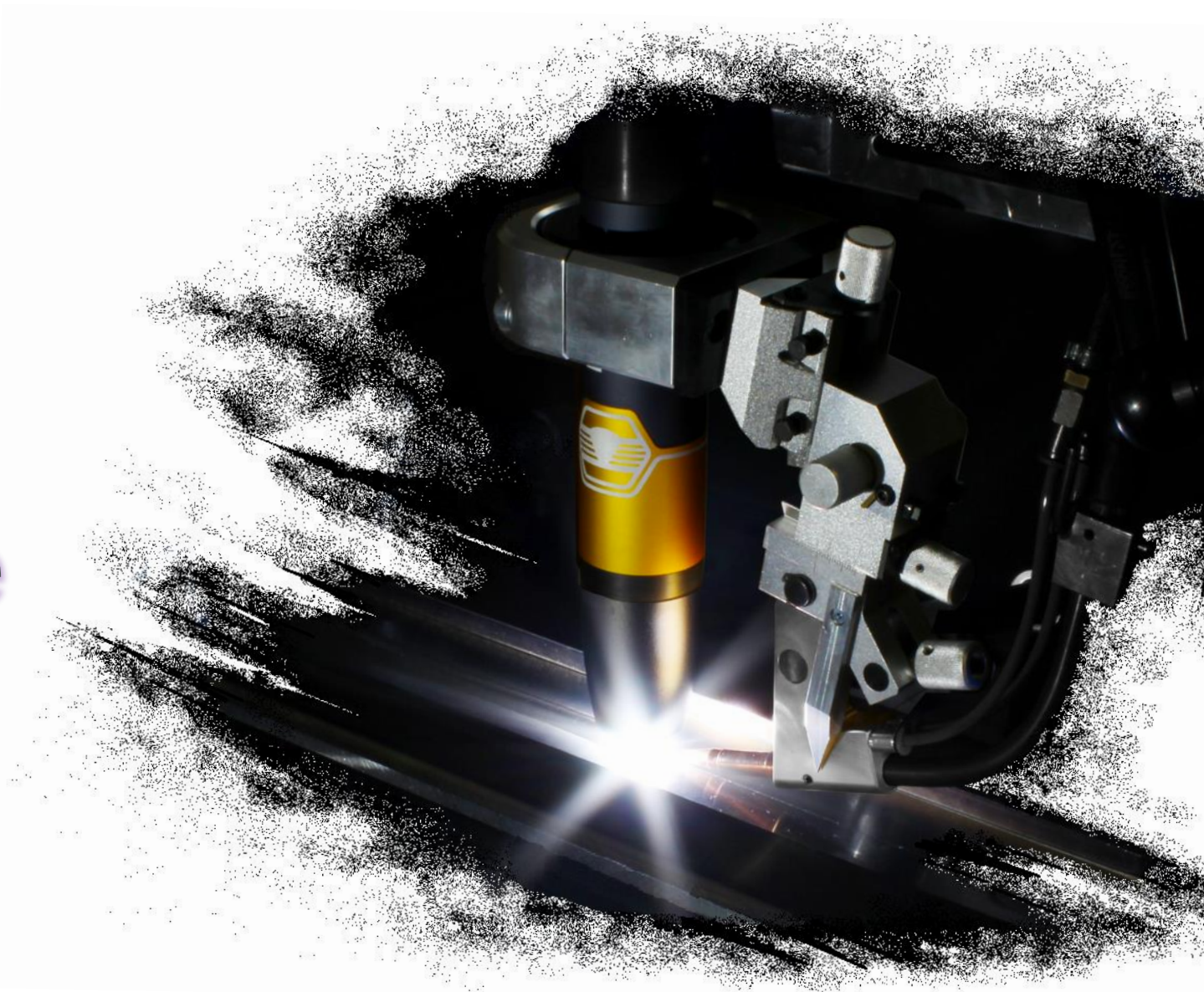


Kjellberg[®]
FINSTERWALDE

InFocus Pluspole

TIG-Pluspole Aluminium Welding

Potentials – Applications – Components



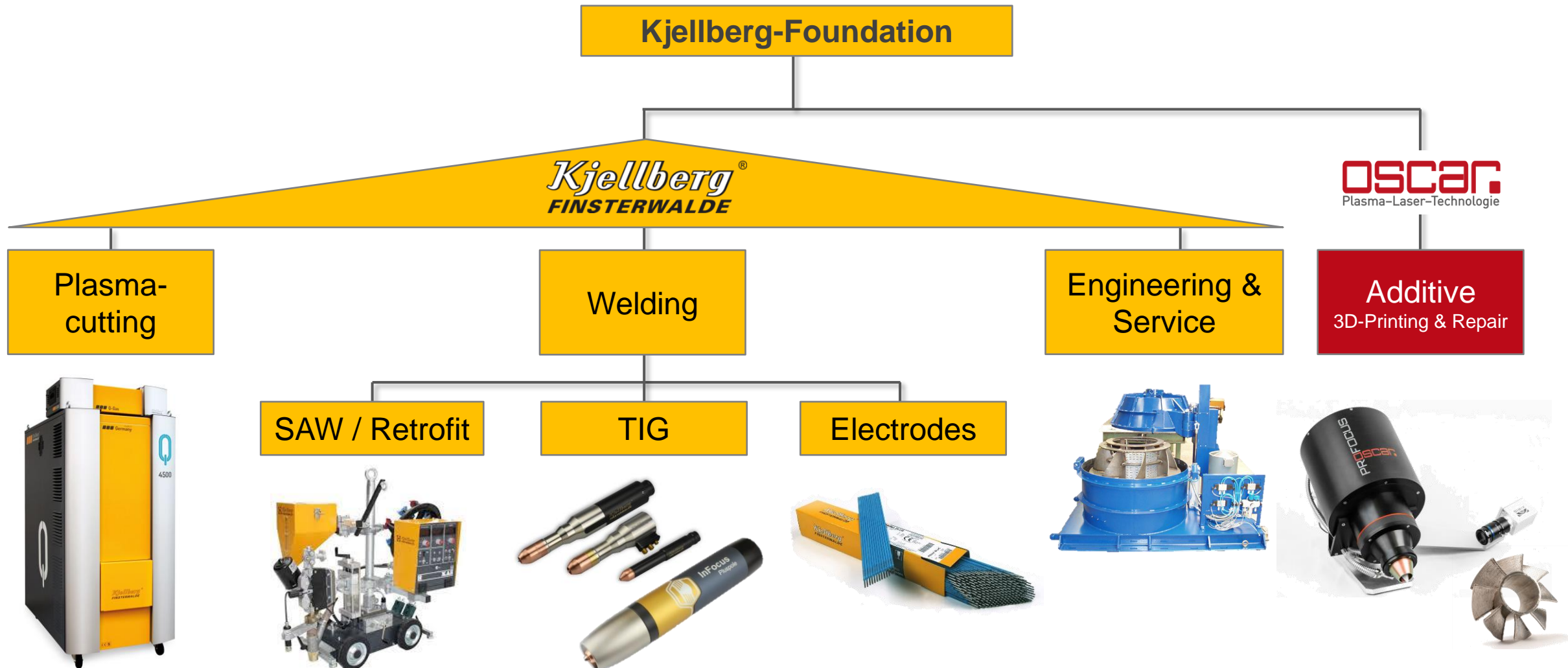
Products „Made in Germany“



- 1922** Foundation of Kjellberg (development & sales of welding technology)
- 1959** Birth of plasma cutting
- 2013** Research company OSCAR PLT (Klipphausen)
- 2019** Market launch Q 3000 Plus and Innovation Award at „Blechexpo“ show
- 2023** 450 employees, 70% export into 50 countries, 4 foreign branches



Products „Made in Germany“



Your Kjellberg team around TIG welding



Plasma und Maschinen GmbH

Development, design, manufacturing, product updating



OSCAR PLT GmbH

Product management, R&D support



Schweißtechnik und Verschleißschutz GmbH

Sales & application engineering



Henning Schuster, IWE

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+49 35204 78693-55 (Th+Fr)
+49 151 528 46933
h.schuster@kjellberg.de



Dr. Michael Dreher, IWE

Group manager TIG welding,
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Nils Manig

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Constanze Gebhardt

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Ksenia Simakova

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WE are Kjellberg

Our TIG products are also competently supported by many dedicated colleagues in purchasing, sales, distribution, development and production.



Fabian Kosel

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Jens Heimbokel, IWE

Freelancer in technical sales
+49 176 816 98703
j.heimbokel@kjellberg.de

InFocus Pluspole – TIG-Pluspole Aluminium Welding



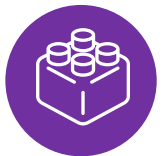
1. What is InFocus Pluspole and what are the potentials for you?

The answer from the perspective of process, torch design & arc characteristics



2. Your application compass

The overview of reliably mastered welding tasks, basic conditions and references



3. Which products do we offer to you?

The overview to your Kjellberg TIG component kit

What is InFocus Pluspole?

The answer from the perspective of process advantages for your production

State of the art in aluminium welding:

GMAW:



+ high productivity



- spatter and fume formation
- prone to seam defects

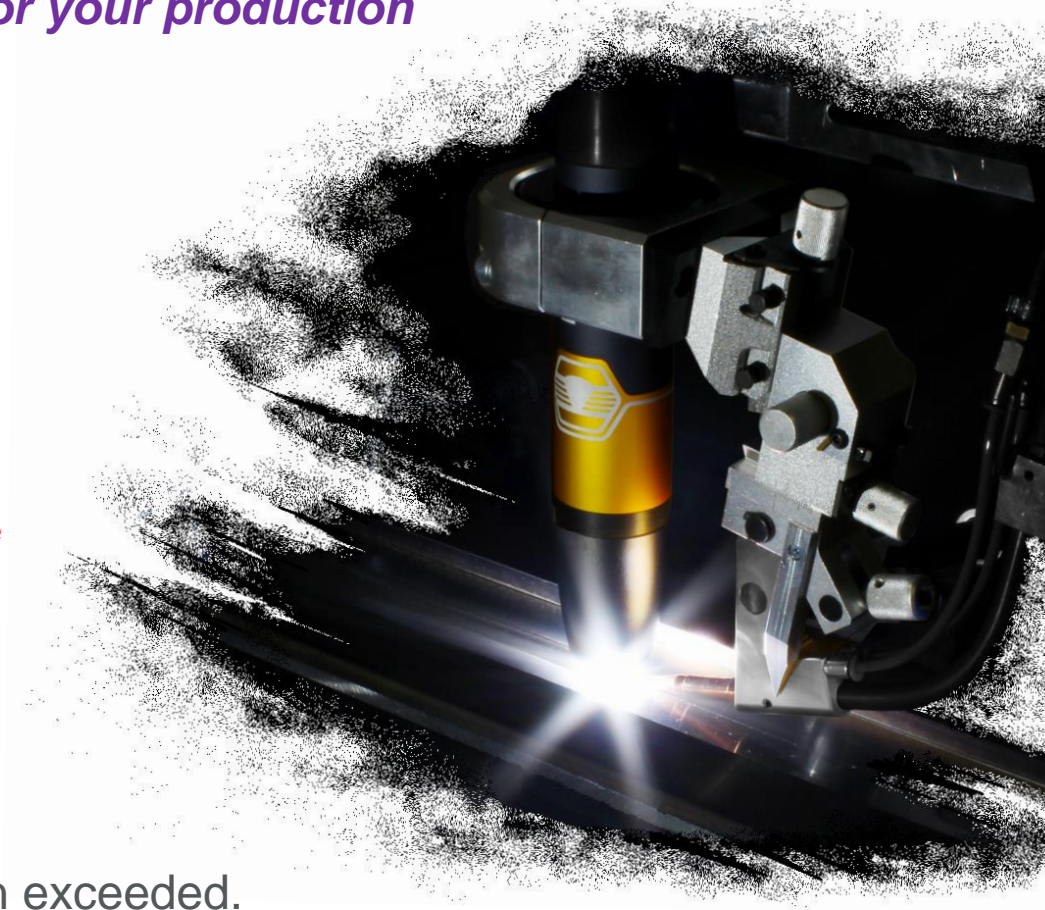
TIG:

+ high quality

- less productivity
- helium oder AC-technique necessary

InFocus Pluspole is a TIG process, in which ...

- the proven TIG quality is retained and ...
- the productivity of the MIG process can be achieved or even exceeded.

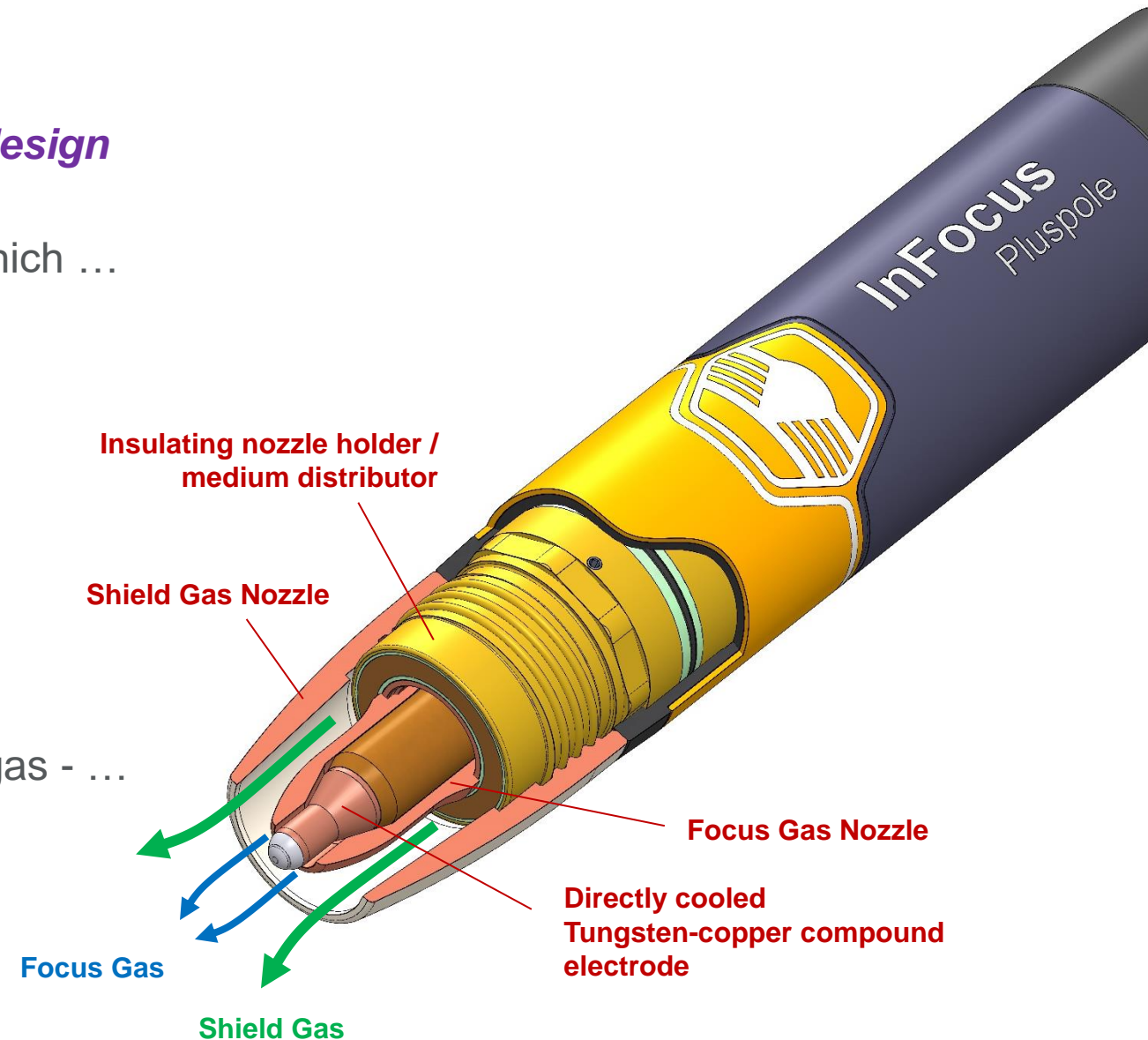


What is InFocus Pluspole?

The answer from the perspective of the torch design

InFocus Pluspole is a TIG welding process, in which ...

- in a machine guided torch ...
- a patented, directly cooled electrode ...
- with a load capacity of up to 500 A ...
- is operated at the positive pole (DC-EP) and ...
- a high concentric focusing gas nozzle ...
- surrounds the arc - in addition to the shielding gas - ...
- with a second gas flow.

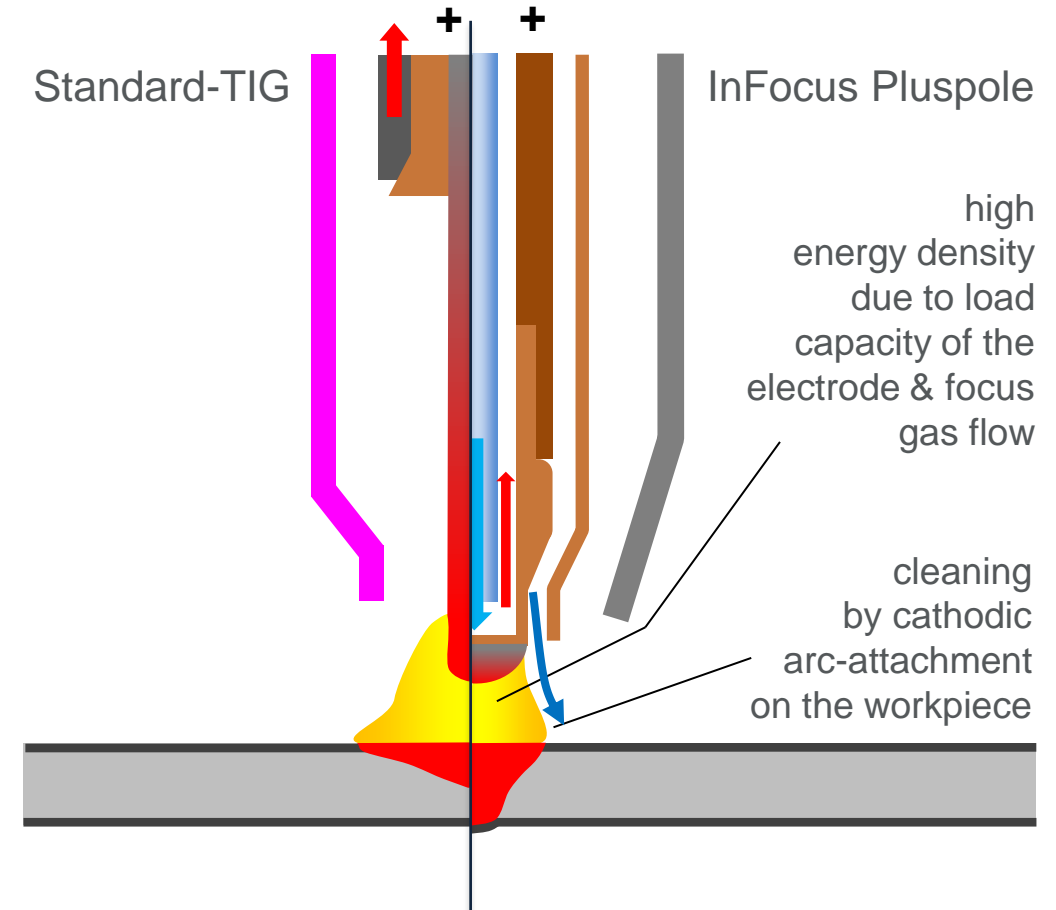


What is InFocus Pluspole?

The answer from the perspective of the torch design and the resulting arc characteristics

InFocus Pluspole is a TIG welding process, in which ...

- the electrode design and the principle of direct cooling enable a
- powerful, cathodic and thus cleaning arc to be applied on the workpiece and ...
- the heat input at the workpiece additionally is concentrate by ...
- a focusing gas flow surrounding the arc.



What potential does InFocus Pluspole offer?

The link between arc properties and advantages for your welding production

In comparison to standard TIG or GMAW:

- Reversal-polarity-free welding in positive pole of the electrode
 - Possibility to save expensive helium or more complex AC power source technology
- Increased energy density on the workpiece
 - Increasing productivity and reducing the total energy input
 - Optimisation of the seam formation (ratio of width and welding depth)
 - Possibility for single-layer welding of butt joints up to 8 mm
- Reduced emissions
 - Ability to significantly reduce noise, smoke and dust in the manufacturing environment



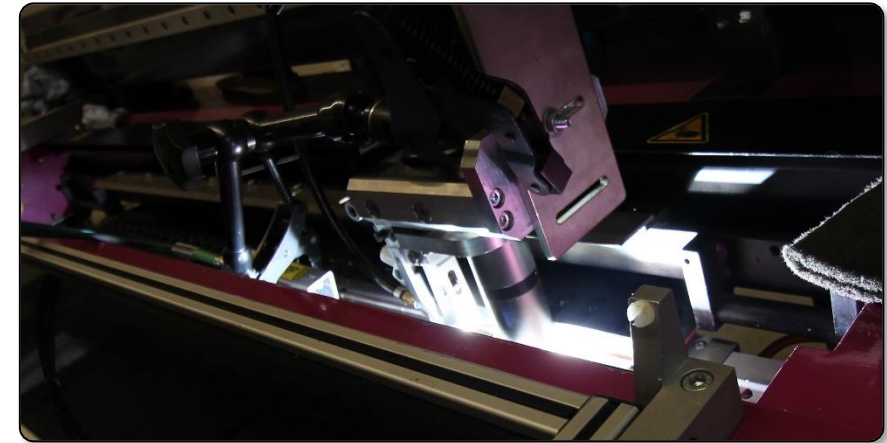
Your application compass

The overview of confident welding tasks and necessary basic conditions

Process control options



- Linear welding machines and clamping benches
- Circular-seam welding systems
- Machine carriers / welding masts
- Robots



- Welding tractors & „old axles“

→ *Welding with welding tractors is possible and must be tested for the specific task, but it depends on the design of the tractor system speed and torch position should not deviate too much.*

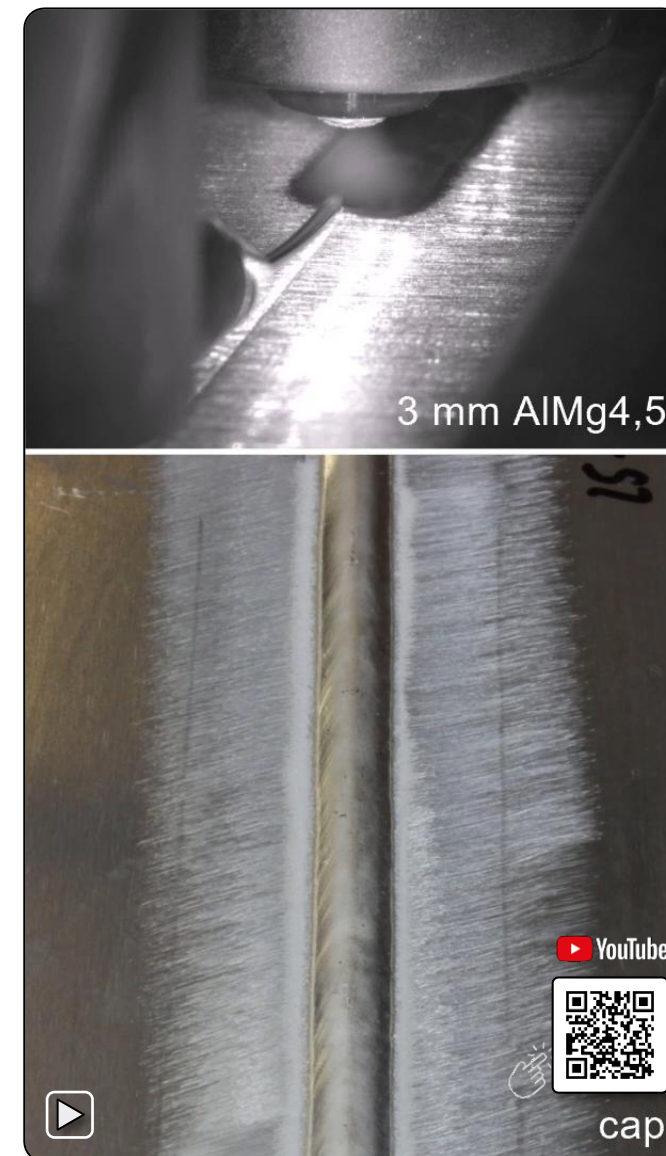
Your application compass

AlMg alloys – AlMg4,5Mn0,7; EN AW-5083

Thickness [mm]	Speed [cm/min]	SG	Focus Gas nozzle	Focus Gas	Current [A]	Filler 1,2mm
3,0	80	Ar	WA2580	VARIGON® S*	200	AlMg4,5
6,0	25	Ar	WA2580	VARIGON® S*	260	AlMg4,5
8,0	20	Ar	WA2580	VARIGON® S*	400/460	AlMg4,5

Welded in longitudinal welding machine by Schnelldorfer, ELENA.
Saw cut, edge slightly bevelled at top & bottom, top & bottom freshly grinded depending on application, not tacked.

* VARIGON® is a trademark of Linde GmbH



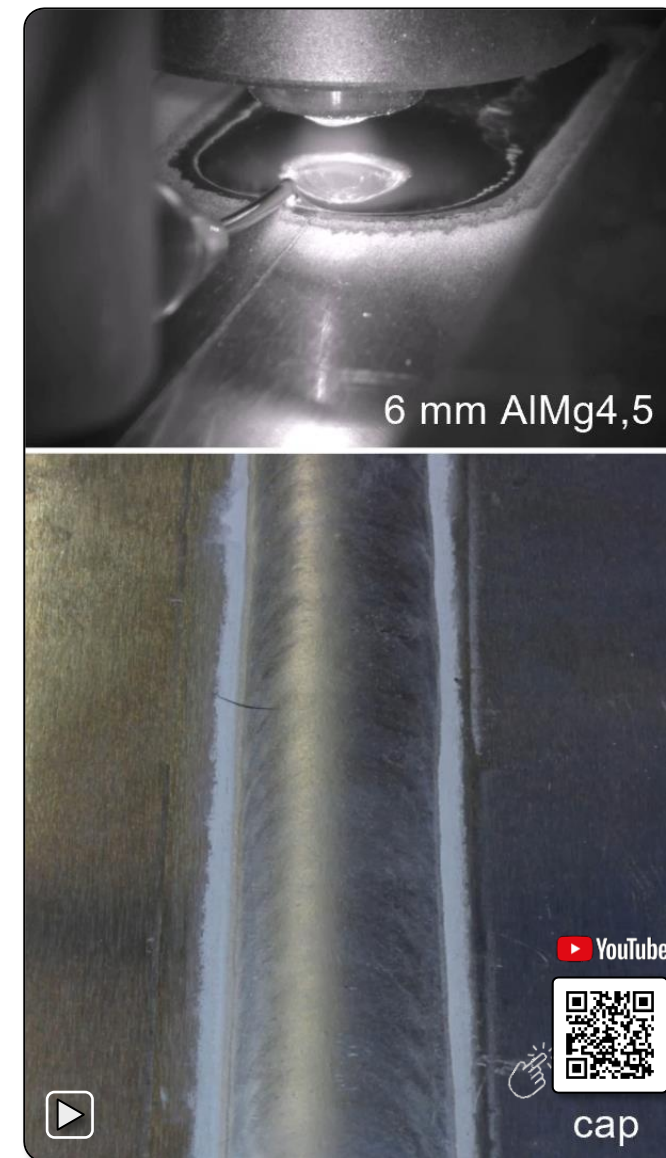
Your application compass

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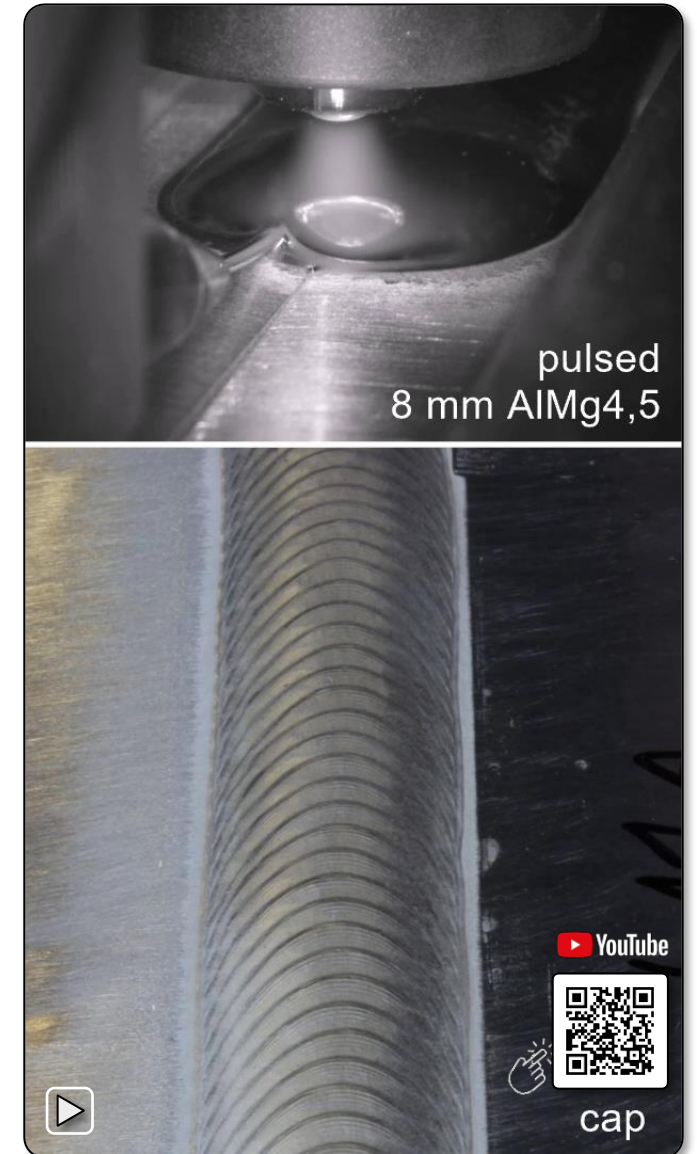
Your application compass

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Welded in longitudinal welding machine by Schnelldorfer, ELENA.
Saw cut, edge slightly bevelled at top & bottom, top & bottom freshly grinded depending on application, not tacked.

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SPITZER

HABA HÄHNLE
SCHWEISSTECHNIK



Your application compass - References

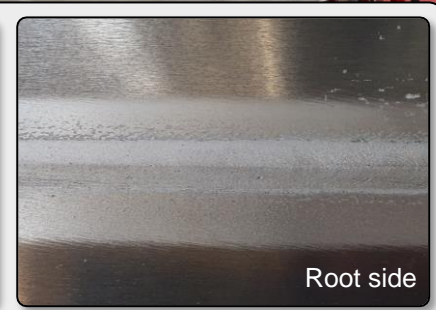
8m longitudinal seam welding plant for silo vehicle construction



Components: Sheet metal joints 7.5 x 2m
Sheet thickness: 5 mm single layer
Start of production: 01/2021



Upper side



Root side



- „ 30% faster “
- „ 50% less time for seam preparation “
- „ never tungsten inclusions “
- „ 7-8 hours of welding with 1 Electrode “
- „ no more helium “



Which products do we offer to you?

The overview of your Kjellberg TIG component kit

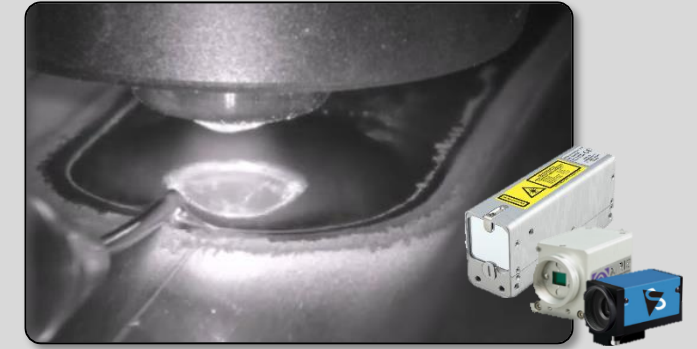
Torch & Accessories



Power Sources, Wire & Accessories



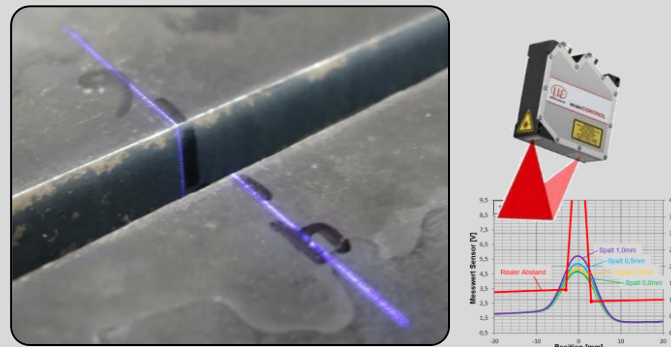
Process Visualisation



Cooling Units



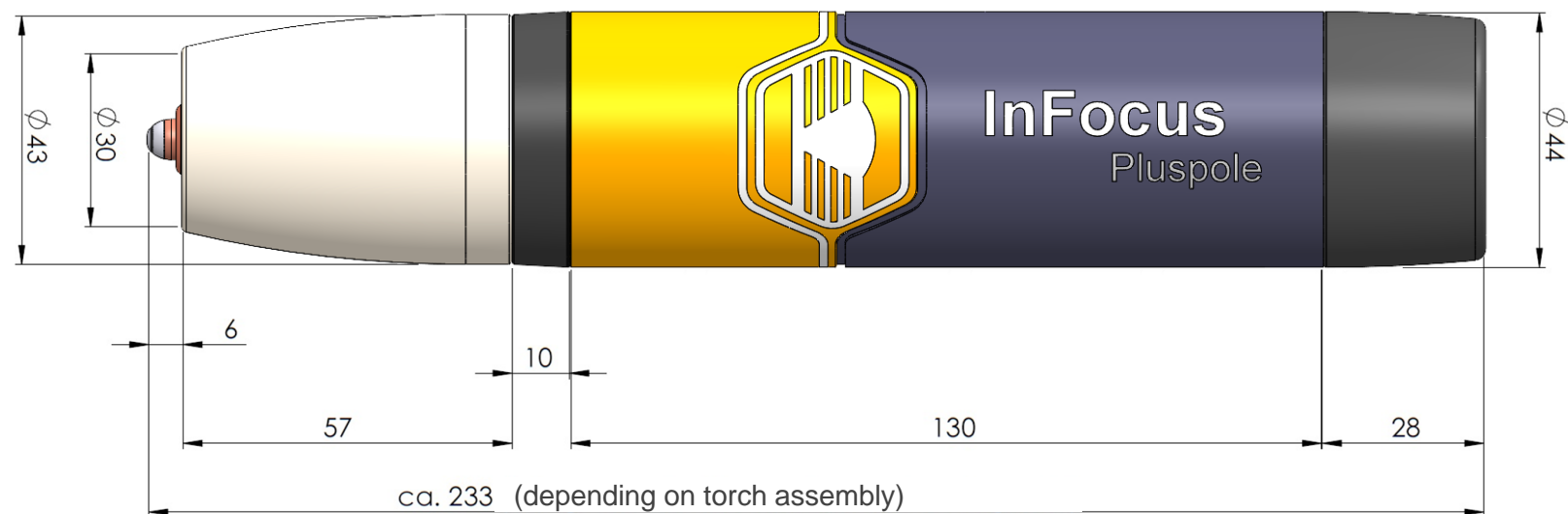
Sensors



Which products do we offer to you?

The overview of your Kjellberg TIG component kit

The InFocus Pluspole torch



Which products do we offer to you?

The overview of your Kjellberg TIG component kit

Torches for direct connection to the power source

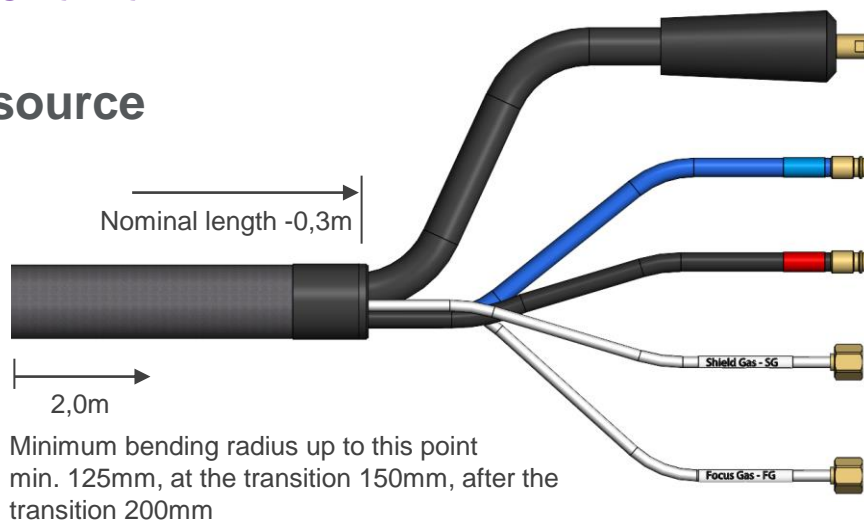


Standard-lead, DIX-connector

5m: .17.230.600.005.5
8m: .17.230.600.008.5
other lengths on request

Robotic-lead, DIX-connector

5m: .17.230.602.005.5
8m: .17.230.602.008.5
other lengths on request



Welding current DIX 95,
nominal length

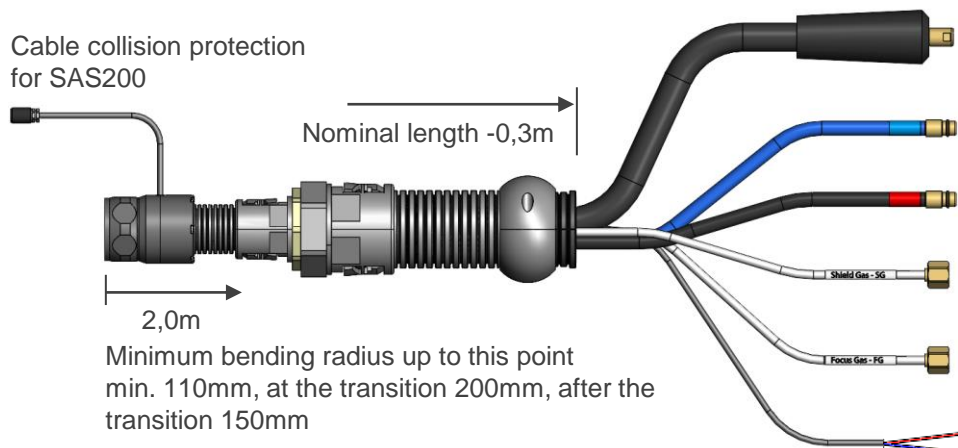
Coolant supply SK 7.2mm,
nominal length +1m

Coolant return SK 7.2mm,
nominal length + 1m

Shield gas G1/4",
nominal length +1m

Focus Gas G1/4",
nominal length +1m

Cable collision protection
for SAS200



Welding current DIX 95,
nominal length

Coolant supply SK 7.2mm,
nominal length +1m

Coolant return SK 7.2mm,
nominal length + 1m

Shield gas G1/4",
nominal length +1m

Focus Gas G1/4",
nominal length +1m

Collision protection, wire end
sleeves, 2-wire, nominal length +2m

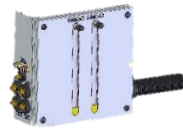
Which products do we offer to you?

The overview of your Kjellberg TIG component kit

Torches for connector box

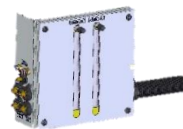


Standard-lead, for Connectorbox PP GR

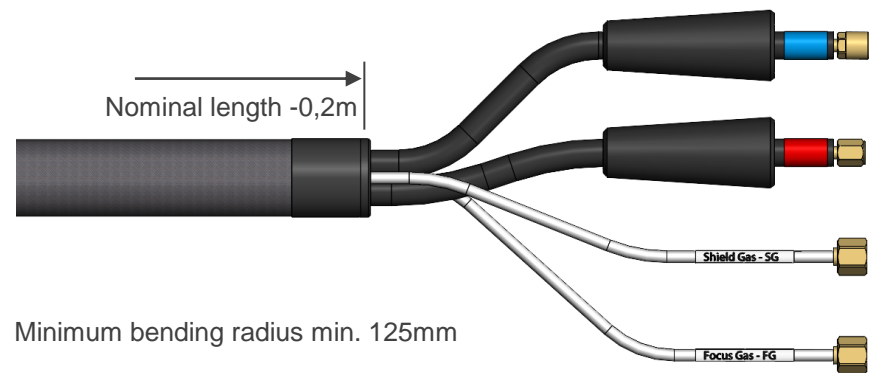


1m: .17.230.601.001.5
2m: .17.230.601.002.5
other lengths on request

Robotic-lead, for Connectorbox PP GR



1m: .17.230.603.001.5
2m: .17.230.603.002.5
other lengths on request

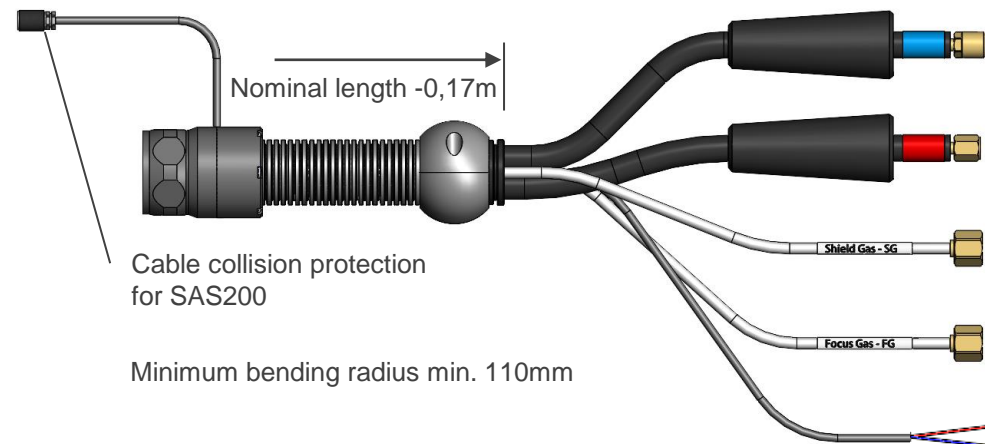


Current and coolant supply,
M12x1, NW 12mm, with protective
sleeve, nominal length

Current and coolant return,
M10x1, NW 12mm, with protective
sleeve, nominal length

Shield gas G1/4",
nominal length

Focus Gas G1/4" LH,
nominal length



Current and coolant supply,
M12x1, NW 12mm, with protective
sleeve, nominal length

Current and coolant return,
M10x1, NW 12mm, with protective
sleeve, nominal length

Shield gas G1/4",
nominal length

Focus Gas G1/4" LH,
nominal length

Collision protection, wire end
sleeves, 2-wire, nominal length +2m

Which products do we offer to you?

The overview of your Kjellberg TIG component kit

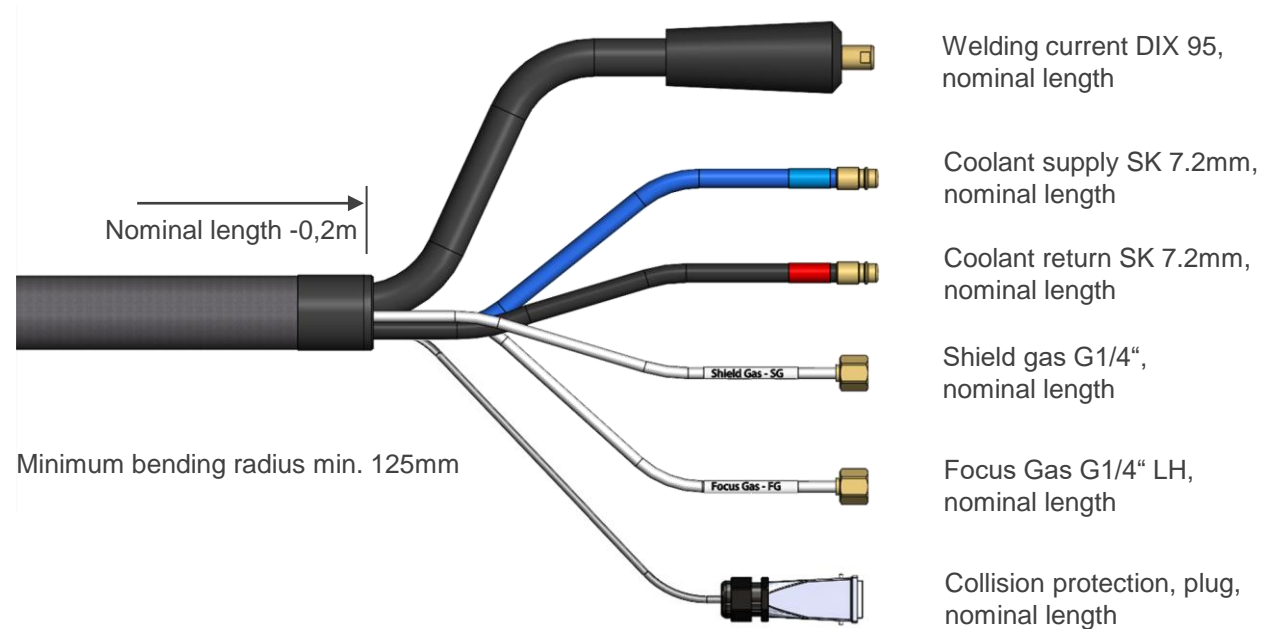
Torches for connector box



**Standard-lead,
for Connectorbox PP**



2m: .17.230.600.002.5
other lengths on request



Which products do we offer to you?

The overview of your Kjellberg TIG component kit

Consumables, wear parts and tools



Electrode WA0571
.17.230.600.555.5



SG Nozzle WA4500
.17.230.600.636.5
For butt joint weldings



SG Nozzle WA4600
.17.230.600.637.5
for fillet joint welding



FG Nozzle WA2580
.17.230.600.169.5
length 43mm, inner-Ø 8mm



FG Nozzle WA2590
.17.230.600.167.5
length 40mm, inner-Ø 9mm



Cooling Tube
.17.230.600.152.5
with thread coating to lock the
installation position



Cooling Tube Tool
.17.230.600.801.5
for the change of the cooling
tube and the position adjustment



Starter-Kit
.17.230.600.880.5

- 10x Electrode WA0571
- 2x Shield Gas Nozzle WA4500
- 2x Shield Gas Nozzle WA4600
- 2x Focus Gas Nozzle WA2580
- 2x Focus Gas Nozzle WA2590
- 1x Cooling Tube
- 1x Cooling Tube Tool



Which products do we offer to you?

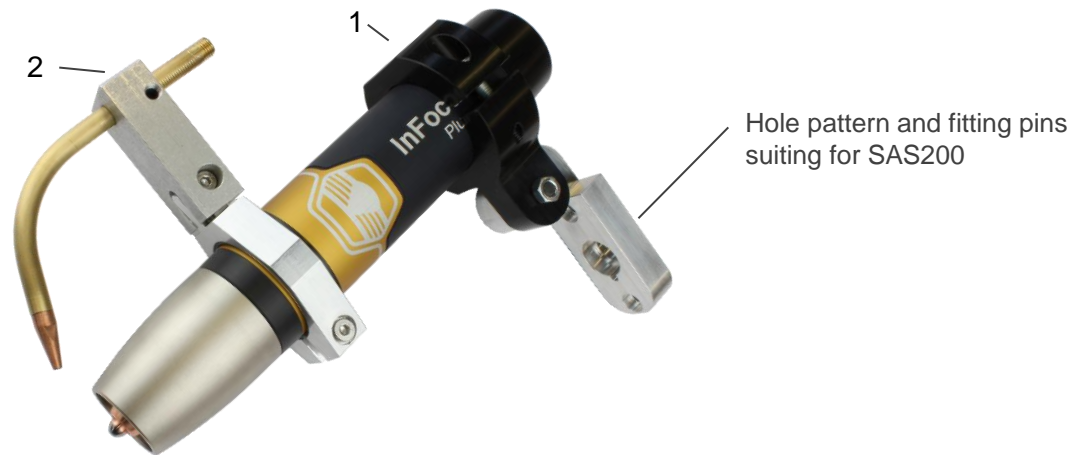
The overview of your Kjellberg TIG component kit

Torch holders & wire feed supports



FLEX / Roboter

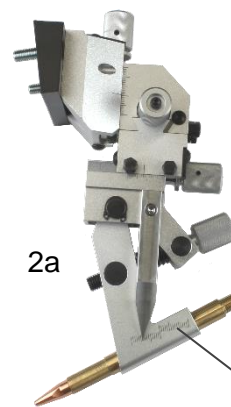
- 1 - Torch holder: .17.042.110.225
- 2 - Wire feed support: .17.042.220.960



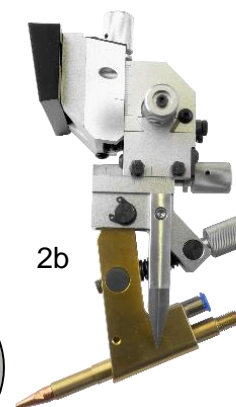
Portal Angle



+



or



=



- 1 - Torch holder Angle: .10.042.111.220.1
- 2 - Wire feed support: .10.042.221.960.1
- 2b - Wire feed support, cooled on request

Which products do we offer to you?

The overview of your Kjellberg TIG component kit

Cooler C5 PP

- Power:** 5,480 W (at 20°C supply temperature and 32°C ambient)
on request also C4 (4,395 W) or C5 (5,480 W) possible
- Setting range:** 13.5 – 25.0 °C
- Connectors:** Torch circuit: quick coupling 7.2mm female, mini ball valve
Periphery circuit: quick coupling 5.0mm female, mini ball valve
- Sonstiges:** operating display,
connection cable 2m with CEE 7/4
Float control with magnetic switch, Self-shutdown & start-up override,
6-pole housing interface, peripheral supply



Cooler C5 PP .17.400.053.2B



Which products do we offer to you?

The overview of your Kjellberg TIG component kit

TIG power source FocusTIG 550 PP

Power: 550A at 60% d.c. / 420A at 100% d.c. (at 40°C)
Setting range: 5-550 A
Welding circuit: DIX (torch and workpiece)
Others: Shielding gas solenoid valve, Focus gas solenoid valve, cold wire preparation, weld data display with control dial, interface for external ignition, cooler interface with quick shut-off, mains cable 5m with CEE 32A



Options:

pallet (.10.102.937) or
 trolley subframe (.10.102.938)

FocusTIG 550 PP
 .17.400.061

TIG power source FocusTIG 550 PP AC/DC

Power: 550A at 60% d.c. / 420A at 100% d.c. (at 40°C)
Setting range: 5-550 A
Welding circuit: DIX (torch and workpiece)
Others: Shielding gas solenoid valve, Focus gas solenoid valve, cold wire preparation, weld data display with control dial, interface for external ignition, cooler interface with quick shut-off, pallet subframe, mains cable 5m with CEE 32A



FocusTIG 550 PP .17.400.062
 AC/DC

For switching off the easy power source in the case of a cooling-related malfunction when using a cooler C5 PP with monitoring & interface:
 Cable monitoring cooler, 2m .11.570.079.002

Which products do we offer to you?

The overview of your Kjellberg TIG component kit

Control of the FocusTIG power sources

Cables for communication between power source and control cabinet / higher-level control system (e.g. EMERGENCY STOP)

- A – cable automation, 19-pole, 5m .10.102.856
- A – cable automation, 19-pole, 10m .10.102.955
- A – cable automation, 19-pole, 15m .10.102.931

Cables for communication between power source and interface for the installation in the control cabinet :

- B – control cable, 7-pole, 5m .10.102.864
- B – control cable, 7-pole 10m .10.102.927
- B – control cable, 7-pole, 15m .10.102.932

Cables for digital and analogue communication between interface of power source (inside housing) and control cabinet / master control:

- C – control cable, 23-pole, 5m .10.102.933
- C – control cable, 23-pole, 10m .10.102.934
- D – control cable, 28-pole, 5m .10.102.935
- D – control cable, 28-pole, 10m .10.102.936

Interface for installation in control cabinet (top-hat rail)



Interface for installation at power source (inside housing)



analogue/digital	.10.102.868	.10.102.868.1
CAN-OPEN	.10.102.859	.10.102.859.1
DEVICE-NET	.10.102.860	.10.102.860.1
INTERBUS	.10.102.861	.10.102.861.1
PROFIBUS	.10.102.862	.10.102.862.1
PROFINET	.10.102.909	.10.102.909.1
PROFINET LWL	.10.102.908	.10.102.908.1
ETHERCAT	.10.102.910	.10.102.910.1
ETHERNET IP	.10.102.911	.10.102.911.1

Which products do we offer to you?

The overview of your Kjellberg TIG component kit

Wire feeder for FocusTIG PP (standard resolution)



Setting range:	0.2 – 10m/min step size 0.1m/min
Initial equipment:	aluminium 1.2/1.6mm
Cover:	left-opening
Control cable:	optional with or without protective hose (e.g. for drag chain)
Wire feeding:	optional 1.5m or 3.0m (shortenable)

Wire feeder for FocusTIG PP (aluminium 1.2/1.6mm , 0.2-10m/min) .17.230.600.310

Cold wire feeding for FocusTIG, 1.5m shortenable .17.040.220.9515A
Cold wire feeding for FocusTIG, 3.0m shortenable .17.040.220.9530A

Components for both wire feeder versions:

Control cable wire feeder 5m, protective hose .10.102.872
Control cable wire feeder 10m, protective hose .10.102.872.3
Control cable wire feeder 15m, protective hose .10.102.872.4
Control cable wire feeder 15m, without protective hose .10.102.926
other lengths on request



Wire feeder for FocusTIG PP, fine (high resolution)



Setting range:	0.1-5m/min step size 0.01m/min
Initial equipment:	aluminium 1.2/1.6mm
Cover:	left-opening or right-opening

Wire feeder for FocusTIG PP, fine (aluminium 1.2/1.6mm, 0.1-5m/min) on request

Wire feeder für FocusTIG PP, fine (aluminium 1.2/1.6mm, 0.1-5m/min), right-opening on request

Cold wire feeding for FocusTIG fine, 1.5m shortenable .17.040.220.9515
Cold wire feeding for FocusTIG fine, 3.0m shortenable .17.040.220.9530

Mounting plate wire feeder with wire reel holder .10.102.921.1
Mounting plate wire feeder with wire reel holder, right-opening on request

Which products do we offer to you?

The overview of your Kjellberg TIG component kit

Connectorbox for FocusTIG PP power source

- Power:** 500A at 60% d.c.
- Others:** HF ignition module incl. protection of rear welding circuit and measuring sockets
measuring sockets with electrode potential (e.g. for voltage-based height control),
solenoid valve for Shield Gas,
solenoid valve for Focus Gas,
interface for collision shutdown



Connectorbox PP, HVI, DIX-Connector

.17.215.830.700

Lead packages for drag chain:

Lead Package PP Basic 15m, for drag chain, in single lines

.17.230.651.700015

Lead package TIG for external HVI 15m, for drag chain, in single lines

.17.215.852.700015

Lead package TIG for HightControl Type A 15m, for drag chain, in single lines

.17.215.853.700015

other lengths on request

Which products do we offer to you?

The overview of your Kjellberg TIG component kit

Connectorbox for FocusTIG PP power source (only 1 gas line inside of the power source)

Power: 500A at 60% d.c.

Others: measuring sockets with electrode potential (e.g. for voltage-based height control),
2 ball-flowmeters (Shielding gas 0-30 l/min, Focus gas 4-16 l/min)
Pressure on Shielding gas line opens Focus gas line

Connectorbox PP GR, for Connectorbox-Connector

.18.600.100.2744

Lead packages for drag chain:

Lead Package PP GR in corrugated tube 5m

.18.600.100.2745

Lead Package PP GR in corrugated tube 10m

.18.600.100.2746

Lead Package PP GR in corrugated tube 15m

.18.600.100.2747

other lengths on request



Which products do we offer to you?

The overview of your Kjellberg TIG component kit



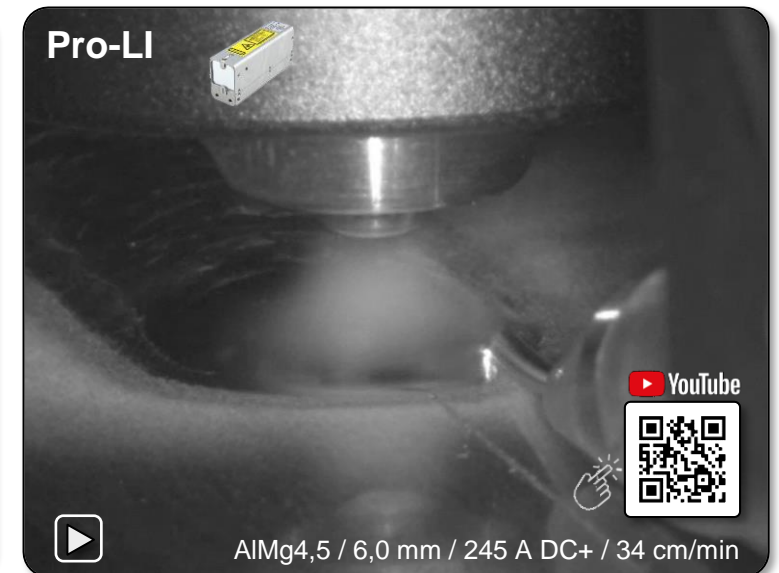
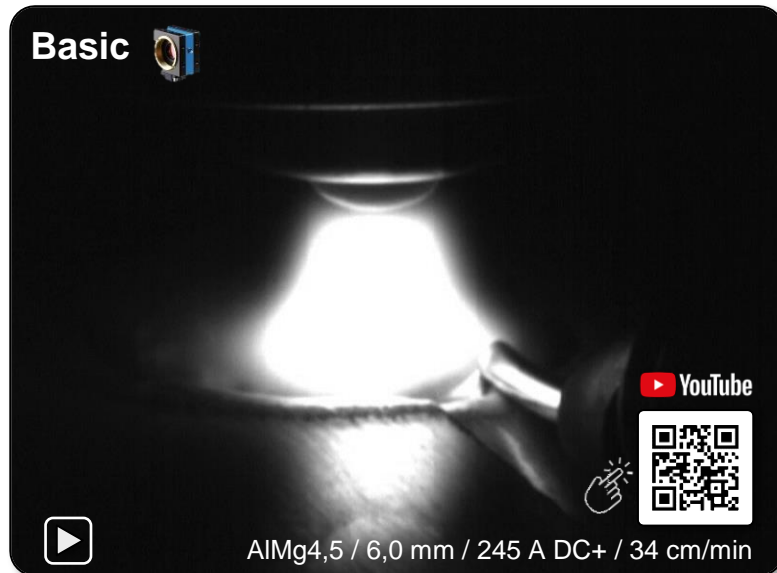
Visualisation of the welding process

Our offer

- Selection of suitable technology and consulting according to your requirements
- Integration into your production environment

Your advantage

- Simplified process handling due to visibility of electrode, arc, wire, weld pool and joint



Which products do we offer to you?

The overview of your Kjellberg TIG component kit

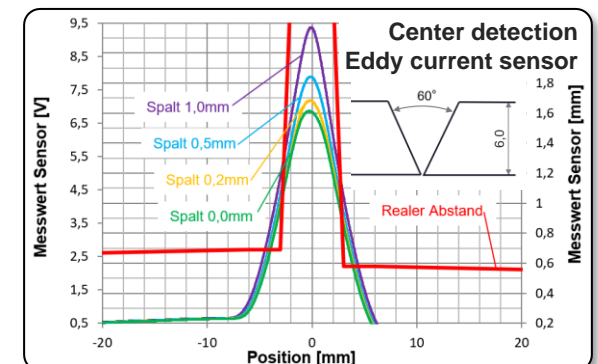
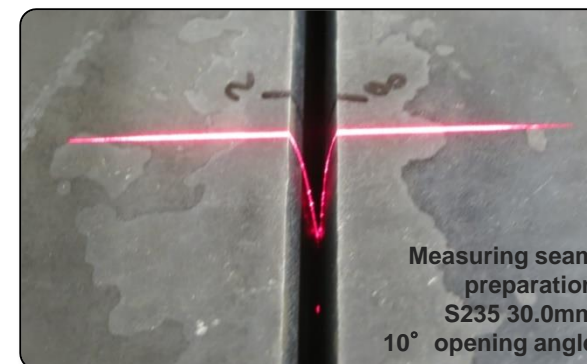
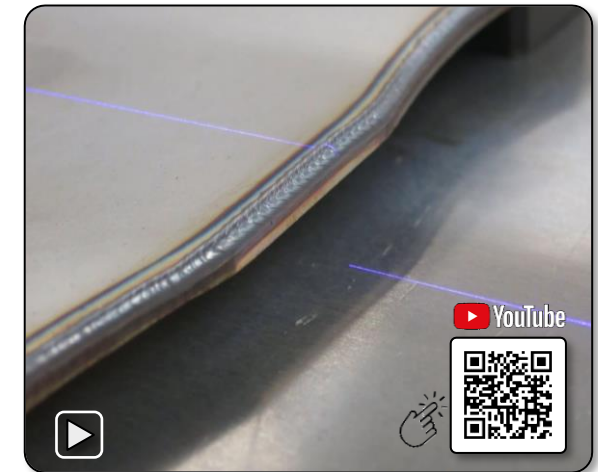
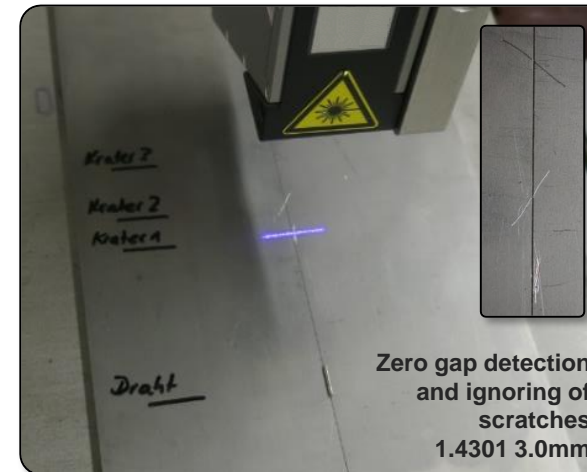
Sensors for seam detection and tracking

Our offer

- Evaluation of the component geometry and seam preparation
- Selection of a suitable sensor with regard to the control task (laser triangulation, eddy current, inductive)
- Programming of the sensor for the output of the correct process variable
- Integration of the sensor into the control circuit or transfer of the interface to your system manufacturer

Your advantage:

- Simplified plant operation due to increased degree of automation



We would be pleased to convince you with our products and services!

You can find further information at
www.kjellberg.de & www.oscar-plt.de

and you are welcome to contact your advisor in person



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