

# FIBERTUBE TUBE / PROFILE CUTTING LASER



**ERMAKSAN**  
INNOVATIVE TECHNOLOGIES

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# FIBERTUBE

TUBE / PROFILE  
CUTTING LASER

## IDEAL SOLUTIONS FOR TUBE AND PROFILE PROCESSING

ERMAKSAN introduces a full automatic tube cutting machine with Fibertube. With the automatic tube loading section, the tubes loaded as bundle, are separated and a tube is made ready to be loaded into the chucks. The tube loaded may be processed either as short pieces or full length as desired. The tubes processed with high precision and minimum amount of waste thanks to fiber laser cutting technology are transferred to the unloading section and collected in the part collection case.

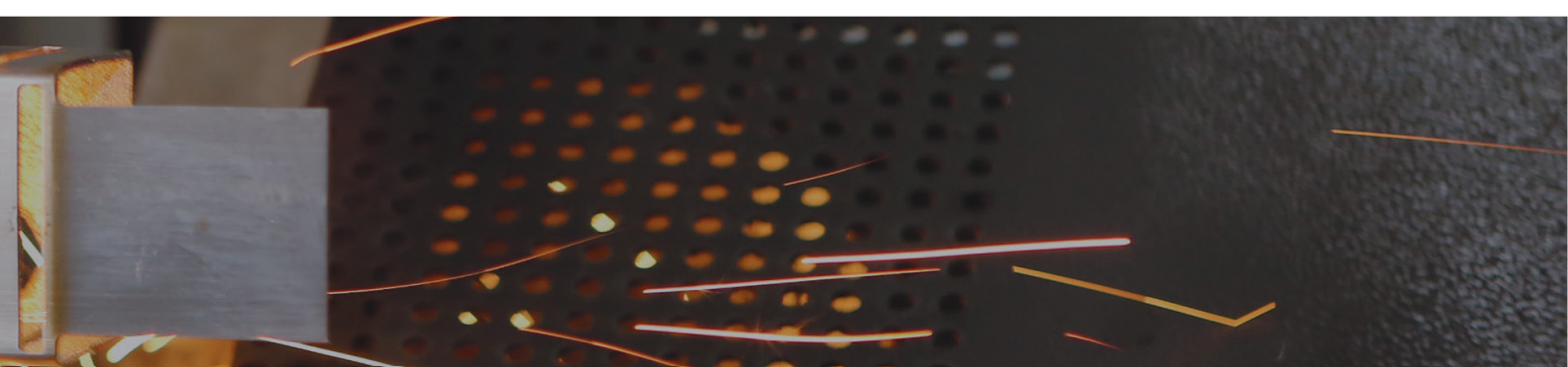


### SMART FACTORY SOLUTION PARTNER

Thanks to the ER 4.0 software we have developed in line with the era of evolution, it helps you in achieving your production goals in your smart factory.

### UNINTERRUPTED CONTINUOUS CUTTING

Thanks to the loading unit developed ensure continuous and full automatic operation of the machine, the operator may load the tube-profiles in bulk by a crane or a lift truck. Thus, all materials may be processed without an operator until running out of all profiles after loading the materials on the machine as a bundle.

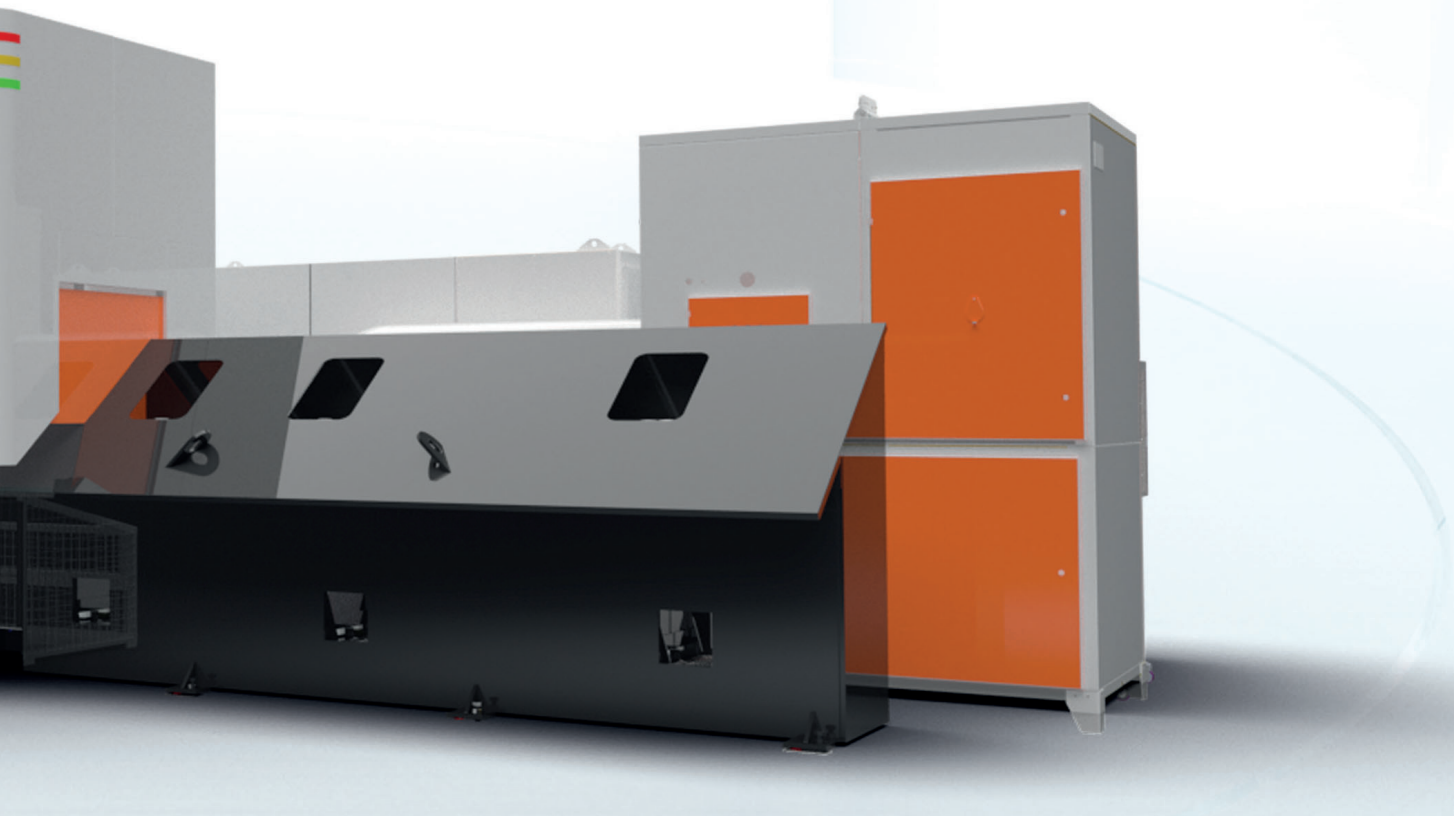


High cutting quality

User-friendly software

Speed and precision

Flexibility and efficiency



### **HIGH DYNAMIC CONTROL**

High dynamic controlled motors are used to achieve fast chuck movements and highprecision positioning.

### **SERVO MOTOR TECHNOLOGY**

Servo Motor technology allows energy saving with silent working and ensures high quality tube-profile processing thanks to its precise positioning.

### **CUTTING IN DIFFERENT GEOMETRIC SHAPES**

Besides cutting square, rectangular and tubular profiles, loading and cutting in a wider range of material types and thicknesses are also possible.

### **RIGID STRUCTURE**

The machine offers many years of trouble free operation under harsh conditions because of its tension free&hardened structure.

# FIBERTUBE

## GENERAL SPECIFICATION



### LASER UNIT

- The beams produced in the modules of the laser source are delivered to the cutting head by fiber optic cable without any loss. Thus, a suitable laser beam is provided for cutting.
- The laser source may range from 500 W to 8 kW.
- Its assembly and disassembly are easy. In case of any malfunction, changing the parts is easy. It is designed as modular, plug-and-play.



- High beam quality produced in the laser unit ensures micro and macro processing operations to be performed with precision. (S)

### SUCTION UNIT

- It provides a healthy working environment by absorbing the fumes and small particles formed during cutting. It runs automatically when cutting is started.
- Suction is performed from different areas, thus much more suction is achieved.
- One of the most important parts of the suction unit is the suction bucket. The machine has a sensor that recognizes and remembers whether the bucket has been changed/unloaded. It is possible to monitor the cleaning of the dust bucket in the suction unit.
- As the filters are cleaned with dry air, the filter has a long life and efficiency.



- It provides a healthy working environment without interrupting the precision of cutting operation thanks to high pressure suction. (S)

### COOLING (CHILLER) UNIT

- This is also used for electromechanical systems with high dynamic control.



- Ensures cooling of relevant parts for the continuity and precision of cutting. (S)

(S) : Standard (O) : Optional



## CONTROL PANEL

- It is resistant to difficult environmental conditions. (Shock, dirt, humidity, temperature, etc.)
- It is equipped with a touch screen and a functional keyboard is mounted on it.
- You can increase and decrease the axis speeds in the working area with the speed adjustment parameter.
- The drawing of the material to be cut may be viewed before cutting operation.
- Shortcut keys provide easy use.
- Cutting operation is processed instantaneously on the NC graphic.
- Increased memory
- Enhanced processor
- Flexibility of Windows 7 operating system
- Alphanumeric keyboard
- Wired and wireless handwheel (optional)

## CUTTING HEAD

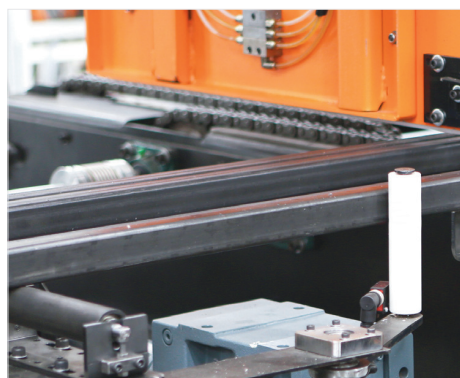
- The beams produced in the laser unit are carried by the fiber cable up to the cutting head. The cutting head transfers the beams from the fiber cable to the processing surface.
- The fiber cable is fixed to the entrance of the cutting head.
- The beams re-shaped in the collimation unit are transferred to the focusing unit.
- The laser beam is set at the desired focus with the help of the lenses in the focusing unit.
- The protection glass is the part that prevents slags to damage the lenses while cutting.
- Instant system control can be done by the LEDs on the cutting head.
- The Height Sensor Insert is an element of the height control system used to adjust the distance between the cutting head and the processing surface. The information from here is converted into numerical values by transferring to an upper unit.
- Nozzle directs the auxiliary gases. Along with this, it helps to make height control.



■ It is the unit which controls the system and sends the user commands to the machine. (S)



■ Performs precision and rapid cutting operations thanks to its structure resistant against higher acceleration and high pressure. (S)



■ Thanks to the profile separation system, profiles on the loading chain are referenced and it is ensured that a single profile is loaded at a time.

(S) : Standard (O) : Optional

# FIBERTUBE

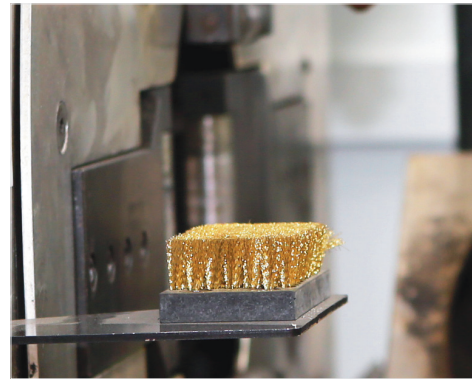
## GENERAL SPECIFICATIONS

### NOZZLE CLEANING

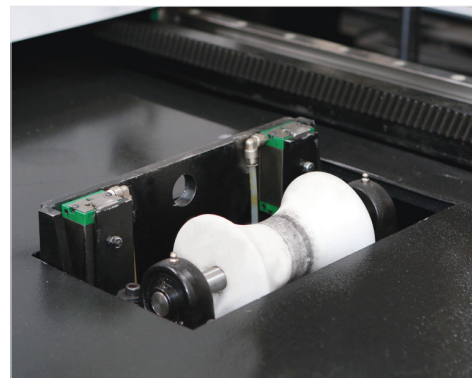
- Thanks to the nozzle cleaning system, nozzle is cleaned automatically in specified intervals.
- Thus, service life of the nozzle is improved by cleaning the burrs, slags attached on the nozzle while cutting.
- Moreover, height control that ensures following up of the cutting surface is performed more accurately by cleaning the particles attached on the nozzle.

### LOADING / UNLOADING UNIT

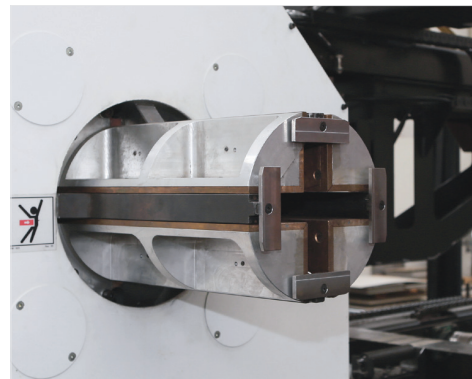
- A loading unit is added to ensure continuous and fully automatic operation of the machine; and thus it is possible to load tube-profiles in bulk by an operator, a crane or a lift truck.
- In this way, all materials may be processed and finished without an operator until running out of all profiles after loading the materials on the machine as a bundle.
- Full automatic loading to the cutting area is possible.
- All operations from loading as a bundle to placement on the cutting zone are monitored and kept under control by sensors.
- Thanks to the automatic unloading system, scraps are discarded to another location with the conveyor while the parts processed are conveyed to a specific location.



■ This is used for automatic cleaning of the nozzle that was contaminated during the cutting processes of materials. (S)



■ Tube support system prevents the material from sagging and ensures precise and accurate cuts. (S)



■ Thanks to its high-strength clamps, it ensures that the material hold prepared for cutting accurately and precisely. (S)

(S) : Standard (O) : Optional



## USER-FRIENDLY INTERFACE

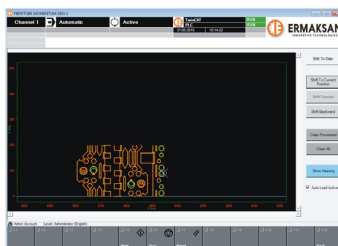
The Fibertube tube cutting machine is designed to handle work pieces with unlimited geometry in round, square and rectangular profiles. With fiber laser cutting technology, it allows machining of parts with ultra precision and speed. Thanks to its advanced automation capability, Fibertube offers a high efficient machine. Loading tubes and starting the cutting operation takes only a few seconds on the installed system.

The interface of the Fibertube is user friendly. It is very simple and easy to operate. It takes only 3 or 4 steps for the operator to operate the machine fully automatically. The CAD-CAM software used allow machining operations with unlimited geometry. Different parts can be processed on the same tube, and the simulation of the process can be viewed. A cutting program that was prepared in advance can be uploaded on the machine control panel via remote network. Then, the operator shall just select the program and start the process.

Fibertube offers uninterrupted operation capability. With the job list feature, you can sort your jobs and repeat any number of jobs.



■ Interface entry screen



■ 2D part view



■ Cut-start screen

## EASE OF OPERATION

- Full automatic loading, cutting and unloading of the tubes.
- High speed and stability.
- High efficiency.
- Capability of high precision cuts with fiberlaser cutting technology.
- Parts can be processed at full length or even the smallest parts.
- Minimum waste amount.
- Job list feature.
- Unlimited number of job repetitions.
- Cutting parameters are uploaded as default configuration which are ready to run on control panel
- User friendly.
- Ease of operation.
- Starting with the desired part or skipping of parts.
- Online NC Graphic drawing.
- Nozzle cleaning and automatic height sensor calibration control.
- Access to control panel via internet.

# FIBERTUBE

## AREA OF USAGE

### IN EVERY DIVISION IN LIFE

FIBERTUBE laser pipe and profile cutting machine has been designed to suit your specific needs and processes with a wide range of applications ranging from defense and aerospace to medical tools.

On the precise processing of the metal profile parts of your furniture, on the lighting poles that illuminate your surroundings at night, on the frame of a bicycle, in every area of transportation, on cars, buses, air planes, trains, ships... Either on air or on land, we are right there for you at very area of your life. With our expertise and love for quality, we have our sign on every moment of your life.



Thickness : 2 mm

Length : 300 mm - 350 mm

Material : Stainless Steel - Mild Steel

Tube-Profile with a diameter of 51 mm

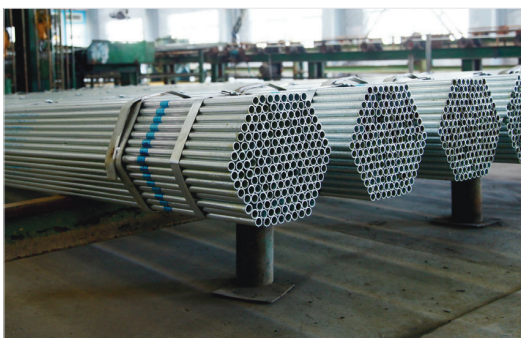
51x51 mm Square Profile



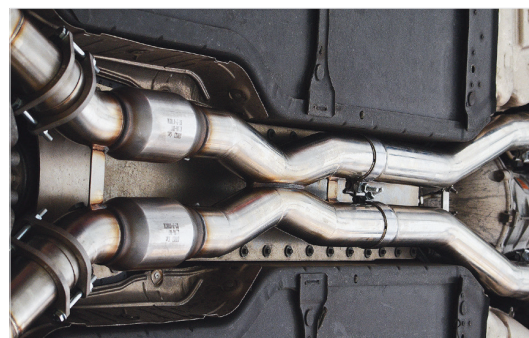
■ It may be used for manufacturing of the bodies of the Off Road vehicles.



■ It may be used for steel construction manufacturing.

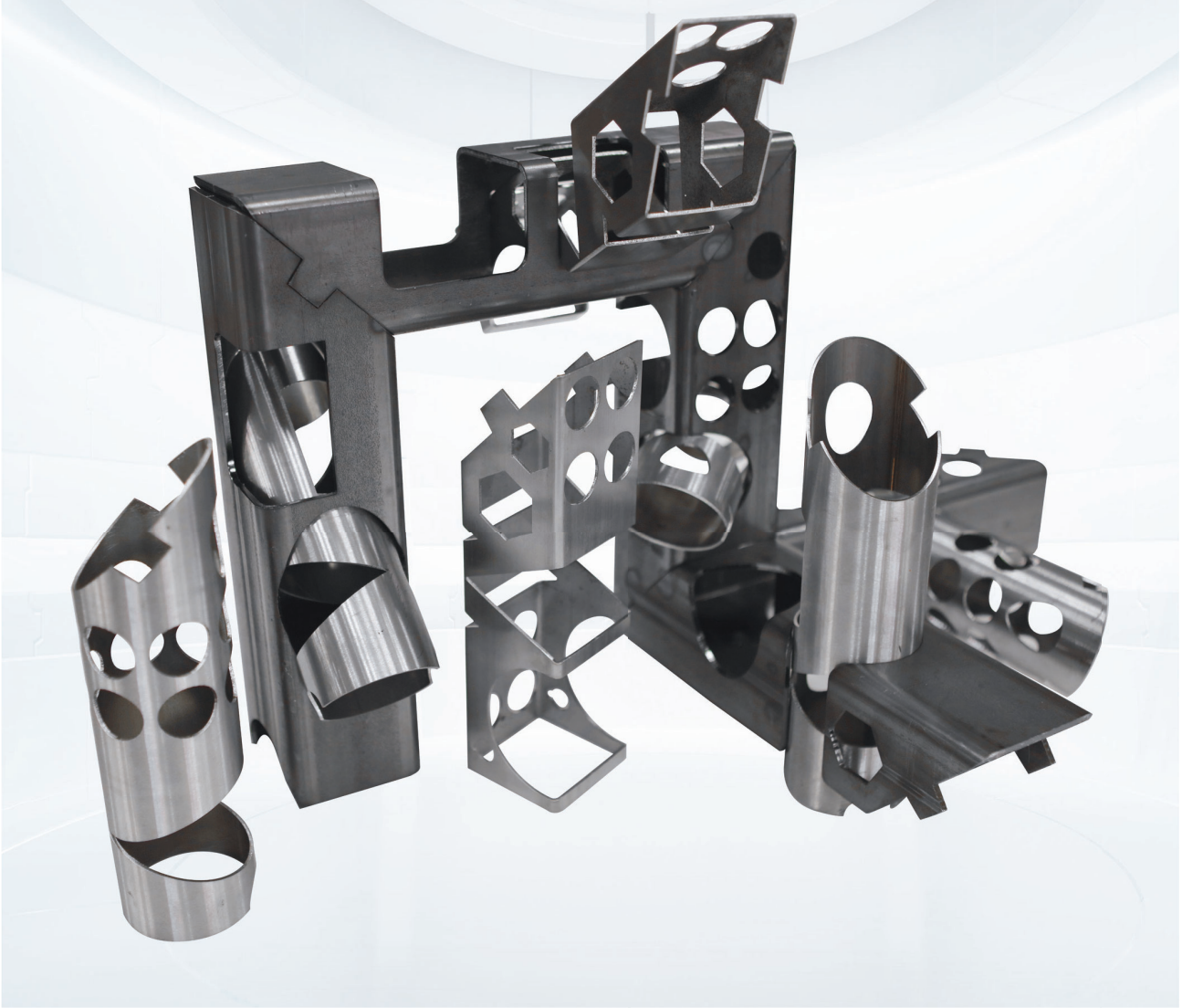


■ Profiles may be loaded as bundles.



■ It is used for manufacturing of vehicle exhausts.

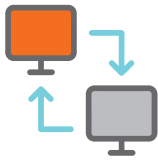




- SHEET PROCESSING CENTERS
- INDUSTRIAL MACHINES
- AGRICULTURE MACHINES
- FURNITURE MACHINES
- SPORTS AND ENTERTAINMENT
- CRANE
- DUMPER & TRAILER
- LIGHTING POLES
- AUTOMOTIVE
- DEFENCE AND AEROSPACE
- RACK SYSTEMS
- STEEL CONSTRUCTION
- WROUGHT IRON
- MEDICAL TOOLS

# FIBERTUBE

INDUSTRY 4.0



With its commitment to innovation and its experience over half a century, ERMAKSAN facilitates industrial life by its engineering works for INDUSTRY 4.0 as well as software works to develop and perfect intelligent production processes. The ER 4.0 software, which processes and reports the data transferred via the intermachine communication network, is designed to ensure sustainability and efficiency in production.



Thanks to this software, we are able to access many data from the location of the machine on the world to the operation status, from its efficiency to its error, warning and fault states to increase the performance and efficiency of our machines all over the world and to contribute to the realization of the production targets of our customers.

## ACTIVE MACHINE CONTROL SCREEN

Allows data of all machines operating on the field such as errors, warning, efficiency data, etc. on a single screen.



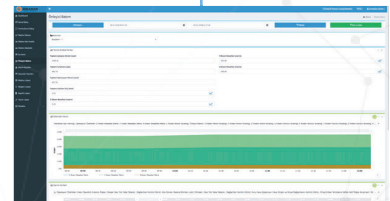
## PREVENTIVE MAINTENANCE

Allows detection of faults that may occur on your machines before they occur.



## PRODUCTION AND POWER CONSUMPTION SCREEN

Allows monitoring of power consumption of the machine, number of parts produced and the changes on the hydraulic oil temperature during production.



# TECHNICAL SPECIFICATIONS

Resonator	Watt	IPG - YLS 2000
Power Range	%	10 - 105
Laser Beam Quality	rad	2 - 2,5
Power Stability	%	1 - 2
Pulse Frequency Range	KHZ	5
Laser Wavelength	nm	1075 ± 5
Fiber Cable Output Dimension	µm	100
Excitation	-	Laser Diode
Coolant Flow Rate	l/min	10
<b>Dimensions of the Profile</b>		
Tube	mm	Ø20 - Ø120
Square	mm	20x20 - 120x120
Rectangular	mm	20x20 - 80x120
<b>Profile Length</b>		
For Loading	mm	3000 - 6300
For Unloading (Max.)	mm	4500
<b>Cutting Capacity (Max.)</b>		
Mild Steel (S235JR, S355MC)	mm	10
Stainless Steel (AISI 304)	mm	4
Aluminium (AlMg3)	mm	3
Maximum Loading Capacity	kg/m	20
Capacity of the Packed Material Loader	kg	4000
Length of blank (Unprocessed Part) at the end	mm	150
Machine Axes		13-Axes
<b>Axial Movements</b>		
X Axis (Servo Motor Drive Chuck)	mm	7110
Y Axis (with Servo Motor)	mm	200
Z Axis (Cutting Head with Servo Motor)	mm	100
<b>Accelerations</b>		
A Axis (Fixed Chuck with Servo Motor (left/right))	rad/sec <sup>2</sup>	70
B Axis (Chuck with Servo Motor)	rad/sec <sup>2</sup>	70
X Axis (Chuck with Servo Motor)	G	1
Y Axis (with Servo Motor)	G	1
Z Axis (Cutting Head with Servo Motor)	G	1
Maximum Axis Speeds (X, Y, Z Axis)	m/min	90
Positioning Accuracy	mm/m	± 0,03
Repetition Accuracy	mm	± 0,015
Automatic Loading Unloading Unit		1 - 1
<b>Assistant Gases</b>		
Steel		Oxygen (0.5 - 6 bar)
Stainless Steel		Nitrogen (0.5 - 25 bar)
Aluminium		Dry Air or Nitrogen (0.5 - 25 bar)
Cutting Head	-	Precitec Procutter
CNC	-	BECKHOFF CP6242
CAD/CAM Software	-	Lantek Flex3D
Network Connection	-	Ethernet - Wifi
Control Panel	-	15 inch touch screen 1024 x 768, alphanumeric keyboard, PLC keys
Average Consumption	kW	30
Machine Dimensions	mm	13480 x 4750 x 3120
Machine Weight	kg	25000

- All technical specifications are subject to change without notice.
- They may vary when factors such as sheet cutting speeds and thickness values, material quality, gas quality, ambient conditions, parameter settings, usage of original spare parts, periodic maintenance, optical cleaning are not suitable.
- Cutting quality at the upper limit thickness depends on the desired geometry, material quality and the operating conditions of the system.
- There may be burrs at the lower edge during cutting at a limit value.
- For high thickness, cutting surface roughness increases in the fiber laser technology.



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1

Management Building and Main Factory

2

Laser R&D Centre

3

Laser Production Factory, Academy and P&D



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