

## Success Story

### **QIROX RoboScan at Kern Stahl- und Metallbau**

Welding small batches efficiently with the robot

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**HAIGER/GROSSHEIRATH, June 2023** - The family-owned company Ernst Kern GmbH realises both complex industrial projects and private construction projects. The specialists for steel and metal construction have been using a CLOOS welding robot with the QIROX RoboScan programming system in their production since mid-2022. Thanks to the minimum programming effort and the simple operation of the intelligent robot system, the company can weld workpieces automatically in batch size 1. "We decided in favour of the robotic welding system because we wanted to relieve the employees," explains Robert Kern, who leads the company together with his father and sister. "The satisfaction of our employees is an important success factor for us."

### Counteracting the shortage of skilled workers

The company feels the shortage of skilled workers very clearly, also because of the location. Fewer and fewer qualified manual welders are available on the labour market. In order to counteract this development, to better absorb order peaks and to further increase the quality level the company decided to invest in a robot welding system in 2021. "The physically heavy and monotonous tasks can now be taken over by the robot and the operators have more time to concentrate on other demanding tasks and process monitoring," says Kern. "In addition, the general hazard and exposure to arc radiation and welding fumes is less."



Photo 1: The new robot system is used to weld different components for steel and metal construction.

### Quality in focus

With more than 70 employees in Großheirath near Coburg, Kern covers the entire spectrum of steel and metal construction - from planning and design to execution. The core competencies are the design, manufacture and assembly of architecturally sophisticated steel and metal structures for a wide range of applications and customer groups. Kern stands out from the competition in particular due to its high level of quality. With continuous investments in modern machinery, the company wants to further expand its quality lead. Thanks to the precision of the new welding robot, Kern was able to further increase the quality of the weld seams compared to manual welding and at the same time increase the welding speed.

### Automated welding in batch size 1

It is the first robot system for Kern. In the past, automated welding in steel and metal construction was often not worthwhile - due to the high programming effort caused by component tolerances and because of the large variety of products. That is why they decided to use QIROX RoboScan from CLOOS. "We manufacture many different components for our customers," explains Stephan Ilgner, head of steel construction at Kern. "The CLOOS robot with scanner offers maximum flexibility for our welding production."



Photo 2: Kern individually tailors the products to the customers.

### Welding at a touch of the button

First, the operator positions the workpiece on the workstation of the system. A special fixture for loading the workpieces is not required. The scanner mounted on a linear track then scans the work surface of the component and saves the result. The system detects weld seams such as fillet and corner seams as well as butt and lap seams and converts the data stored by the scanner into a 3D model which appears on a screen. The welding program is automatically generated from the comparison of the 3D model with the component geometry stored in QIROX RoboScan. The operator can check the result and, for example, make corrections to the weld seam length or change the welding direction. Then the QIROX RoboScan sends the completely generated program including all welding data to the robot controller. The operator can then start welding simply by pressing a button on the operating monitor.

### Maximum flexibility in single- or two-station operation

Today, the company mainly welds different types of supports and railing modules with the new robot system. Since hardly any component is the same as another and the products are individually tailored to the customers, the robot system must also offer maximum flexibility. For this reason, Kern can use the system in single- or two-station operation, depending on requirements. For long components, the 18 metre long system is used in single-station operation. For smaller and medium-sized components, the partition wall is closed. In two-station operation, the machine can be loaded by the operator on one side while welding takes place on the other side - an enormous time gain for the entire production process.

### Support and Relief

"The robot makes our work easier every day because it takes a lot of physical strain off us," Stephan Hümmer, employee in the welding production at Kern, states happily. "Welding is very strenuous and if you weld for eight hours a day, you are simply exhausted in the evening."

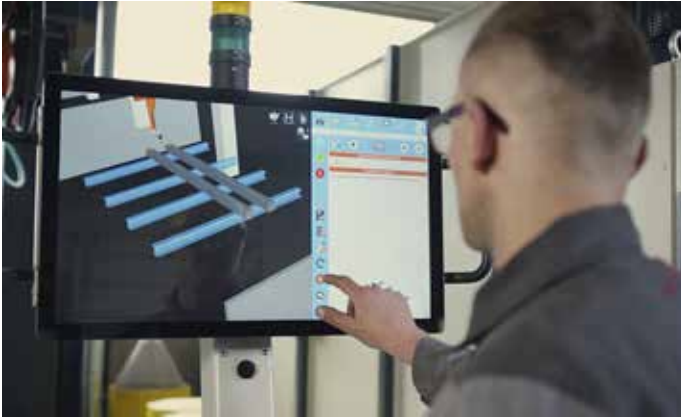


Photo 3: Employees are physically relieved and can concentrate on process monitoring.



Photo 5: The system can be used flexibly in single or two-station operation.

The employees in the welding area were involved in the project from the very beginning. It was their first contact with a welding robot. In order to benefit fully from the innovative technology, they were intensively trained by CLOOS.

"The colleagues attended training courses in Haiger and received strong support from the CLOOS team in setting up the system," explains Ilgner. In the meantime, four employees have been trained to operate the robotic system.

"The database is expanding every day, so we can weld more and more components with the robot," says Hümmer. "Everything is much quicker if we only scan briefly and then weld directly." In that time, we're already preparing the next part again."



Photo 4: The scanner then scans the work surface of the component and detects the weld seams.

### Complete package from a single source

Apart from a portable power source for the construction site, Kern had no contact with CLOOS before the robot project. The company then became aware of QIROX RoboScan through an article in a trade journal. "CLOOS responded to our individual wishes right from the start and offers us all components for automated welding from a single source," emphasises Kern. "The complete package convinced us."



Video on CLOOS TV

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