Kjellberg
FINSTERWALDE

the FINE FOCUS company

Plasma Cutting Machine HiFocus 100

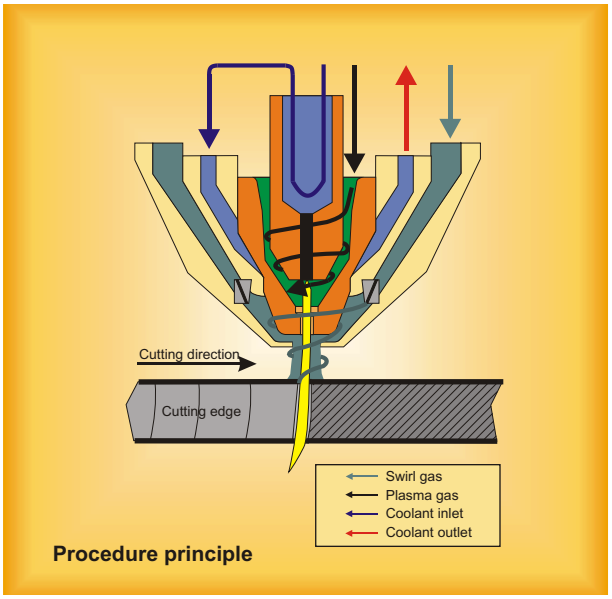
New: HiFocus PLUS - technology for mild steel ensures outstanding results at high productivity



Cutting of electrically conductive materials 0.5 to 25 (40) mm

The Hi*Focus*-technology with *PLUS* for highest demands

Cutting results with high precision



Procedure principle

The production of smooth, square and dross-free cutting surfaces, which can be used for further operations without post-processing, is the basis content of the Kjellberg philosophy regarding plasma cutting.

Nearly straight cuts at materials 0.5 to 25 (40) mm thick can be produced with the plasma cutting unit Hi*Focus* 100. This will be achieved by an increased constriction and stabilization of the plasma arc.

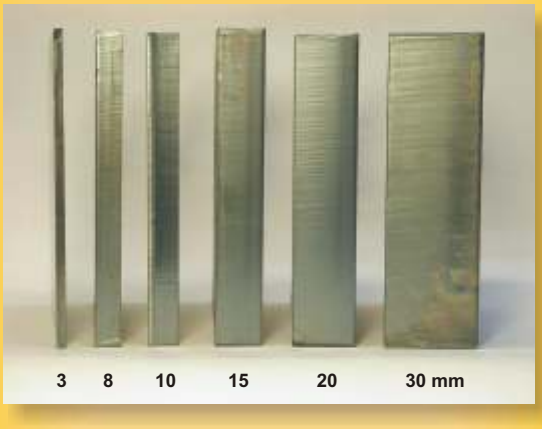
The insulated swirl-gas nozzle, which is protecting the cutting nozzle against upcoming hot material and double arcing during piercing as well, ensures permanent cutting quality, high life time of consumables, and therefore lowest operational costs.

Hi*Focus*^{PLUS} - extends the range of application

The Hi*Focus*^{PLUS} - technology is based on a computer-optimised development of plasma torch components and control sequences. The result is a laser-like cutting quality with extremely low squareness tolerances acc. to DIN EN ISO 9013 (optimum -1° to +2°) for a very wide thickness range up to 25 (40) mm.

An up to 100 % higher cutting speed compared with conventional systems in connection with the increased longevity of the XL-Life-Time consumables are the result of considerably minimized cutting costs for mild steels.

The outstanding features of the new Hi*Focus*^{PLUS} -technology are highest quality capabilities at a substantially improved productivity and cost reduction in an extended range of application.



The picture shows a to zero tending angularity at straight cuts on mild steel plates of different thickness

With the plasma cutting unit Hi*Focus* 100 four optimised cutting ranges are disposable, ensuring superb cutting results at destined dimension limits for mild steels, stainless steels and aluminium.
Those are characterized by:

- metallically clean, laser-like cutting surfaces, also with thicker materials and stainless steels,
- narrow cutting kerfs with lowest squareness tolerances,
- very small heat effected zones, therefore nearly no distortions, also at thin plates,
- dross-free cutting in a wide range of thickness,
- running cutting start and running piercing,
- direct corner cutting and cutting of inside contours;

and ensure a wide technological field of application as well as excellent economical parameters.

Process stability and reliability at automated operation

High availability of the plasma cutting units and the Hi*Focus*-plasma torches

Due to their outstanding features the Kjellberg plasma cutting units are offering versatile possibilities of application to the customer. In principle all electrically conductive materials can be cut. Critical conditions, like coated or dirty material surfaces, plate inclusions, air gaps or silicon and sulphur containing mild steels will not create any problems.

The Hi*Focus* 100 is destined for cutting operations in connection with guiding systems, provided with a conventional and a serial interface, and therefore compatible to various control systems.

Availability and performance capabilities of the cutting unit itself and particularly of the sophisticated plasma torches of the PerCut series are of decisive meaning for application in automated processes. For the cutting with the plasma gas oxygen the specially developed XL-Life-Time system will be used. The cathode is furnished with a high-quality Hafnium pin, which is imbedded in a special alloy and directly water cooled.

A difficult to fabricate cooling channel system is granting an extremely effective heat transfer from the water cooled nozzle. Due to the swirl-gas technology piercing is a nozzle saving operation now. In connection with the powerful plasma torches PerCut 160 and PerCut 170, the plasma cutting unit offers high-economical and cost-saving solutions to the customer.

Cutting quality and lifetime of consumables depend widely from the guiding system. Generally, it is recommended to integrate an arc voltage depending torch height and distance control system into the cutting complex.

Robot guided cutting of 3D-parts

Besides the application with 2D-guiding systems more and more the use of the plasma cutting technology in the automotive industry for the preparation of 3D-parts grows rapidly, a field, where the laser cutting was dominant so far.

The high technical level of the Hi*Focus*-technology, which is fulfilling the high quality and fabrication requirements in that sector, is the reason that the number of our partners in the automotive sector and their suppliers, using the Hi*Focus* 100, worldwide is growing.

Features at the cutting of 3D-parts with Kjellberg cutting systems are the high process stability and the relative insensitiveness to process-related tolerances (e.g. at IHU-profiles) compared with the laser cutting and products from competitiors.



Hi*Focus* plasma approved in various sectors of the automotive fabrication

Superior cutting results by optimal gas mixture



A substantial contribution to the achievement of optimal cutting results at the cutting of metallic materials with the plasma arc have the material-specific composition and the flow rate of the plasma gases.

For mixing the plasma and swirl gases the manually adjustable gas mixing units **PGE-HM** and **PGE1-HM** are at disposal. These conventional units however do not have the possibility to control the flow parameters during the cutting process, and a data storage is not provided. However, for many applications at standard qualities like medium and thicker seized plates they fully are acceptable.

Optimum gas mixtures for higher quality demands will be achievable through the latest development of Kjellberg Finsterwalde, the new automatic gas console **Flow*Control.*** This **worldwide novelty** consists of the plasmagas valve unit PGV and the plasmagas control unit PGC, and is characterised by following advantages:

- Safe dosage of smallest gas quantities and **control of flow rate** through five separate control paths
- Optimum cutting quality through tailored gas mixtures and compensation of pressure fluctuations
- Highest reproducibility by microprocessor control and monitoring
- Independence from the operational state of the plasma torch (gas preflow, pilot arc, main arc)
- Use of gas parameters for standard materials from a data base, established by the supplier, easy storage of gas parameters for further materials possible

Versatile torch technology

Especially for the Hi*Focus*-technology a new generation of plasma torches was developed, covering the growing demands on this technology. Increased arc constriction due to smaller nozzle orifices, intensified gas rotation and use of swirl gas are the main features of those torches. For the three-dimensional cutting particular 3D-consumables are available.

Modifications of the plasma torches PerCut 160 and PerCut 170 enlarge the range of application considerably. Therefore, torches with inclined torch heads (60° and 90°) and stronger clamping shafts will be offered for the robot aided cutting. Best prerequisites for the cutting of three-dimensional parts are made with that.



To simplify the handling, the new developed plasma torch **PerCut 170** is provided with a **quick-change head** with bayonet lock.

Downtimes will be reduced by

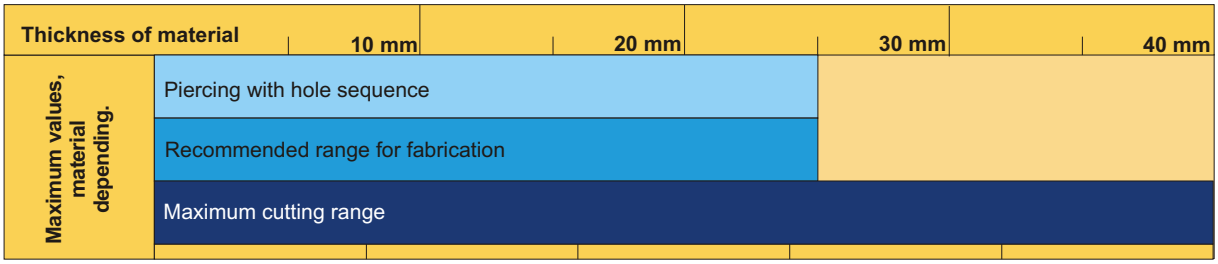
- Rapid technology conversion when changing cutting jobs
- Fast power adaption when cutting different thicknesses
- Quick replacement of consumables with prepared torch head

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Extended possibilities of application through *PLUS*-technology

Range of application



Cutting parameters for quality cuttings [1]

Material thickness (mm)	Mild steel			Stainless steel			Aluminium		
	Techno-logy range [2]	Cutting current (A)	Cutting speed (mm/min)	Techno-logy range [2]	Cutting current (A)	Cutting speed (mm/min)	Techno-logy range [2]	Cutting current (A)	Cutting speed (mm/min)
0,5	HiFocus	20	7 000						
1		20	6 500	HiFinox	(30)	(4 500)	HiFocus	30	1 800
2		50	2 600		45	3 200		30	1 400
3		50	2 200		45	2 400		35	1 200
4	HiFocus PLUS	50	2 200		50	2 000		45	1 500
5		50	1 750		50	1 800		50	1 400
6		100	2 700	HiFocus F	130	2 000	HiFocus F	130	3 200
8		100	2 400		130	1 600		130	2 200
10		130	2 400		130	1 200		130	1 600
12		130	2 000		130	1 000		130	1 400
15		130	1 800		130	950		130	1 000
20		130	1 000		130	550		130	800
25		130	700		(130)	(400)		130	600
(30)		(130)	(500)						
(40)		(130)	(250)						

1) Cutting speed for highest quality requirements. For standard demands the cutting speed can be increased considerably. The cutting speed depends on kind of material, gas pressure, cutting and swirl gas, and nozzles and cathodes as well.

2) The technology ranges have been optimised for different materials and thicknesses.

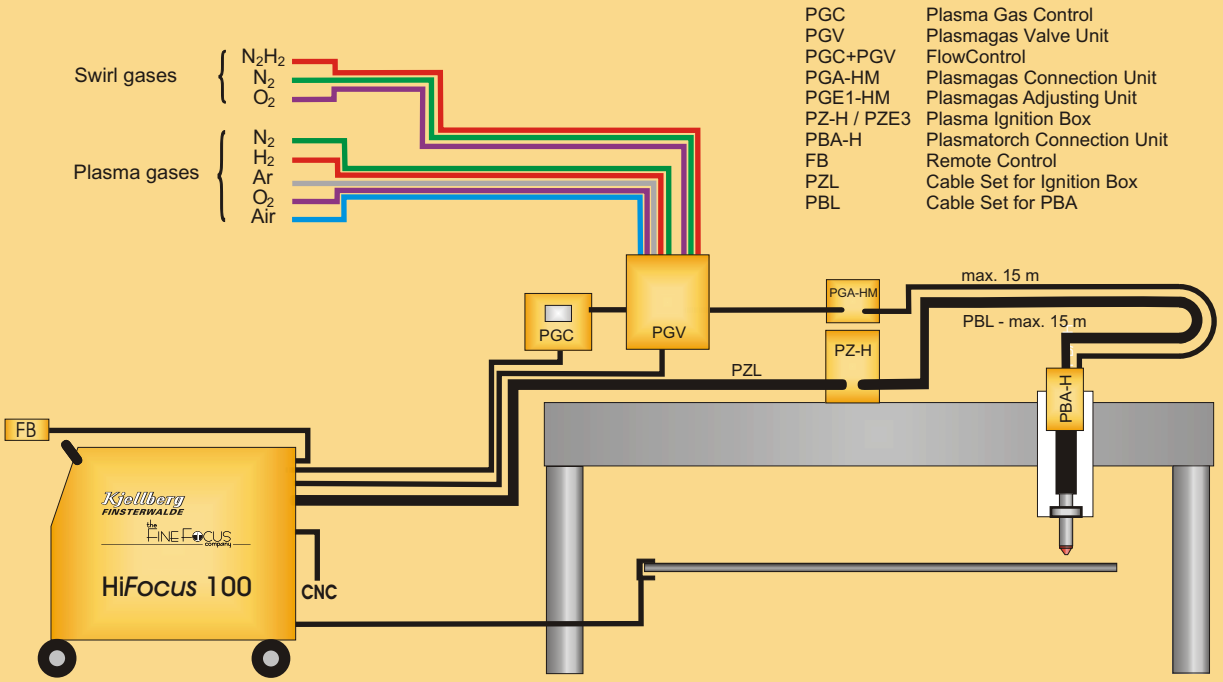
Technical data

Power source	Hi*Focus* 100
Mains connection	3x 400 V, -10 % / +5 % 50 Hz
Mains power	32 kVA
Cross section, Cu	4 x 6 mm^2
Fuse	T50A
Cutting current	20-130A (100 % d.c.: 100A)
Open circuit voltage	400 V
Ignition	High voltage
Protection class	IP 22
Insulation class	F
Dimensions (L x B x H)	960 x 540 x 1050 mm
Weight	251 kg

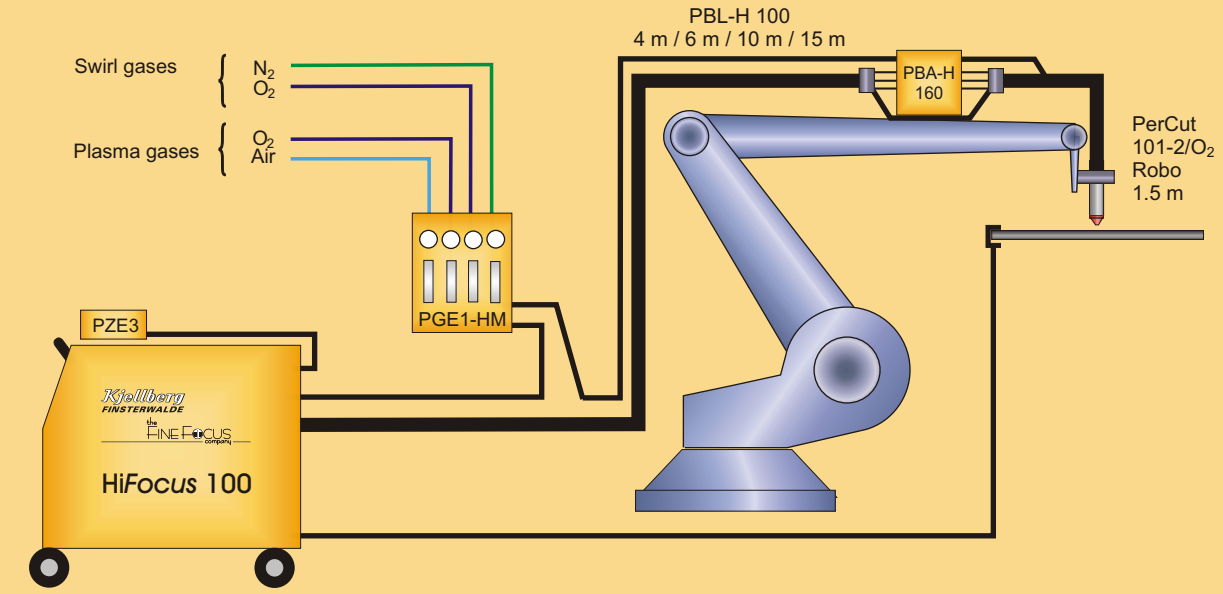
Plasma machine torch	PerCut 160 / 170
Cutting current	max. 160 A
Hose parcel length	1 m or 1.5 m
Clamping diameter	44 / 50 mm
Cooling Flow rate	Coolant circulation 2.5 l/min
Plasma gases	Oxygen, Air, Argon, Nitrogen, Hydrogen
Swirl gases	Oxygen, Nitrogen, F5

Equipment examples for Hi*Focus* 100

Plasma cutting of mild steel, stainless steel and aluminium with Flow*Control* (maximum configuration)



Plasma cutting of mild steel with robot (with PGE1-HM)



The plasma cutting units possess CE-conformity and comply with the valid regulations and instructions of the European Union. They are developed on basis of following standards and regulations: EN 60974-1 (VDE 0544, part 1) and BGV D1.
All Kjellberg plasma cutting units possess the S-mark and therefore are applicable at environments with increased hazard of electric shock.The fabrication takes place according to DIN EN ISO 9001. The company quality assurance is carried out in form of piece and cutting performance check, proofed by product-related test certificate.

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

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