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Buschor Präzisionsmechanik invests in Kern Micro 5-axis machining centres to enable unmanned out-of-hours operation

Buschor Präzisionsmechanik—a Switzerland-based manufacturer of high-precision parts for the aerospace and optical markets—has improved its overall performance as a result of investing in two Kern Micro 5-axis machining centres from Germany-based Kern Microtechnik.

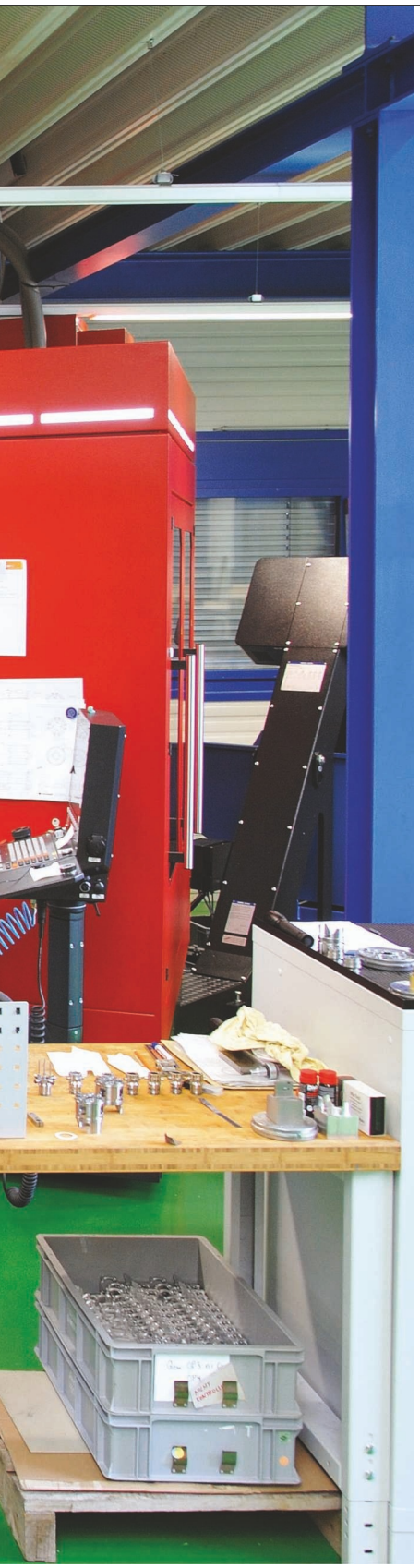
The company has structured its entire machining process chain around incredibly tight tolerances to meet the strict requirements of customers in the aerospace and optical industries. The entire production area is air-conditioned and raw material is always annealed a second time before the machining process begins.

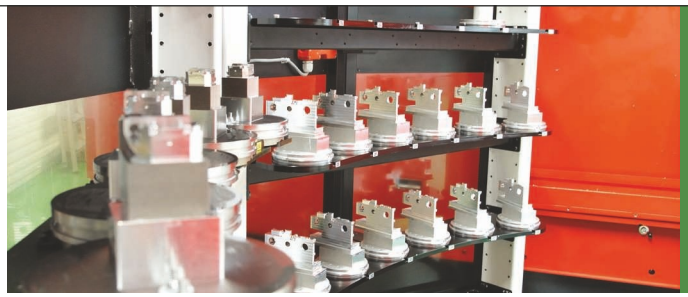
Werner Buschor, owner of Buschor Präzisionsmechanik, and his team check finished parts on a Leitz high-precision measuring machine. The company then delivers the parts directly to customers to ensure that they are transported carefully and not damaged.

Buschor has continually expanded and improved the process chain since founding the company in Au, a village in eastern Switzerland, in 1989. Three years ago, he decided to increase the process reliability of production once again. Specifically, parts possessing tolerances in the micrometre range needed to be produced automatically and unmanned during the night and at weekends.

After speaking to Stephan Zeller, sales technician at Kern Microtechnik, on a number of occasions and visiting the company's machine tool manufacturing facility in Eschenlohe, Bavaria, Germany, Buschor invested in the first of two Kern Micro machines.

Explaining the reasons for his choice, Buschor said: "The Kern Micro [was] the first milling centre that [could] stand up to our measuring machine, which we had purchased two years earlier. The measuring machine has a measurement uncertainty of half a thousandth of a millimetre and the Kern Micro offers a positioning accuracy of half a thousandth of a millimetre. The first Kern Micro was immediately connected to a 3R automation system, with the possibility of adding another machine. The large tool magazine with 186 tools and the repeatability of the Kern Micro are ideal for automatic production.





▶ *The 3R automation system and tool changer are located between the Kern Micro machines, providing tools for both.* ▶

"It is a real pleasure to be able to produce high-precision parts with such a machine. When we measure, it's always amazing to see how precise [it is]."

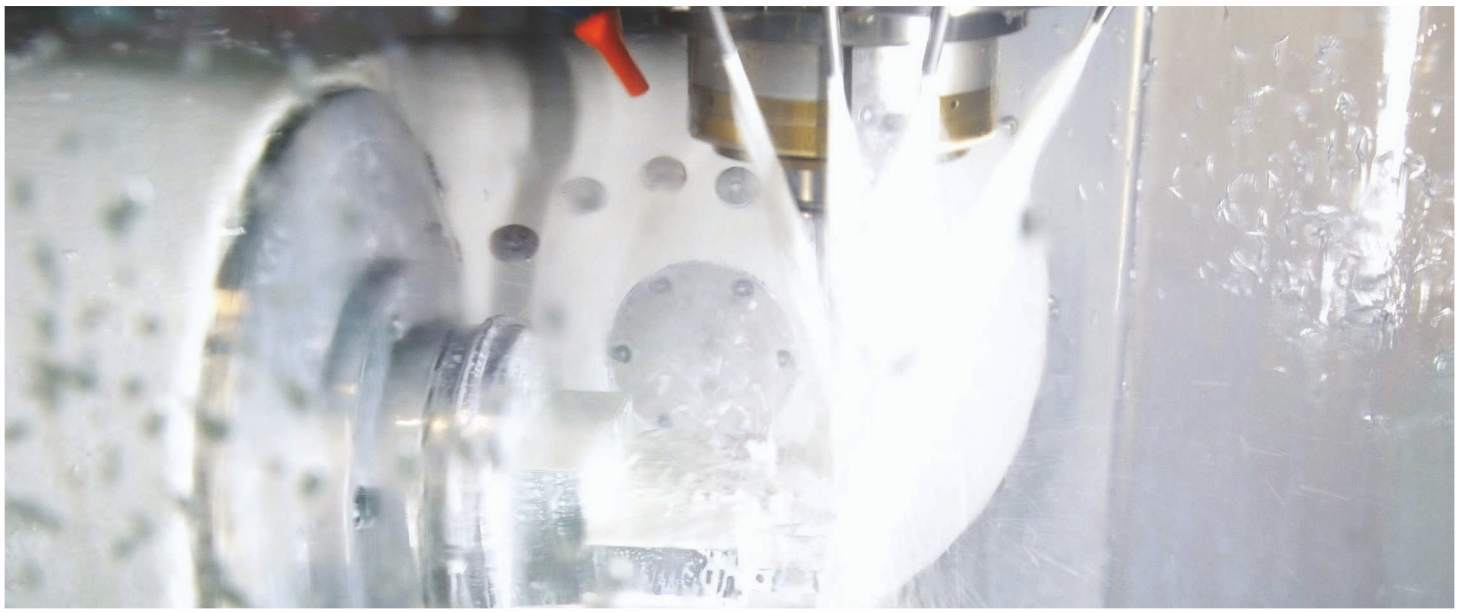
As staff at Buschor Präzisionsmechanik are no longer required to stand at the machine to produce parts, they are able to focus on other important tasks. The 5-axis machining centres installed prior to the Kern Micro are also automated, however they do not meet the required process reliability in unmanned operation.

The thermal stability of the Kern Micro is a decisive factor for its high process reliability. A smart cooling management system ensures that the temperature of the machine's structural components remains constant with a maximum deviation of 0.2°C.

Kern Microtechnik prioritises the use of vibration-decoupled or vibration-damped components in all of its machines. These components, as well as the Kern Micro's patented light metal structure and Kern volumetric compensation software, also contribute to process reliability.

It is a real pleasure to be able to produce high-precision parts with such a machine. When we measure, it's always amazing to see how precise [it is].

▶ *The Kern Micro machines operate unmanned during the night and at weekends.* ▶



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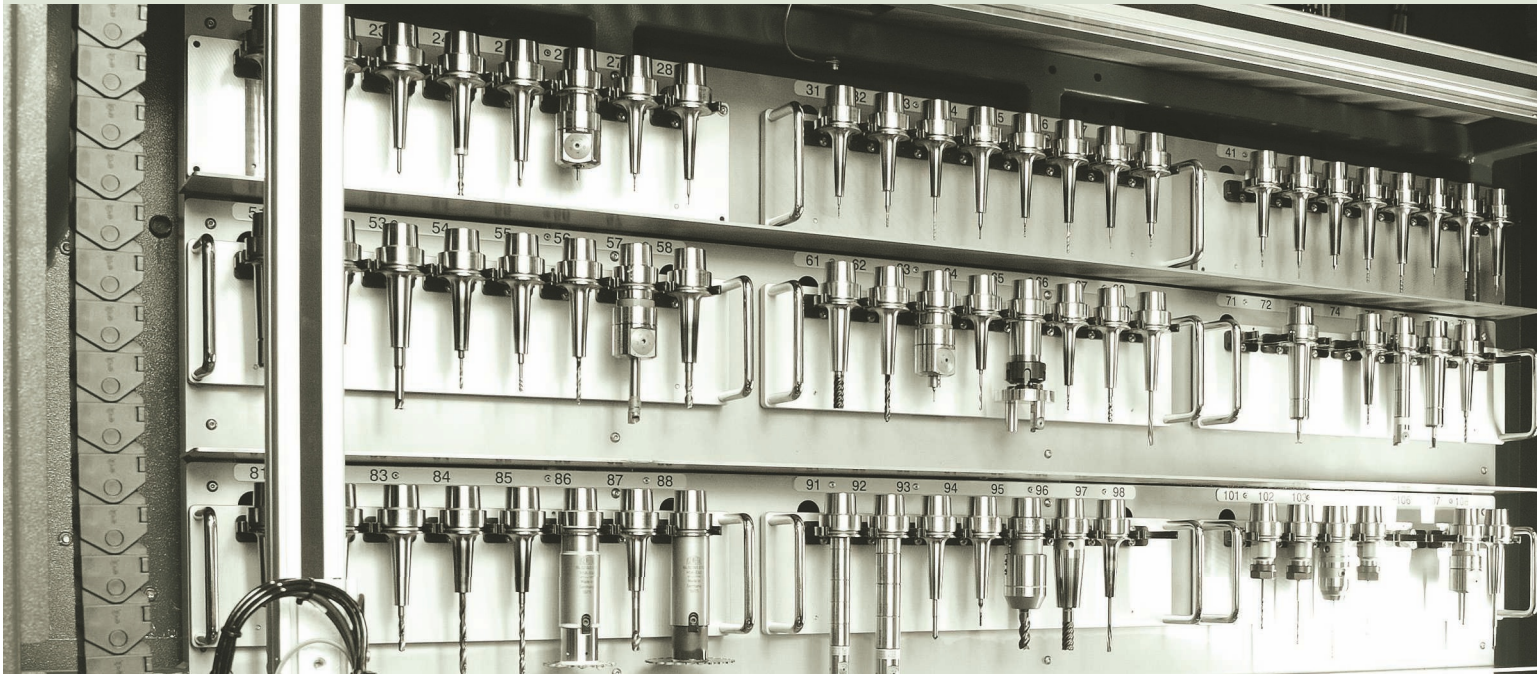
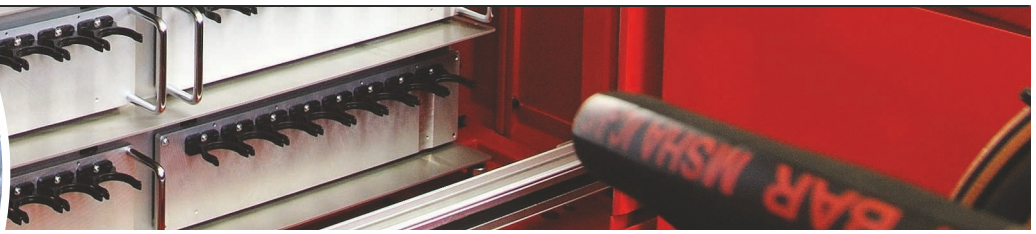
▶ *The Kern Micro tool magazine offers space for 186 tools as standard, thus facilitating automatic production.* ▶





▶ *Werner Buschor, owner of Buschor Präzisionsmechanik, and Stephan Zeller, a sales technician at Kern Microtechnik, regularly exchange optimisation ideas. Buschor is very satisfied with the precision he can now achieve in unmanned operations.* ▶

Another significant advantage of the Kern Micro is its compact design, measuring 2,965 x 3,110 x 1,510 mm (h x w x d). This has been especially important at Buschor Präzisionsmechanik, as there had been little space available at the time the first machine arrived. The ratio of part size to installation area is huge; specifically, the machine allows for part sizes of up to 350 mm in diameter and 50 kg weight, and achieves this in approximately 4 m^2.

Furthermore, despite its compactness, the Kern Micro is highly accessible and affords a clear overview of the entire machining process.

Buschor's investment in the first Kern Micro quickly paid off as new orders came flooding in, so he decided to install a second machine in 2017. Today, the 3R automation system and tool changer are between the two machines, supplying tools to both.

The high process reliability of the Kern Micro is not only important for unmanned operation. Buschor Präzisionsmechanik also manufactures prototype parts in batch sizes of 20 up to 20,000 units, and the two machines are frequently used for these orders. Prototype parts are challenging and especially so if they are complex. It had previously been the case that the company produced the test part, measured it, made corrections, produced it again, measured it and often corrected it again. Using the Kern Micro machines, the first part fits, enabling the company to provide a fast and flexible service.

▶ *Buschor inspects a component on a Leitz high-precision measuring machine.* ▶

Buschor is also an advocate of the service provided by Kern Microtechnik, not only in terms of the Kern Micro machines but the actual manufacturing process. This is because the company itself has a contract production facility in Murnau, Upper Bavaria, that, of course, depends on the efficient running of a number of Kern machines. The facility's machine operators are extremely knowledgeable regarding application capabilities and therefore readily able to advise customers on specific milling tasks.

Kern Microtechnik has also established a service location near Zürich to better serve its customers in Switzerland. From this location, service technicians are able to offer assistance as well as supply spare parts in shorter timeframes. ●

Buschor Präzisionsmechanik
www.wbuschor.ch

Kern Microtechnik
www.kern-microtechnik.com

► *High-quality precision parts produced by Buschor Präzisionsmechanik for the optical industry.* ►