



## QIROX Compact cells

Your customised solution for  
automated small part welding

**CLOOS**

Weld your way.

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## Advantages for increased productivity

In order to achieve optimum and economic welding of any workpiece, CLOOS has developed an extensive range of compact cells. They do not require much space and can be easily integrated into any production. From sensors to controller each compact cell or compact system is a tailor-made unit with components which match each other perfectly. With their large variety of welding processes, extensive options and complementary services, CLOOS can offer you the perfect solution for all requirements of automated series production.



- **Compact:** Just integrate the cells into your production – the compact design facilitates transportation and saves production area.
- **Plug & Weld:** Benefit from simplified installation and maintenance – our compact cells are available ready to weld and are completely pre-installed.
- **Flexible:** Use the compact cells for numerous applications and realise individual extensions and retrofits at any time – the modular design makes it possible.
- **Premium quality:** Get the best weld quality – with innovative welding processes and the optimally matched QINEO welding equipment.
- **Powerful:** Achieve a fast payback due to the high productivity with an optimal price-performance ratio – the compact cells are characterised by the highest duty cycle.
- **User-friendly:** Use our comfortable operating panels - we guarantee easy, precise and intuitive handling.
- **Reliable:** Trust in "Made in Germany" – as technology leader we guarantee maximum performance in proven CLOOS quality.

## Modular design creates a multitude of possibilities

Our QIROX Compact cells have a modular design which makes it possible to add individual enhancements and upgrades – easily, quickly and with minimum expenditure. Thus you can upgrade your QR-CC-1, for example, to a more efficient QR-CC-4 at any time. Benefit from a maximum production flexibility!





## Compact cell CC1

Page 6

Premium compact cell with manual two-station positioner with horizontal station change and a clamping plate for 1.25 kN component weight per station



## Compact cell CC2

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Premium compact cell with manual two-station positioner with horizontal station change and a rotational positioner for 1.25 kN component weight per station



## Compact cell CC3

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Premium compact cell with two working stations and a workpiece positioner with turning and tilting movement for 2.5 kN component weight per station



## Compact cell CC4

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Premium compact cell with two-station positioner with vertical station change, workpiece positioner with vertical rotation and counter bearing for 5 kN component weight per station



## Compact cell CC5

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Premium compact cell with two-station positioner with horizontal station change and a clamping plate for 2.5 kN component weight per station



## Compact cell CC6

Page 11

Premium compact cell with two 5 kN positioner with horizontal station change, workpiece positioner with turning and swivelling movement for 5 kN component weight per station

## QIROX QR-CC-1 Compact cell

**"Ready to weld" system for welding small parts up to a weight of 1.25 kN**

The powerful compact cell QR-CC-1 offers you an easy entry into automated welding of small parts that can be welded without component movement. It has a manual two-station turning table and the station change is carried out by a horizontal rotation. A pneumatic indexing fixes the turning table and ensures repeatable positioning of the components to be welded.

### Features:

- Manual rotary positioner
- Standard system bore holes (with either 22 or 28 mm diameter) on the faceplate
- Option: automated station change (semi-automatic) without additional safety technology

### Technical data

Load	1.25 kN	Rotating speed	-
Clamping length	-	Cycle time	Manual rotary table
Free-turning radius	-	Inserting height	950 mm
Torque	-	Max. component size Clamping plate	1400 x 750 mm
Overturning moment	-	Safety technology	
Swing torque	-	System size [LxWxH]	4400 x 2200 x 2200 mm
Mass moment of inertia	-	Cell weight	max. 2500 kg
System bore holes	Faceplate Ø22 or Ø28		



## QIROX QR-CC-2 Compact cell

**"Ready to weld" system for welding small parts up to a weight of 1.25 kN**

The powerful compact cell QR-CC-2 offers you an easy entry into automated welding of small parts that can be welded with a rotating movement. It has a manual two-station turning table and the station change is carried out by a horizontal rotation. A pneumatic indexing fixes the turning table and ensures repeatable positioning of the components to be welded. The clamping tools for holding the components can be easily mounted on the faceplates of the positioners.

### Features:

- Manual rotary positioner
- Assembly of the rotary positioner either in horizontal, diagonal or vertical position
- Option: automated station change (semi-automatic) without additional safety technology
- Option: Equipment of a station with faceplate with system bore holes (optionally with 22 or 28 mm bore holes)

### Technical data

Load	1.25 kN	Rotating speed	150 °/sec
Clamping length	-	Cycle time	Manual rotary table
Free-turning radius	400 mm	Inserting height	940 mm
Torque	150 Nm	Max. component size Clamping plate	Ø 800 x 800 mm
Overturning moment	750 Nm	Safety technology	
Swing torque	-	System size [LxWxH]	4400 x 2200 x 2200 mm
Mass moment of inertia	30 kgm <sup>2</sup>	Cell weight	max. 2500 kg



## QIROX QR-CC-3 Compact cell

**"Ready to weld" system for welding small parts up to a weight of 2.5 kN**

The powerful compact cell QR-CC-3 offers an easy entry into automated welding of complex small parts that must be welded or positioned with a turning and tilting movement. It has two adjacent stations. The clamping tools for holding the components can be easily mounted on the faceplates of the positioners. The turning and tilting movement allows the component to be positioned in an optimal position for welding. The movements of the robot and positioning axes work synchronously, enable the welding of contour seams and guarantee excellent weld seam quality.

### Features:

- One turn-tilt positioner per station
- Very little floor space
- Welding of compact, cubic workpieces
- Quick station change



### Technical data

Load	2.5 kN	Rotating speed	130 °/sec
Clamping length	-	Cycle time	manual sliding gate
Free-turning radius	400 mm	Inserting height	900 mm
Torque	250 Nm	Max. component size Clamping plate	Ø 800 x 800 mm
Overturning moment	-	Safety technology	manual sliding gate
Swing torque	-	System size [LxWxH]	3600 x 2200 x 2200 mm
Mass moment of inertia	40 kgm <sup>2</sup>	Cell weight	max. 3000 kg





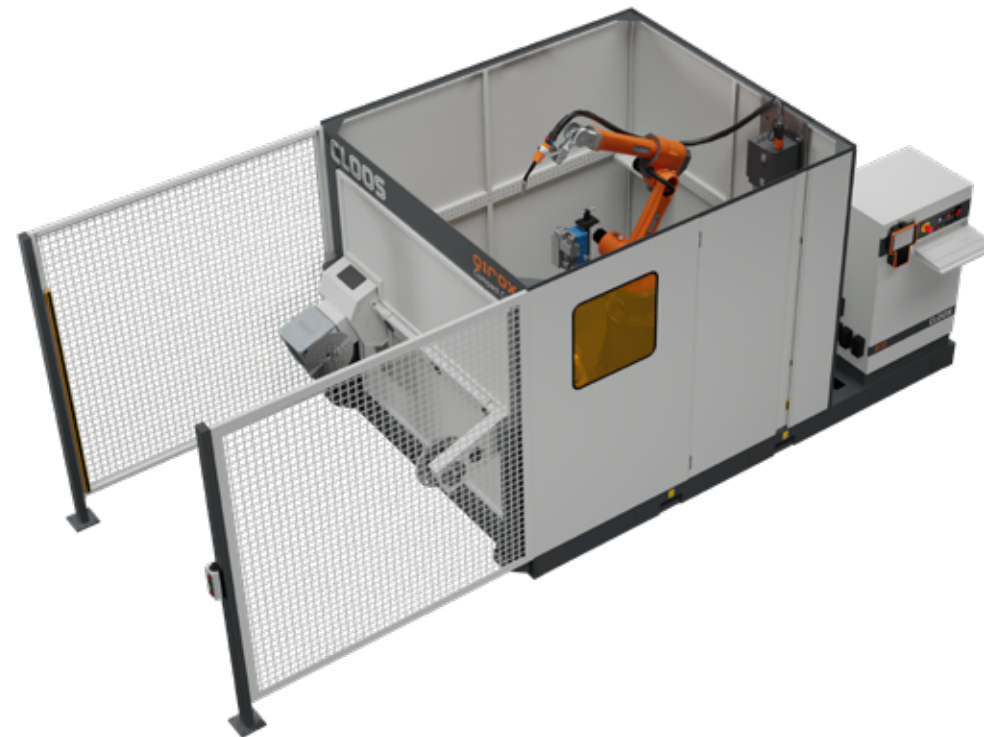
## QIROX QR-CC-4 Compact cell

"Ready to weld" system for welding small parts up to a weight of 5 kN

The powerful compact cell QR-CC-4 offers you an easy entry into automated welding of elongated small parts that must be welded or positioned with a vertical rotating movement. It has a two-station turning table and the station change is carried out by a vertical rotation. The movements of the robot and positioning axes work synchronously and enable the welding of contour seams and guarantee excellent weld seam quality.

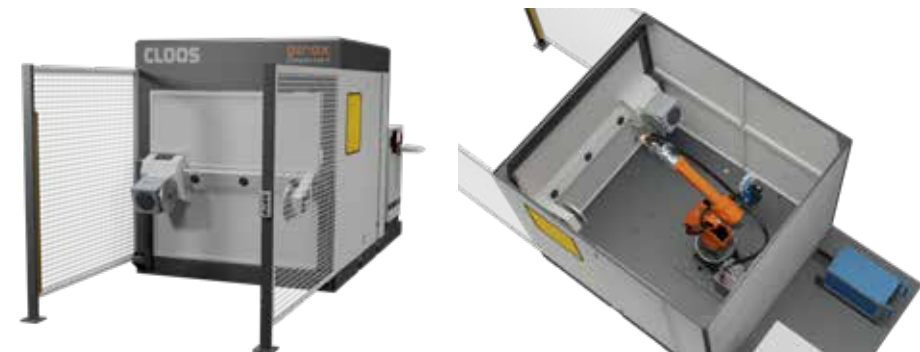
### Features:

- One rotary positioner with counter bearing per station
- Cylindric workpieces with a clamping length of up to 2,000 mm
- Quick station change
- Easy tool change
- High rotation speed allows welding of pipes with small radii



### Technical data

Load	2.5 / 5 kN	Rotating speed	120 °/sec
Clamping length	1250 - 2000 mm	Cycle time	2.5 kN=3 sec/180° 5 kN=4 sec/180°
Free-turning radius	400 mm	Inserting height	925 mm
Torque	250 Nm	Max. component size Clamping plate	Ø 800 x 1250 - 2000 mm
Overturning moment	950 Nm	Safety technology	Light barriers
Swing torque	1000/1600 Nm	System size [LxWxH]	5700 x 2200-2950 x 2200 mm
Mass moment of inertia	40 kgm²	Cell weight	max. 4000 kg



## QIROX QR-CC-5 Compact cell

"Ready to weld" system for welding small parts up to a weight of 2.5 kN

The powerful compact cell QR-CC-5 offers an easy entry into automated welding of small parts that can be welded without component movement. The compact cell QR-CC-5 has a two-station turning table and the station change is carried out by a horizontal rotation. The clamping tools for holding the components can be easily mounted on the faceplate of the positioner.

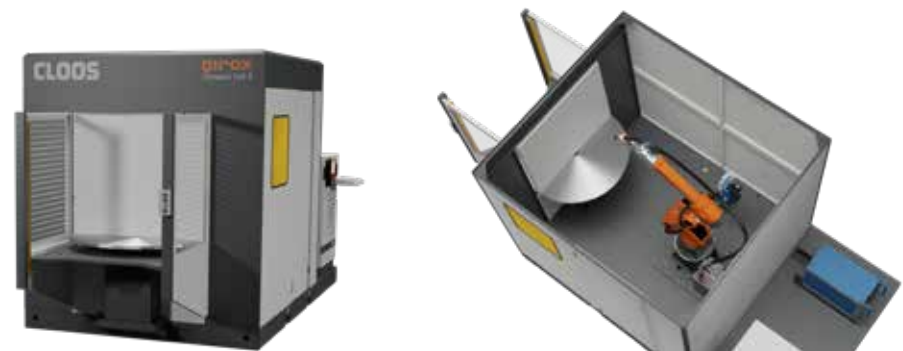
### Features:

- Automatic horizontal turning table
- Quick station change
- Option: Standard system bore holes on (22/28 diameter) faceplate



### Technical data

Load	2.5 kN	Rotating speed	120 °/sec
Clamping length	-	Cycle time	3 sec 180°
Free-turning radius	-	Inserting height	900 mm
Torque	-	Max. component size	Ø 1200 mm
Overturning moment	-	Clamping plate	semicircle per station
Swing torque	-	Safety technology	Light barriers
Mass moment of inertia	550 kgm <sup>2</sup>	System size [LxWxH]	4600 x 2200 x 2200 mm
		Cell weight	max. 3000 kg



## QIROX QR-CC-6 Compact cell

**"Ready to weld" system for welding small parts up to a weight of 5 kN**

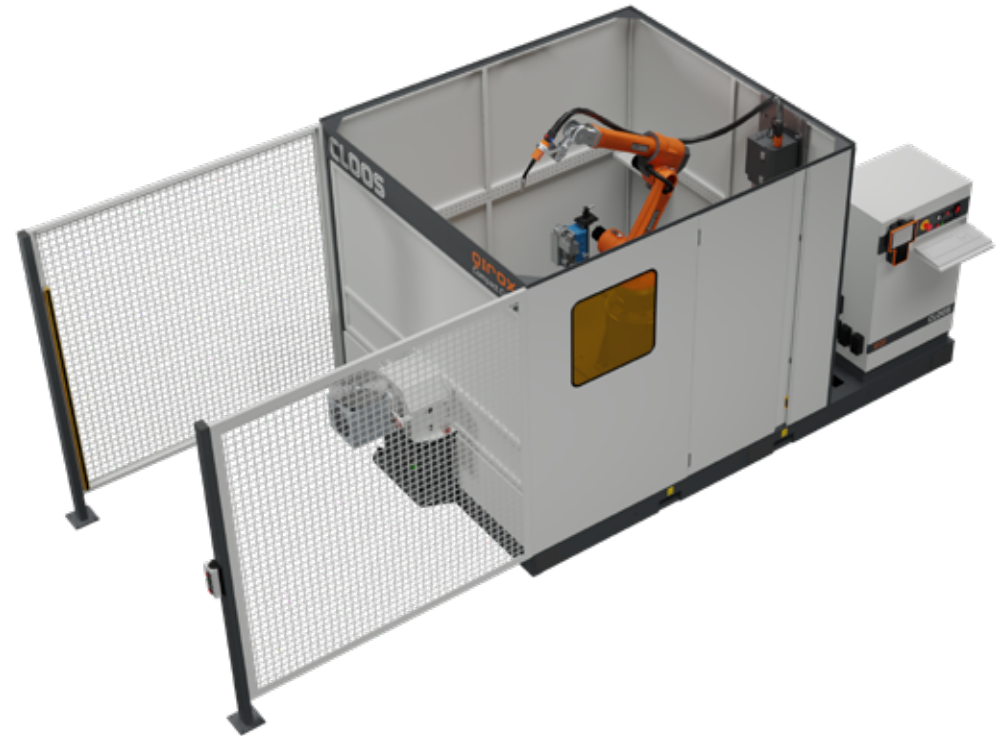
The powerful compact cell QR-CC-6 offers an entry into automated welding of complex small parts that must be welded or positioned with a turning and swivelling movement. It has a two-station turning table and the station change is carried out by a horizontal rotation. The clamping tools for holding the components can be easily mounted on the faceplates of the positioners. The movements of the robot and positioning axes work synchronously and guarantee excellent weld seam quality.

### Features:

- Quick station change
- High rotating speed of the positioners allows welding of contours on complex cubic workpieces

### Technical data

Load	2.5 / 5 kN	Rotating speed	2.5 kN=130°/sec 5 kN=120°/sec
Clamping length	-	Cycle time	2.5 kN=3 sec/180° 5 kN=4 sec/180°
Free-turning radius	500/625 mm	Inserting height	1050 mm
Torque	2.5 kN-250 Nm 5 kN-1000 Nm	Max. component size Clamping plate	2.5 kN=1000/1250 mm 5 kN=1000 mm
Overturning moment	2.5 kN-950 Nm 5 kN-2450 Nm	Safety technology	Light barriers
Swing torque	2.5 kN-1000 Nm 5 kN-1600 Nm	System size [LxWxH]	5700 x 2200-2950 x 2200 mm
Mass moment of inertia	2.5 kN-40 kgm <sup>2</sup> 5 kN-150 kgm <sup>2</sup>	Cell weight	max. 4000 kg

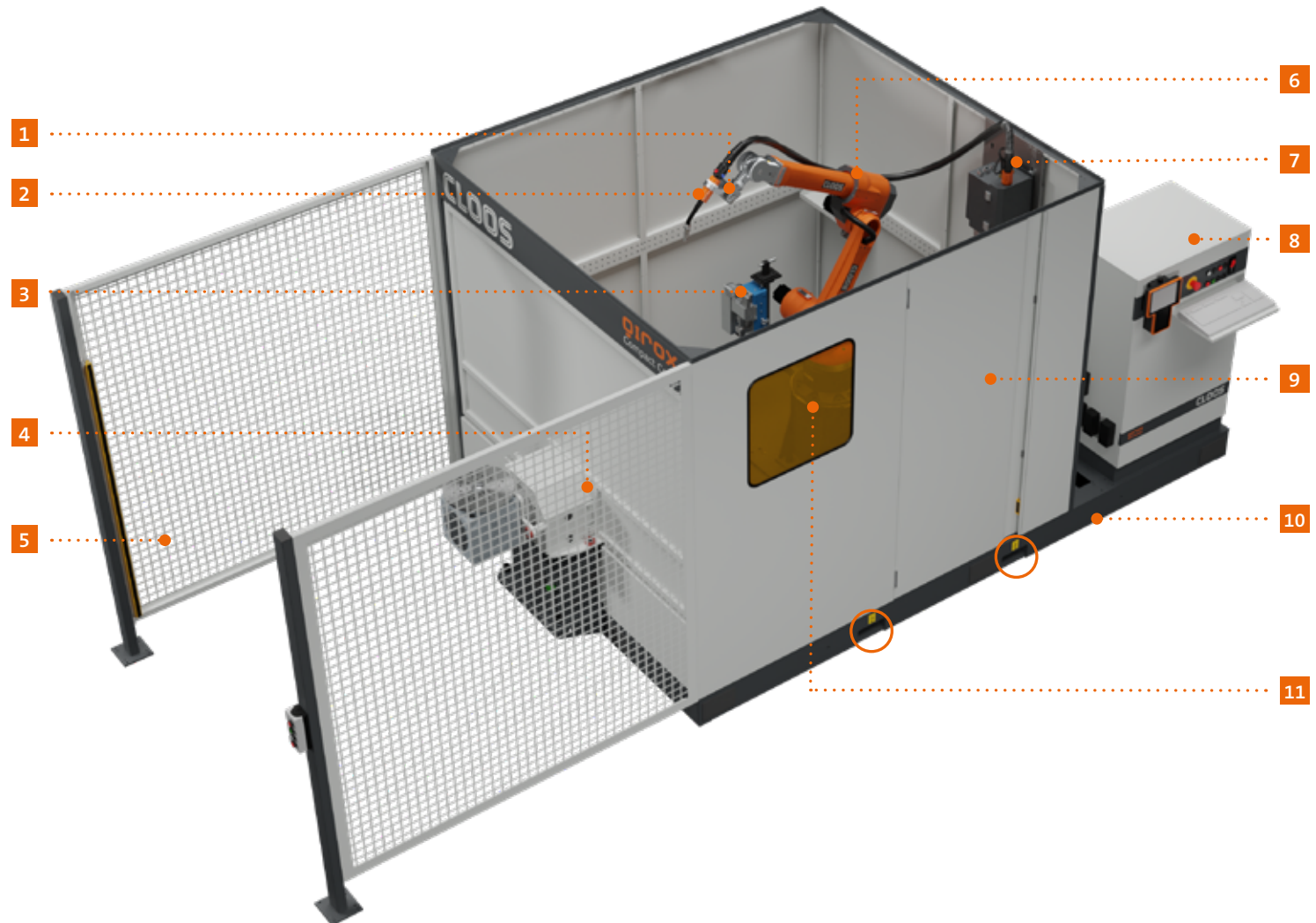




Technical data	CC-1	CC-2	CC-3	CC-4	CC-5	CC-6
Load per station	1.25 kN	1.25 kN	2.5 kN	2.5 / 5 kN	2.5 kN	2.5 / 5 kN
Clamping length				1,250-2,000mm		
Free-turning radius		400 mm	400 mm	400 mm		500/625 mm
Inserting height	950 mm	940 mm	900 mm	920 mm	900 mm	1050 mm
Max. component size Clamping plate	1,400 x 750 mm	Ø 800 x 800 mm	Ø 800 x 800 mm	Ø 800 x 1,250 mm Ø 800 x 2,000 mm	Ø 1,200 mm Semicircle per station	1,000 x 1,250 mm
Positioner	Manual turning table	Manual turning table with two rotary axes	2-station positioner with turn/tilt axis	Vertical two-station turning positioner with turning axis and counter bearing	Automated turning table	2-station turning positioner with turn/tilt axis

## Basic equipment of a compact cell:

- 1 Sensors
- 2 Welding torch with anti-collision sensor
- 3 Torch cleaning unit
- 4 Workpiece positioner
- 5 Safety technology
- 6 QIROX Welding robot
- 7 Wire feed distance
- 8 QIROX Controller
- 9 QINEO Pulse welding power source
- 10 Load carrying frame
- 11 Window



## Safety technology

The standard safety devices ensure a safe handling of the cells.

- DIN EN ISO 10218-1
- DIN EN ISO 10218-2
- DIN EN ISO 13850:



## Load carrying frame

Base frame with integrated forklift pockets and attachment points for jack rings allow a fast commissioning of the cell

- Easy change of the location
- PLUG & WELD



## The compact solution

### Agile and highly dynamic for short cycle times

The models of the **WM series** are designed for standard welding processes. They are characterised by a compact design and act highly dynamically. Therefore, they are ideally suited for use in our compact cells and systems.

- Highly dynamic, agile and efficient
- Small floor space due to compact design

### Processes



## QIROX Workpiece positioner

The two-station workpiece positioners of the compact cells are designed for parallel work of the system operator and the robot. The station change is made by a vertical or a horizontal rotation. The station change is made by a vertical or a horizontal rotation as soon as the loading and unloading operations have been completed and the robot has finished processing the workpiece. The two-station positioners are designed for small to medium-sized, light to medium-weight workpieces and ensure a high throughput of the robot system..

Mature combination of different movement devices

- Welding of complex contours without interruption
- Improved accessibility of nearly all weld seams on the workpiece
- Very high system availability with long operating life
- Exact path accuracy and high repeatability



## Control centre of the QIROX robot systems

The QIROX Controller is specially designed for the requirements of robot technology. A digital drive system with high end distributed computing power ensures dynamic movement and a high path accuracy of the robot during welding. All processes are controlled by an industrial PC with the capacity to simultaneously control seven internal robot axes and numerous external peripheral axes. The components are clearly arranged in a robust system cabinet where they are protected from dirt and easily accessible. This contributes overall to a high reliability and a low maintenance expenditure.

- **High end distributed computing power:** Dynamic movement and a high path accuracy of the robot
- **Absolute reliability:** Clear dirt-protected arrangement and easy change of all components in the robust system cabinet
- **Numerous extra functions:** Many optional combinations with the RoboPlan offline programming software and CarolaEdi, Remote Service Manager (RSM), Process Data Manager (PDM) and User Management (UMS) by CLOOS





## Optimum "man-machine" interface

The QIROX Operating System QOS offers a user-friendly and intuitive programming of the QIROX robots. The light and robust teach pendant with touch interface and keyboard as well as the optional pendant additional monitor support the operator in the best possible way when programming the different components. The integrated QINEO interface allows him to select the welding parameters directly in the QOS. You benefit from a significant reduction of the programming times for a maximum system efficiency. The simple integration of sensors into the process run ensures excellent weld quality. In addition, the C-Gate enables an optimal data flow and makes your robot system fit for Industry 4.0. Furthermore, you can use a variety of optional modules to adapt the QOS to your individual requirements.

- **Intuitive programming:** Quick and easy for reduced programming times
- **Efficient interfaces:** Integration of all process-managing devices and sensors into the programming of the QOS
- **C-Gate:** Built-in future for the world of Industry 4.0



## QINEO Next Premium for automated welding

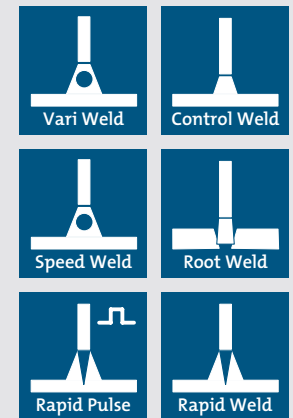
The QINEO Next Premium has all important components and functions "on board" so that you are perfectly prepared for the future. The heart of the QINEO Next is an inverter power unit developed by CLOOS which clocks with a high frequency. This allows an even better arc control for excellent results: The unique welding characteristics enable you to solve complex welding tasks perfectly. A multitude of optional components and functions make the QINEO Next to be your individual power source – exactly how you need it for your tasks of automated welding.

- High-quality inverter technology for excellent weld quality
- Robust housing and good user-friendly operation guarantee a high availability
- Prepared for all commonly used standard interfaces
- Optimal integration of all functions of QIROX controller and QINEO-NexT into one unit, made possible by the bidirectional interface QT1
- The Premium operating module, designed for the highest level of welding
- A wide range of accessories guarantees that the NexT can be adapted to your needs



450 A  
60%  
duty cycle

### Processes

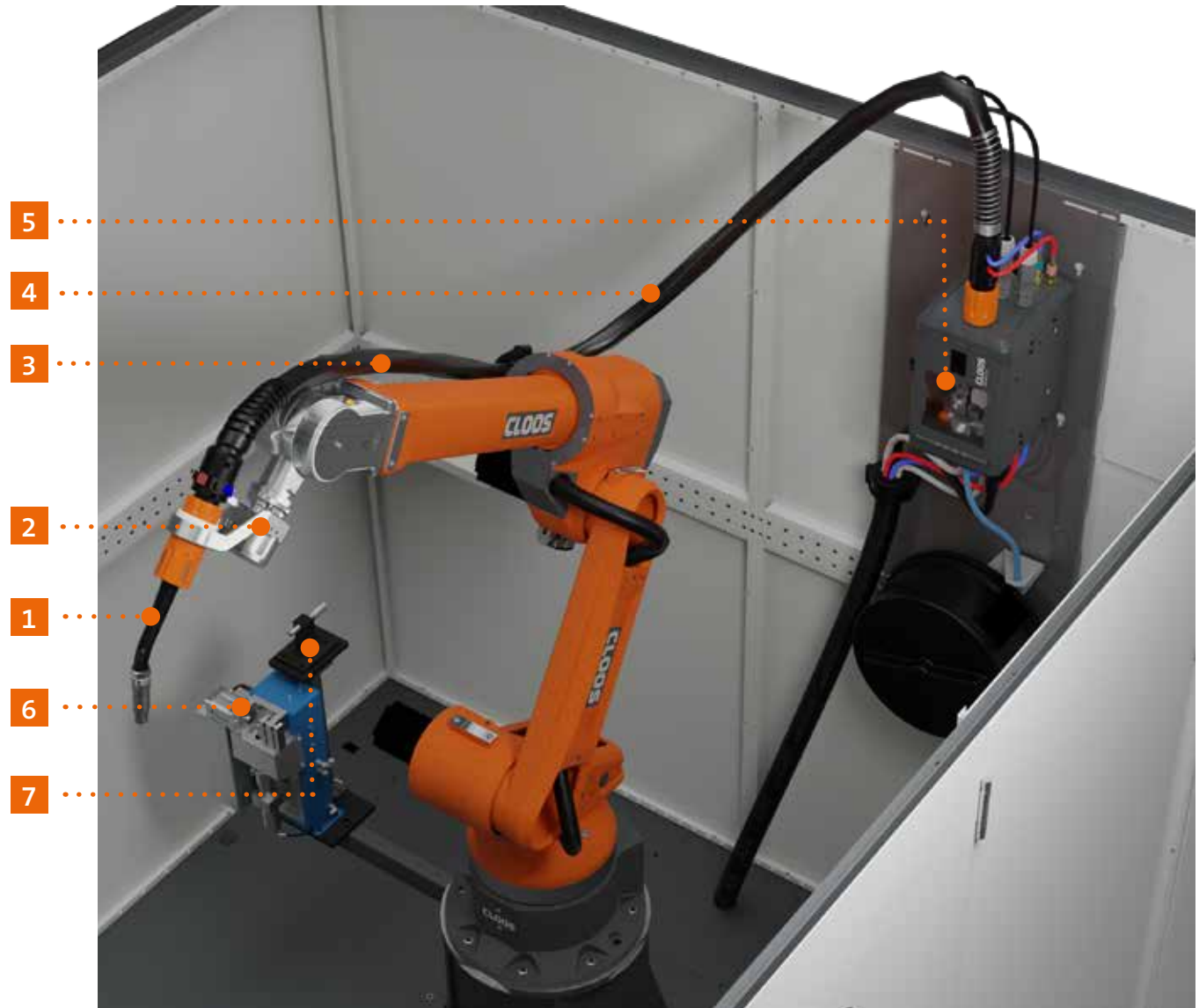


## Wire feed distance

Safe wire feed for perfect welding results:

- Powerful 4 roller drive
- Slip- and abrasion-free wire feed
- Maintenance-friendly

- 1 Robot welding torch QN-MRW-380
- 2 Mounting flange with integrated anti-collision sensor
- 3 Torch cable assembly
- 4 Flexible hose guide
- 5 Wire drive QN-WDA-50
- 6 Torch cleaning unit
- 7 Manual setting jig



## Find the exact start and/or end position

In practice, there are deviations to the programmed points because of workpiece tolerances. To enable these deviations to be quickly and accurately compensated for, the tactile gas nozzle sensor checks the start and/or end positions and corrects the programmed welding path correspondingly to the measured

deviation.

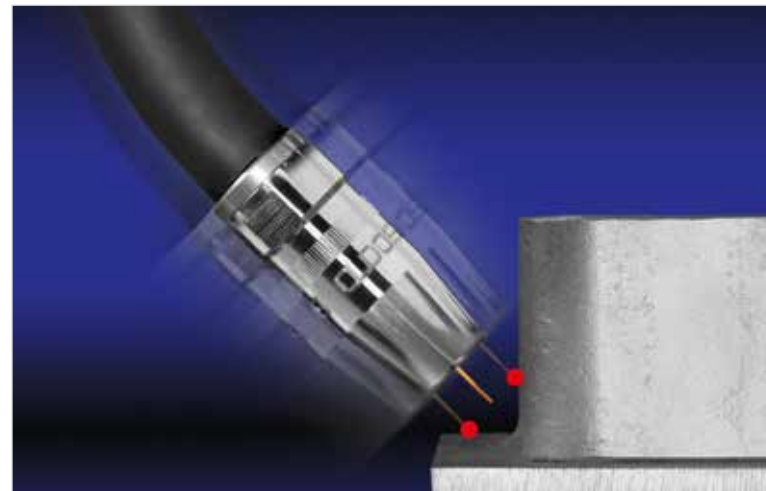
- Recognition of workpiece tolerances: Considerable improvement of the weld quality
- Direct integration into the user program: Quick and easy programming



## Arc sensor Welding and Measuring

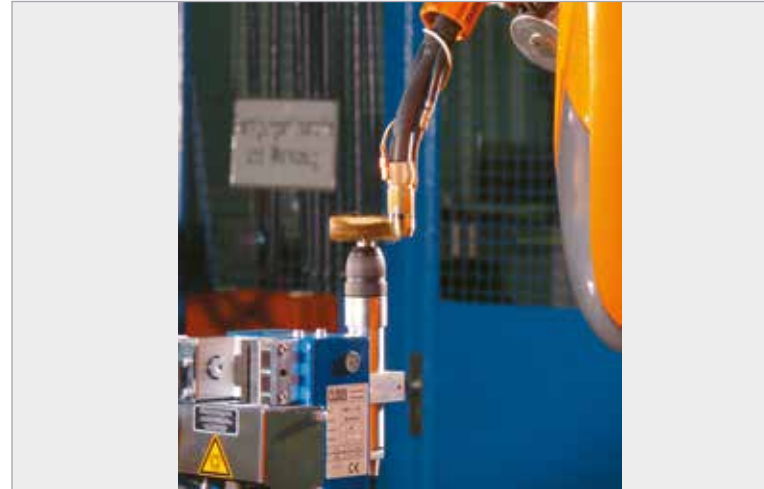
Loss of time is minimised because measuring and welding take place simultaneously with the arc sensor. At the same time, workpiece distortion, e.g. due to thermal expansion, is directly compensated for. The CLOOS arc sensor thus combines productivity with optimised quality. Attached parts are not necessary.

- Correction of the torch position during welding for compensation of material tolerances.
- Direct integration into the user program: Quick and easy programming
- No interference from attached parts



## Welding technology accessories

- Wire cutter
- External gas nozzle cleaning
- Pressure intensifier for blowing through the torch
- DuoDrive additional wire drive
- Accessories for wire drum
- Automated torch changing system
- Gas bottle holder



## Suction hood

- Suction hood for fume extraction system incl. system lighting
- Fume gas filter system



## TIG Welding technology

### ■ CLOOS TIG power source DC/AC

- Convincing power with direct and alternating current:  
The TIG power source for best automated welding results.
- Optimised ignition, no material ejection at the arc strike
  - Excellent due to integrated pulser

### ■ Cold wire accessories

- Automated wire feed



## Trainings

### ■ Basic course part I

- Users who have to edit, correct and maintain the robot programs
- Robot programmers

### ■ Basic course part II

- Advanced course based on part I





## Compact welding cell saves space and time

### Ihnen Stahl- und Metallbau

- Component: Spinner supports
- Industry: Production of energy
- Welding process: Speed Weld

Ihnen Stahl- und Metallbau GmbH realises demanding steel construction projects all over the world. With the **CC-6 compact cell** standard parts are welded – in this case spinner supports for wind energy converters. Due to the compact design the welding cells can be easily integrated in every production. Their modular design makes it possible to add individual enhancements and upgrades at any time. The compact cells are completely pre-installed electrically and mechanically. This facilitates assembly and maintenance and saves time.





## Compact robot cell for process safety and top quality at Halder

### Halder Werkzeuge GmbH & Co. KG

- Component: Soft-faced hammer
- Industry: Metal construction
- Welding process: Vari Weld

The Halder family company has been producing soft-faced hammers for over 75 years and is the world leader in this product segment. Recently, the Hidden Champion has automated the entire welding process for the soft-faced hammers made at the Baden-Württemberg site in Achstetten.

The new, compact **QIROX QR-CC-6 robot cell** produced by CLOOS guarantees constant quality and reproducibility. It does not require much space and could be easily integrated into the production. From sensors to controller and safety technology the compact cell is a tailor-made unit with components which match each other optimally. The cell has a two-station positioner with turning/swivelling movement.







## QIROX compact cell ensure efficient small part welding

### Rudolf Hörmann GmbH & Co. KG

- Component: Railing
- Industry: Metal construction
- Welding process: Speed Weld

The **QIROX QR-CC-4 compact cell** for welding smaller parts has a 2-station workpiece positioner with vertical change and vertical rotation.

By means of the rotary axis the station is turned from the loading area to the robot within three seconds. During this procedure, the loading area is protected by a light barrier and an additional lateral safety fence. There is a glare shield between the two stations. Thus the system operator is perfectly protected and can load a station while welding takes place at the other. All robot and positioner axes are fully synchronised. This provides excellent welding results, reduces the non-productive times and speeds the entire process run enormously.





## Customised solution for automated small part welding

### Thoclatic GmbH

- Component: Bracket
- Industry: Metal construction
- Welding process: Speed Weld

Since spring 2016 Thoclatic has been using two new **QIROX QR-CC-4.1 compact cells** from CLOOS to weld small components. The robot cells have a 2-station workpiece positioner each with vertical change and vertical rotation. Whilst the robot welds at one station, the other station can be loaded again. This accelerates the entire process enormously. All robot and positioner axes are fully synchronised. With a clamping length of up to 1,200 mm and a maximum load of 250 kg per side a wide range of components can be processed in both systems. In addition to a faster process, the robots now achieve exactly reproducible welding results, which was previously not possible with manual welding. Furthermore, the compact cells are characterised by maximum production flexibility.



# The way ...

## Consulting

With this comprehensive “pre-service”, we take care of your project from the beginning and transfer our integrated process expertise to your component..

## Planning

We elaborate a solution which perfectly meets your individual requirements.

## Design

Due to the modular design of our product series we develop customised solutions which meet all your production requirements.

## Production

Welding machine and robot technology is our strength - including our core competence: the arc.

## Commissioning

Our specialists carry out the installation step-by-step in your production hall and test your system for faultless functionality.

## Training

We train your employees and service technicians in programming, operation and maintenance in our modern training centre.

## Service

Our competence team advises you on any extensions, modifications and retrofits of your existing robot and welding systems.

... to your success.

# All over the world

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Subject to technical alterations.

**CLOOS**

Weld your way.

