• Equipment Name and Appearance

1. **Equipment name:High-power Fiber Laser Cutting Machine**

2. **Quantity:1 set**

3. **Appearance：** **The appearance of the equipment is as follows（For reference only）**

• Configuration list

Name	Quantity	Brand	Brand of Country
8000W/ 36000W　Fiber Laser	1 set	IPG-RAYCUS	Germany
Special precision cutting head for fiber	1 set	PRECITEC	Germany
Precise rack	3 sets	SENFENG LMN	China
Reducer	3 sets	MOTOREDUCER	France
High speed servo motor and drive	4 sets	YASKAWA-S	Japan
High precision Linear guide(bed)	3 sets	LAPPING	Taiwan
Precision ball screw(Z-axis)	1 set	SENFENG LMN	China
Control system	1 set	FSCUT8000	China
Electric control	1 set	SCHNEIDER	France
Gas circuit system	1 set	SMC & AIRTAC	Japan & Taiwan
Mechanical platform and accessories	1 set	SENFENG LMN	China
Water cooling unit	1 set	S&A/TONG FEI	China

Notes:

1. If the customer purchases the above devices by himself, he must purchase the designated brand and model; if the brand is changed arbitrarily, the customer shall be responsible for the impact on the machine performance.

2. The warranty period of the whole equipment (wearing parts and consumables, non-irresistible natural disasters, war and illegal operations, man-made damage and other factors are excluded) is x years.

- ## Technical Parameters

NO.	Performance Indicators	Parameter RT6020H5
1	Working area(length x width)	6050*2030mm
2	X-axis stroke	2030mm
3	Y-axis stroke	6050mm
4	Z-axis stroke	170mm
5	Positioning accuracy of X / Y axis	±0.05mm
6	Repeated positioning precision of X / Y axis	±0.02mm
7	Maximum speed	200m/min
8	Maximum acceleration	2.8G
9	Maximum load of workbench	2000KG
10	phase	3
11	voltage	380V
12	Frequency	50Hz
13	Total power protection level	IP54

Notes:

1. The accuracy depends to a certain extent on the work-piece type, pretreatment, plate size, plate position in the working area and other factors.

2. The above parameters are subject to change without notice. The final technical parameters shall be subject to the actual order agreement.

- ## Cutting Samples

- **Cutting Capacity**

    10000W

Material	Thickness（MM）	Speed（m/min）	Gas
Stainless steel	1	60-80	N_2
	3	20-35	N_2
	5	15-20	N_2
	8	6-9	N_2
	10	4.5-7	N_2
	14	1.8-2.7	N_2
	16	1.5-1.9	N_2
	20	1-1.5	N_2
	25	0.3-0.6	N_2
	30	0.3-0.5	N_2
	40	0.1-0.4	N_2
Carbon steel	1	60-80	N_2
	3	25-35	N_2
	5	15-17	N_2
	8	6-8.5	N_2
	10	3-5	N_2
	14	1.4-1.7	O_2
	16	1.2-1.6	O_2
	20	0.8-1.1	O_2
	30	0.3-0.5	O_2
	40	0.1-0.3	O_2
Brass	1	55-75	N_2
	3	20-30	N_2
	5	9-13	N_2
	8	5-6.5	N_2
	10	2.5-3.5	N_2
	14	1.2.1.4	N_2
	16	0.7-0.9	N_2
	20	0.2-0.4	N_2
Aluminum	1	60-80	N_2
	3	25-30	N_2
	5	13-16	N_2
	8	5-7.5	N_2
	10	4-6	N_2
	12	2-3	N_2
	16	1.5-1.8	N_2
	20	1-1.4	N_2
	30	0.3-0.4	N_2

ROTEC®

8000W

Material	Thickness (MM)	Speed (m/min)	Gas
Stainless stee	1	50-65	N_2
	3	16-25	N_2
	5	10-14	N_2
	8	3-5	N_2
	10	2-2.5	N_2
	12	1-2	N_2
	14	1-1.8	N_2
	16	1-1.4	N_2
	20	0.4-0.8	N_2
	25	0.3-0.6	N_2
	30	0.2-0.4	N_2
Carbon steel	1	40-65	N_2
	3	15-25	N_2
	5	10-13	N_2
	8	3-5	N_2
	10	2-2.8	N_2
	14	1.4-1.8	O_2
	16	1.2-1.5	O_2
	20	0.8-1.0	O_2
	25	0.5-0.8	O_2
	30	0.3-0.5	O_2
Brass	1	40-55	N_2
	3	20-30	N_2
	5	5-9	N_2
	8	2-3.5	N_2
	10	1.5-2.2	N_2
	12	1-1.4	N_2
	14	0.4-0.7	N_2
	16	0.3-0.5	N_2
Aluminum alloy	1	50-65	N_2
	3	20-30	N_2
	5	8-13	N_2
	8	4-6	N_2
	10	2-3	N_2
	16	1-1.4	N_2
	20	0.6-1	N_2
	25	0.3-0.6	N_2
	30	0.3-0.5	N_2

• Feng Cloud

The client displays a dynamic map of real-time data through a browser and allows the client to perform remote engineering development and maintenance on the client with sufficient permissions. The client which runs on the mobile phone, PDA and other devices, displays the monitoring interface in real time and changes the data value and confirms the alarm in the form of text.

1. "Expert system" realizes product positioning, track query, remote fault diagnosis, equipment fault resume query function. Transfer data to clients, other monitoring points and servers over the Internet/5G network.

2. Feng Cloud intelligently collects equipment status and fault information for analysis, calculates production cost and maintenance cost according to certain algorithm, and obtains high-quality cost-effective scheme of product design, which saves manufacturing cost for the enterprise.

3. Feng Cloud has powerful functions, including remote diagnosis and maintenance, redundancy, real-time historical data recording, scheduling, formula, video and audio. It has rich drive types and script functions, integrates many standardized interfaces, and can effectively connect with MES system of customer factory.

4. With the advent of 5g era, Feng Cloud will use 5g technology to combine laser equipment and artificial intelligence, and be widely used in the fields of cloud computing, big data and edge computing, so that more and more laser equipment with advanced technology and complex use will be presented, intelligent, easy-to-use and popularized, and provide customers with faster and more convenient global remote diagnosis services.

• Main Configuration

1. Body

Hollow bed structure, after annealing to eliminate the internal stress, after the secondary vibration aging treatment of precision processing, to ensure 20 years of no deformation.

Dust removal is designed according to aerodynamic principles.Ensure the smooth flue path, can effectively reduce the dust fan capacity loss;The feeding trolley and the machine tool base form a return enclosed space to avoid inhalation of air into the flue.

Sintered graphite -- the bed standard of high-power 10,000-watt cutting equipment is equipped with sintered graphite.Its purpose: to make the equipment in the processing process more resistant to high temperature, effectively prevent the deformation of the body, the protective bed is not burned through by the 10,000 watt laser beam, to ensure the normal use for a long time without deformation.

Welding of main body

Adopt carbon dioxide protection welding bed frame, with a stable welding process, no internal defects, the minimum degree of spatter and so on.

Stress annealing

To eliminate the material stress caused by welding, the super-large fuel heating annealing furnace was used for 600° high temperature annealing. Stable and uniform furnace temperature, electronic monitoring welding stress removal thoroughly, quality assurance. Non - ordinary small furnace single annealing and temperature is not uniform, stress relief can not be guaranteed to eliminate completely.

Rough machining

Rough machining is to quickly cut off the blank margin. In rough machining, should choose a large amount of feed and as much cutting depth as possible, in order to cut as much chip as possible in a short time.

Vibration aging

Vibration aging is a method to eliminate the residual internal stress in the work piece. It is to make the residual internal stress and additional vibration stress in the work piece exceed the yield strength of the material by vibration, so that the material produces a small amount of plastic deformation, so that the internal stress in the material can be relaxed and reduced.

Natural aging

The bed is placed outdoors for more than 1 month. Removing repeated temperature stresses from the bed. The residual stress is relaxed and the dimensional precision is stabilized. Improve the stiffness, increase the ability to resist deformation, to ensure the dimensional stability of the bed.

Precise processing

CNC pentahedron machining center is used to process high precision surface such as guide rail and rack of the bed to obtain high quality installation base surface to ensure the cutting precision of the machine.

(1) Adopt mixed welding structure of profile and plate;

(2) Plates account for more than 60%;

(3) Features:

Flexible design;

Easy to manufacture;

Reasonable structure arrangement;

Strong rigidity;

Good torque resistance.

2. Beam

High strength aluminum alloy beam, light weight, good dynamic performance, after annealing to eliminate the internal stress after rough machining, after the secondary vibration aging treatment after finishing, to ensure the overall strength of the beam stability.

3. Control System

LM3015H5 fiber laser cutting machine adopts CypCut CNC system. The system is a designed for the needs of 8KW and above ultra-high power fiber laser cutting. Stable and reliable, easy to deploy, easy to debug, production safety, rich functions, excellent performance, etc. Support and provide modular, personalized, automation, information solutions.

	Function point	Effect
Process function	Level 3 lightning piercing	Rapid piercing of thick plate
	Grade five perforation	Provides perforation capability for thicker plates
	Non-inductive punch 2.0	"Perforation-free" cutting of medium thin plates
	Optimized vibration suppression (thick and thin Plate adaptive)	Optimize the following stability of the board and sheet
	Slag process	After perforating the hole, the slag around the hole can be removed by laser melting
	Increase the process of lifting and retracting knives	Solve the problem of "tumor" at the end of carbon steel plate and the problem of blue light at the end of stainless steel plate
	More lead process parameter Settings	Thick stainless steel can be started with a negative focus to expand the slit
	Outside the plate with	The part needs to be supported when cutting from the outside to the inside of the plate
	Curve control accuracy	Special graphics require faster arc transition speed
	Automatic focus measurement	Determine the overall focus shift of the cutting head for compensation
	A photographic paper	Check the beam quality of the cutting head output
	Gas scour	Blow air to fill the pipeline and clear the air path before processing
Automation function	Infinite coil cut in line	Coil cutting can be cut while walking, to achieve the function of laser flying shear
	Automatic loading and unloading	Support automatic loading and unloading docking with the material warehouse
	Virtual multi station	Large area machine tool places many identical plates, which can be processed in batch at one time
Auxiliary function	Support the vertical filling	When the problem of machine tool perpendicularity appears, it can be corrected temporarily
	Capacitance edge	Support 2-point edge searching (Angle searching only), 3-point edge searching
	Whether the touch board is lifted	Choose whether to lift the nozzle by hand to cope with different scenes
	Gas rapid calibration	When using BLT series cutting head, the gas pressure can be automatically calibrated to ensure the same cutting pressure
	Point out the light	Use in cutting irregular plate, inching cutting under the remaining material
	Air moving obstacle avoidance	Actively judge the path of the warped parts, plan the lifting height in advance, avoid the parts
	Visual residue cutting	After shooting the leftover plate by camera, drag the parts to the plate, it can be processed directly
	Code mapping	Use the scanning gun with CypNest to scan the code quickly

	Function point	Effect
Auxiliary function	Automatic loading diagram process	When importing the processing task without process, such as DXF, the process of the previous processing task can be automatically called
	The focus of compensation	Read the collimation temperature change of Pres and compensate the focus shift according to the temperature
	Optimization of installed	Servo parameter writing optimization, one-key measurement system delay, dual drive detection
	Process base optimization	Support material management, material thickness management
	Graphics processing speed	Optimize graph read time substantially

Quality Inspection

1. Before assembly, check whether the processing tolerance of cross beam is within the design range to ensure the quality of equipment.

1. CMM

CMM is the three coordinate measuring machine, it refers to in the three dimensional measurable space range, according to the point data returned by the probe system, through the three coordinate software system to calculate various kinds of geometry, size and other measuring ability of the instrument, also known as three dimensional.

The collimator detects the guide rail surface - measures the straightness of the guide rail to ensure the accuracy of each equipment.

Precision work-piece altimeters detection, is to test small precision work-piece drawing requirements of linear size and shape tolerance , To ensure that the precision of the equipment to meet the quality of parts.

Swiss soil altimeter can be used to measure the dimensions of interior, exterior, height, depth, or distance of plane, parallel, and cylindrical geometry.

2. assemble

Professional and technical personnel assembly rack and other important precision parts, the use of micrometer adjustment to ensure the normal installation of gear and rack.
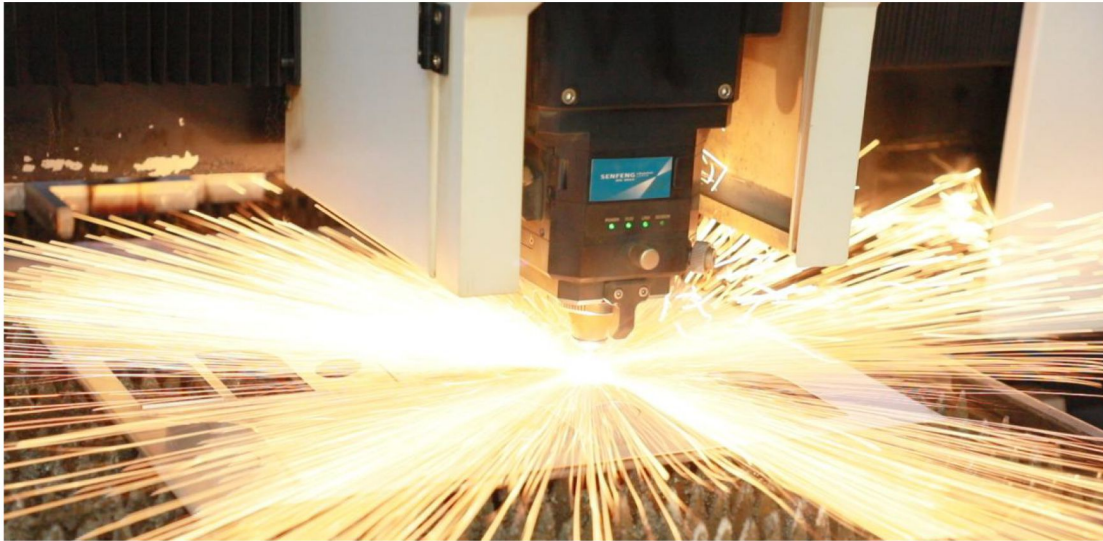
3. Assembly completion and testing

   In conjunction with the related software, combined with different optical components, can also dynamically test the performance of machine, such as the positioning precision , repetitive positioning accuracy and dynamic parameters, such as micro displacement precision machine tool vibration test and analysis, dynamic characteristics analysis of rack driving, driving system response characteristic analysis of the guideway dynamic characteristics analysis and so on, has a very high precision and efficiency, and process the data in a timely manner, provide the basis for the machine tool error correction.

• corporate strength

1. Introduction

LP workshop

120000+ square meters of production and R & D center

SENFENG LEIMING has independent machining workshop and sheet metal workshop,covering an area of about 30,000 square meters. We have invested tens of millions of yuan to build a modern machining workshop and sheet metal workshop, with a number of precision five-axis machining center, gantry milling, boring and milling machine, bending machine and other advanced, automatic equipment. SENFENG LEIMING fully carry out fine management of "6S", cooperate with ISO9001 quality management system and intellectual property standard management system, so as to establish a strict quality assurance system.

2. **Products**