Press release

Staufen im Breisgau, September 19, 2024

OWIS positioning systems in digital-holographic   
3D measurement technology

# At OWIS, we realize the pioneering ideas of our customers and drive progress in high-tech industries. This is also underpinned by the latest application example of our direct drive linear stages in digital-holographic 3D metrology at the Fraunhofer Institute for Physical Measurement Techniques IPM.

# In contrast to photography, in which the spatial distribution of light intensity is stored, holography also uses the recording of phase information. The prerequisite for this is a coherent light source – typically one or more lasers. If the surface of a component is illuminated with laser light, the shape of the component is stored in the phase distribution of the backscattered light wave. Through interferometric recording and subsequent digital reconstruction, Fraunhofer IPM makes this information accessible and usable, for example to measure roughness and deflection in three dimensions.

# Direct drive linear stages with resolution in the sub-µm range

# In the HoloAMS optical 3D measuring stand developed by Fraunhofer IPM for the automated processing of customer-specific measuring tasks, the predefined measuring fields on the component surface are approached, recorded and then combined to form an image. The high-precision positioning of the component in the x-y plane required for this is achieved with two LINPOS M direct-drive linear stages and the PS 90+ position controller. Thanks to the powerful direct drives and the fine-resolution, incremental linear measuring systems, this setup guarantees high dynamics with maximum positioning accuracy and stability. The lateral resolution is in the sub-µm range.

# Precision and reliability play a decisive role

# At an on-site project meeting, Managing Director Rüdiger Ruh and Head of Development Dr. Peter Hilgers were impressed by the overall system: “We are delighted that we were able to convince the project team at Fraunhofer IPM with the performance and quality of the OWIS components”. In addition to precision and dynamics, reliability and fail-safety also played a decisive role in the selection and combination of components. These are important prerequisites for continuous operation in industrial production control.

1928 characters

Pictures

Ein Bild, das Computer, Im Haus, Elektronik, Maschine enthält.

Automatisch generierte Beschreibung  
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**Digital-holographic 3D measurement technology:** The Fraunhofer Institute for Physical Measurement Techniques IPM has developed a version of the HoloAMS optical 3D measurement stand for the automated execution of customer-specific measurement tasks in production control

**Ein Bild, das Text, Screenshot, Diagramm, Logo enthält.

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**Functional principle:** Predefined measuring fields on the component surface are illuminated with laser light and then combined to form an overall image. Based on the phase distribution of the backscattered light wave, the shape of the component is of the component is stored and made usable.

**Ein Bild, das Elektronik, Computerkomponenten, Computerhardware, Elektronisches Gerät enthält.

Automatisch generierte BeschreibungPositioning in the sub-µm range:** The high-precision positioning of the component in the x-y plane is realized with two LINPOS M and the positioning controller PS 90+. The lateral resolution is in the sub-µm range.

About OWIS

At OWIS, we turn our customers' pioneering ideas into reality and drive progress in high-tech industries. In doing so, we rely on our high-quality standard components, our outstanding engineering expertise and our ambition to push technological boundaries.

Following the idea of our founders, we now offer a modular system of optomechanical components and positioners that can be used to simplify and customize applications in industry and science.

Things get exciting when we combine our expertise and develop customer-specific systems based on our standard components. Typical application examples include laser processing, sensor technology, analytics, medical technology, semiconductor technology and clean room applications in general.

Lasers love OWIS. Not without reason. Our products and engineering services are characterized by precision, functionality, scalability, sophistication and reliability that our clients can rely on and that will take them further.

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