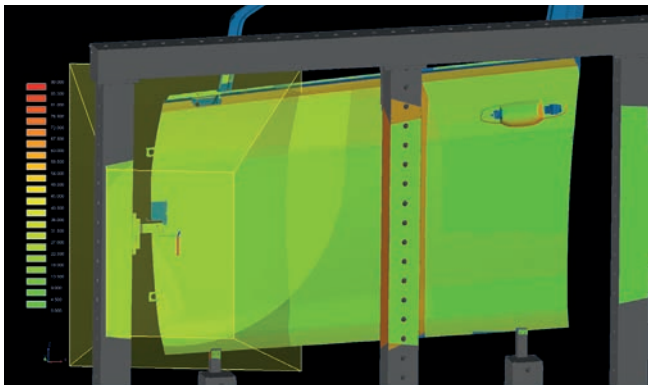
Customer-specific design for maximum efficiency

All system configurations are completely customizable and scalable in accordance with the degree of automation, software interfaces, connection to part feeding/conveyors, etc. and customer-specific conditions.

These ZEISS metrology solutions make it possible to program many components offline to ensure 100% system uptime.

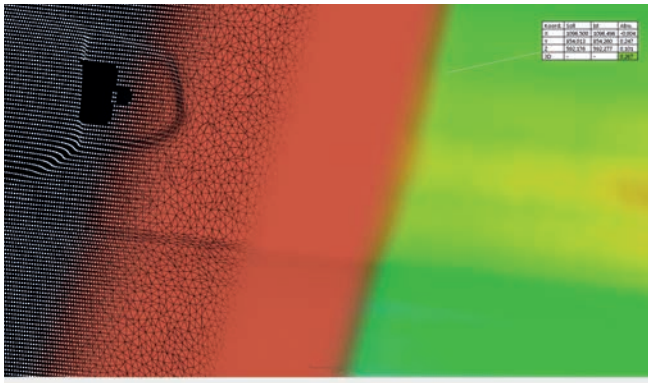
A wide range of applications

- Quality control / inspection
  - Initial inspection
  - Measurements during series inspection
  - Production-related inspection
  - e.g. gap and flush measurements
- Tool and model making
  - Actual-capture following tool approval



ZEISS COMET Automated:

Virtual measurement using the sensor positions in offline teaching



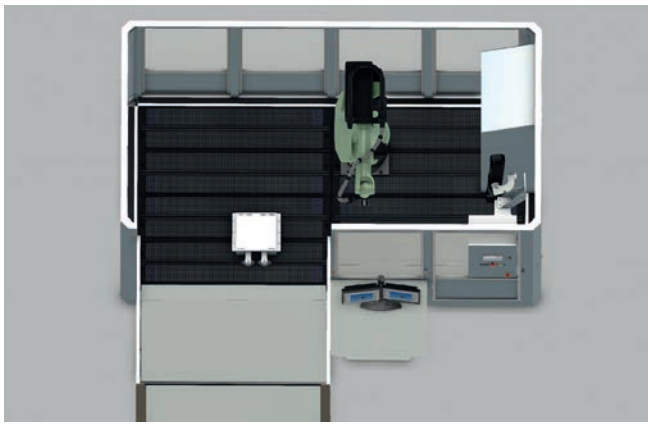
Process steps of automated 3D data capture:

Point cloud, triangle mesh, false color comparison

ZEISS T-SCAN Automated

3D laser scanner

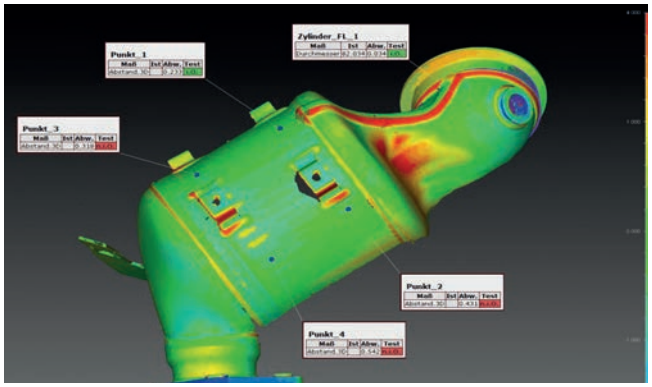
The automated measuring configuration featuring the unique ZEISS T-SCAN laser scanner allows exceptionally efficient workflows for repeated measuring jobs in quality assurance (e.g. fully integrated measuring solutions for statistical process control in the production cycle).
The especially compact laser scanner impresses with effortless reachability – even with difficult-to-reach areas on the component – and delivers precise 3D data in next to no time.



ZEISS T-SCAN Automated: sample system configuration

Wide application range for flexible use and high productivity

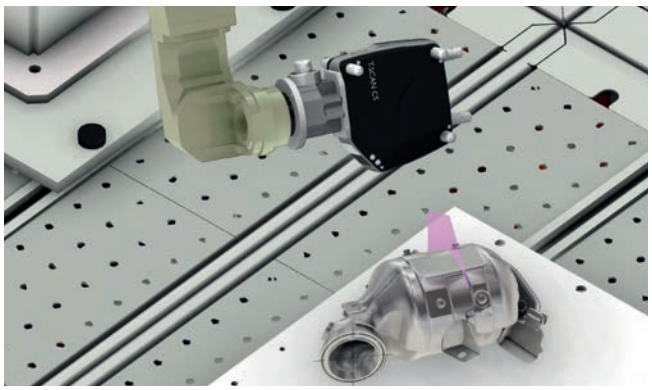
Featuring an outstanding dynamic range, the scanner enables measurements on diverse surfaces without time-consuming pretreatment and achieves an unparalleled data rate. In addition, the minimal working distance and the tolerant scan line ensure maximum flexibility, reducing the time needed for programming to a minimum.
Throughout the entire measuring process, you can observe the component areas which have already been measured in real time, and with the online data display you can check the progress of the measurement at any time.



Simple false color assessment for fast quality assessment

High data quality and precision

The ZEISS T-SCAN laser scanner delivers excellent data quality and highly precise measuring results, making it ideal for demanding applications in quality inspection.
Due to the specific triangulation angle of the scanner, the sensor is well-suited for gap and flush measurements.



Innovative high-end technology for greater flexibility and efficiency

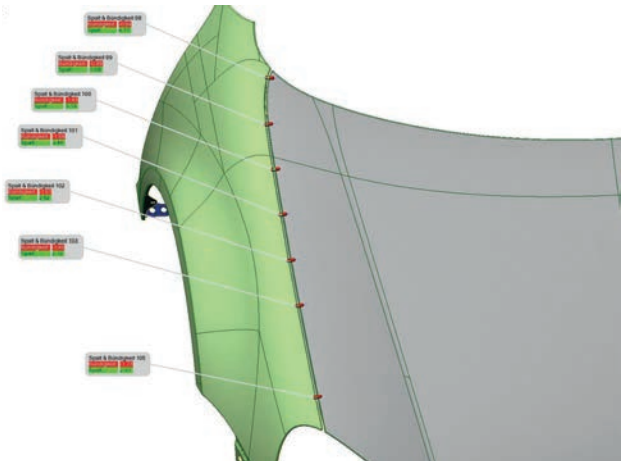
- High dynamic range: Measure very different component surfaces in one scan path without time-consuming preparation
- Real-time display of the measuring run
- Compatible with almost every common robot type / manufacturer
- Optical sensor and automated solution from a single source, all components perfectly matched
- Optimized programming through a tolerant scan line and minimal measuring distance
- Customized and complete solution for optimal integration

ZEISS T-SCAN Automated:
Impressive performance

- High measuring speed
- Minimal working distance, compact sensor
  Optimal accessibility for complex component geometries
- High measuring accuracy via an optical tracker,
  independent of robot

ZEISS T-SCAN Automated – technical data sensor

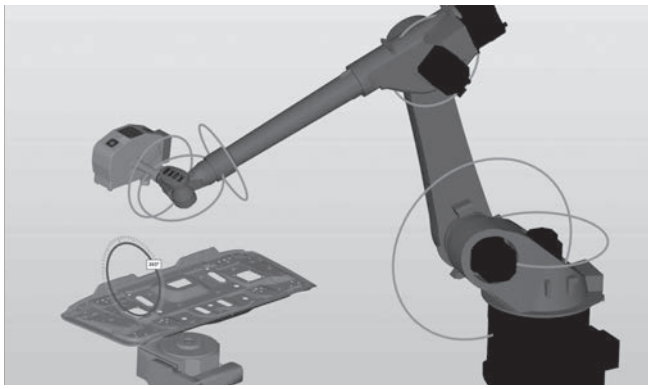
Measuring depth	+/- 50 mm
Line width	Up to 125 mm
Mean working distance	150 mm
Line frequency	Up to 330 Hz
Data rate	210,000 points/second
Mean point distance	0.075 mm
Points per line	1317
Laser type / wavelength	Diode / 658 nm
Laser class	2M



ZEISS T-SCAN Automated:
Measuring slit width and flushness

ZEISS COMET Automated
Fringe projection sensor

Enjoy maximum efficiency and performance for your automated measurement processes in quality assurance with the ZEISS COMET Automated fringe projection system.
The combination with a robot for sensor guidance or object handling enables fully automated component measurements, making 3D digitization for various component sizes even faster and substantially simplifying routine inspection tasks, e.g. initial inspection (monitoring functional dimensions).



ZEISS COMET Automated:
Virtual display of the measuring cell for offline teaching

ZEISS COMET Automated: a 3D sensor for automated data capture with an integrated edge illumination module

Innovative sensor technology
ZEISS COMET Automated uses innovative maintenance-free, cost-effective LED lighting technology with a long service life. The high light output generated by the LED pulse mode guarantees excellent measuring results even in difficult ambient conditions.
The sensor housing, with proven single-camera technology, and the sensor structure specially designed for automation provide easy access to difficult-to-reach points: from single parts all the way to entire vehicles.

Simple, automatic measuring runs
Two flange points make the ZEISS COMET adaptable to all current robot systems regardless of the application area and can be controlled throughout the measuring process using VISIO 7 software.
The working distance designed specially for automated optical measuring and the measuring field size enable the quick and efficient inspection of components with different shapes and surface properties.

Fast and precise
3D data capture with the COMET Automated sensor is particularly fast. Measurements are performed efficiently thanks to the extremely short measuring time and user-friendly software. The ZEISS COMET Automated delivers excellent data quality and highly precise measuring results, making it ideal for demanding applications in quality inspection. Intelligent alignment strategies and the photogrammetry camera optionally integrated into the sensor also enable the measurement of very large objects.

Impressive performance

- High measuring speed
- Minimal working distance
- Large measuring range
- Two positions for the robot flange, on the side e.g. for measurements in vehicle interiors
- Compatible with different robot types/manufacturers

High-end sensor technology

- High-end camera and precision lenses
- High point resolution
- Compact, robust housing
- Projector with extremely high light output

ZEISS COMET Automated – technical data for sensor

Camera	Digital projection unit with 8 megapixel CCD camera
Resolution	Point resolution 180 µm
Illumination	LED light source (BlueLight Technology), edge illumination for optimized feature measurement
Photogrammetry	Integrated, 16 megapixel CCD camera
Working distance	700 mm
Measuring volume	600 x 450 x 400 mm

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