Arbra uses a mixture of manual and automated machining operations. Here, a robot with a gripper system assists with surface treatment of aluminium motorcycle handlebars. Images: SHL

Over time, a significant number of specialists in the fields of machine building and medical technology have settled all around the technology region of Tuttlingen. Particularly in the latter field there are indeed a few large international companies that have specialized in the development and production of surgical instruments and implants made of metal and plastic. Upon closer inspection, however, it is clear that this field consists mainly of small to medium-sized family-owned companies that have been able to establish themselves and their products in this market segment. One of these medium-sized companies is Arbra Oberflächentechnik GmbH, which was founded in 1987 by managing director and shareholder Arnold Bräunlinger. He first began to produce implants and surgical instruments as a sideline business, while still employed full-time as a department manager at a global manufacturer of implants. Due to continuously increasing demand, he soon decided to concentrate solely on growing and expanding his own company.

**Flexibility Is the primary directive**

The tendency of many companies to outsource particular areas of production – such as mechanical surface finishing – due to
now have about 4000 active items that we and polishing increases every day, so that we says, “The range of parts that need grinding a few hundred parts in each lot. Bräunlinger low end, the company now easily processes cal technology have previously been at the little critical,” Bräunlinger explains.

From this aspect, the newly purchased system proved to be a real stroke of luck, as a majority of the system components were carried over directly and were able to be installed again. Additional grinding and polishing stations were also integrated with the system.

Cost advantage with used equipment

The robotic grinding and polishing system installed at Arbra currently consists of two six-axis Kuka robots, model KR30/3, with a maximum payload of 30 kg each, and two FKS 250/450 ROB belt and contact wheel grinding machines from SHL. In addition to the already integrated SHL P550 ROB grinding system, the system included space for two additional SHL model DP550 grinders, with DPE-K 15° tilting/rotating tables. These, however, were not installed until later. In addition, the system was equipped with a PFA 10-600/400 pallet conveyor and positioning system, with adaptation function, also provided by SHL, as well as two sets of ten workpiece pallets measuring 600 x 400 mm. In order to be usable in the automated machining process at all, these pallets had to be specially adapted not only to the two robots, but also to the products to be machined. Each of the two models, each consisting of ten pallets, is designed for two different parts.

Additional equipment on the system includes a base clamping device for vacuum and pneumatic clamping tools for three different parts. Controls and software integration of these additional units followed, along with expansion of the existing guard enclosure. While the SHL robotic system that was purchased back in 2008 is used particularly for processing surgical instruments and implants, the new system is mainly used for challenging automotive applications, such as grinding and polishing aluminum door supports for sports cars, or motorcycle handlebars.

Robots provide relief and expansion

“While in medical technology we generally have smaller volumes, but a wide variety of designs, currently in the automotive field there are seven different parts that are running at increasing volumes,” Arnold Bräunlinger explains. “Despite the support of the robots, however, 70 percent of all workpieces still need to be manually processed. In order to free up our highly qualified grinders and polishers, whom we train ourselves, incidentally, we adjust the automated portion of surface machining upward whenever possible.” Because the Arbra employees work on a 1.5-shift schedule, the company has additional grinding and polishing capacity virtually around the clock. In a company with only 13 workers, however, this rate can be maintained economically only with a high level of automation – that is, robotic technology that can be used flexibly.

At the end of the day, Bräunlinger sees a positive result: “By purchasing a financially attractive used system, we have a mixture of costs that allows us, for example, to turn to manual machining if the workpieces are found to be unsuitable for machine processing. Based on our many years of experience with manual surface machining, as well as expertise in robotic surface machining, this puts us in a position of always being able to provide the customer with the optimal solution.”