



# Robotic Welding

Intelligent solutions



to unleash your  
welding potential

# Focus on the Future



Intelligent robotic welding systems from a single source—  
flexible, user friendly, and cost-effective

Robotic welding is a worthwhile investment. And not just in series production!

The industry is undergoing increasing transformation, and so too is welding. Until recently, what would have been welded manually is now welded automatically. There are many reasons for this transition. More and more companies are demanding both consistent, high welding quality that can be reproduced at any time, and full documentation of all welding parameters. Ever-tightening safety standards and a chronic shortage of skilled workers are also impacting the situation. Meanwhile, robotic welding solutions are becoming increasingly intelligent, more collaborative, and highly cost-effective for small and medium-sized companies too. This is thanks to offline programming, system autonomy, and extremely fast set-up times from batch sizes of 1. Robotic welding offers optimal solutions to unleash your welding potential.

# Your Benefits



Solution provider

When designing robotic welding cells, we always consider all processes, from optimal component handling through to an efficient welding process. We also integrate the latest arc technology and sensors into our systems, providing a competitive edge for our customers.



Seamless documentation of welding data

WeldCube Premium, our full-featured welding data management software, documents all the relevant parameters from the welding process. Each individual weld can be traced down to the last detail and can be reproduced at any time.



Simulation ensures reliability

Fronius Pathfinder® enables the simulation of welding sequences on the digital twin of the welding system. The software identifies axis limits, calculates start points, end points and journeys, and sets teaching points independently. Obstacles can be visualized and welding torch positions corrected on time, before the first weld is made.



Extremely fast set-up times

Customers who opt for our offline Pathfinder® programming software avoid lengthy set-up times and downtimes. The software significantly reduces the time-consuming process of teaching the robots. Programming is offline, away from welding cells, so welding work can continue undisturbed.



# One Platform

## as a Basis

### Welding Technology

- Welding tests in the technology and prototype center
- Smart integration of the Fronius arc technology
- Modern sensors for guiding and checking welds

### Individual Design

- Engineering and feasibility studies
- Modular system with standardized modules
- Simulation of all welding processes
- Component-specific storage and clamping systems

### Intelligent Software

- Visual Components engineering software
- Fronius Pathfinder® simulation software
- HMI-T21 RS system controls
- Robot control



The platform is at the heart of our engineering process. We define it as an intelligent matrix comprised of technical development, project management, technology, partnerships, and service. In the process, we always keep an eye on the needs of our customers, creating a common denominator for the perfect welding process, user comfort, sustainability, and cost-effectiveness.



### Project Management

- Methodical procedure (planning and organization)
- Transparent communication
- Reliable contact person

### Comprehensive Service

- Commissioning with user training
- Remote maintenance, on-site maintenance, and regular calibration
- International service network

### Technology Partnerships

- Strong partnerships for software, robotics, control, and jig manufacturing
- Professional supplier management

# One determines the other.

## Customer-specific welding systems with standardized modules

Our customers' requirements are component-specific and varied. No two robotic welding systems are alike in every detail. However, if we were to constantly reinvent the wheel, then system reliability and cost-effectiveness would suffer. With this in mind, we use a modular system of reliable components from reputable technology partners when engineering and assembling our systems.

### Handling Robot

- Range and model depending on application
- Load capacities of 27–1,543 lbs
- Extreme repeatability

### Welding Torch Systems and Service Station

- Tailored to the welding process
- TCP measurement
- Torch cleaning
- Torch replacement
- Contact tip replacement

### Welding Robots

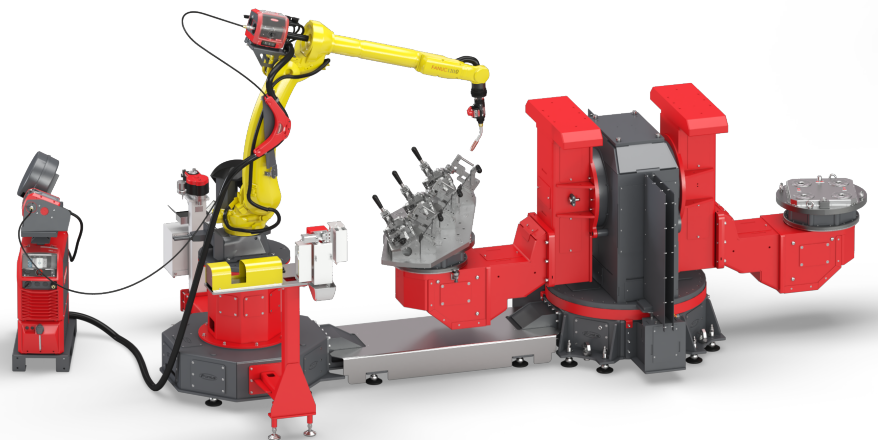
- Six-axis articulated robot with hollow shaft
- High stability and repeatability
- Load capacity and range depending on the application
- Extreme repeatability

### Robot Track

- Track with robot base
- Various C-frames
- Platform for welding equipment
- Track length can be extended

### Positioner

- Different configurations and sizes
- Turn/tilt positioner
- Turnover positioner
- Heavy-duty positioner



Our

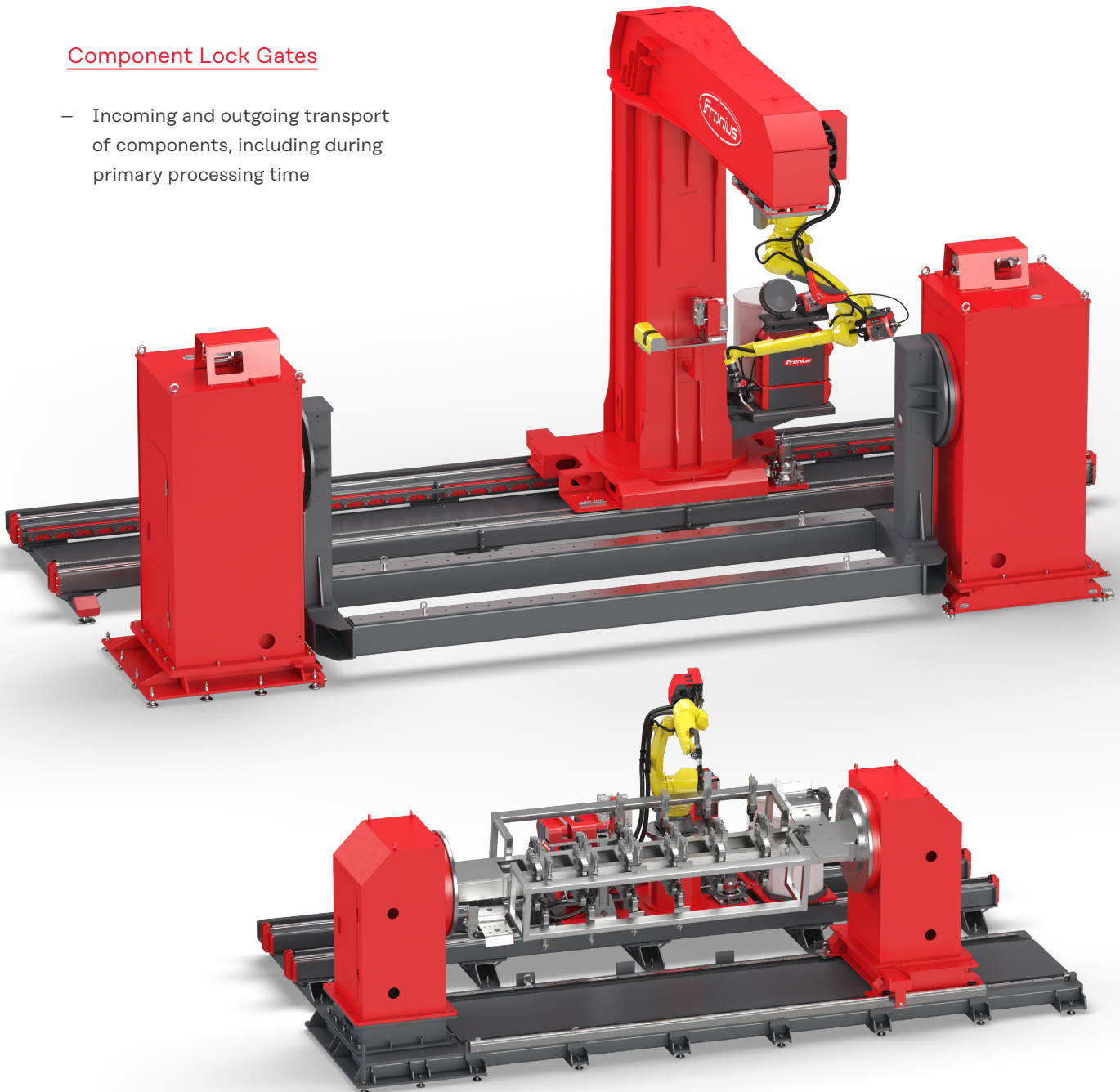
modular sy

### Fully Automated Picking and Changeover System for:

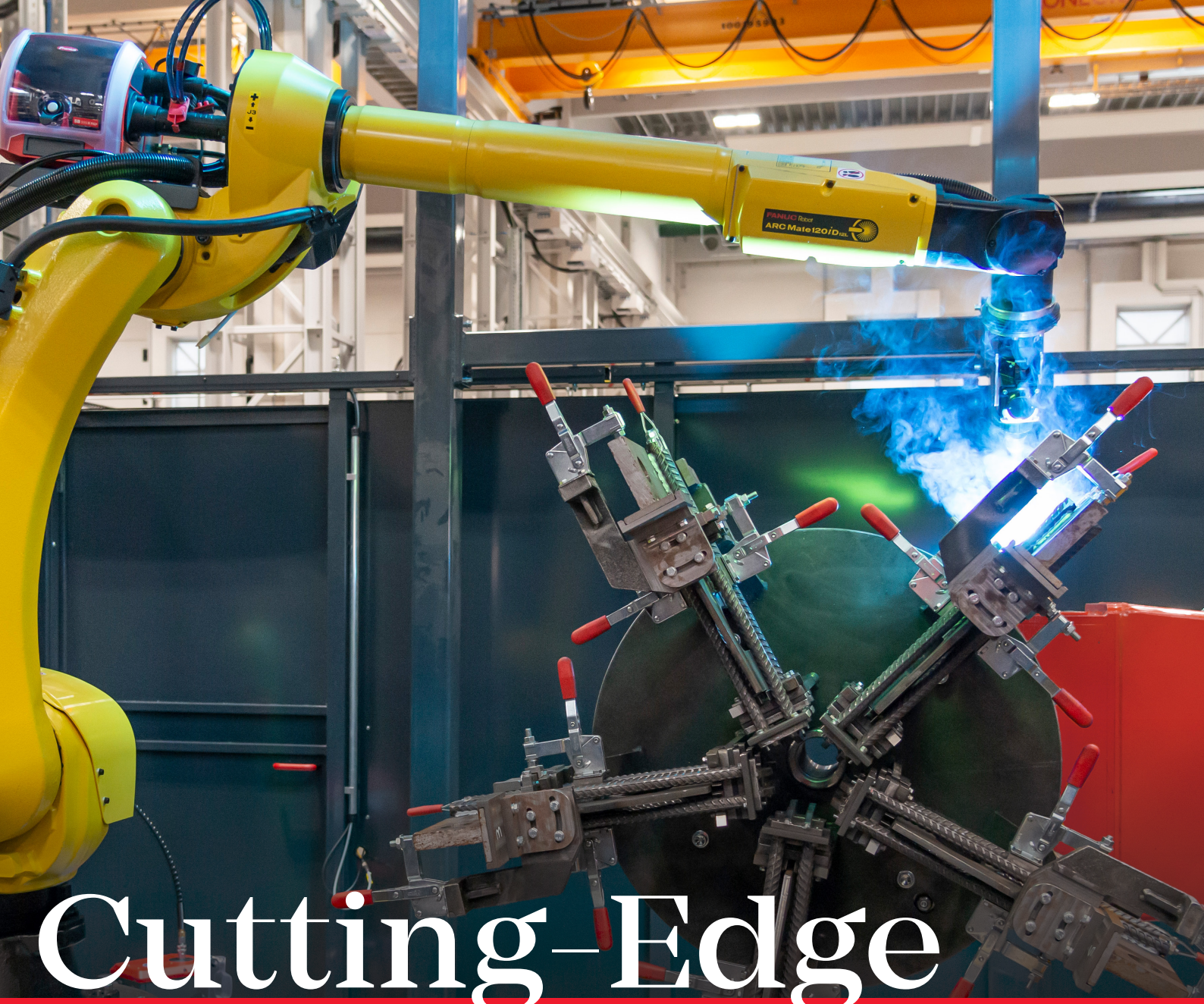
- Different components (geometry, size, and weight)
- Different welding processes (MIG/MAG, TIG, TWIN, etc.)
- Various manipulation processes (preheating, cleaning, etc.)

### Component Lock Gates

- Incoming and outgoing transport of components, including during primary processing time



# system



# Cutting-Edge

Technology







## Welding Processes

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We choose the right welding process depending on the component, material, and quality requirements. MIG/MAG, TIG hot wire and cold wire, ArcTig (keyhole welding), plasma, and LaserHybrid are available. Our high-tech processes such as CMT (Cold Metal Transfer), PMC (Pulse Multi Control), and LSC (Low Spatter Control) optimize welding quality and cost-effectiveness.

## HMI-T21 RS System Controls

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When in use, all our robotic welding systems monitor and coordinate all components such as robots, the welding system, positioners, changeover, and shelving systems, as well as torch cleaning. They also visualize all processes in real time. Other highlights include the program editor for defining all program processes and the three-dimensional real-time visualization.

## Fronius Pathfinder®

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The software provides a range of functions for creating and simulating welding sequences. Highlights include: Autoseam—the automatic generation and management of welds along a track, multirun welding, or weld tracking with gas nozzle. Quality control and WPS (Welding Procedure Specification) are also integrated.

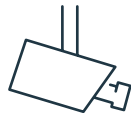




# Maximum productivity

# Faster, more accurate welding

with assist systems



## Visual Arc Monitoring

Our ArcView 2 high-resolution camera system provides a live view of the arc and therefore direct monitoring of the weld pool. If weld errors occur, welders can respond immediately.



## Automatic Replacement of Contact Tips

Manual replacement of contact tips is time consuming and disrupts production. The Robacta CTC automates this work step. Replacement takes no more than 40 seconds which is up to ten times faster than manual replacement.



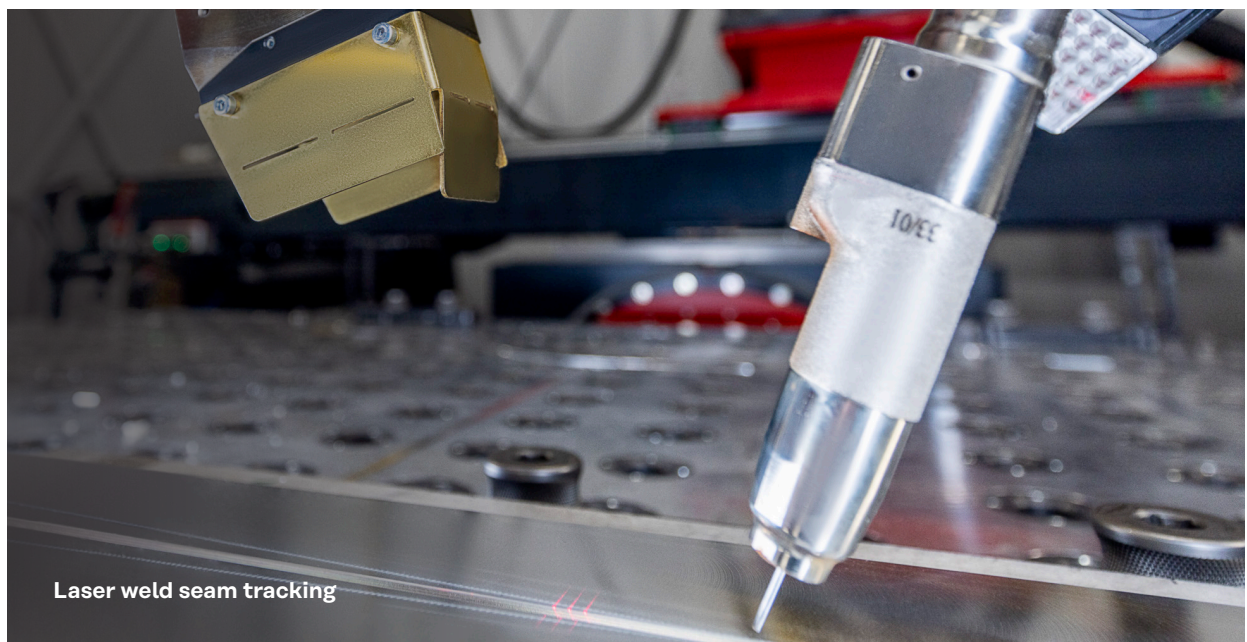
## Sensors for Increased Efficiency

SeamTracking automatically offsets weld deviations and TouchSense enables the robot to determine positions for offsetting component tolerances. WireSense measures these tolerances and sends them directly to the robot. Our sensors reduce welding errors, rework and wastage, and directly increase the cost-effectiveness of our robotic welding systems.



## Automatic Wire Change

Our WireSwitch system can be used to weld two different wires alternately on one welding system. If a component is welded with two different filler metals, automatic wire change is possible within just a few seconds. The WireSwitch technology significantly reduces downtimes.



Laser weld seam tracking



# Customized

modular solutions



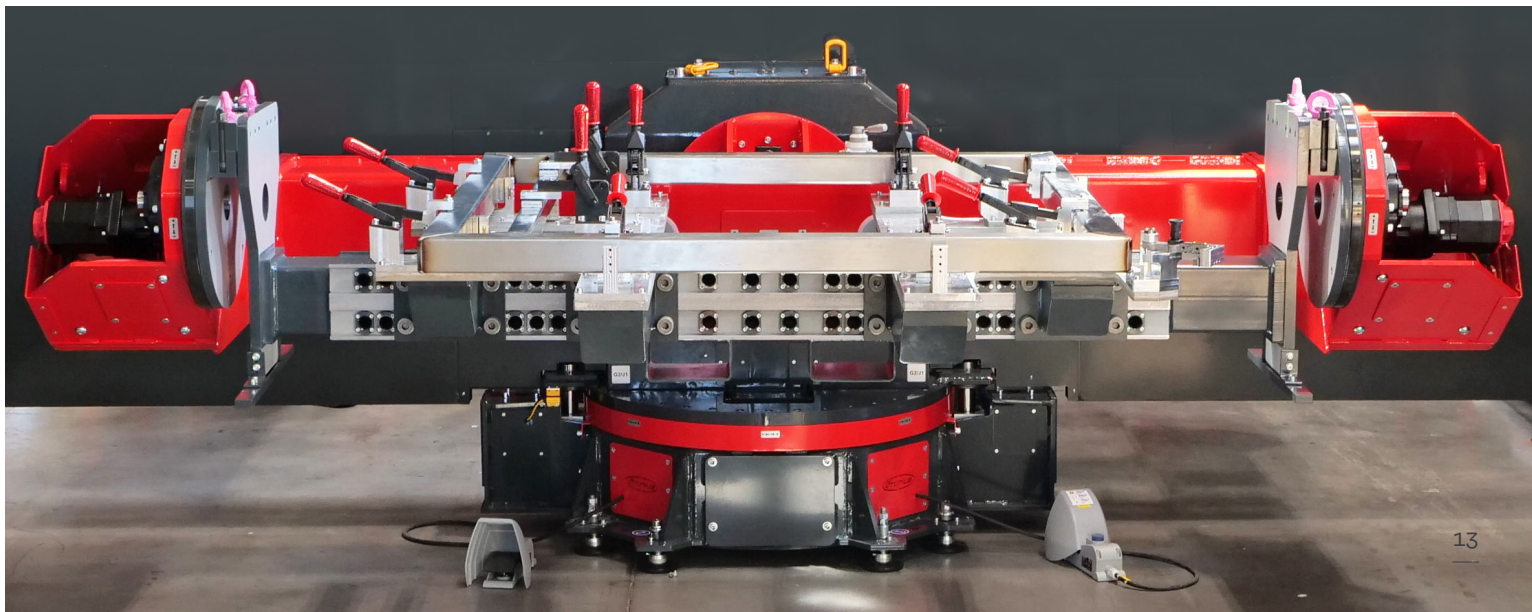
© Fr. Marija Kanizaj

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The shortage of skilled workers and ever-increasing unit quantities call for new solutions in production. The robotic welding cell from Fronius represents a huge step towards automation of our manufacturing. If we were to weld our process sensors manually like before, we would encounter huge difficulties achieving the planned quantities in the coming years.

Dominik Santner, COO Anton Paar GmbH

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# Perfect

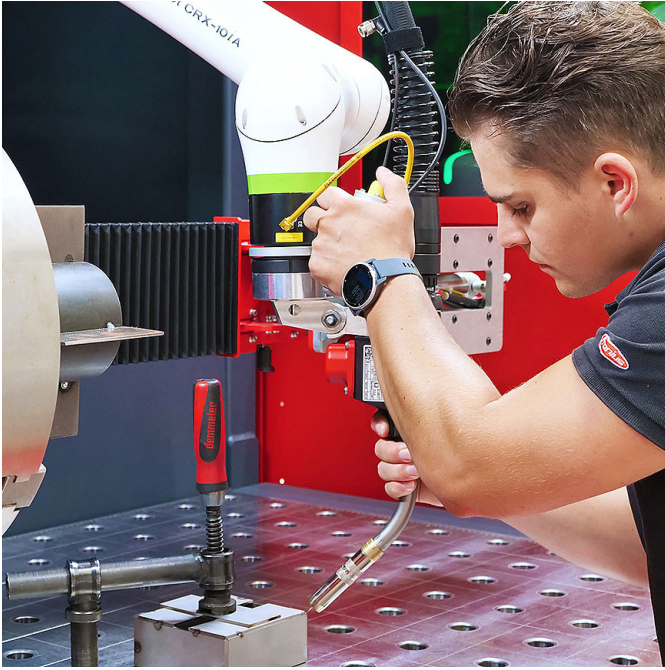
## for beginners

Thanks to the enormous flexibility when welding different components, the CWC-S offers the best conditions for cost-effective welding. Precise weld torch movements produce high-quality, reproducible welds at any time; from batch sizes of 1 up to small-scale production. Operation can be learned in just a few hours as no programming skills are required. Trainees can operate the CWC-S in no time at all and significantly reduce the workload of your welding specialists. Protective cabin and welding fume extraction ensure safety. Rotary unit and high-tech welding packages are available as options.



## Setting weld paths

# Simple and user-friendly



### Guide & Press

It couldn't be simpler: Guide welding torches onto the start, contour, and end points of the desired welds, and press the confirmation button on the control handle. All points are then automatically copied over to the welding program.



### Drag & Drop

It's just as easy with the tablet. Simply drag symbols such as Handle Teach, Basic Arc, or Basic Wave into the desired position in the graphic programming interface.

For further information visit  
[www.fronius.com](http://www.fronius.com)



# Sustainable Welding



## Our Systems Protect People and Resources.

For us, sustainability means designing the entire workflow through to the finished weld so that it protects people and conserves resources. When engineering our welding systems, we ensure the greatest possible energy efficiency, as well as economical consumption of shielding gas and filler metal.

We minimize rework by making targeted use of our innovative arc technology. We design each individual system to be robust and durable, and equip it with the latest safety technology. We provide enclosures, light grids, and secured doors to protect people against injury.

## Unleash your welding potential

Our mission is to unleash the welding potential of our customers. As an innovation leader for arc welding and the global market leader in robot-assisted welding, we create cutting-edge, profitable welding solutions that are inspired by our sustainable way of thinking. We often have long-standing relationships with our customers. We understand their challenges and perspectives and keep them in focus with our global on-site service. We listen, understand, and thereby shape the way the welding industry thinks. Our strengths lie in combining our customers' knowledge with our expertise, which allows them to unleash their full welding potential.

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