

## **ZEISS ScanBox for eMotors**

Efficient quality assurance in stator production



Seeing beyond





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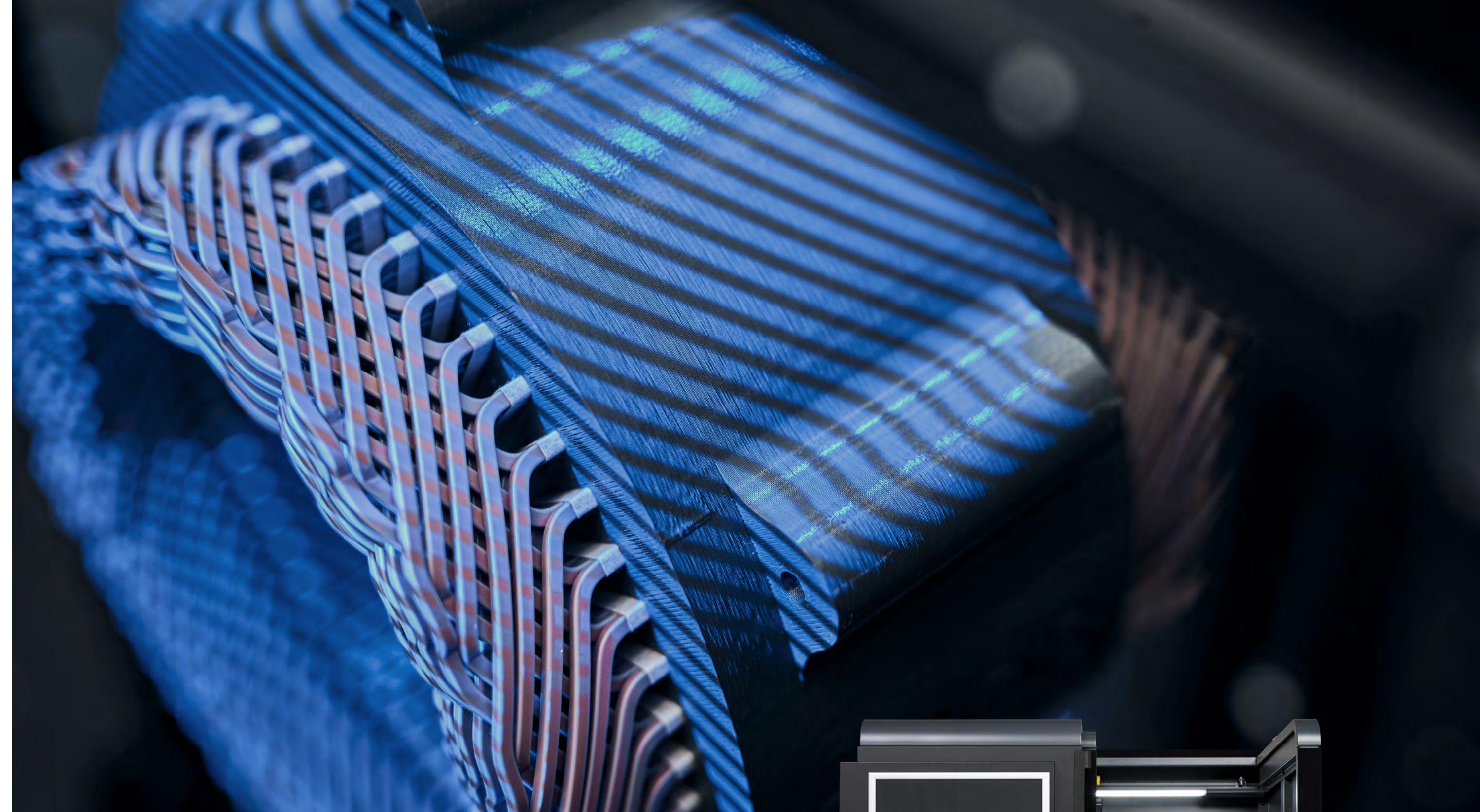


# ZEISS ScanBox for eMotors

Automated inspection  
and digitization of  
hairpins and stators

ZEISS ScanBox for eMotors was developed for efficient quality assurance in the production of reliable and durable electric motors. The optical 3D measuring machine is used for quality checks on hairpins and stators. Stators including hairpins as well as individual hairpins or multiple hairpins are digitized and inspected simultaneously and fully automatically.

Within a very short time, ZEISS ScanBox for eMotors delivers full-field deviations between the actual 3D coordinates and the CAD data of the inspected parts. The acquired 3D measurement data is visualized and analyzed in the powerful Inspect software. The automated process ensures that sources of error can be identified at an early stage and necessary correction measures can be implemented.



The standardized ZEISS ScanBox for eMotors measuring machine offers everything from a single source: programming, automated digitizing, inspection, and reporting. Thanks to an intuitive user interface and the virtual measuring room (VMR), as the central control and measurement planning software, ZEISS ScanBox for eMotors is easy to operate.







## ATOS Design

ATOS sensors are specifically developed for industry use and deliver fully traceable measurement results even under harsh conditions. The sensors' optical and electronic systems are dust- and splashproof. The industry housing facilitates the step from the measuring room into the production area.

## ATOS Q for eMotors

Non-contact fringe projection for fragile structures

ATOS Q for eMotors is specialized on the fast, full-field shape measurement and digitization of hairpins and stators.

Thanks to powerful sensor technology specifically developed for the measurement task, the 3D scanner delivers precise data with high detail resolution in very short measurement cycles. The compact system meets high metrological demands and is integrated as standard into the automated ZEISS ScanBox for eMotors.

As all ATOS sensors, ATOS Q for eMotors also provides the perfect triplet composed of design, technology and performance. Together with ATOS DNA, the compact system offers a high level of precision, speed, and ease of use in the industrial environment.





# ATOS Technology

ATOS sensors are fully tailored to the metrological requirements of industrial users. Precise optoelectronics deliver absolutely accurate and traceable measurement results. Using structured blue light, the fringe projection systems enable non-contact measurements.

## **Triple Scan Prinzip**

The Triple Scan Principle ensures precise and complete measurement data, even with complex geometries and non-cooperative surfaces.

## **Blue Light Technology**

The narrow-band blue light of the projection unit allows for precise measurements regardless of the ambient lighting conditions.

## **ATOS Performance**

Due to the GPU acceleration, ATOS sensors deliver measurement results at high speed. Combined with a powerful light source and camera technology, ATOS sensors reach a new level of performance with this GPU acceleration.

## **Precise, Full-Field 3D Data with High Detail Resolution**

Fast automated measurements with highest precision: ZEISS ScanBox for eMotors is an all-in-one solution for efficient quality control in production and manufacturing processes.

Without surface treatment, hairpins and stators are fully digitized in a very short time even before assembly. The software creates a complete, geometric digital twin from full-field 3D coordinates.

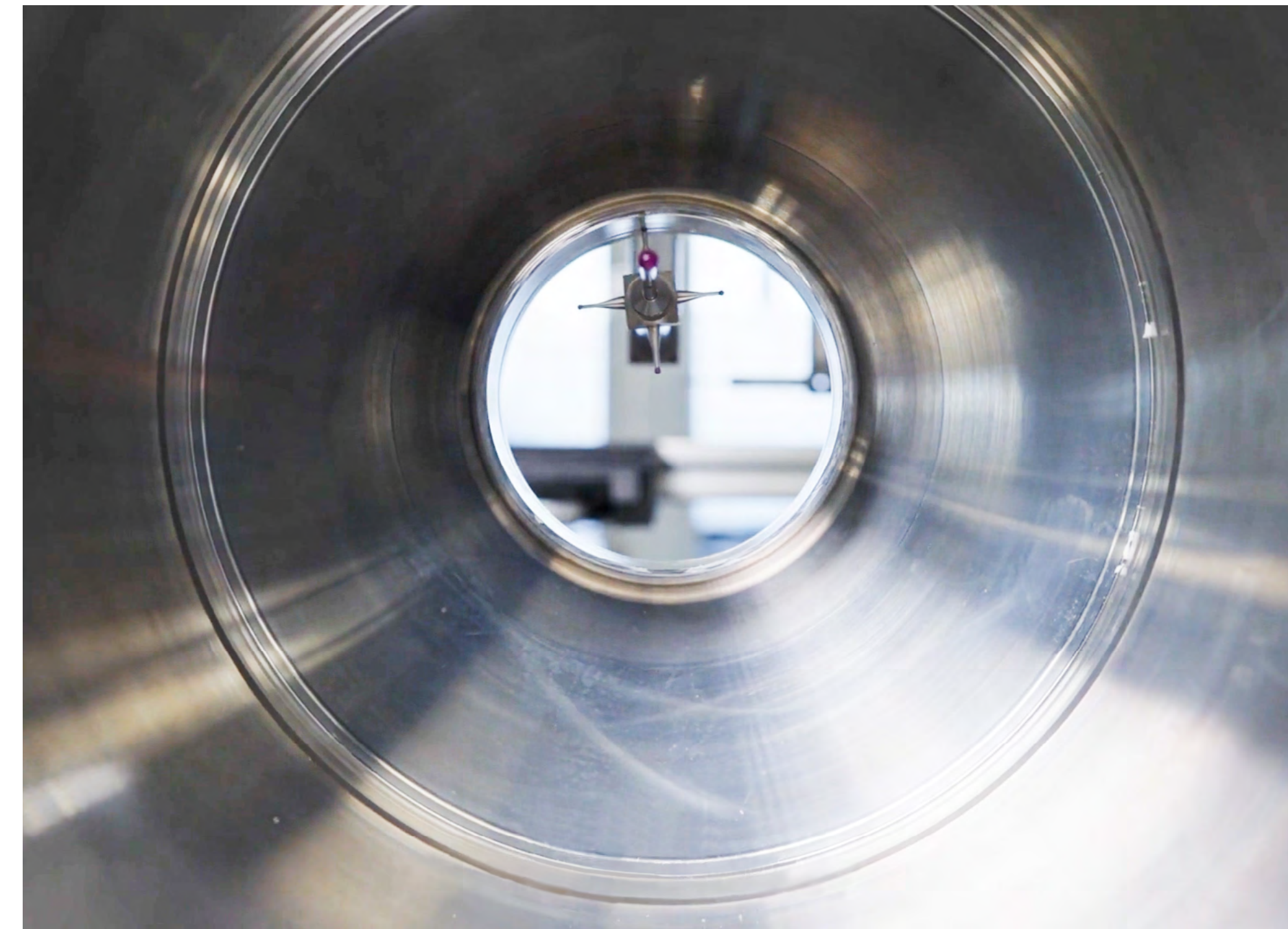
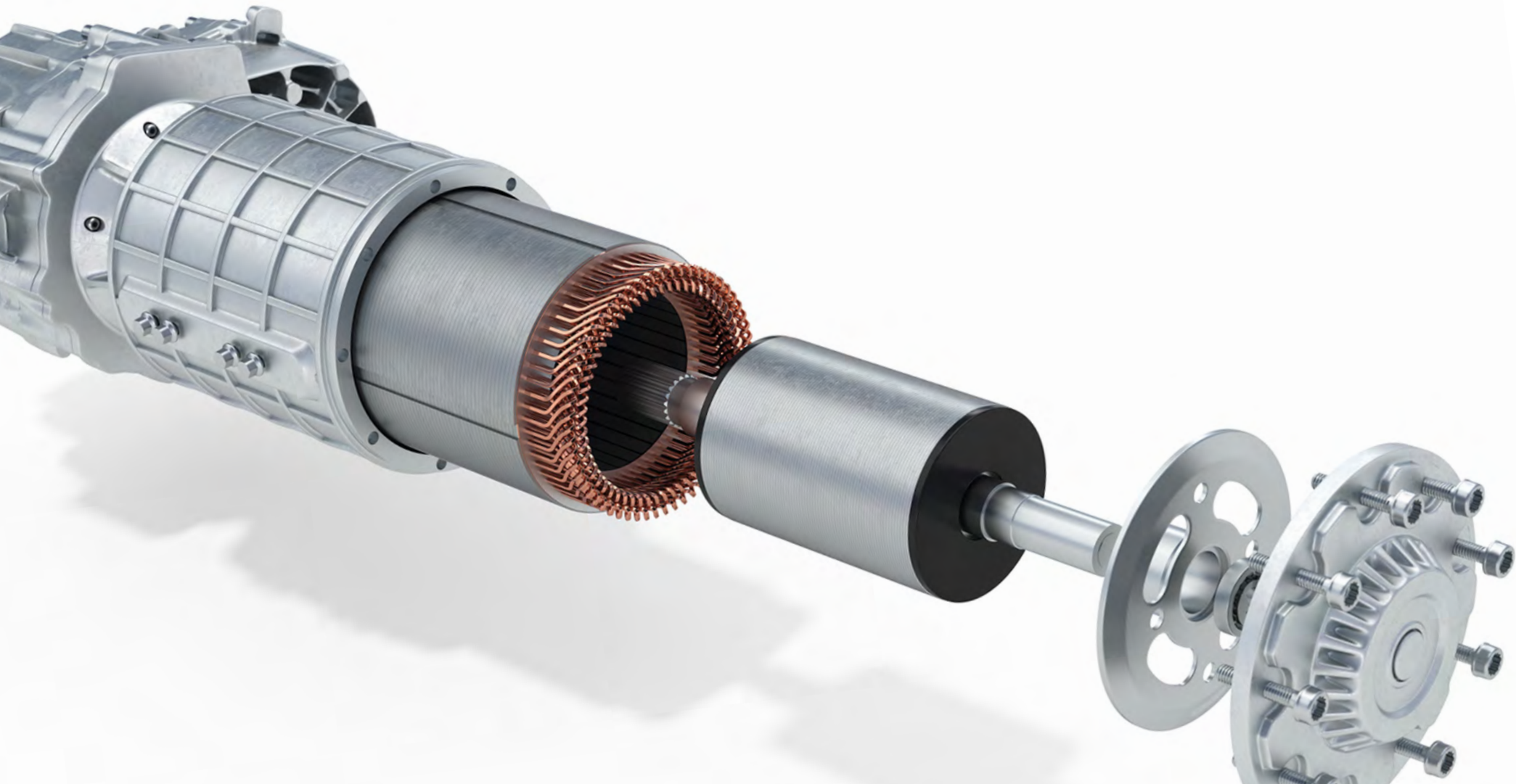


# ZEISS eMobility Solutions

From software to technical implementation, everything comes from a single source: The combination of optical 3D measurement technology with high-precision, tactile systems is ideal for ensuring process reliability in the production and installation of stators and hairpins for electric motors.

## Unique Interaction of Optical 3D Measurement Technology with Tactile Measurement Technology

ZEISS PRISMO is the ideal complement to the ZEISS ScanBox for eMotors in the metrological inspection of electric motors. The coordinate measuring system is predestined for measuring very tight tolerances and provides reliable measurement data even for features that are difficult to access.



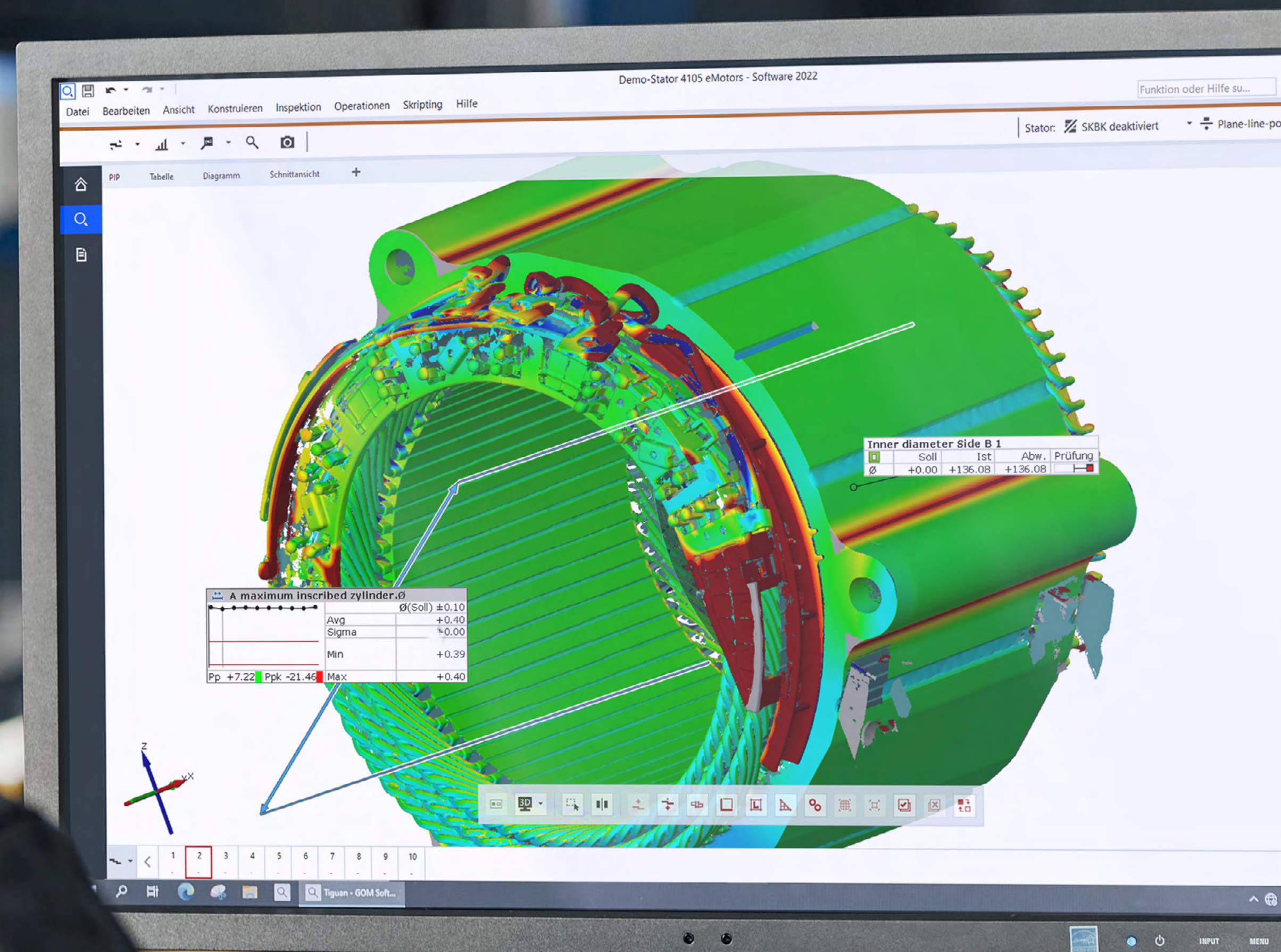


# All-in-One-Software Inspect

Scanning, inspecting, and reporting with a single source: Each ZEISS ScanBox for eMotors is controlled with the Inspect software. You can import CAD data, create polygon meshes from point clouds and execute 3D inspections and evaluations. The Inspect software is part of the ZEISS Quality Suite.

## HyperScale – Recalibration without Losing Time

The new HyperScale software feature allows for a particularly quick recalibration on site. It only takes a single measurement of a DAkkS-certified length standard to complete the calibration.





# All-in-One-Software Inspect

## Parametric Inspection

Due to the parametric design of the software, all process steps can be traced back, repeated, and edited. Trend analyses, statistical process control (SPC) and deformation analyses can be carried out with one single software. In addition, it also facilitates performing serial inspections in a project and determining statistical analysis values.

## Numerous CAD Formats

Native CAD formats, such as CATIA, NX, SOLIDWORKS and PTC Creo can be imported into the software at any time.

## Teaching by Doing

Thanks to continuous caching, it is possible to apply the desired inspection steps to subsequent parts without any programming effort.

## Digital Assembly

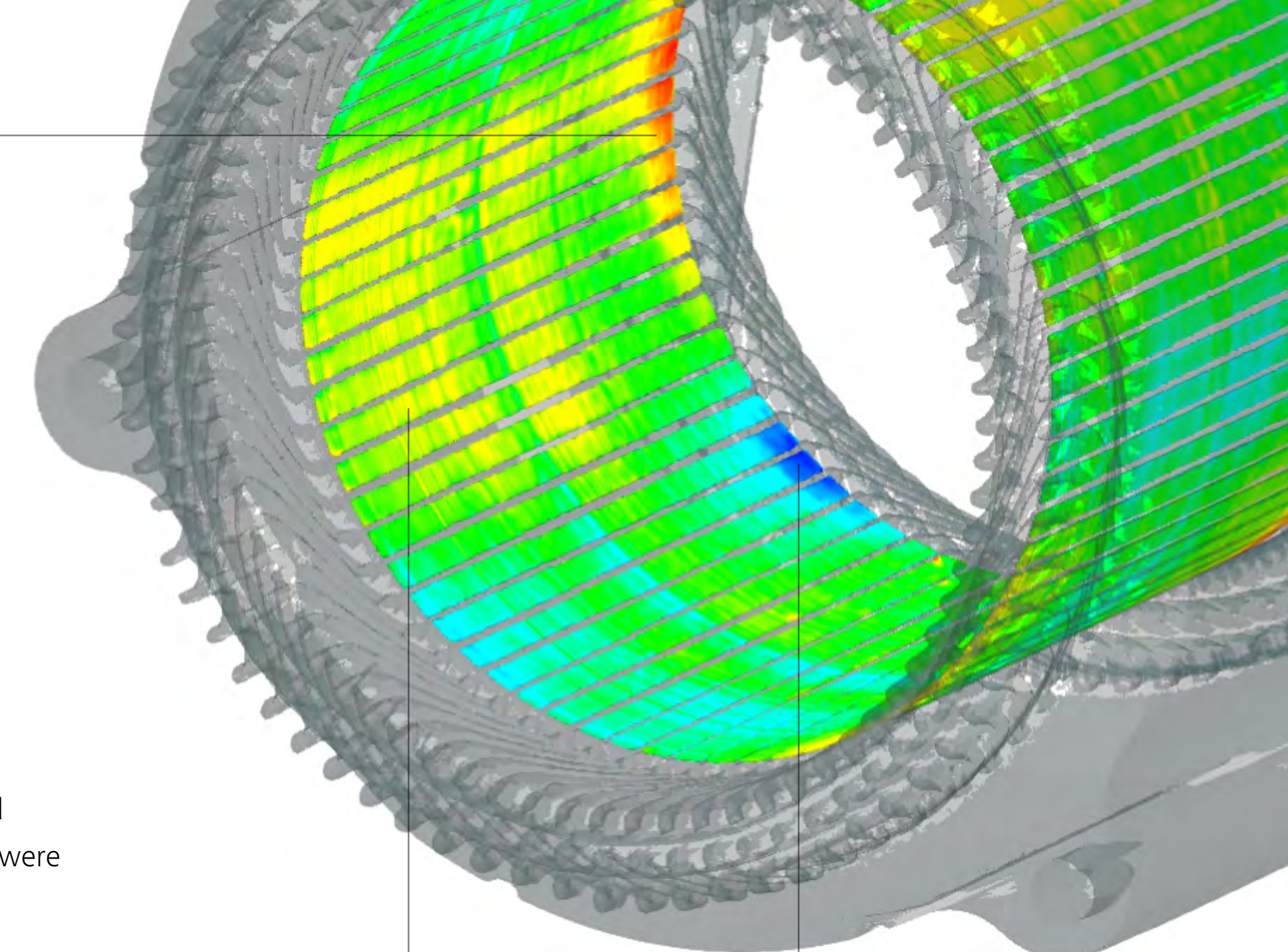
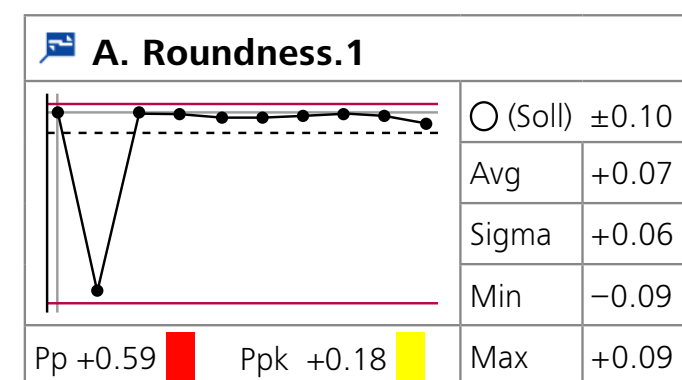
Digital assembly allows for aligning parts to one another and analyzing their accuracy of fit, regardless of where the parts were manufactured.

## Customization

For example, a command recorder saves all executed operations as a Python script, which can then be repeatedly applied or adjusted for additional measurements.

## Reporting

As part of the ZEISS Quality Suite, the software supports the measuring and inspection process with detailed analysis and reporting functions. The results are compiled in a simple and concise manner.



+0.04

-0.09

## Free Trial Version

Experience the numerous benefits of Inspect in the ZEISS Quality Suite for 14 days – free of charge and without any contractual obligation.

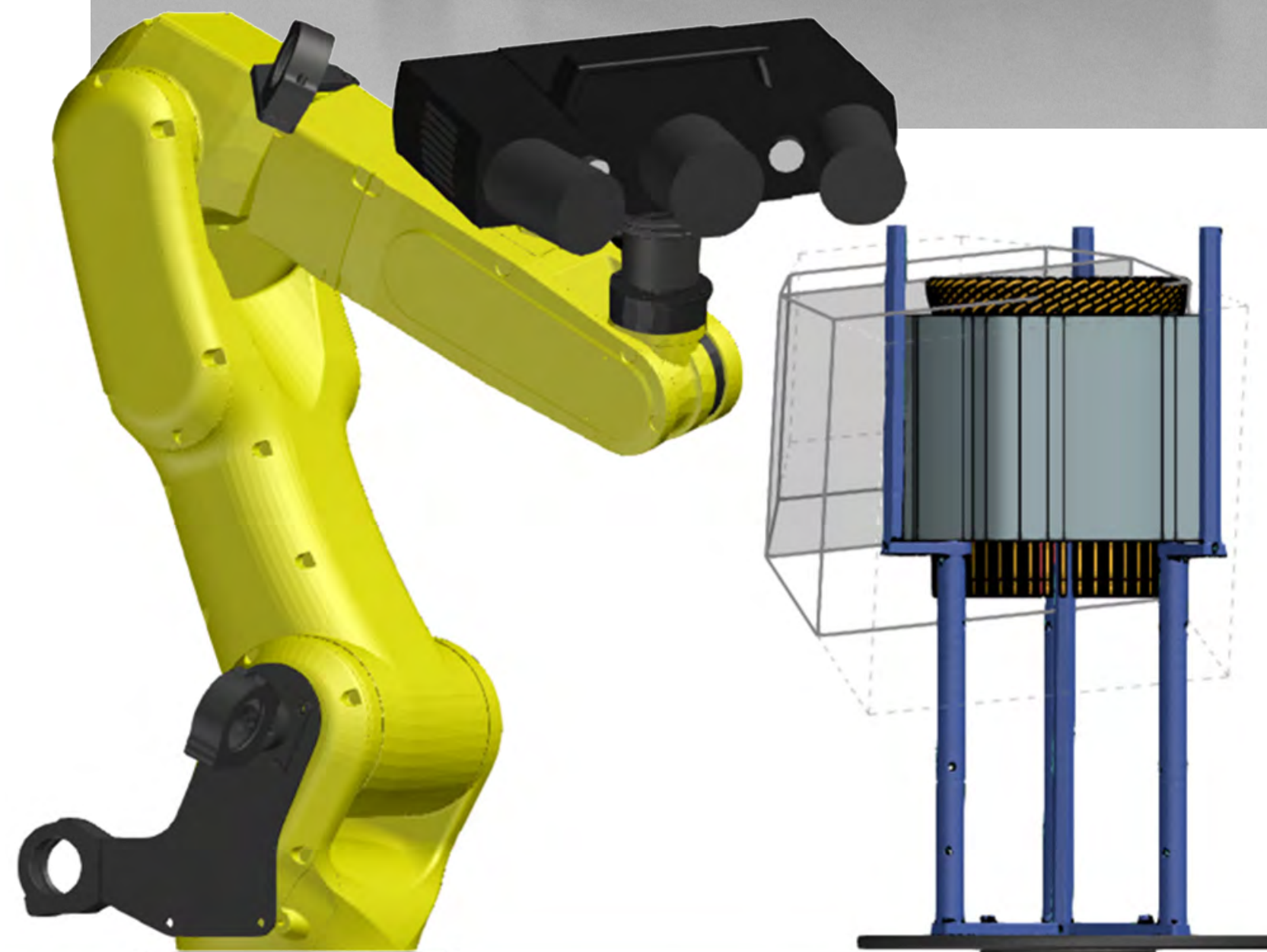




# Virtual Measuring Room

Central control and measurement planning software

The virtual measuring room (VMR) is the central control and measurement planning software for all elements of optical measuring machines. The VMR functionally represents the real environment, i. e., robot, sensor, and part in the measuring cell, as a simulation. Programming includes the kinematics of the robot paths, the fixture, and the measurement plan. Thanks to the VMR, no special programming skills are required by the user. All robot movements are simulated and checked for safety before being performed in the actual environment.



## Advantages for the Entire Workflow

**Inspection planning:** The CAD data set is imported together with the corresponding measurement plan. The measurement principles stored in the measurement plan are automatically assigned to the inspection features. The report can also be prepared offline in advance.

**Process-reliable and runtime-optimized:** The Smart Teach functionality in the virtual measuring room simplifies the creation of robot programs. Measurement positions are automatically updated whenever the CAD model or single elements are modified.

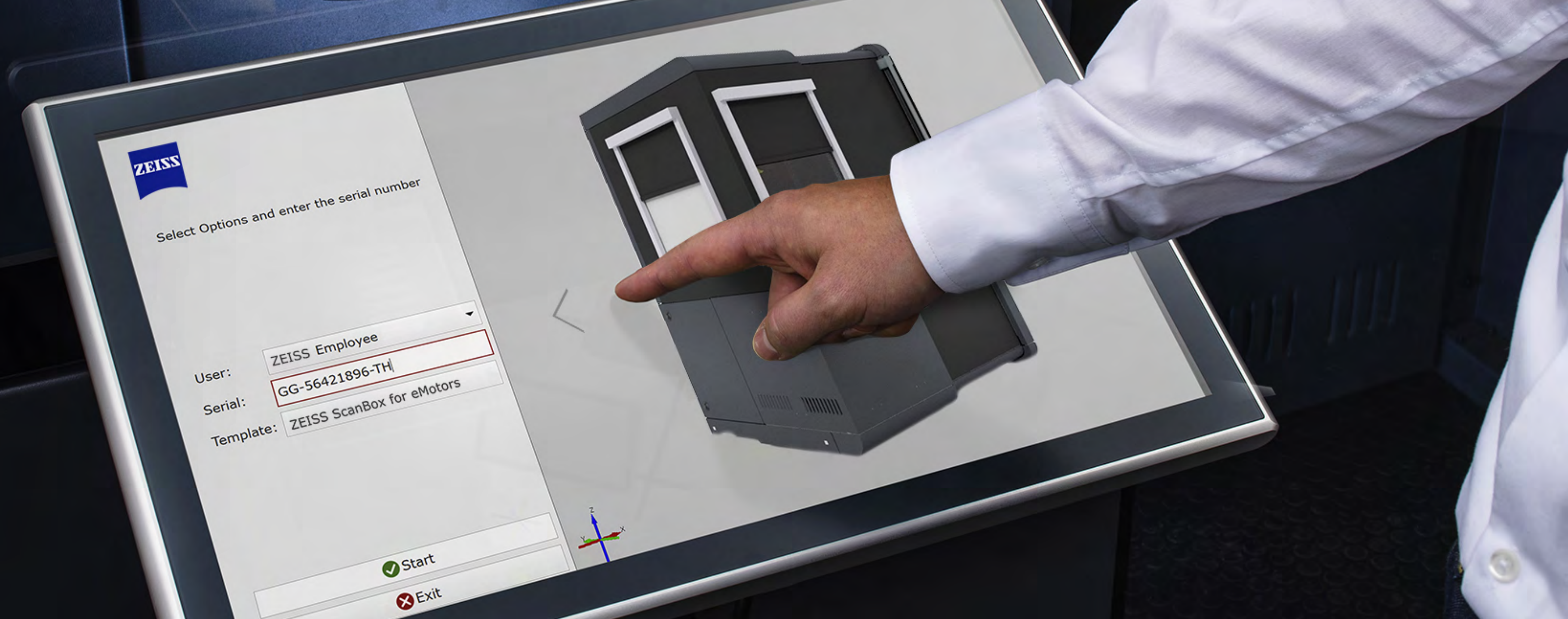
**Burn-in procedure:** The measuring programs created are read in once with the help of an automated process. The robot approaches the measurement positions and defines individual measurement parameters at the real component.

**Serial measurement:** The measuring programs can be used for additional part testing. Due to the parameter-based software design, changes to the CAD data and the measurement plan can be easily updated with the touch of a button.

**Reporting with a single click:** Once inspection is complete, the results can be compiled into a customized report with photos, tables, diagrams, text, and graphics.



# Technical Information



## Easy to Use

ZEISS ScanBox for eMotors is controlled with the associated inspection software in the ZEISS Quality Suite. Measurement and inspection sequences are executed via the intuitive user interface – the Kiosk Interface – and the virtual measuring room (VMR). The part is inserted, the measuring program is selected, and the start button is pressed.

## ZEISS Integration Series

Feeding and loading systems from ZEISS are designed to optimize part flow and operating times throughout the entire measurement process. This also applies to the combination of optical 3D measurement technology and tactile coordinate measurement – in the measuring room and at or directly in the production line.

|                          |                                       |
|--------------------------|---------------------------------------|
| Dimensions               | 1600 × 1200 × 2100 mm                 |
| Power supply             | Standard, 100 – 240 V (1-phase, 16 A) |
| Max. part size           | Ø 500 mm                              |
| Max. part weight         | 100 kg                                |
| Entrance                 | Sliding door with safety door switch  |
| Opening width            | 685 mm                                |
| Floor mounting or fixing | Not required, mobile                  |
| Loading concept          | Manual, crane                         |
| Sensor compatibility     |                                       |



## ZEISS Industrial Quality Solutions

ZEISS Industrial Quality Solutions is a leading manufacturer of multidimensional measurement technology solutions. These include coordinate measuring machines, optical and multi-sensor systems, microscopy systems for industrial quality assurance as well as metrology software for the automotive, aircraft, mechanical engineering, plastics, and medical technology industries.

Innovative technologies such as 3D X-ray measurement for quality assurance complete the portfolio.

In addition, ZEISS Industrial Quality Solutions offers a broad global spectrum of customer services with ZEISS Quality Excellence Centers close to its customers.





# Your Holistic Technology Partner

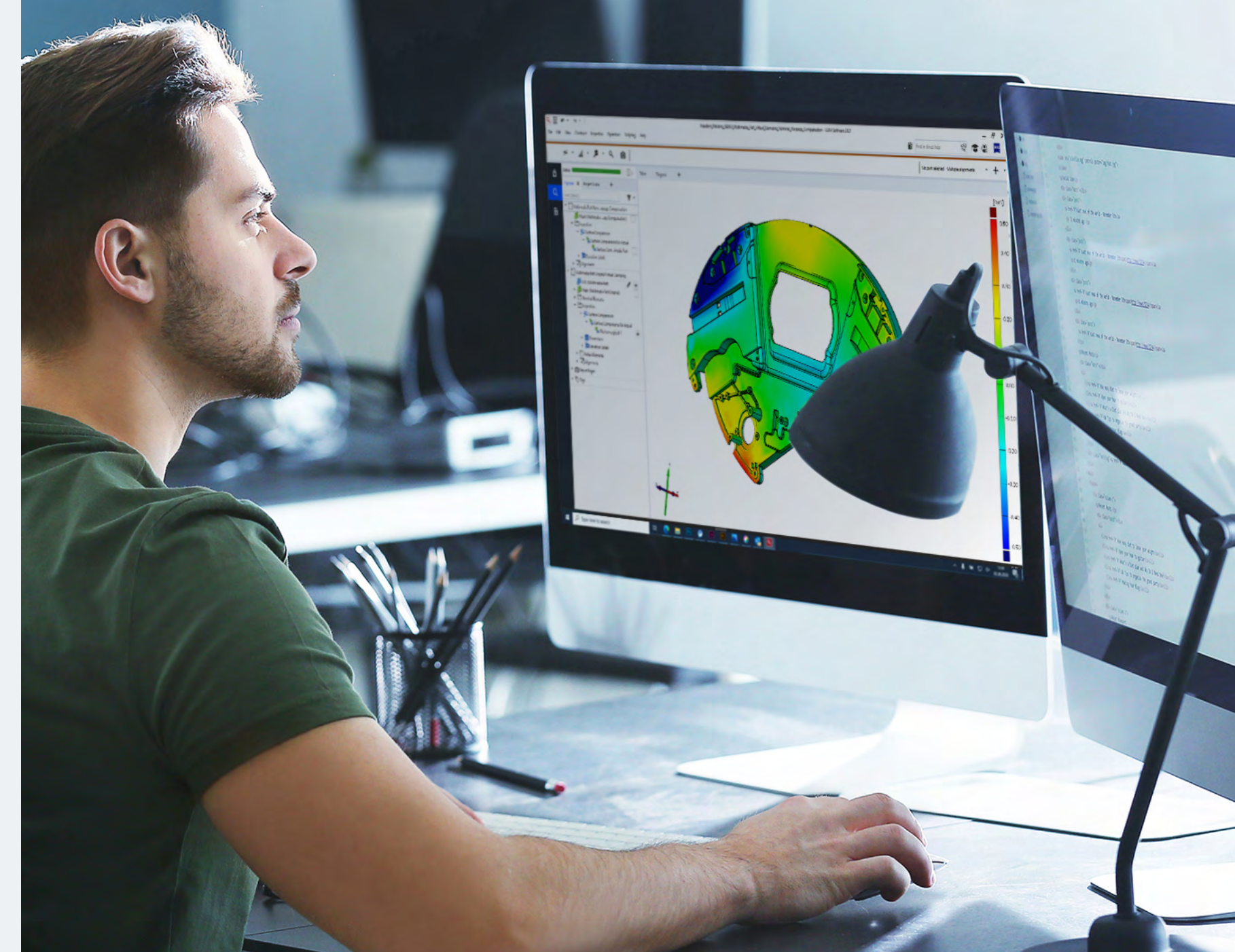
Numerous services and training courses support you in your daily use of 3D measurement technology. Training courses and webinars help you to extend your knowledge about using the software and get to know more application fields for the measuring systems.

ZEISS Quality Suite supports you with instructions, tutorials and frequently asked questions and answers. Moreover, the user forum offers a platform for mutual exchange and support.

At conferences and application-based workshops, webinars and digital demos, ZEISS directly shares process and measurement technology know-how. In addition, contractual support and services for all measuring solutions are available.

## Training

ZEISS training centers offer training and eLearning courses for all levels of expertise. The training courses follow an internationally standardized concept and are implemented by our certified partners in the corresponding national language. In addition to online training courses and scheduled courses in our training centers, customer-specific on-site training courses are also available.



## Support and Service

ZEISS provides support and services to assist you quickly and reliably if required. These are based on the following three pillars: Remote Assistance, Services and Contract Plans.





# Did ZEISS ScanBox for eMotors get your attention?

Contact us for a free demonstration –  
on site or online.

## **ZEISS Industrial Quality Solutions**

Carl Zeiss Industrielle Messtechnik GmbH  
Carl-Zeiss-Str. 22  
73447 Oberkochen, Germany

Phone +49 7364 20-6336  
info.optical.metrology@zeiss.com  
www.zeiss.com