

Kjellberg
FINSTERWALDE

the
FINE FOCUS
company

Now with
PLUS - technology !

Plasma Cutting Units

FineFocus 800

Dry plasma cutting up to 80 mm
Underwater plasma cutting up to 50 mm

FineFocus 1600

Dry plasma cutting up to 160 mm
Underwater plasma cutting up to 100 mm



**Plasma Fine Focus technology -
the Fine Art of Plasma Cutting**

Since 1960 setting the standards for the cutting of metallic materials

Since more than 45 years Kjellberg Finsterwalde as the first and most competent producer in Europe has developed and manufactured plasma cutting equipment successfully. So in the early sixties the first plasma cutting unit PA 100 was launched already. In 1964 the Institut Prof. Manfred von Ardenne, Dresden was developing the Plasma Fine Focus technology, which was presented with the model PA 20 (picture) first time to the industry.



Then in the early seventies the plasma gas air entered the field and found its application in the economical cutting of mild steels. In the middle of the nineties Kjellberg Finsterwalde was offering the oxygen cutting technology along with the XL-Life-Time system, which is increasing the life time of the consumables significantly, and furthermore, the virtually rework-free cut reduces the operational costs considerably. From 2001 Kjellberg Finsterwalde is mainly concentrated on the development of new inverter power sources for the automated cutting, the HiFocus technology.

**Fine Focus technology -
our experience for your prospective duties**



Highest quality
through the approved Plasma Fine Focus system, delivered metallic clean and dross-free cuts.

Reduced angularity and increased cutting speed
on mild steels by **FineFocus^{PLUS}** technology



Double-Straight Effect:
Inclination 3-5°;
Inclination around the plate up to 4°



PLUS technology:
Inclination -1 to +2°;
Inclination around to plate up to max. 2°

Increased life of consumables

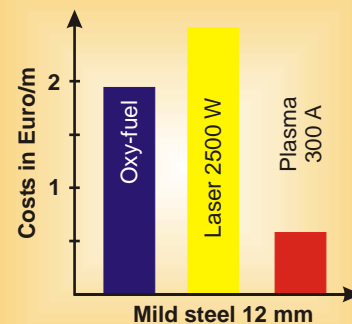
and improved cut shape at the cut end, and especially at inside contours, caused by the new microprocessor controlled torch lowering at down-slope phase.



Life time testing

Minimized costs

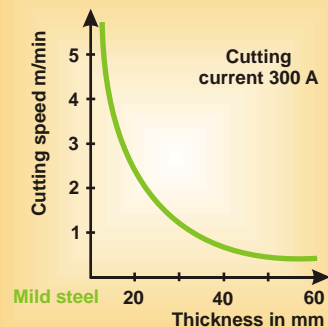
through optimized application of plasma gases and electric energy,



with optimum results compared to other cutting methods, and to competitors too

High productivity

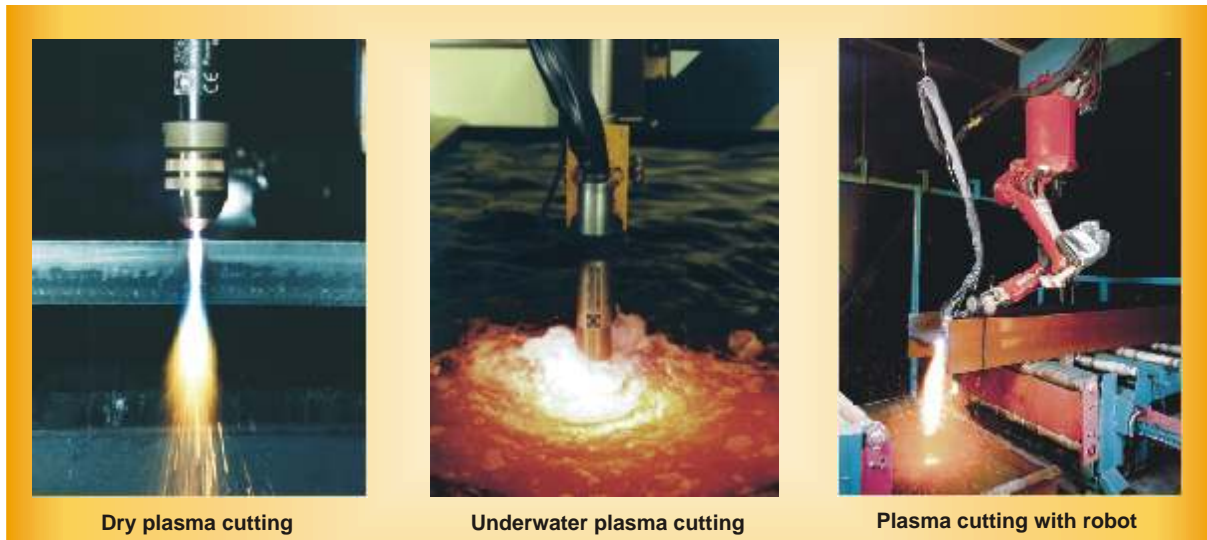
because of plasma torches with superb functionality, granting



rework-free cutting surfaces and low extra expenses, also at high cutting speed.

Versatile application of the plasma cutting unit **FineFocus 800**

The universal technological concept of the *FineFocus 800* and *FineFocus 1600* enables in connection with relevant accessories the effective solution of all cutting operations at metallic materials up to 80 mm resp. 160 mm. They are especially designed for cutting with CNC-controlled guiding systems and robots. *FineFocus*-plasma cutting units are suitable for straight, profile and bevel cutting, for dry and under water applications, using all kind of cutting gases.



FineFocus 800

- 300 A at 100% duty cycle for cutting of all metallic materials with technical gases or air
- provided with one or two terminals for machine or hand torches, cutting of metals up to 80 mm thickness
- by changing only the consumables the plasma machine torch PB-S80 W with swirl gas technology can cut mild steels with air or oxygen, and stainless steels or aluminum with optimized gas mixtures of Argon/Hydrogen/Nitrogen or air as well
- the quick-change torch PB-S80 WS-2 is suitable for underwater applications too

FineFocus 1600

- Parallel operation of two units *FineFocus 800* with the plasma machine torch PB-S150 W up to 600 A for dry cutting (with external cooling, without swirl gas), or
- with the plasma machine torch PB-S101 WU for underwater cutting up to 100 mm
- approved at scraping applications in nuclear power stations with a special arrangement, consisting of three paralleled *FineFocus 800* combined with a heavy duty plasma torch

Free selectable gas mixtures ensure superior cutting results

The material-specific composition, the pressure and the flow rate of the plasma gases have a substantial influence on the achievement of optimum results during the cutting of metals and alloys.



PGE 3-800 Automatic

For the provision of gases and gas mixtures Kjellberg Finsterwalde is offering the manual plasmagas adjustment unit PGE 2-800 and PGE 3-800.

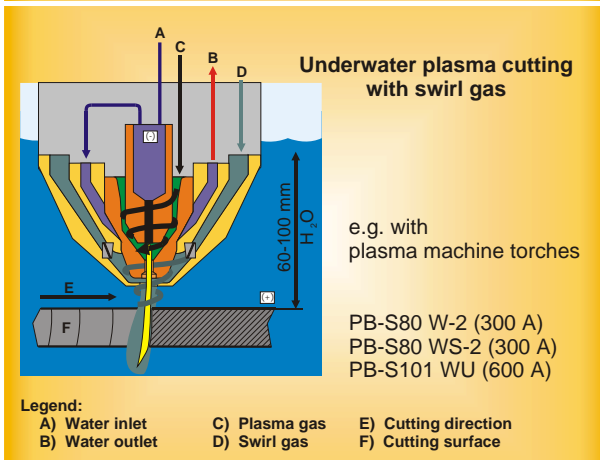
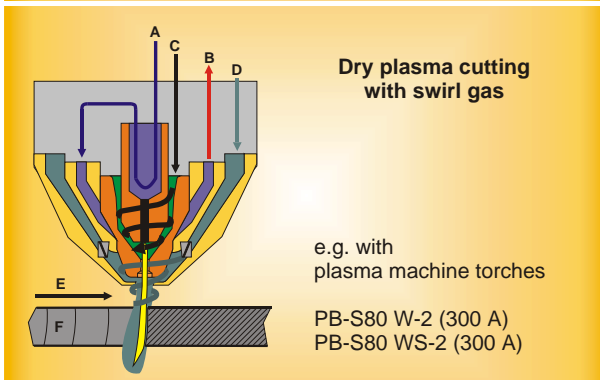
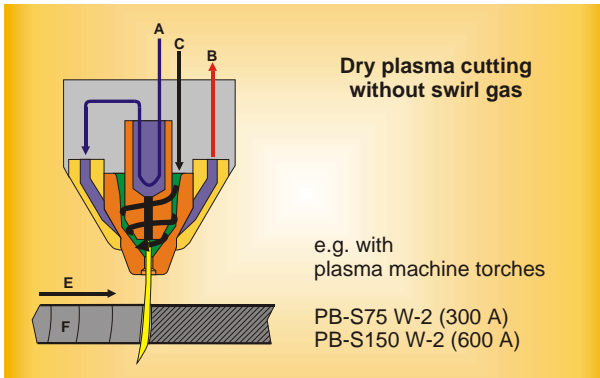
The programmable plasmagas adjustment unit PGE 3-800 will be available in the fourth decade of 2005.

PGE 2-800:
For adjusting the plasma gases nitrogen, hydrogen and argon



PGE 3-800:
For adjusting the plasma gases oxygen and the swirl gases

Process principles of the plasma cutting



**Quick-change torch
PB-S80 WS-2, ready for cutting**



Components of the plasma machine torch PB-S80 W-2

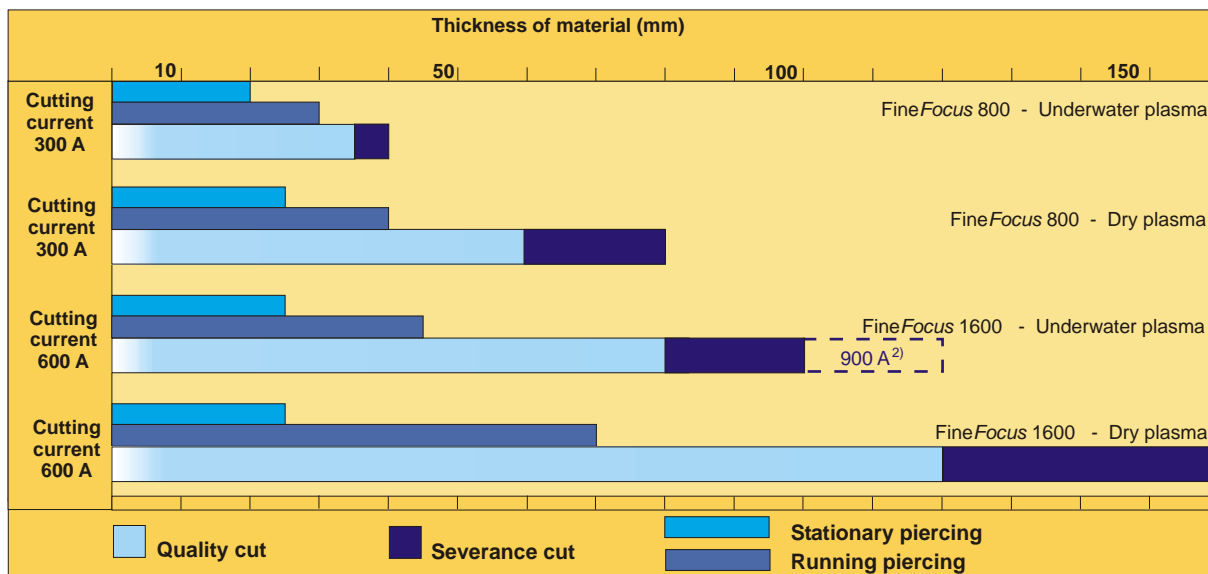
Technological leader by advanced torch configuration

- High longevity of plasma torches and consumables due to the direct cooling of thermally high loaded torch parts, like cathode and nozzle
- Double piercing capacity by the wear-reducing second gas ignition
- Perfect and constant quality over long cutting periods
- Process-optimized cutting gas or mixed gas adjustments are granting optimum cutting results at different materials
- The plasma gas oxygen avoids nitration on the cutting surfaces of mild steels and eliminates therefore secondary finishing operations
- The XL-Life-Time system multiplies the life time of consumables when using the plasma gas O_2

... and sophisticated swirl gas technology

- The use of Kjellberg FineFocus torches acc. to patent DE 3832630/ DE 301299 are granting highest productivity at lowest cost level
- Machine torch suitable for dry-cutting and underwater cutting, and all plasma gases as well, only by changing the consumables
- Potential-free swirl gas cap protects nozzle against upcoming hot material
- Trouble-free stationary and running piercing within a defined thickness range
- Swirl gas technology reduces cut angel deviation
- Cutting quality can be directly influenced by the selected swirl gas

Cutting ranges of the FineFocus 800 and 1600¹⁾



1) for straight cutting, depending on material quality and guiding system
2) 3 plasma cutting units FineFocus 800 in parallel

Cutting parameters for quality cutting³⁾ (extract)

Material	FineFocus 800						FineFocus 1600					
	PB-S80 W-2			PB-S80 W-2 (UWP)			PB-S150 W (without swirl gas)			PB-S100 WU		
	Thick-ness (mm)	Cutting current (A)	Cutting speed (mm/min)	Thick-ness (mm)	Cutting current (A)	Cutting speed (mm/min)	Thick-ness (mm)	Cutting current (A)	Cutting speed (mm/min)	Thick-ness (mm)	Cutting current (A)	Cutting speed (mm/min)
Mild steel	5	200	5000									
	6	200	4300									
Plasma gas: O ₂	8	300	5000									
	10	300	4100									
Swirl gas: Air resp. N ₂	15	300	3200	6	300	4200						
	20	300	2000	10	300	2600						
Technology: FineFocus ^{PLUS}	25	300	1500	20	300	1800						
	30	300	1200	25	300	1000						
	40	300	700	30	300	600						
	60	300	300	40	300	400						
Stainless steels	(1.4301)			(1.4541)			(1.4301)			(1.4301)		
	5	200	2300	4	220	3800	20	220	900			
Plasma gas: Ar/H ₂ /N ₂ resp. Ar/H ₂	10	200	1700	6	220	3200	30	250	700			
	15	250	1700	8	220	1800	45	500	600	20	600	1300
Swirl gas: N ₂	20	250	1100	10	300	1600	60	600	500	40	600	800
	30	250	800	15	300	1300	80	600	250	60	600	500
	40	300	550	20	300	1000	100	600	200	80	600	250
	60	300	200	30	300	500	120	600	150	100	600	200
40	300	500		40	300	400						
Aluminium	6	200	5000									
	10	200	4000									
Plasma gas: Ar/H ₂	16	250	3100									
	20	250	2500									
Swirlgas: N ₂	30	250	1400									
	40	250	1000									
	60	250	450									

3) Cutting speed depends on material, gas pressure, cutting and swirl gas, and consumables as well. For lower demands to the cut quality considerably higher speeds are possible.

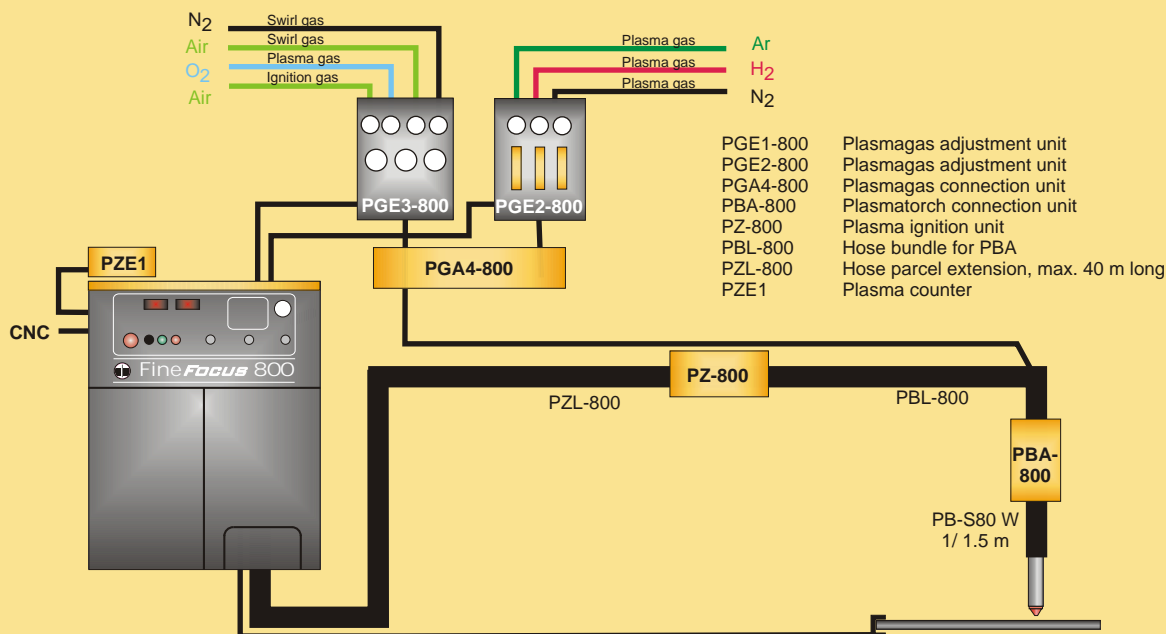
Technical data

	FineFocus 800	FineFocus 1600
Mains voltage (V)	3x 400, 50 Hz	3x 400, 50 Hz
Connecting power (kVA)	83	2x 83
Fuse, slow (A)	125	2x 125
Open circuit voltage (V)	400	400
Cutting current at 100 % d.c. (A)	80 - 300	160 - 600
Cutting thickness (mm)	max. 80	max. 160
- quality cut	60	120
- underwater plasma	40	100
Plasma gases	O ₂ , Air, Ar/H ₂ , Ar/H ₂ /N ₂	Ar/H ₂ , Ar/H ₂ /N ₂
Swirl gases	Air, N ₂	N ₂
Protection class	IP 22	IP 22
Insulation class	F	F
Weight (kg)	556	2x 556
Dimensions (mm)	1370x875x1505	2x 1370x875x1505

	PB-S80 W	PB-S150 W-2	PB-S101 WU
Plasma gases			
Pressure (MPa)			
Ar	0.6	0.7	
Ar/H ₂ (65/35%)	-	-	0.7 - 0.8
H ₂	0.8	0.8	0.7 - 0.8
N ₂	0.7	-	0.7 - 0.8
O ₂	0.9	-	0.7 - 0.8
Air	0.9	-	-
Consumption (l/min)			
Ar	18 - 38	58	52 - 68
Ar/H ₂ (65/35%)	-	-	67 - 85
H ₂	3 - 6	30	21 - 32
N ₂	10	-	17 - 30
O ₂	38 - 50	-	-
Air	18	-	-
Swirl gases			
Pressure (MPa)			
N ₂	0.5 - 0.6	-	0.5 - 0.6
Air	4,5	-	-
Clamping diameter (mm)	58	58	58
Ignition	High voltage		
Cutting current (A)	300	600	600
Main arc establishment	Full automatic power increase if pilot arc contacts workpiece		

Kjellberg-plasma cutting units are CE-conform and correspond with the valid guidelines and instructions of the European Union. They are developed and fabricated on basis of following standards and instructions: EN 60974-1 (VDE 0544, part 1) and BGV D1. The plasma cutting units are labelled with the S-sign and therefore applicable to environments with increased hazard of electric shock. The fabrication takes place according to DIN EN ISO 9001. The factory-owned quality assurance comprises piece and cutting performance tests, documented by test certificate.

Configuration diagram FineFocus 800 with plasma torch PB-S80 W-2 and hose parcel extension, all gases



Our products represent a high level of quality and reliability. We reserve the rights to change design and/or technical specification during the series fabrication. Claims of whatever kind can't be derived from this prospectus.

Kjellberg

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