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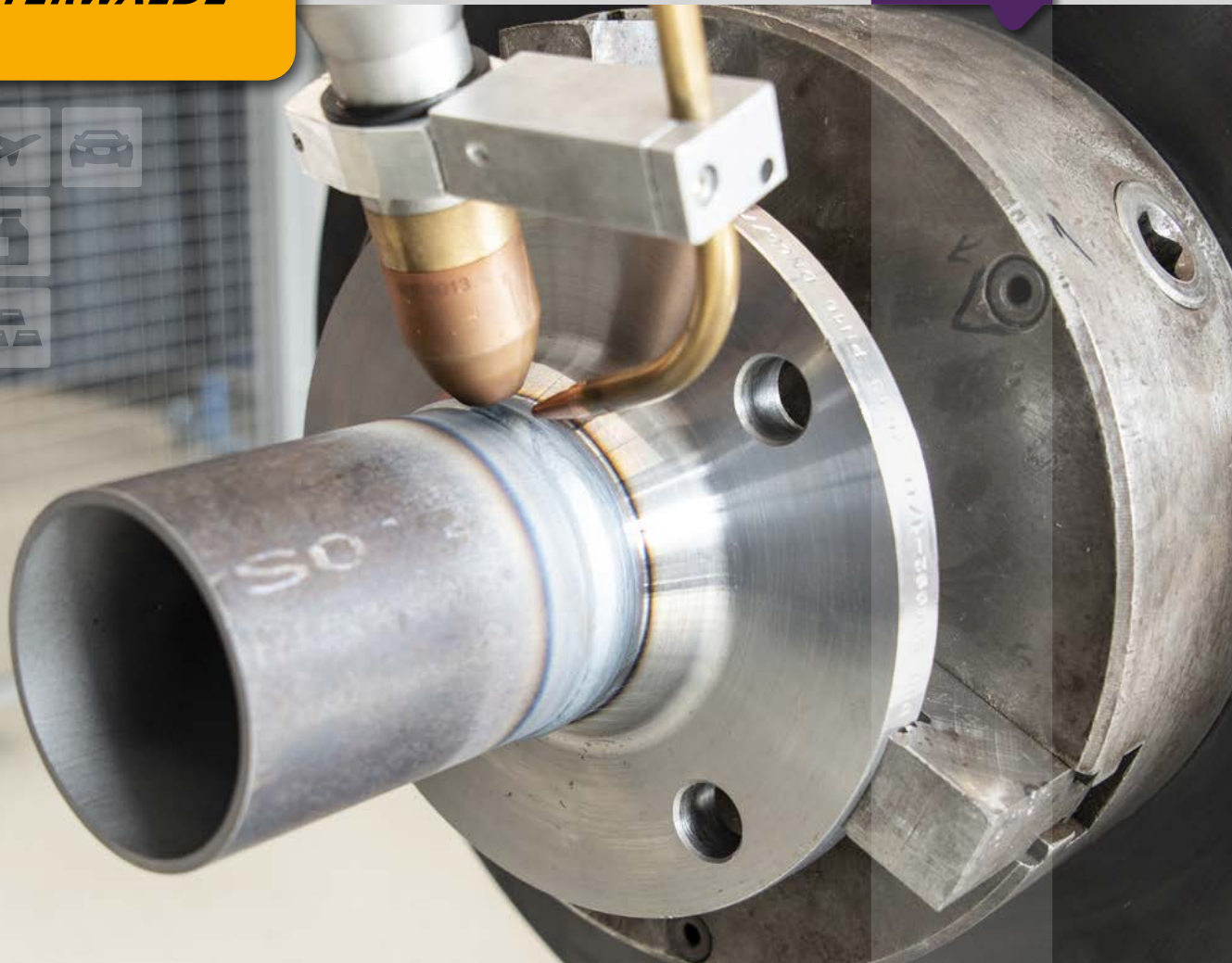
Cutting

Engineering

Hardfacing

WELDING

INFOCUS



InFocus High-Power TIG

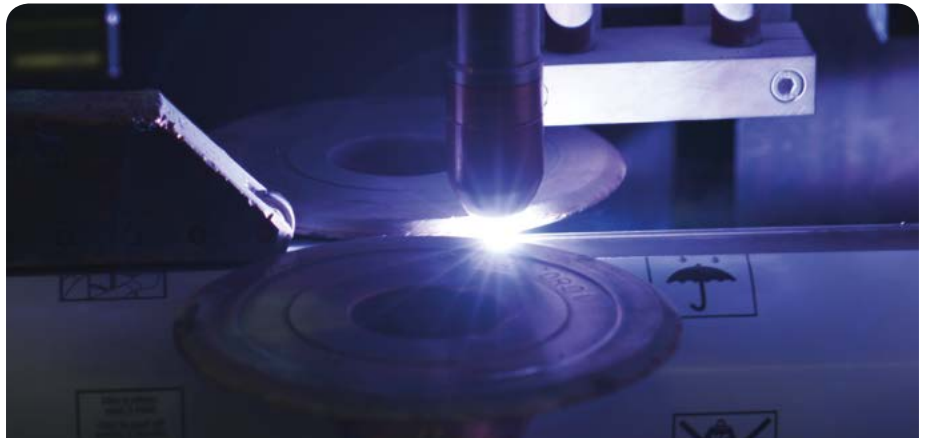
InFocus 500 and 1000

0.15 - 10 mm (single layer) TIG welding up to 15m/min



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**Precise.
Reliable.
Reproducible.**



Advantages

- Sheets with a thickness of up to 10 mm (single-layer)
- Process-stable and spatter-free
- Multiplied welding and soldering speed
- High quality of the weld, small heat-affected zone, low distortion
- Good inert gas coverage
- Welding with Argon, Helium, usually not required

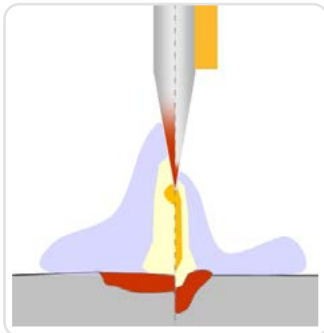
Flexible & fast automated welding

The InFocus welding technology starts where TIG standard solutions reach their limits. Due to the heavily constricted arc it is possible to join in a cost-efficient manner nearly all steel types and non-ferrous metals with material thicknesses ranging from thick to thin. The process-stable joining produces an even seam surface of high quality. Thus, this TIG process is predestined for automated applications in areas like the vehicle and automotive industry (e.g. chassis and exhaust systems), in pipeline and container construction or in sensor and medical engineering. InFocus means automated TIG welding at the highest level.

Highly concentrated arc

InFocus is a high-performance TIG arc welding technology for automated applications. Due to the maximised cathode cooling, the arc is constricted at the cathode tip in such a strong way that the special arc properties, process and joint properties are achieved and the joining of nearly all steels and non-ferrous metals with a material thickness between 0.15 - 10 mm (one layer) is made possible. The innovative torch design allows a quick change of consumables and a defined position of the cathode tip (TCP – tool centre point) without additional adjustment. InFocus is one of the most flexible joining processes because it covers a wide range of materials and thicknesses that can be processed. The multiplied welding speed and the short downtimes make the spatter-free InFocus process more economical than conventional TIG welding. Compared to laser welding, there are considerably lower investment and operating costs.

In contrast to plasma welding, InFocus works without an arc-forming nozzle and the ignition takes place directly towards the work-piece. An additional consumable is no longer required and the large number of influencing factors and parameters which is typical for plasma welding can be reduced considerably.



Comparison TIG- and InFocus-technique (right)



InFocus welding process

- ✓ **Welding of thin-walled profiles, thin sheets and foils**
- ✓ **Full-attachment welding and root welding for sheets up to 10 mm**
- ✓ **Welding of sheets and plates of non-ferrous metals**
- ✓ **Soldering and welding of galvanized sheets**

Torch as Carrier of the Technology

Compact and efficient in automated production lines

The torches of the InFocus series are unique due to the special design of the cathode. The innovative torch design ensures a quick change of the tool centre point (TCP) without additional adjustment efforts. Due to an optimised water cooling and minimised electrical and thermal resistances, the constriction of the arc at the cathode tip is forced, thus increasing the energy density in the arc many times over.

InFocus 1000 AX and InFocus 1000 RD – powerful with 1000 A

The torches InFocus 1000 AX and InFocus 1000 RD realise high-performance arcs with currents up to 1,000 Amperes. They are different with respect to an axial (AX) or radial (RD) connection to the hose parcel.

InFocus 500 – small and manoeuvrable with 500 A

In many areas of automated welding, the choice of an appropriate process and torch is restricted by limited accessibility. In order to make the InFocus technology available also for such welding applications, we developed the TIG welding torch InFocus 500 as the little brother of the InFocus 1000. The combination of compact design and high performance makes the InFocus 500 an unbeatable tool in filigree production processes. 20 mm diameter, 95 mm length and a mass of 250 g allow the torch InFocus 500 to braze (between 0.1 and 2.0 mm) and weld up to 500 A and the flexible use with robots and applications with limited accessibility.

Technical data	InFocus 500	InFocus 1000 AX	InFocus 1000 RD
Maximum ampacity	500 A	1,000 A	
Welding current at duty cycle	500 A / 100 %	1,000 A / 100 %	
Protection gases	Ar, He, mixtures		
Ignition	High-frequency ignition		
Torch cooling	Coolant: Kjellfrost		
Clamping diameter	Ø 20/23 mm at shaft transition	Ø 48 mm at torch shaft	Bolt circle 41 mm, 6 x M5
Mass without hose parcel	250 g	1,200 g	



Perfect seam surface even in case of coated surfaces, $v = 3 \text{ m/min}$



Joining pipe-pipe resp. pipe-flange



Titanium welding in aircraft industry

Advantages

- Longevity of cathodes
- Quick change of only 3 consumables
- Highly concentrated arc
- Excellent cooling up to torch tip
- Acute-angled and small torch head for flexible use with robots and applications with limited accessibility

InFocus torches

Torches as carrier of the InFocus technology (from left to right):



InFocus 1000 AX	max. 1,000 A (axial)
InFocus 1000 RD	max. 1,000 A (radial)
InFocus 500	max. 500 A

As standard power supplies Kjellberg offers the two power sources FocusTIG 500 AC/DC and FocusTIG 1000. Alternatively, also other standard TIG power sources can be used. The InFocus torch is connected to the power source and the heat exchanger via a connecting adapter.

The torch is basically cooled via a powerful heat exchanger with a cooling capacity of at least 2.3 kW at an ambient temperature of 15 °C.

Power Source	Focus TIG 350	Focus TIG 500	Focus TIG 1000	Focus TIG 500 AC/DC
Adjustment range of welding current	5 - 350 A (DC)	5 - 550 A (DC)	10 - 1,000 A (DC)	5 - 550 A (AC/DC)
Ambient temperature	-20 °C - 40 °C	-20 °C - 40 °C	-25 °C - 40 °C	-20 °C - 40 °C
Welding current at 40 °C (ambient temp.)				
60 % d.c.	-	550 A	1.000 A	550 A
100 % d.c.	350 A	420 A	750 A	420 A
Open-circuit voltage	80 V	80 V	79 V	79 V
Mains voltage (tolerance)	3 x 400 V + N + PE (-25 % bis +20 %)			
Frequency	50/60 Hz			
Mains connection	CEE 32 A	CEE 32 A	CEE 63 A	CEE 32 A
cos φ	0.99			
Insulation class	H			
Protection class	IP 23			
Dimensions (L x W x H)	1,080 x 460 x 930 mm	1,080 x 460 x 930 mm	1,485 x 460 x 930 mm	1,080 x 690 x 1,195 mm
Built in accordance with standard	IEC 60974-1, -3, -10, S-sign, CE-sign			
Optional interfaces	RINT X12, BUSINT X11			

06|05|20

Welding examples*

Material	Thickness	Filler material	Welding speed**
Titanium Zinc	0.7 mm		800 cm/min
Copper	0.6 mm		400 cm/min
Titanium	1.2 mm		200 cm/min
Duplex steel	4.0 mm	✓	50 cm/min
Aluminium	5.0 mm	✓	38 cm/min
Steel S355	6.0 mm	✓	40 cm/min
Steel 1.4301	10.0 mm	✓	25 cm/min

* Single-layer welding. ** The data depend on the type of material and welding position.



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