Robotics: Investment in the future
The metal products manufacturer WMF in Württemberg has its offices in Geislingen an der Steige. The company was founded in 1853 and sees itself as a supplier of branded products that fulfil the highest expectations with regard to design, quality and usefulness. WMF currently employs approx. 3500 staff members, of which 2000 work at the company headoffice in Geislingen. The company has additional plants in Hayingen and China. WMF AG provides a wide range of products with the focus on tableware and cookware for commercial as well as for private use.

In its pioneering plant, WMF consistently uses robot technology for grinding and polishing processes. Synchronously working robots process lids of pressure cookers and other cooking utensils. The investment in this fully automated system is part of an overall strategy aimed at increasing the competitiveness of the cookware production in Geislingen by using robots.

Grinding and polishing with a six-axis robot

Investment in the future
Previously, the production of pressure cookers and pans was dominated by rotary table systems. As these had become rather maintenance-intensive the company chose to modernise the production of lids. The system concept of SHL Automatisierungstechnik AG, which was implemented for this purpose, is based on four robot cells. The first one consists of a handling robot with a camera system and a grinding aggregate to process the inside of the lid. The three other cells each consist of a handling robot, a grinding aggregate and two double-shaft polishing machines. They are used to mirror-deck the outsides.

The Kuka robots of the type KR 60 are each equipped with an additional axis to enable them to perform the processing of the inside lid with a higher rotation speed. "For the production of these parts on conventional rotary table systems, two separate runs with eight fixtures each had to be set up and performed for inner and outer processing. Production is clearly more economical with the new system," said Helmut Kamitz, production manager at WMF. In contrast with the rotary tables, the new system has the advantage that each robot can perform movements with the various brushing and polishing disks, optimised for the individual lid shapes. In this way, optimal surface treatment can be achieved in a very short time. Reproducibility is assured, as all individual data are stored in the program.

**Polished side up**

The pot lids roll into the system on a conveyor belt. An integrated camera system detects the position and the rotational angle of each lid and forwards the information to the KR 60.
Close cooperation: The Kuka robots work in complete harmony. They handle the transfer of cookware lids from one robot to the next without problems.

Robots take over the grinding and polishing processes that were unpopular among WMF staff.

SHL Automatisierungstechnik provided this turn-key system that fully complies with all expectations.

Background SHL

SHL Automatisierungstechnik was founded in 1989 by the shareholders Seelmann, Häring, Lehr and deals with automated solutions for grinding, brushing, polishing, deburring, palletting, feeding and handling. The company currently has a staff of about 60 at its site in Böttingen and has delivered about 700 robotic SHL grinding and polishing systems and numerous special machines to major companies within the country and abroad. SHL offers a complete service range for the automation of production and linking of the entire production process. State-of-the-art robotics and comprehensive knowledge of surface treatment techniques for metals and numerous other materials provide a solid base for reliable production solutions.
The requirements are defined in a quality level description. Mr. Lehr explained it thus: "These requirements were the basis for our systems planning. We implemented them first in our Technology Centre during a test run."
The KR 60 then puts the freshly polished lids into the turning station that ensures that the lid rests on the conveyor with the polished side upwards. This ensures that it is not scratched on the polished side while it is being transported by the conveyor from the system to a suitable pot.

**Flexibility by robot**

"Our main reason for selecting a systems concept with robots was our desire to be flexible and future-orientated," explained Helmut Kamitz. The shapes of the pots change according to fashion. The system should still be usable after the shape or material of the processed lids has changed. The need for flexibility already became obvious during the implementation phase. Suddenly, there were pressure cooker lids in the product range that required a "mirror polish" on both sides. This was no problem for the automation experts of SHL. "We simply added one more grinding station to the cells of robots two, three and four." When the pot lids of the cookware series "Gourmet Plus" arrive in the system, the machining process is changed and pairs of robots cooperate: One grinds the inner and the other one the outer side of the lid. The acquisition of a state-of-the-art system was also an investment in the future for WMF. "The investment in a new decking and polishing system is part of our overall strategy to ensure the competitiveness of the cookware production in Geislingen in the upper price segment," said Helmut Kamitz. Modernisation promises simpler operation, lower maintenance effort and lower consumption of operating materials as well as higher flexibility that will enable the company to handle rapid changes to new product series in future.

SHL Automatisierungstechnik offered WMF a polished concept that succeeded against the proposals of its competitors. It took approximately two years from the concept and the testing phase, through planning and scheduling, to the initial operation of the system that was provided by SHL as a turn-key system.

Gerd Lehr emphasised that: "During the planning of the system we have taken care to use as many standard components as possible. This applies to the camera, the robots and the polishing devices. In this way, the system will remain extensible, flexible and low on maintenance in future." The system has a central emergency-off function. In addition, every cell can be switched off on its own. This implies that maintenance and exchange of operating materials can be performed in one cell without the need to switch off the other cells. In addition, the noise protection cabins comply with the current noise protection requirements. This provides the staff members at WMF with a pleasant noise environment at their workstations. WMF AG had several reasons to select SHL and Kuka as partners for this project. "One reason was that it improves service, maintenance and also training when we cooperate with a company that is geographically close by," said Helmut Kamitz.

"Kuka robots convinced us, because they are easy to use and have a high availability. In addition, we were already using a few of them in different areas," said the production manager. In addition, SHL impressed with its technical know-how in the form of a turn-key system that provided a comprehensive, total solution for this automation project. The last but not least reason for awarding the contract was the good communication and the smooth cooperation between the two companies.

**Polishing at full speed: The six-axis robots have to work hard to fulfill the quality requirements of WMF.**