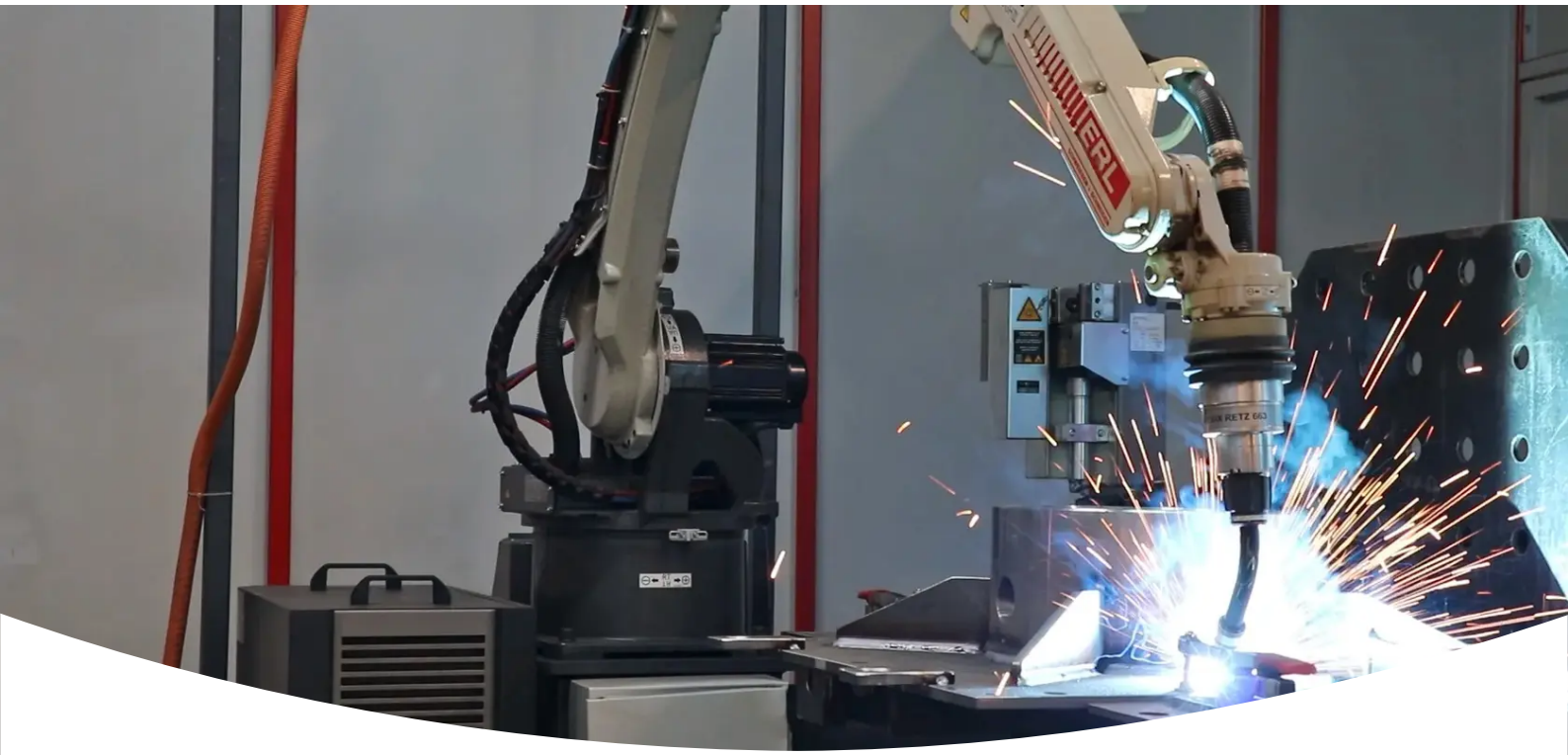
Panasonic CONNECT



CASE STUDY

Technology That Delivers: New Production Opportunities at Hopf GmbH with the ARCentre Welding Robot from Our Partner ERL

The demands placed on the metalworking industry are increasing rapidly. More complex workpieces, growing time pressure and a noticeable shortage of skilled workers are presenting companies with ever greater challenges. Hopf GmbH is addressing these developments by taking a decisive step towards the future, investing consistently in modern automation technology.

In its search for a future-proof solution, Managing Director Engelbert Hopf discovered the right approach at a trade fair. Working together with automation specialist ERL, the company developed a tailored concept to optimize its welding processes: the implementation of a state-of-the-art ARCentre XPERT robotic welding system.

Client: Hopf GmbH
Location: Germany

Product(s) supplied: TAWERS WG3 Arc welding system | TM series

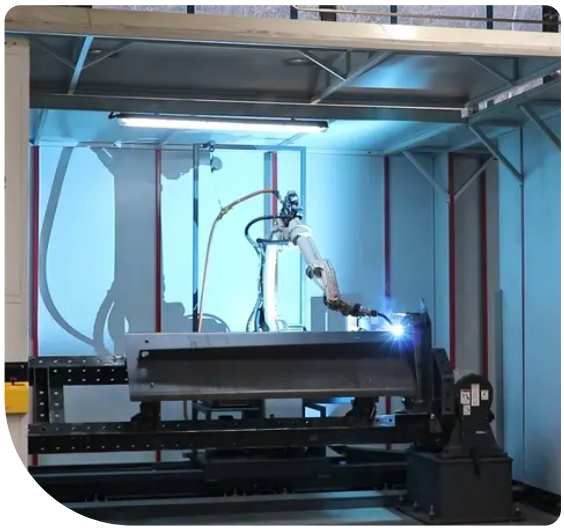
Challenge

The metalworking industry is under increasing pressure. More complex workpieces, tighter production schedules and the continuing shortage of skilled workers are driving the need for more efficient manufacturing solutions.

Solution

A future-proof robotic welding system designed to relieve skilled workers, ensure sustainable process and product quality, and enhance the company's attractiveness as an employer.

Automation at Hopf GmbH



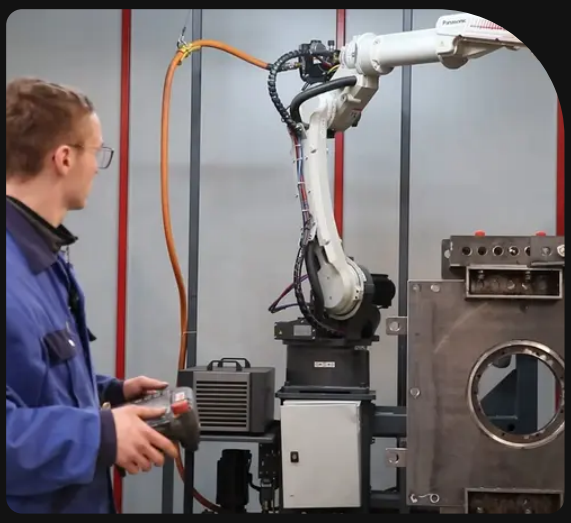
The ARCentre from our partner ERL GmbH performs MIG/MAG welding using standard, pulse and special pulse processes, with a maximum reach of 2,011 mm. In terms of welding technology, the system features an integrated 450 A Panasonic TAWERS welding power source combined with a water-cooled DINSE torch system. The TAWERS system integrates the robot controller and welding power source into a single unit.

At the heart of the new installation is the Panasonic **TM-2000**-**WG3 welding robot**, which enables flexible welding of components on two alternating workstations. Depending on the application, the stations can be configured either as a single-axis rotary positioner for machining long workpieces or as a tilt-rotate positioner for components requiring synchronized positioning during welding. The positioners can accommodate workpieces weighing up to 500 kg and are designed for welding current transmission of up to 500 A. Thanks to the identical arrangement of the positioning units on both stations, welding programs can be copied seamlessly from one station to the other.

To ensure optimum positioning relative to the workpiece, the system is equipped with an almost 8 m long travel track. Integrated into the track are all required utility lines, including power and compressed air, as well as the Rolliner wire feed system.

Reliable wire delivery to the robot is ensured by the Rolliner wire feed system. Its pairs of feed rollers, offset by 90° from one another, guide the welding wire particularly smoothly, ensuring excellent arc stability. At the same time, wear and the associated maintenance requirements are significantly reduced. This also eliminates downtime for wire spool changes, particularly when using 250 kg wire drums positioned outside the system. In addition, the need for a separate wire tender cart is eliminated, reducing both costs and floor space requirements. Another advantage is the integrated quick-change system, which allows operators to switch between drum and basket spool holders without tools, enabling special filler materials to be processed on the robot quickly and flexibly.

The system also features an automatic torch cleaning station to ensure a smooth welding process. Its integrated reamer reliably removes weld spatter from the nozzle before anti-spatter agent is automatically applied. This maintains consistently high weld quality while significantly reducing unplanned downtime. In addition, the integrated water cooling system provides fast and reliable control of the torch coolant temperature, protecting wear parts and significantly extending their service life.



Greater Precision, Less Downtime

To provide optimum conditions for offline programming and enable access to confined component geometries, the system is equipped with a DINSE T.Connector hollow-shaft assembly. The highly torsion-resistant hose package offers exceptionally low wear, a long service life and extended maintenance intervals.

Thanks to its compact design and 260° rotation on both sides of the robot's sixth axis, the T.Connector HW reduces contour welding times while providing excellent access to the workpiece. Equipped with the METZ 574 pistol grip torch head, which offers a 100% duty cycle at 500 A, the system can easily handle long, high-amperage welds. The exceptionally robust and durable torch ensures consistently outstanding welding results.

To ensure the correct Tool Center Point (TCP) at all times and provide the optimum basis for program execution, the system is supplied with a precision alignment gauge that allows operators to adjust the pistol grip torch head quickly and accurately. Both the gas nozzle seat and the contact tip holder can be aligned with precision.

The TCP is automatically verified at regular intervals using the TCP Scout. If any deviation is detected, the system stops automatically to prevent the production of defective parts. This ensures consistently high weld quality with a repeatability of ±0.1 mm, regardless of external influences.

The robotic welding system is also equipped with TouchSensor and ARCSensor technologies. The TouchSensor automatically applies three-dimensional program offsets whenever workpieces exhibit significant dimensional tolerances. A dedicated subroutine enables the robot to locate the workpiece in the X, Y and Z axes using the gas nozzle before initiating the welding process with corrected positional data.

The ARCSensor automatically compensates for deviations such as workpiece tolerances or thermal distortion during welding by continuously monitoring changes in the welding current throughout the welding process.

The result is maximum flexibility combined with minimal setup effort. Thanks to the tilt-rotate positioner and the robot's optimum positioning, workpieces can be welded completely without the need for repositioning.

"What is particularly impressive is the consistently high quality. Even the slightest movement or hand tremor during manual welding can affect the weld seam, whereas the robot delivers precise and consistent results every time."

Reliable Welding Processes Thanks to Automated Peripheral Equipment and Fume Extraction

The production workflow has also been fundamentally redesigned. While the robot carries out the welding process, components for subsequent operations can be prepared simultaneously.

As a result, downtime is significantly reduced and productivity is noticeably increased. At the same time, the system takes over physically demanding tasks such as the precise positioning of workpieces, providing valuable relief for the operating team.

In addition to efficiency, safety plays a key role. A fully enclosed work area, modern light curtain systems and an automatic fume extraction system ensure a safe and clean working environment. The large extraction hood covers the robot's entire working envelope and reliably captures welding fumes at the source. The extracted air is then cleaned by a central extraction and filtration system.

To enable optimum crane loading, the extraction hoods automatically move to a parking position after the welding process and return over the workpiece again when the welding program is started.

Process Optimization Through Offline Programming

Another major advantage of the system is the digital preparation of production processes. Using the Panasonic DTPS offline programming system, welding operations can be simulated and optimized in a realistic virtual environment before production begins.

This includes accessibility checks, collision monitoring, and the analysis of welding and cycle times. As a result, production sequences can be coordinated in advance, ensuring a smooth and efficient production start-up.

Compared with manual welding, the robotic system operates far more efficiently. In addition to higher welding speeds, the powered auxiliary axes contribute significantly to improved workpiece handling and shorter process times. With its investment in the new ERL system, Hopf GmbH is making a deliberate commitment to future-oriented manufacturing technologies. The objective is not to replace skilled workers, but to support them by reducing their workload, ensuring sustainable process and product quality, and strengthening the company's long-term competitiveness.

"Since commissioning the ARCentre in 2024, our productivity has increased significantly. Repeat production jobs are particularly well suited to the system, as they can be manufactured very quickly with minimal work preparation and programming effort"

Engelbert Hopf
Managing Director
Hopf GmbH

www.youtube.com/watch?v=7RxOMI1Yhz4 eu.connect.panasonic.com/gb/en/support/contact-us

© 2026 Panasonic Connect.