



Cold Weld

Perfect for thin plate welding

CLOOS

Weld your way.

www.cloos.de

"The power is in the quality".

Friedrich Nietzsche







Welding with minimum heat input

Cold Weld – made for thin plates

With Cold Weld an alternating current produces a very special pulse form, which brings about an extremely low heat input. Due to this type of 'cold' arc welding the welding process can be optimally controlled. The material is only subjected to minimum heat and the original material properties remain to a large extent unchanged. This enables an excellent weld quality to be achieved with good gap bridging and increased weld speed. The Cold Weld process is mainly used with thin to medium plate thicknesses.

In the case of positive (classic) wire polarity the arc starts at the wire end and couples only few energy into the free wire end. Most of the arc energy is led into the workpiece. In the case of negative polarity the arc attachment spot on the free wire end goes up and encloses a large part of the wire. Thus more heat is coupled in the free wire end. The wire gets hotter and the deposition rate increases considerably. This causes less heat input in the material and less load for the component. By means of the polarity ratio the heat input in the component can be controlled very precisely. The increased deposition rate can either be used for more filling volume or higher welding speed.

Advantages

- Low heat input
 - Good gap bridging ability
 - Optimum for thin plates
 - Made for high-strength steel
 - Reduction of component distortion
- High deposition rate
 - Increase of weld speed
- Low material dilution
 - Optimum for aluminium welding
 - High weld quality
- Nearly spatter-free
 - Less rework



Overlap weld



Overlap weld with gap

Technology



+ polarity on wire

- Heat transfer into the workpiece



- polarity on wire

- Heat transfer into the wire end



Task

AKP Otomotiv has specialised in delivering parts for commercial vehicles and the automotive industry. The owner-operated family company, with its head offices in Bursa, is benefitting significantly from the economic upturn in Turkey over the last few years. Since it was founded in 1976, AKP has grown continuously and currently employs more than 200 people.

Lightweight construction is becoming ever more important even for commercial vehicles. For that reason, AKP uses an increasing number of parts made from aluminium. But the material represents a particular challenge for the welding process, as it is very sensitive. Since 2012 AKP has been welding aluminium tanks on the CLOOS robot system.



Cold Weld overview

Technical data

■ Applications

- Heat-reduced cladding
- Joining of high-strength steels
- Thin plate welding

■ Properties

- High weld speed
- High deposition rate
- Good gap bridging ability
- Low heat input

■ Material

- Aluminium
- CrNi steel
- Steel

Functions

- QINEO Champ can now use the Cold Weld process
- Applicable for manual and automated welding systems
- Suitable for repair welding
- Due to the negative time slice the T8/5 time can be influenced

Result

- Excellent weld quality as in the case of a fuel tank





Project description

The QIROX QRC 350 robot welder is mounted overhead on a C-shaped frame. This position allows the robot better access to the workpiece. The C-frame is mounted on a floor-mounted linear track so that the robot can move horizontally and flexibly between the two stations. Additionally, the robot is equipped with the CST Flex D laser online sensor. The laser online sensor first moves to the programmed start position. The tracking section is then measured online during welding. The laser head which is mounted parallel to the processing point sends a laser

beam onto the workpiece surface, receives the reflected radiation and directly transfers the measured results to the robot controller. Here the data is evaluated in order to compensate for material tolerances and heat distortion. Based on the new values the system changes the position of the welding torch and adjusts the process parameter accordingly.



Project description

The Presswerk Struthütten company concentrates on complex and demanding metal forming systems, particularly on the processing of high-quality materials, such as various stainless steel grades. Being a renowned OEM supplier, PWS is a development partner for its customers and is centred on the conception and realisation for series production mainly in the field of exhaust gas systems, turbo charger systems and heating technology.

The Cold Weld process allows considerably higher welding speeds which results in shorter production cycle times. PWS produces more than 15,000 elbow components per month. This process reaches a welding speed of astonishing 2.2 metres per minute, even with the complex PWS components with their winding welds and narrow radii. Under certain circumstances it is even possible to double the welding speed.



Weld your way!

Providing added value for our customers! This objective drives our 700 motivated employees to achieve maximum performance. We are constantly raising our bar by pushing ourselves to provide innovative welding processes and solutions that will contribute to the long-term commercial success of your company!

Our process competence is at the forefront in welding and cutting of various ferrous and non-ferrous metals.

We offer our customers individual solutions which are optimised and adapted specifically to your product and production requirements. Leadership and competence equals process automation and welding at its best.



Whatever your needs are, we “Weld your way.”
CLOOS develops, manufactures and delivers innovative solutions in more than 40 countries worldwide.

With QINEO, the new generation of welding machines for manual and automated applications, and QIROX, the system for automated welding and cutting, our product range covers the entire spectrum of arc welding technology. Our product portfolio includes intelligent software, sensor and safety technology solutions – all of which are customised to meet your specific needs and requirements!
Cloos provides full service solutions – all from a single source!

QINEO®

Arc welding at the highest level

- Power sources
- Wire drive units
- Welding torches
- Cable assemblies
- Accessories



QIROX®

Everything for automated welding and cutting:

- Robot mechanics
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- Robot positioners
- Workpiece positioners
- Sensors
- Software



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