



Bending & Cutting Solution

## **TECHNICAL OFFER W-FIBER 2020 EDITION**



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## 1 – BASE MACHINE FRAME

The machine base frame is a welded monolithic steel structure. The structure is submitted to a heat treatment normalization and sandblasting. This treatment allows the structure to withstand great stress, such as the one to which fiber laser cutting machines are usually subjected and together with machining processing, it guarantees a linearity of 0.02 mm.



## 2 – ALUMINUM GANTRY

The gantry is a monolithic structure made from a single aluminum casting. This technological solution is ideal for structures subjected to great mechanical stresses and guarantees perfect precision in short term as well as over time.





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### 3 – AXES TRANSMISSION AND MOVEMENT

The gantry longitudinal movement on the base frame is names axis X. On the portal itself lies the cutting head with both transverse movement (Y axis) and vertical movement (Z axis).

The X and Y axes are controlled by an electronic synchronism. The movement of X-Y-Z axes is by digital brushless motors at low inertia and high performance with an integrated encoder.

Data transmission between the motors and motor drive uses digital technology at high speed ETHERCAT. The transmission of X-Y axes is through rack and pinion made by WITTENSTEIN, in 16MnCr5 steel hardened and tempered, the best quality possible to support high speed and acceleration. The rack is grounded in all its parts, while the pinion hub is broached. Both have a helical teeth according with DIN/ISO: Q6.

The mechanical transmission positioning error is 0,008mm. All the guides in axes X-Y-Z are linear guides with recirculating balls, hardened and grinded with the highest quality and precision.



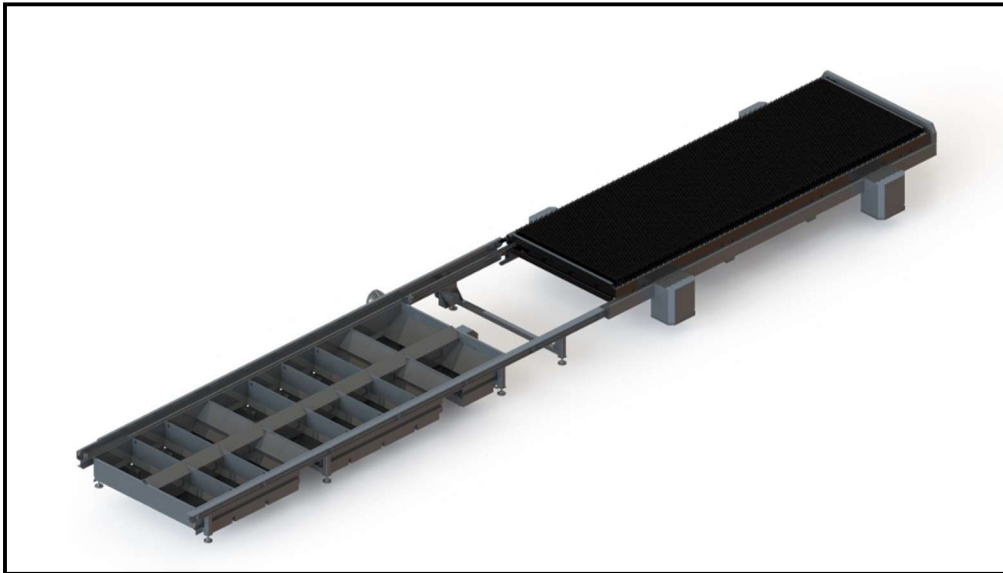




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#### 4 – VACUUM SUCTION TABLE

The integrated suction system in the cutting table is divided into sections. For each section there are separate pneumatic opening vents managed by the CNC. This technical solution allows aspiration concentrated only in the area where the cutting head works. This way the suction is optimized on the cutting area and all the system is more efficient.



#### 5 – AUTOMATIC PALLET EXCHANGE

W-Fiber is equipped as standard with a fast automatic pallet exchange that allows to reduce downtimes in sheet metal loading and cut pieces unloading, which of course can be done while machine is running. The two pallets will have, thanks to the hydraulic system at the back, the same height, guaranteeing the same working conditions for the cutting head. The top grid is constituted by parallel metal strips shaped as cusps with 50 mm pitch easily replaceable when the need arises.





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## 6 - DRAWERS

W-Fiber has movable drawers as scrap collectors on the lateral side, allowing extraction and easy cleaning.



## 7 – W-SCRAP COLLECTOR (OPTIONAL)

As an option the W-Scrap system is available. A system with motorized conveyor belts at the bottom and collectors to allow an even easier scrap disposal.



## 8 – AUTOMATIC OPENING OF FRONT DOORS (OPTIONAL)

Automatic front opening, managed by CNC.



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## 9 – SAFETY PROTECTION COVER BOX (LATERAL WINDOWS AS OPTIONAL)

As protection from the possible reflections of the laser beam, which could be very dangerous to humans, the machine is equipped with a metal stylish and safe cover box, conform to European safety rules. The front doors, if not equipped with the optional automation, close by magnet whose locking and unlocking is managed by CNC. As standard the front doors are equipped with two special front windows which allow to watch closely the cutting area. On the other hand the windows on the lateral sides are an option. Of course all windows are specially made to ensure at the same time perfect vision and the correct protection for the eyes of the operators.



## 10 - CNC

The state of the art ESA S675 CNC is built on a platform Windows® technology and with double intelligent units (CNC + Industrial PC). In it are implemented all auxiliary functions for complete machine management. Through a dedicated Post-Processor the CNC is compatible with all application software for CAD/CAM and nesting available on the market. Even if it's already in possession of the end user.

The new version 2020 of W-Fiber comes with an updated HMI, more user friendly than the previous one and smartphone-like for a full touch screen easy use.

Through software like TeamViewer®, remote control of the CNC is possible, helping a lot remote assistance procedures.

- Intel® Core™ i5 6500 Processor – 3.20 GHz – 8Gb of RAM – 64 bit OS – x64 processor
- 21" full touch screen display
- User Interface Windows® like
- Anti-Scratch key-board, anti-oil and acid. IP65 protection certified
- Axes manual movement by joystick
- Dynamic and integrated cutting head check
- Anti-collision system for the cutting head
- Automatic functioning for sheet metal detection







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## 11 – PRECITEC LASER SOURCE “ALL IN LIGHT”

The revolutionary DISK laser technology has seen PRECITEC as a specialist in industrial applications and today boasts a wide range of areas in the material transformation processes. PRECITEC offers generators with TRUDISK by Trumpf low/medium/high power disk technology with laser generated and transported with fiber (with high intensity and reduced wavelengths) making the system integration very easy and fast. The reduced energy consumption and the absence of ordinary maintenance improve the efficiency of fiber technology, comparing this technology to others and with very competitive operating costs.

**In fact in comparison with a CO2 laser, it guarantees energy consumption reduction of more than 70% and a reduction of general costs of more than 50%. No warm-up times needed and the stand-by mode consumption is basically zero. W-Fiber also comes with a Chiller suitable for the chosen source power. Fiber technology requires 50% less cooling capacities in comparison with CO2.**



### 12 - PRECITEC CUTTING HEADS



#### MODELLO LIGHTCUTTER

Cutting head suitable for the execution, in a rapid and economic way, of low thickness materials. Lightcutter is completely sealed off and protected from cutting gas impurities by a protection glass which can sustain pressure and which is easily replaceable.

The focus adjustment is automatic.

#### MODELLO PROCUTTER (OPTIONAL)

Cutting head created to sustain high acceleration and speed. Equipped with Bluetooth® connection, useful to monitor all the working parameters, and with LEDs as an indication of the working status of the cutting head.

The focus adjustment is automatic, without any need for the operator intervention.



#### MODELLO ZOOM 2.0 (OPTIONAL)

The most advanced cutting head on the market. Automatic regulation of the laser beam diameter according to material, thickness and cutting speed as inserted in the CNC.

It guarantees great improvement in speed and cutting quality: the more the thickness increases the more Zoom 2.0 is more effective.



### 13 – W-PIERCETEC (OPTIONAL)

PRECITEC patent with a sensor in the head which monitors and regulates the laser beam power during piercing, increasing the efficiency and as a consequence speed and precision of the piercing itself.

### 14 – DUST FILTER (OPTIONAL)



The dust compact filter with horizontal cartridges down flow, automatic cleaning by backwashing with compressed air with electro soundproofed centrifugal fan.

The compact design ensures easy installation, space saving and installation time.

All models are equipped with an antispark device, a fan and an independent electrical panel interfaced to the machine for automatic working.

Upon request, certified duct filters with anti-explosion fire prevention systems are available, in accordance with ATEX directive 94/9-EC for cutting light alloys (such as ALUMINUM)

Power	5,5 KW	7,5 KW	9 KW	11 KW
N° of cartridges	4	6	9	12
Filtering surface	84 m <sup>2</sup>	126 m <sup>2</sup>	189 m <sup>2</sup>	252 m <sup>2</sup>
Capacity	4200 m <sup>3</sup> /h	6300 m <sup>3</sup> /h	6500 m <sup>3</sup> /h	8400 m <sup>3</sup> /h

Antispark trap	Included
Sucked air humidity	<50%
Sucked air temperature	<65°C
Compressed air pressure	6-7 bar dry
Dust origin	Dust e metallic fumes (plastic and aluminum excluded)
Dust emission	2 mg /m <sup>2</sup>
Compressed air consumption	50N / lt per impulse (6 impulses/h)
Installation	Internal / External
Medium lifetime of cartridges	4000 h

### FIRE RISK

The standard filter is not suitable for cutting light alloys (ALUMINUM). Given the great danger in both fire risks and pollution for such materials different filters with ATEX certification are needed.

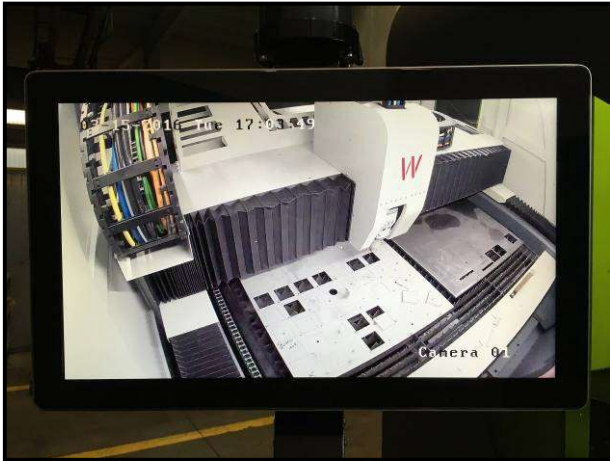
Since with filters fire represents a risk (a stub of cigarette, a piece of wood or other flammable material inserted into the suction bench are enough to unleash fire) it is recommended, together with taking all the necessary cautions, to have an insurance which could cover possible fire.



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### 15 – W-VIEW MONITORING SYSTEM (OPTIONAL)

N. 1 infrared camera which allows direct monitoring of the inside of the machine during cutting phase, without any risk for the operator. This function is also available for remote assistance and serves as great help for online technical assistance by Warcom.



### 16 - W-CHANGE AUTOMATIC NOZZLE CHANGE (OPTIONAL)

Automatic nozzle change (10 nozzles) W-CHANGE

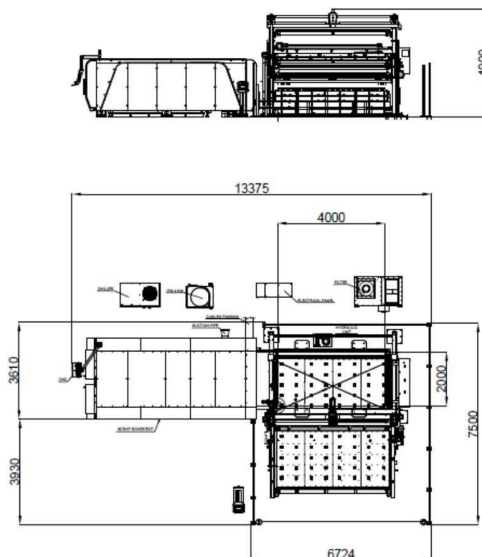




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## 17 – AUTOMATIC LOADING-UNLOADING SYSTEM CSS (OPTIONAL)

Automatic loading-unloading system with 2 pallets (one for loading and one for unloading) which, with the help of the standard machine pallet exchange, allow the system to work unattended.

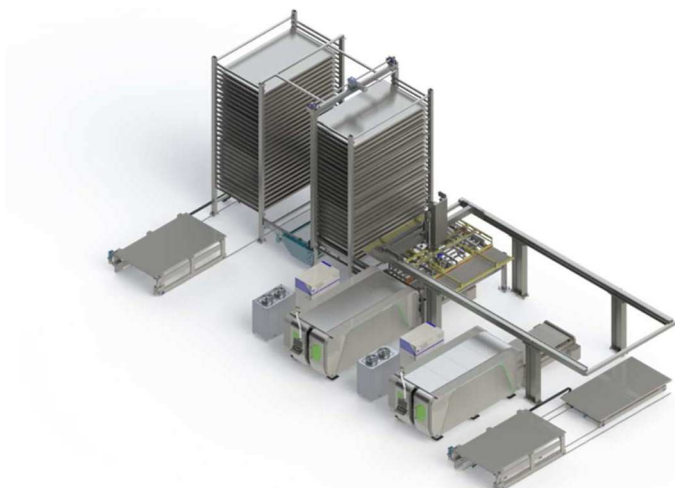


*The lay-out is just an example, not a definitive lay-out for any machine quoted*

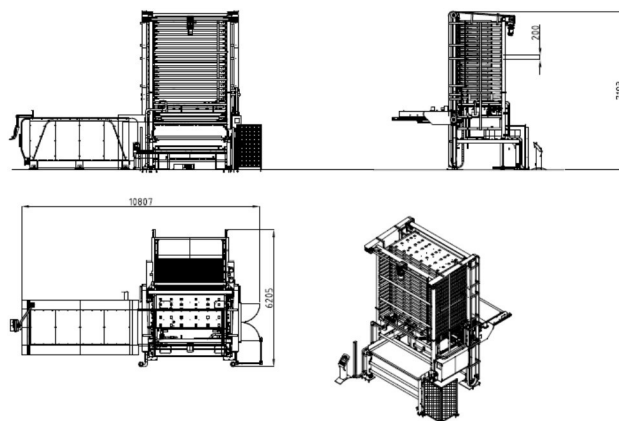
## 18 – AUTOMATIC LOADING UNLOADING SYSTEM CST (OPTIONAL)

Automatic Loading-Unloading system with tower, which allows W-Fiber a continuous and autonomous work till the end of the storage on the tower.

It's available in different versions, according to the machine and to customer facility.



*render for demonstration of purposes only*



*lay-out for demonstration purposes only*





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#### **19 – W-CONTROL (OPTIONAL)**

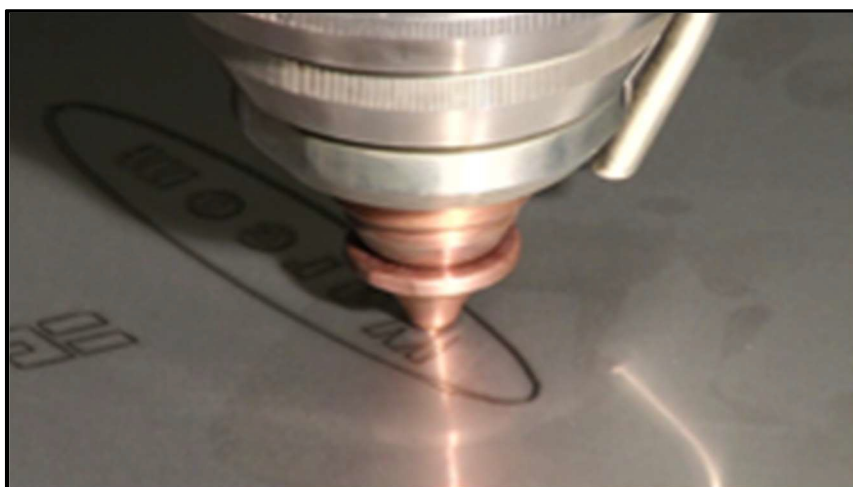
Valves and sensor system for monitoring the gas and electric consumption during time, with all the data stored in the CNC and collected in diagrams.

#### **20 – W-PRINT (OPTIONAL)**

Integrated software for JPG acquisition and photoengraving on the sheet metal.

#### **21 - MARKING**

The fiber laser includes the function to perform any type of marking on the sheet metal.





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**DATI TECNICI MACCHINA TAGLIO LASER W-FIBER BY WARCOM**

Models	Y AXIS STROKE (mm)	X AXIS STROKE (mm)	Z AXIS STROKE (mm)
W-FIBER 15-30	1550	3150	150
W-FIBER 20-40	2050	4150	150
W-FIBER 20-60	2050	6150	150
W-FIBER 20-80	2050	6150	150
W-FIBER 25-60	2550	6150	150
W-FIBER 25-80	2550	8150	150
W-FIBER 25-100	2550	10150	150
W-FIBER 25-120	2550	12150	150

**Nota:** Different models available upon request

**MACHINE AXES SPECIFICATION**

	SPEED m/min	ACCELERATION	POSITIONING REGOLUTION (mm)	POSITIONING TOLERANCE (mm)
X AXIS	150	2G (1G per Y 2500)	0,01	+/- 0,03
Y AXIS	150	2G (1G per Y 2500)	0,01	+/- 0,03
Z AXIS	40	–	0,01	+/- 0,03
X-Y INTERPOLATED AXES	210	2G (1G per Y 2500)	0,01	+/- 0,03



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## GENERAL DATA

GANTRY HEIGHT FROM THE BENCH	mm	140
HEIGHT OF WORKING BENCH	mm	860
LOAD CAPACITY OF THE WORKING BENCH	Kg/mq	250
VOLTAGE	Volt	400
FREQUENCY	Hz	50
PHASES	n°	3

## CUTTING GASES

GAS	Air 9 bar (130 psi) Consumption: 200 lt/min	Oxygen 8 bar (115 psi) Consumption: 200 lt/min	Nitrogen 27 bar (400 psi) Consumption: 1800 lt/min
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For cutting the following gases can be used: Nitrogen (N<sub>2</sub>), Oxygen (O<sub>2</sub>) and compressed air.

## CUTTING GASES REQUIRED QUALITY

The quality of the gases used for cutting has a huge impact on the quality of the cut itself. Nitrogen purity, for example, affects the result of the cutting surface. The following tables show the correlation to the quality level and the possibility of oxidation to form on the cutting surface.

## COMPRESSED AIR QUALITY

For a cheap production of compressed air, it is recommended to have a system composed by compressor and filter, creating the necessary volume with the required air purity.

## MINIMUM QUALITY OF COMPRESSED AIR ACCORDING TO ISO 8573-1:2001

MAX DIAMETER OF PARTICLES	Class 1
MAX DENSITY OF PARTICLES	Class 1
DEW POINT	Class 2
MAX REMAINING OIL CONTENT	Class 1





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#### QUALITY DEGREE AND OXIDE FORMATION WITH OXYGEN AS CUTTING GAS

GAS TYPE	QUALITY	PURITY [VOL. %]	NITROGEN + ARGON QUANTITY N <sub>2</sub> +Ar [ppm]	WATER QUANTITY H <sub>2</sub> O [ppm]	CUTTING SURFACE
OSSIGENO O <sub>2</sub>	3.5 <sup>a)</sup>	≥ 99,95	≤ 500	≤ 5	OXIDE FORMATION

#### QUALITY DEGREE AND OXIDE FORMATION WITH NITROGEN AS CUTTING GAS

GAS TYPE	QUALITY	PURITY [VOL. %]	NITROGEN + ARGON QUANTITY N <sub>2</sub> +Ar [ppm]	WATER QUANTITY H <sub>2</sub> O [ppm]	CUTTING SURFACE
Azoto N <sub>2</sub>	2.8	≥ 99,8	≤ 500	≤ 20	NO OXIDE, VAGUELY YELLOWISH
	3.5 <sup>a)</sup>	≥ 99,95	≤ 100	≤ 10	NO OXIDE, BUT NOT NECESSARILY POLISHED
	4.5	≥ 99,995	≤ 10	≤ 5	NO OXIDE, POLISHED
	5.0	≥ 99,999	≤ 3	≤ 5	ABSOLUTELY NO OXIDE, POLISHED

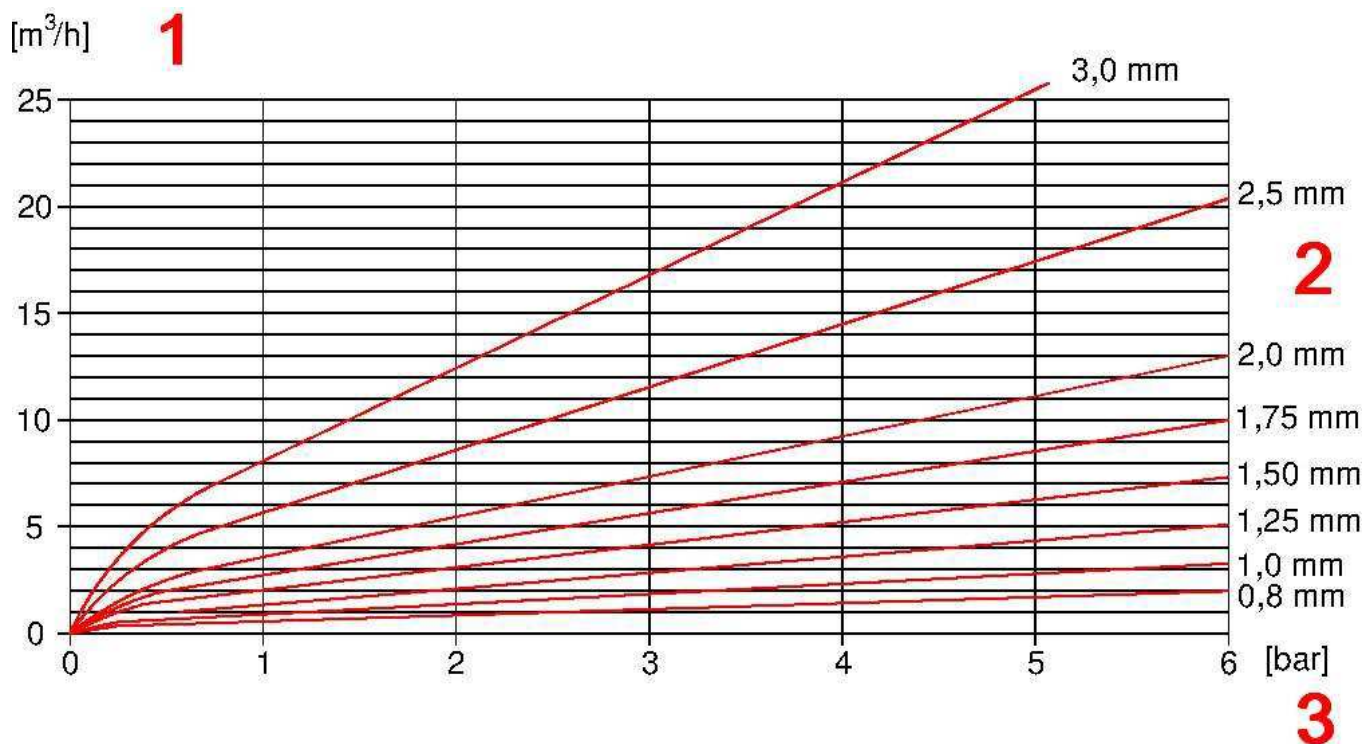


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## CUTTING GASES CONSUMPTION

The consumption of the cutting gases depends on the pressure and on the nozzle which is being used. The following diagrams show some values for cutting in low and high pressure.

Cutting gas consumption: low pressure up to 6 bar



1 Gas consumption ( $\text{m}^3/\text{h}$ )

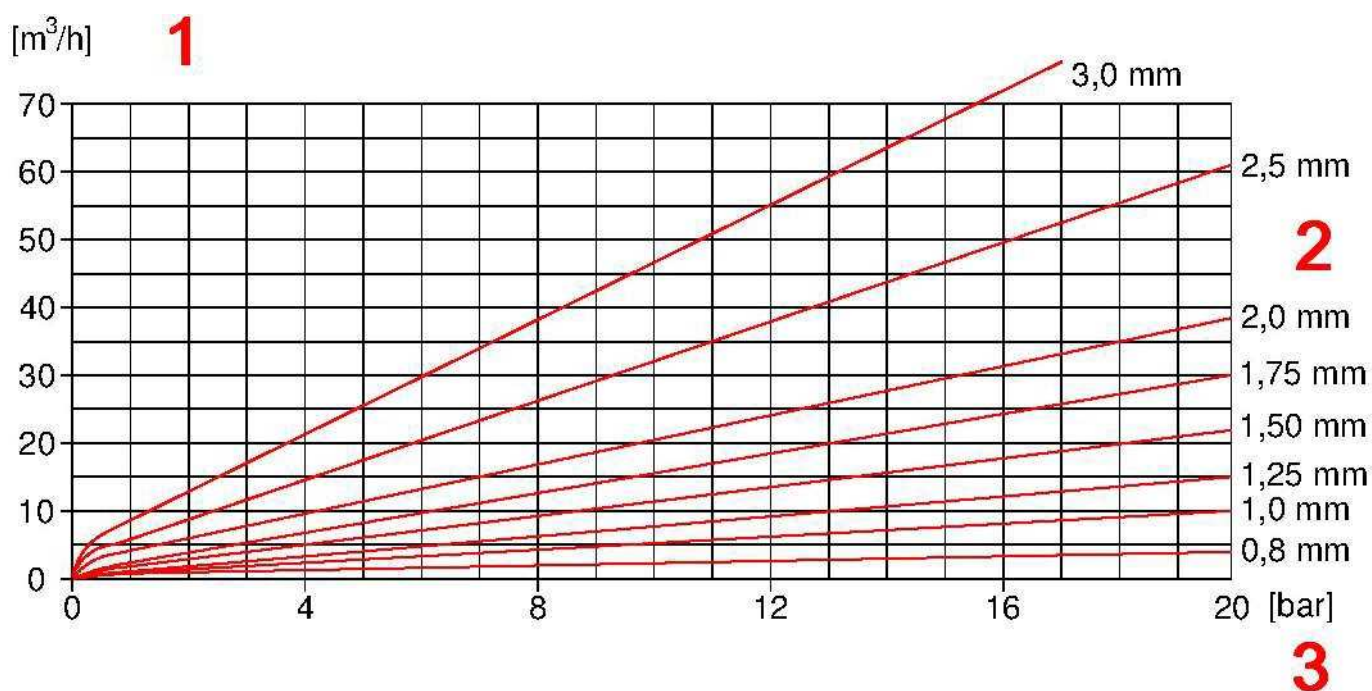
2 Diameter of the nozzle (mm)

3 Gas pressure (Bar)



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Gas consumption: high pressure up to 20 bar



1 Gas consumption (m<sup>3</sup>/h)

2 Diameter of the nozzle (mm)

3 Gas pressure (Bar)





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#### MAXIMUM LASER CAPACITY

	2 KW	3 KW	4 KW	6 KW	8 KW
Mild Steel	12 mm	15 mm	20 mm	25 mm	25 mm
Stainless Steel	10 mm	12 mm	15 mm	25 mm	30 mm
Aluminum	6 mm	10 mm	15 mm	20 mm	25 mm
Brass	3 mm	5 mm	6 mm	8 mm	10 mm
Copper	3 mm	5 mm	6 mm	8 mm	10 mm

#### LIST OF SUGGESTED MATERIALS:

- Mild Steel (S185JR, S235JR, RAEX250 C LASER)
- Stainless Steel (AISI 304, X5CrNi 18-10 1.4301)
- Aluminum (Al 99.5 EN AW 1050A)
- Copper (Cu-ETP CW004A H040 EN1652)
- Brass (CuZn37 CW508L H055 EN1652)

#### INSTALLED POWER AND MEDIUM ENERGY CONSUMPTION (kW)

	2 KW	3 KW	4 KW	6 KW	8 KW
Laser source (kW)	8	13,5	17	25,5	29
Chiller (kW)	10,8	10,8	10,8	15,3	15,3
Gantry (kW)	8,5	8,5	8,5	8,5	8,5
Tot. Installed power (kW)	27,3	32,8	36,3	49,3	52,8
Medium consumption during production (kW)	12	13	14	18	20