

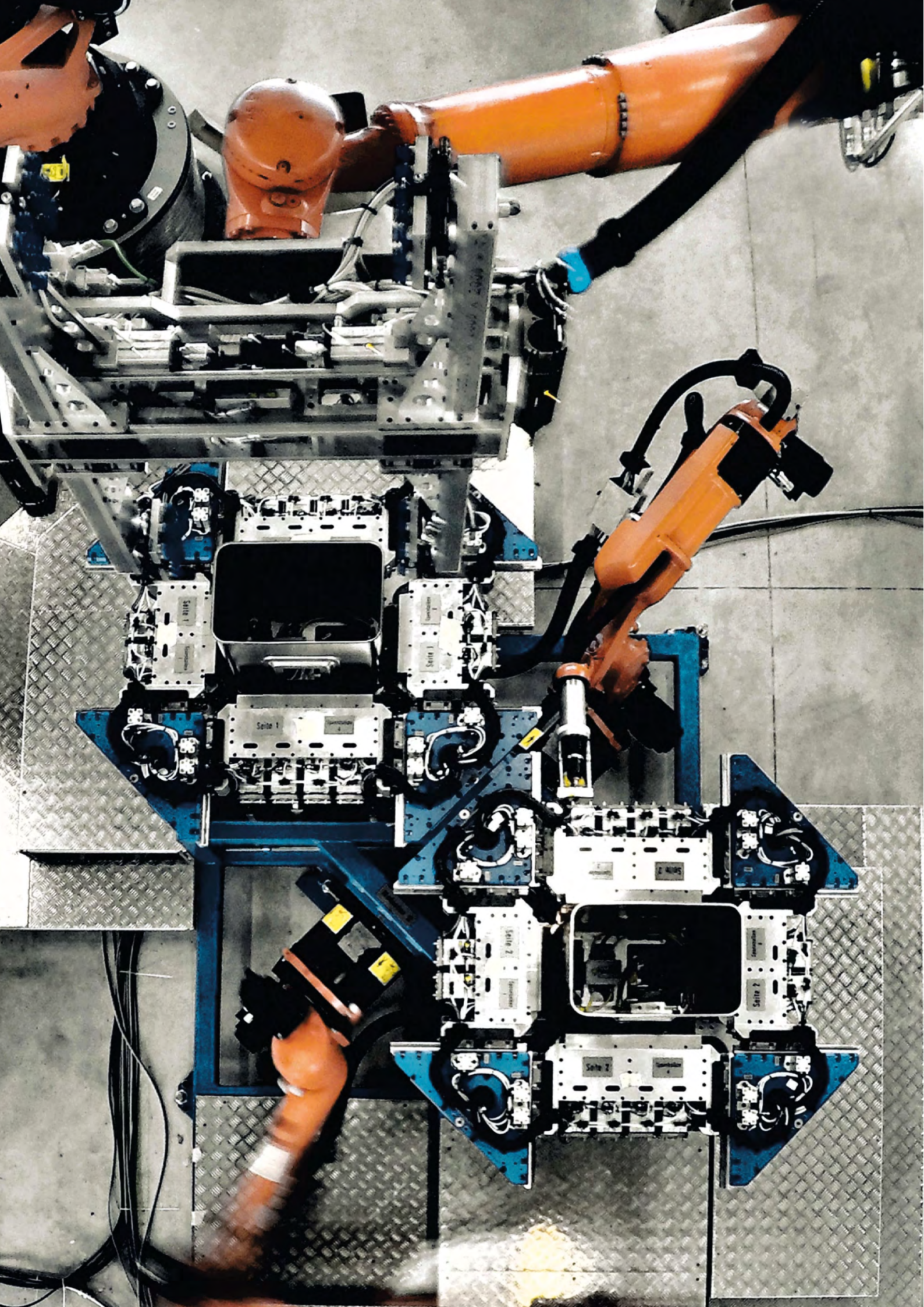


INOCON

Welding for Success



Plasmatron®
Welding &
Brazing



INOCON

TECHNOLOGY

INOCON Technologie GmbH looks back on 20 years of experience in the field of plasma technology. We have developed numerous plasma applications for brazing and welding and have successfully implemented them based on our experience with plasma hardening. Several projects were undertaken which led to the development of the patented Plasmatron® torch. This product is used for high-end welding operations in several areas. With this process, INOCON serves several renowned international companies, particularly in the automotive industry. These include, for example: Audi, Volkswagen, Ford, PSA, Renault and many more. Several customers in other industrial sectors also make use of this process.

Since 2012 the company has been developing several applications in the area of atmospheric plasma coating. The coatings are micro and nano layers, which are applied on sensitive surfaces such as paper, plastics, glass, ceramics and wood as conductor paths or adhesive and anti-adhesive layers.

In the area of mechanical engineering, INOCON undertakes manufacturing for almost all sectors of industry, from small solutions to large production lines, making an economically viable use of the available energy resources and series components. The reference customers of the company include: Daimler AG, DANA Group, Miele, Montblanc, Voith and many more. With a more than 90 percent export ratio, INOCON is in a strong position internationally.

**“ WE OFFER
SOLUTIONS,
STARTING FROM
SIMPLE WELDING
SYSTEMS TO
COMPLEX
AUTOMATED
MACHINES ”**

THE PLASMATRON®-TECHNOLOGY

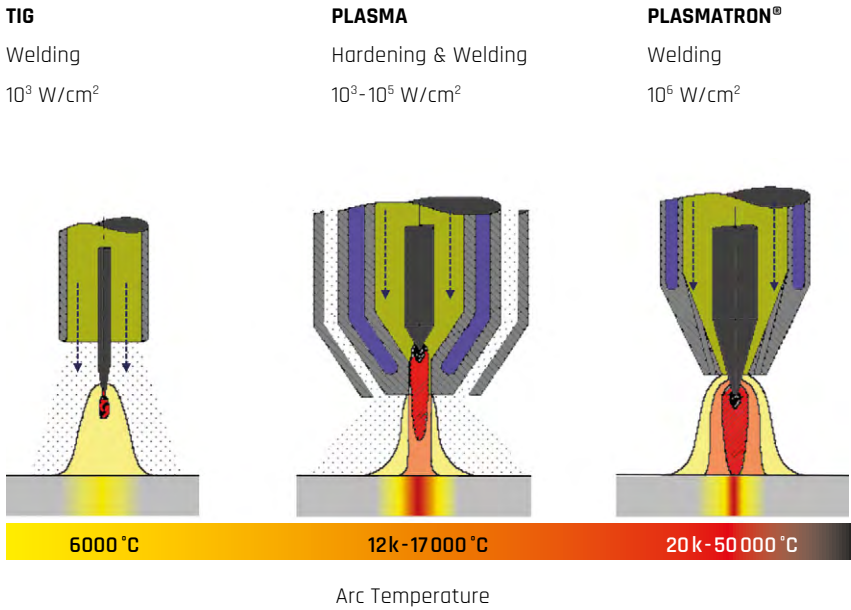
In contrast to usual plasma processes, the Plasmatron® process creates an arc outside of the nozzle. This reduces the thermal stress on the nozzle.

The constriction of the plasma beam does not take place by means of a long narrow nozzle, as was the case up to now, but results from the gas flow with a defined angle that forms a nozzle-far impact focus.

The electrode intentionally protrudes approx. 1.2mm above the nozzle edge. As a result, a flashing of the arc to the nozzle edge is suppressed.

Due to the special focussing, a pronounced „bottle neck“ is created, i.e. a zone of the same diameter of the focus point with a length of up to 4mm.

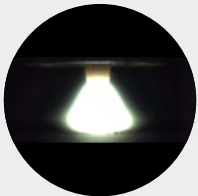
The diameter of the focus point can be adapted to the welding task by using different nozzle shapes.



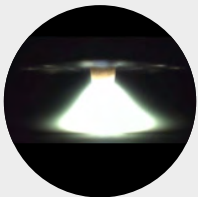
VARIATION OPTIONS

The option of gas mixture, current, nozzle shape and cathode tip provides numerous application-specific variation options.

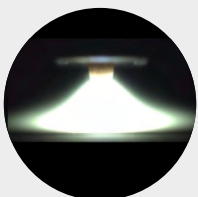
For example, a change in the shape of the arc due to varying nozzle geometry.



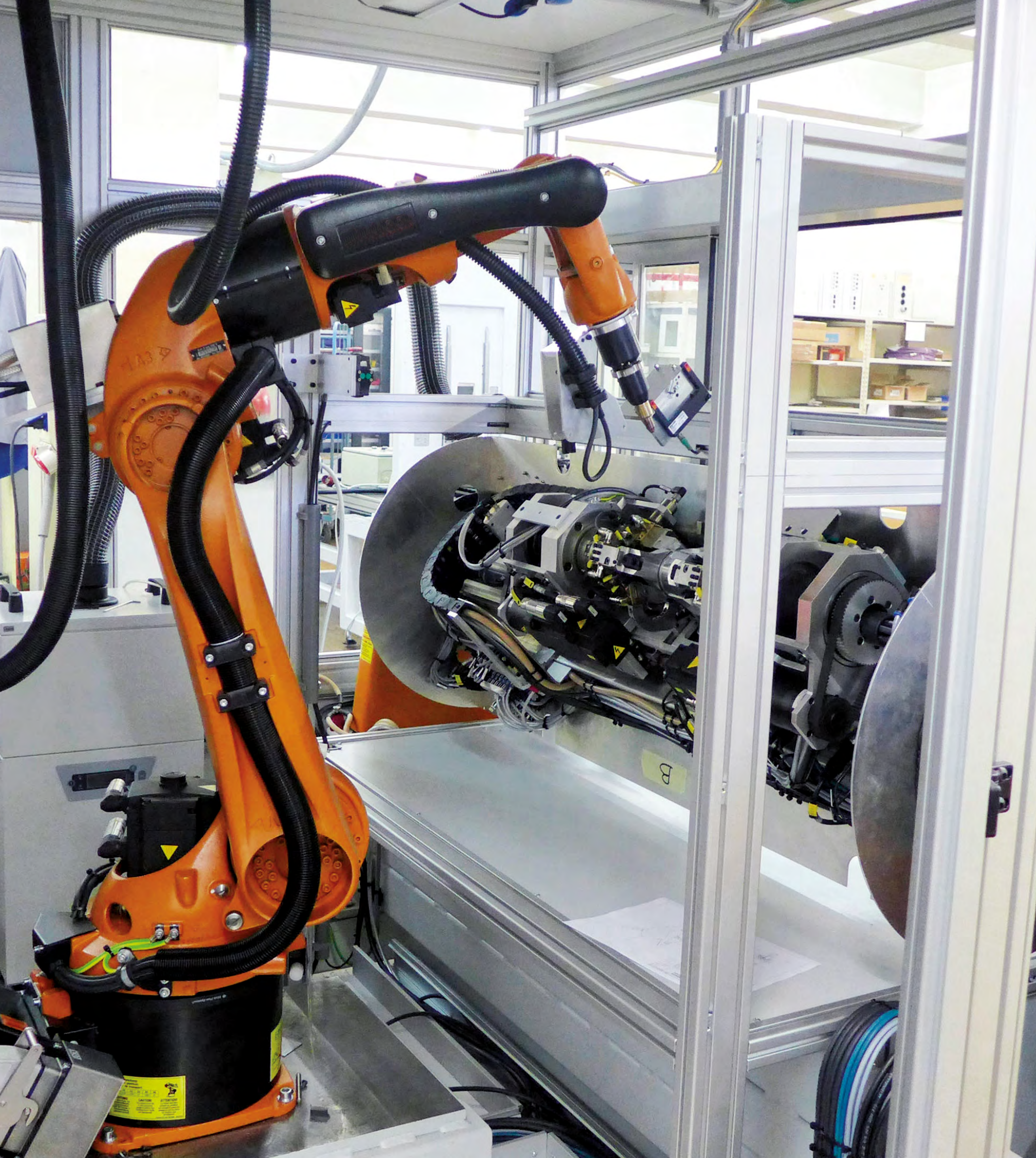
A - Strong focussing for high speeds



B - Good ratio between arc width and plasma density



C - Wide arc for a large process window



BENEFITS

HIGH PROCESSING SPEED AND MINIMAL HEAT DISTORTION

The focussed arc increases the energy density. This leads to a higher speed, reduced energy impact and minimized heat distortion in the component.

VERY GOOD GAP BRIDGING

As compared to the other processes, the Plasmatron® process has very good gap bridging, thereby balancing out clamping inaccuracies and material tolerances.

OPTICS: NO WELD SPATTER

Visual appealing weld seams, particularly in the visual seam area, are an important field of application. In the Plasmatron® process, there is no weld spatter and thus the component does not become spattered.

QUICK CATHODE CHANGE

With the new torch concept, the cathode can be changed within a few seconds, manually or fully automated.

GOOD PRICE-PERFORMANCE RATIO

Similar to the laser process, high quality and speed requirements can be realised at low investment and operating costs.

EVERYTHING UNDER ONE ROOF

The basic equipment of this system includes a Plasmatron® torch, hose package, power source and gas supply. Depending on the application, this basic system can be extended with components such as a seam tracking system, a wire feeder, an automatic cathode changer and an optical monitoring system or up to a complete system.

PLASMATRON® APPLICATIONS

THIN SHEETS

Extremely thin sheets, with thickness 0.3mm and above, are welded in the stainless steel area, featuring excellent seam optics. This application is most useful in the visual seam area. In butt welds and flanged seams, clamping inaccuracies can be bridged up to the material thickness.

Picture: Resonator; Material 1.4301; 0.6 mm / 0.4 mm



BRAZING GALVANISED SHEETS

Similar to laser technology, high speed and seam optics requirements can be achieved while brazing galvanised sheets, at considerably low investment costs. This technology features a very good gap bridging, irrespective of the type of galvanisation. Non-galvanised sheets can also be easily joined together by adjusting the speed.

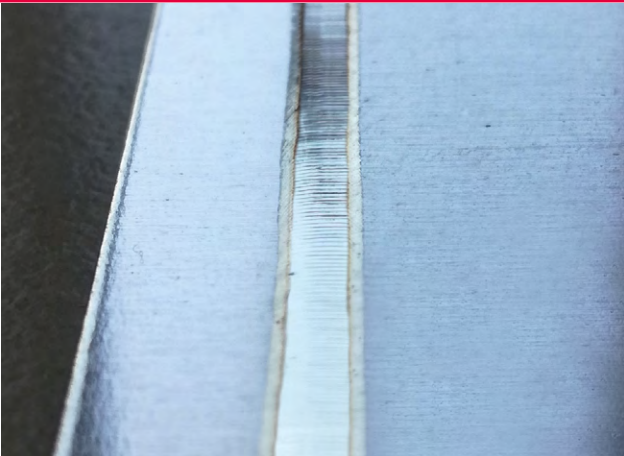
Picture: Truck door; galvanised sheets; Wire CuSi3



ALUMINIUM WELDING

Since the Plasmatron® can be operated in DC- and DC+ as well as in the AC mode, it is suitable for a wide range of application areas in the aluminium sector. Very high strength can be achieved with less weld preparation coupled with very good seam optics.

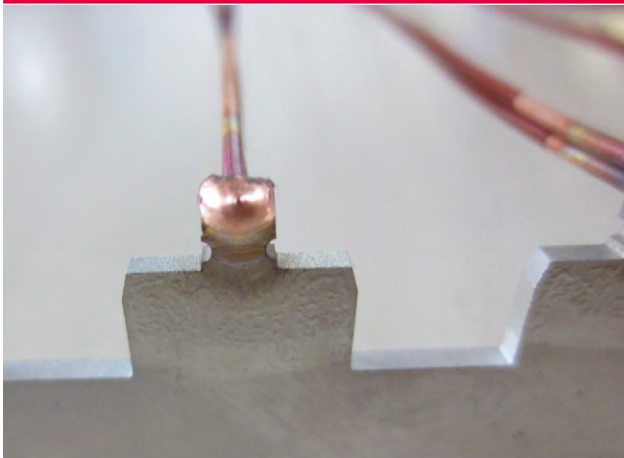
Picture: Overlap Joint; 1 mm / 2 mm



STEEL WELDING

When welding steels with a material strength of up to 5mm, the Plasmatron® process has advantages such as absence of weld spatter, high root penetration and high strength coupled with less distortion.

Picture: Shock Absorber; Material 1.0308 / 1.5535

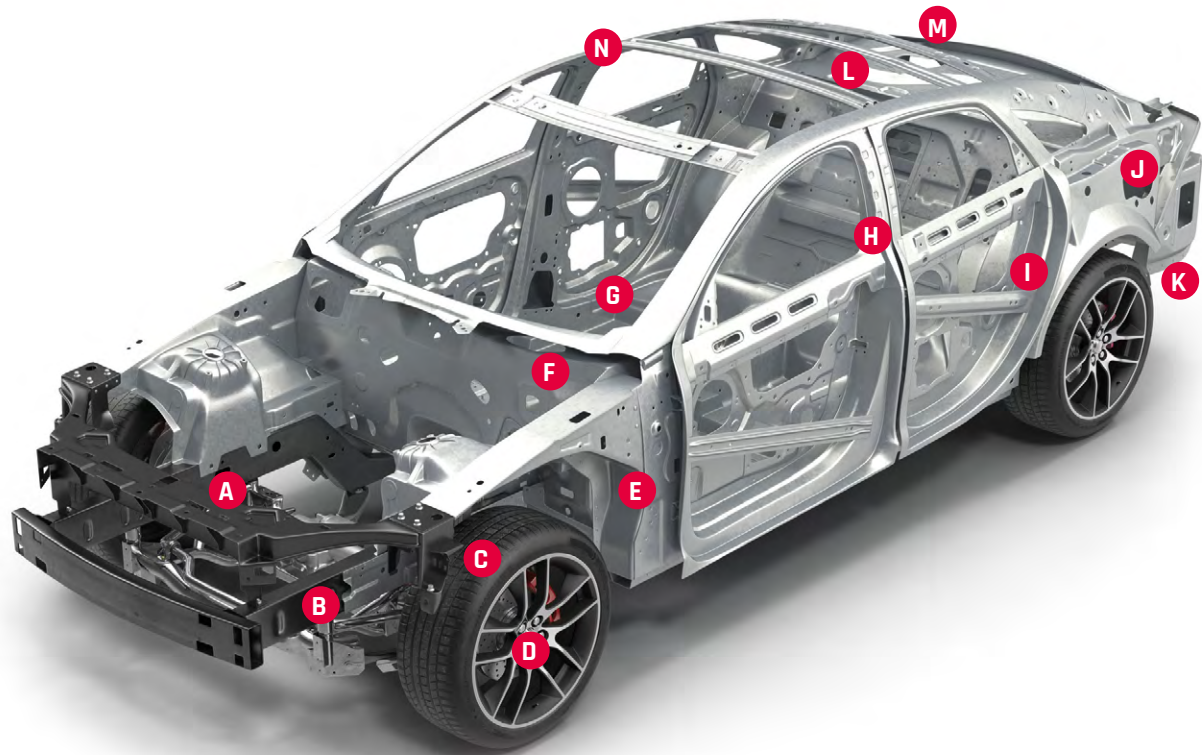


COPPER WELDING

Using short, focussed current pulses, extremely fine copper wires, pins and electronic components can be welded.

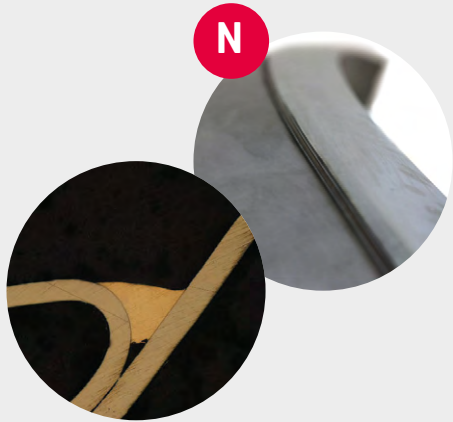
Picture: Copperpin; Welding time 0.3s

YOUR PARTNER FOR BRAZING AND WELDING REGARDING CARS ...



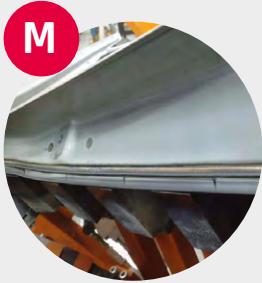
ROOF SEAM

The high degree of focussing of the Plasmatron® arc on the brazing allows high-strength joints, without melting the base material. This reduces a distortion of the components. Re-work operations are hardly required, since a smooth and even surface of the brazed seam is achieved.



WATER DRAIN

While brazing overlap seams, very fine visually appealing brazed seams can be achieved with the Plasmatron®. This process features good gap bridging, minimum weld reinforcement and absence of weld spatter.



SHOCK ABSORBER



SILENCER FOR TURBO



ELECTRIC MOTOR WINDING



SHIFT FORK



DOOR INNER SIDE



GEAR SHAFT



ALLOY WHEEL RIMS



BRAKE PEDAL



STEERING COLUMN ENCLOSURE



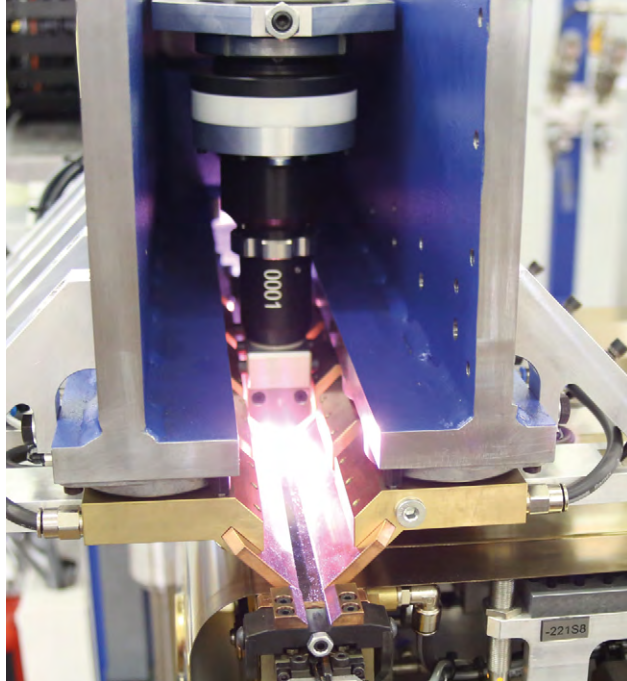
TANK NOZZLE



EXHAUST SYSTEM



FUEL TANK



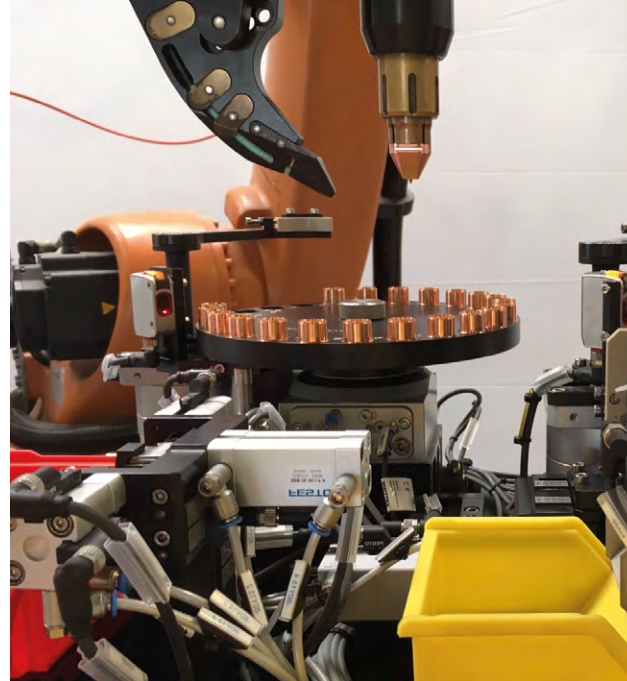
PLASMATRON® TORCH

FEATURES

- Arc welding process with minimal nozzle wear
- Focussed arc due to the nozzle geometry
- Spatter-free welding process
- Easy changing of cathode and nozzle
- Variation of arc due to the variety of nozzles
- Power range up to 250A

BENEFITS

- Re-grinding of cathode not required
- Less maintenance for operating staff
- Minimum wear parts and hence low costs
- Low heat input, less distortion



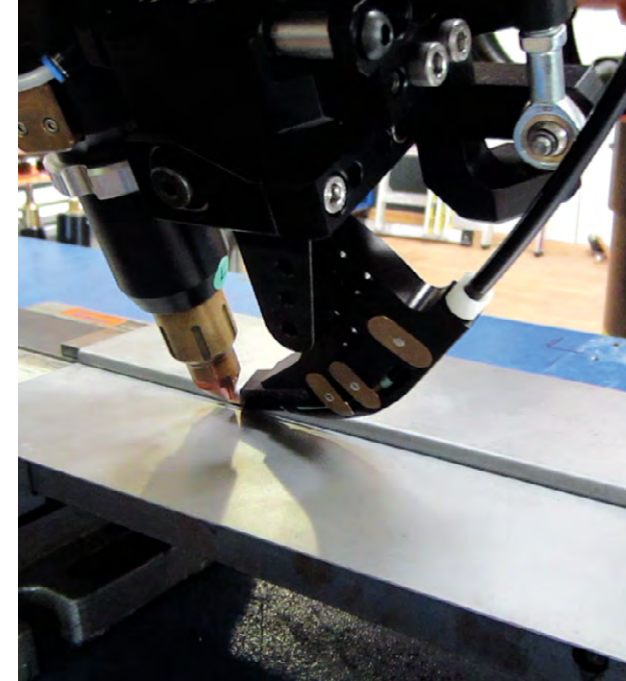
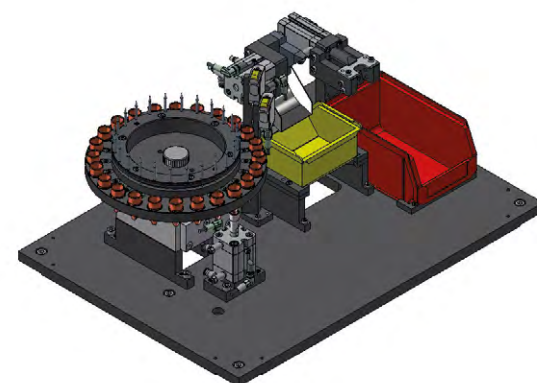
AKS - AUTOMATIC CATHODE CHANGING SYSTEM

FEATURES

- Unique inline changing process
- Automatic cathode and nozzle change
- Depots for 24 cathodes and nozzles

BENEFITS

- No interruption of production for changing wear parts
- Change cycles less than 10 seconds



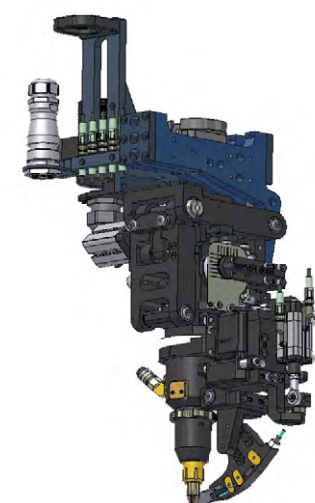
MNV - MECHANICAL SEAM TRACKING

FEATURES

- Mechanical seam tracking
- $\pm 15\text{mm}$ compensation of the robot path
- Hardened guiding finger as wire outlet
- Pneumatic control system
- Centring and clamping included
- Modular extendible structure

BENEFITS

- Robust, mechanical structure
- Not sensitive to EMC interference
- Easy handling
- Continuously adjustable working pressures



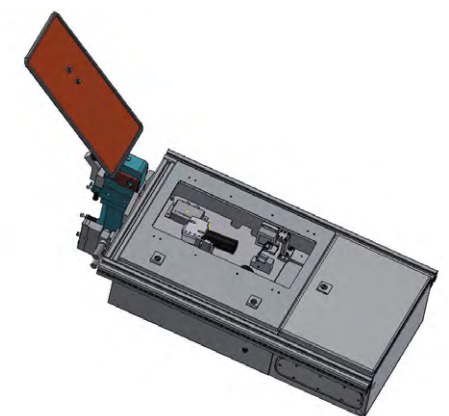
OMK - OPTICAL MEASUREMENT AND MONITORING SYSTEM

FEATURES

- Fully automatic measurement of the geometry of cathode, nozzle and welding wire
- Entry of warning and error limits
- Cathode wear detection

BENEFITS

- TCP check
- Wear warning
- Assessments and measurement logs
- Less number of rejects, due to the detection of incorrect positioning

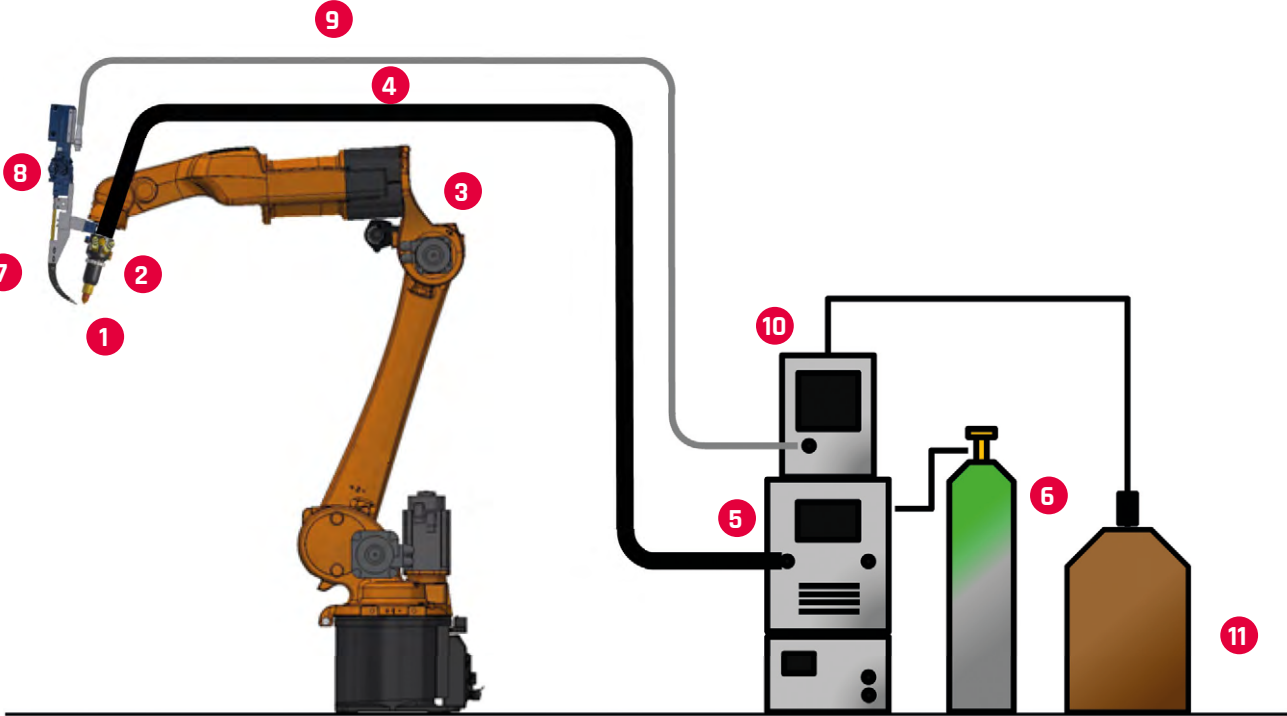


REACHING THE GOAL WITH THE CORRECT COMPONENTS!

INOCON delivers individual components as well as complete solutions, as you can see in the graphics. The use of wire feeder depends upon the corresponding welding task. This means that the system can be used with or without the welding wire.

Apart from this, INOCON has decades of experience in the area of customer based mechanical engineering in the most varied industrial sectors and great know-how in the field of clamping technology. Our solutions are tailored to suit customer requirements.

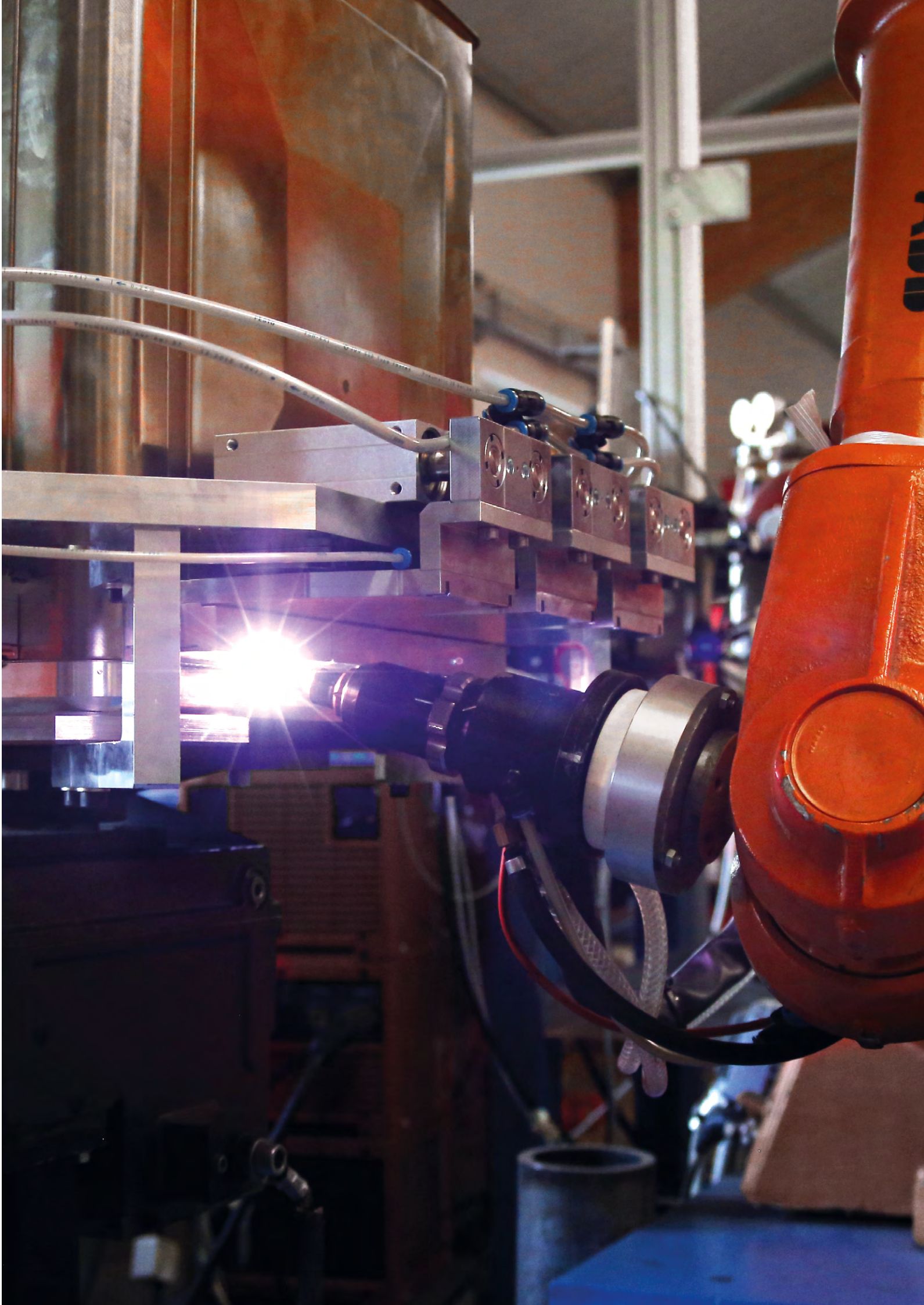
PLASMATRON® SYSTEM



- 1 Plasmatron® torch
- 2 Plasmatron® support
- 3 Robot
- 4 Plasmatron® hose package

- 5 Power source (with cooling system)
- 6 Gas supply
- 7 Wire guiding
- 8 Wire feeder (Master)

- 9 Wire hose package
- 10 Wire feeder (Slave)
- 11 Wire drum



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