

In the welding robots of the company Carl Cloos Schweißtechnik GmbH, the automation technology of Baumüller provides for maximum precision  
| image: Cloos

# COOPERATION FOR MAXIMUM PRECISION

*The use of robotics in industrial production is booming. It enables innovative production processes and is a key technology used for networking in smart factories. As a driver of efficiency, profitability and flexibility, the use of robotics has fully extended from the automobile industry into the entire machine construction sector. Pioneering automation solutions from Baumüller are developed for use in the robotics industry together with the company Carl Cloos Schweißtechnik GmbH. Baumüller provides a secure solution for the remote maintenance of machines and units that does not lessen the benefits of networking.*

In the joint project of Cloos and Baumüller, the six-axis articulated welding robot QIROX QRH-280, the best of two industries were linked with each other: Highly specialized, process engineering expertise paired with pioneering automation solutions. The aim of this collaboration is to expand the innovative leadership in automatic welding technology.

Productivity, quality, flexibility and future reliability – users place these key requirements on solutions in automated welding technology. Baumüller is renowned for its precision drives with exact positioning accuracy for high dynamics and as a result is pre-destined for the robotics industry. The high productivity in the production process is achieved through the enhanced dynamics of the welding robot in order to, for example, particularly quickly and precisely implement the offset of the welding arm when welding components with many spatial movements.



A high-performance control system combined with powerful drives provides for reduced cycle times and thus higher quantities in the complete system from Baumüller. A high repeatability in the welding process is in turn important for ensuring maximum quality. This is why high-precision drive and control technology is used in the complete solution.

Thanks to the open interfaces in hardware and software and a modular setup of the system, the welding robot can be flexibly integrated into existing as well as new production systems. The user benefits from flexible adjustment options in the production process, such as when changing the workpiece. The platform-independent and scalable control system can be expanded for any requirement profile and, thanks to the intelligent networking options, it is ready for the requirements of Industry 4.0.



## SIX-AXIS ARTICULATED WELDING ROBOT QIROX QRH-280

The automation specialist presented the latest cooperation project with the company Cloos at the trade fair for automation and mechatronics, Automatica, in Munich in 2016 for the first time. Visitors were impressed with the exhibit of the six-axis articulated welding robot QIROX QRH-280 and shown in real time how precisely the robot kinematics function with visualization, drive and control engineering from Baumüller.

It uses the full range of Baumüller automatization components: Starting with the Baumüller box PC to the multi-axis controller b maXX 5800 to the DHS motors. The overall system impresses with an extremely high control quality and ten times lower detent torque compared to conventional servomotors. With special robotics software modules from the

'coordinated motion' library, Baumüller also achieves a high level of repeatability, exact positioning and maximum smooth running at the tool center point, which leads to optimum quality weld seams.

The welding robot was specially designed for loads of up to six kilograms and in particular is used in the automated arc welding of small components, such as for agricultural machines or motorcycle frames, especially in compact cells. Customers from the automotive and electrical industry as well as mechanical engineering benefit from the advantages of such welding robots, which work particularly quickly and are highly dynamic. Due to its low mass and small lever arms, the robot achieves high speeds with a simultaneously higher positioning accuracy.

## AUTOMATION COMPONENTS FROM BAUMÜLLER FOR ROBOTICS

- Baumüller box PC uses Skylake CPUs to achieve a higher work performance with a lower energy consumption
- Multi-axis controller b maXX 5800 for controlling up to six drive axes
- DSH motors with a very load detent torque for high-precision applications
- Special robotics software modules from the "Coordinated Motion" library for optimal repeatability, precise positioning and maximum running smoothness at the tool center point, which leads to a very good and constant quality, such as the weld seam.



## PARTNER FOR COMPLETE AUTOMATION

Cloos and Baumüller are embarking into the future together as equal developmental partners. By combining the core competencies of both companies, Cloos offers economical and attractive solutions on the market for automated welding, which give users optimal quality and a high investment and future reliability for their production processes.

### CLOOS + BAUMÜLLER TEAMWORK

The decision by Cloos to implement the new automation concept, including control technology, worldwide in the future in a joint development with its long-term supplier Baumüller resulted from several considerations. Baumüller has a high level of automation and drive expertise. It is an owner-managed company with all of the associated benefits, such as quick decision-making paths, maximum flexibility and innovative capacity with a simultaneous global presence.

In cooperating with Baumüller, Cloos can have a major impact on the required degree of support with respect to the development of software and hardware as well as the application, thus gaining maximum flexibility with simultaneous resource optimization on both sides. Thus a

a key differentiating feature for many companies, the process expertise of the process



|| *The combined innovative power of both companies Cloos and Baumüller helps the end user to gain a significant competitive advantage.*

*Stephan Reiß, Sales Manager Europe Baumüller Nürnberg GmbH*

technology, remains fully in the area of responsibility of the company Cloos.

In addition to these performance features, the user also benefits from additional features that have resulted from the cooperation of two development departments. Thanks to the open interfaces in hardware and software and a modular system set-up, the welding robot can thus be flexibly integrated into existing and new production systems. The platform-independent and scalable control solution also means a high future and investment reliability in times of Industry 4.0 for the customer. The bundled innovative power and highly-specialized procedural expertise of Cloos paired with pioneering automation solutions from Baumüller helps the end user to achieve a significant competitive advantage.

