



Looking into micro bores

Surface inspection of a gas spring

A standardized inspection system with a small footprint enables fast, fully automatic, non-contact bore inspection at a manufacturer of tool clamping systems. The customized solution has enabled the manufacturer to provide proof of quality with 100 percent part inspection.

Ott-Jakob, a manufacturer of tool clamping systems for processing machines, is developing a new clamping technology solution for high-speed milling machines, consisting of a gas pressure spring that can withstand high speeds in clamping systems, for example in toolmaking. The compact clamp is designed to achieve exceptionally smooth operation by generating significantly less vibration than a classic spring clamp. This enables end customers to achieve significantly higher surface quality and dimensional accuracy of the finished product.

Quality control for a demanding market

To enable Ott-Jakob to meet the quality requirements for gas springs, Hommel Etamic has developed a special stand-alone metrology solution for the surface inspection of micro bores.

The critical challenge in developing gas springs lies in its own surface quality. The highest possible surface quality is a prerequisite for ensuring that the seal of the clamp can be securely positioned >>>

The technology of the Visionline V205

- Fully automatic, optical, non-contact bore inspection
- Qualitative and documented assessment of surfaces in accordance with DIN EN ISO 8785
- Possible bore diameters from 5 mm to 50 mm
- Bore depths of up to 240 mm
- Process-reliable error detection limit of 100 µm
- Optional X and Y axes for precise workpiece positioning
- Extensive, AI-supported evaluation and analysis functions
- Short inspection cycles

within the designed tolerances. To ensure a flawless surface within the clamp, Ott-Jakob's quality assurance department inspects the cylinder track of each individual clamp. The Visionline V205 developed by Hommel Etamic for this application meets international requirements for traceability and repeatability. "In Asia, great importance is attached to quality and its assurance through measurement protocols and evaluations," says Tobias Krösser, Head of Quality Assurance at Ott-Jakob. "Our gas pressure springs are currently used in most applications there, so we were reliant on a customized solution for inspecting the individual components of our tool clamps." The customer specific solution from Hommel Etamic has enabled Ott-Jakob to provide its customers with the required proof of quality with one hundred percent part inspection.

Documented Quality

Before Ott-Jakob was able to use the internal inspection technology from Hommel Etamic, the employees of the clamping technology company used a manual endoscope to inspect and individually assess the surfaces inside the gas springs. "The endoscope did not provide any storable images," says Tobias Krösser. "We could only assess in real time on the screen whether the surface had deviations or not. This manual process was very slow and expensive. In addition, the operator's inspection of the surface was always subjective and therefore not reproducible. In contrast, the new Visionline system makes it possible to inspect each component and to document and save the respective serial numbers together with the images created."

The Visionline V205 has now been in place at Ott-Jakob in Lengenwang, Germany, for around a year, where it carries out the inspection of products for the Asian market during series production.

The post process inspection system utilizes a B5 sensor from Hommel Etamic capable of inspecting the entire inner surface of bores with diameters between 5 and 14 millimeters. For this purpose, an axis moves the optical sensor with LED and lens into the part, then scans the entire length of the bore pixel row by pixel row for a complete 360-degree distortion free image of the surface. The sensor is usually integrated into highly complex, interlinked systems for fully automated surface inspection. Hommel Etamic has already incorporated the standard device developed for Ott-Jakob into its product portfolio in order to be able to offer the added value of the technology to other customers.

Further development of the Visionline V200 series can now also inspect bores up to 50 millimeters in diameter both semi and fully automatically. Each system is controlled by Hommel Etamic "Evovision" software, which processes, analyzes and documents the required data using proprietary programmed formulas, artificial intelligence, and more.

Cooperation based on trust

"We approached Hommel Etamic directly with our request. We have known the metrology provider for years and knew that we could expect high-quality inspection technology from them," says Michael Kustermann, Team Leader Measuring Room at Ott-Jakob. "Fortunately, our very specific request was met with an open ear, and we had great discussions with Hommel Etamic."

The production results of new and current clamping technology products are also checked in Lengenwang, Germany, with the help of Hommel Etamic's complete line of metrology solutions. In addition to the Visionline V205, Ott-Jakob is already using several devices for optical shaft measurement as well as roughness and contour measurement. ■

Translated by Firma JENOPTIK Industrial Metrology Germany GmbH

INFORMATION & SERVICE

USER

The history of the Ott-Jakob company began in 1873, when Albert Ott founded a mathematical-mechanical institute in Kempten, Germany. In 1974, the company developed the first tool clamp.

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SUPPLIER

Hommel Etamic develops and builds industrial measurement technology. The tactile, pneumatic and optical measuring systems perform a wide variety of measuring tasks depending on the requirements.

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