SENFENG

SF3015HM

Medium Power Laser Cutting Machine

TECHNICAL SOLUTIONS

CONTENTS

C O N T E N T S

01 Laser Cutting Machine

02 Core Components and Systems

03 After-sales Service

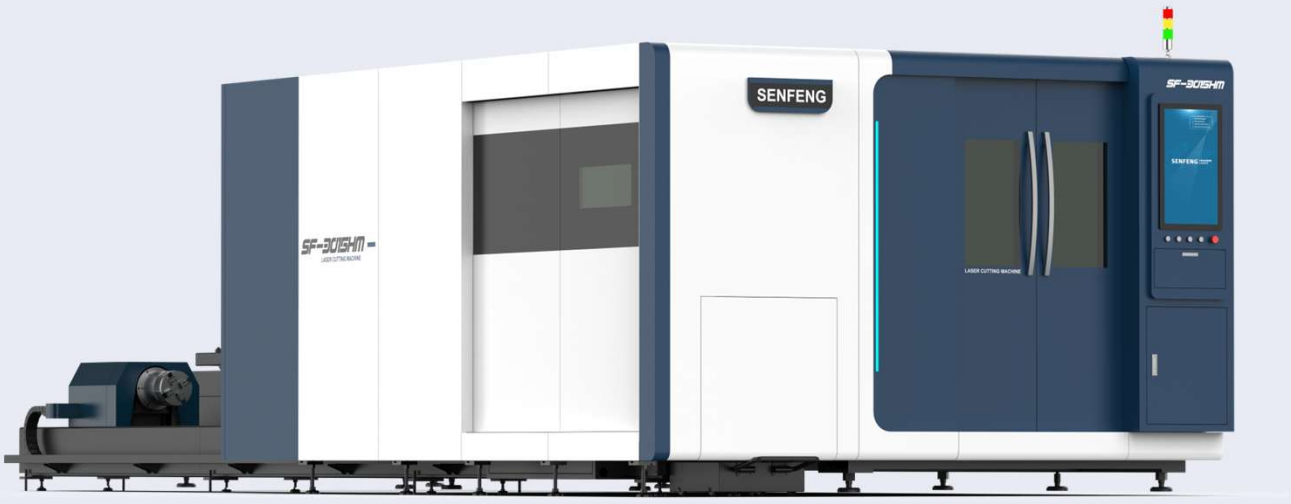
Model	01
Technical parameters	02
Cutting parameters	03
Cost benefit analysis	05
Laser cutting advantages	07
Configuration list	08
Cutting samples	09
Laser source	10
Laser head	11
Machine bed	12
Automatic gas distribution device	15
System	16
Training	17
Packing and shipping	17
Installation	17
Metal forming customization service	18
5 star service	19

Tube & Sheet Cutting

SF3015HM

Medium power laser cutting machine

- High-strength machine bed
- Aviation-grade aluminum beam
- One machine with two uses, doubling the efficiency
- Auto follow technology



※The picture is for reference only, the actual appearance and size shall prevail

TECHNICAL PARAMETERS

TECHNICAL PARAMETERS (SF3015HM)

Items	Parameters				
	1.5kW	2kW	3kW	4kW	6kW
Work area (Length X Width)	3000*1500mm				
X-axis travel	1530mm				
Y-axis travel	3050mm				
Z-axis travel	330mm				
Tube length	500~6000mm				
Tube diameter	20~220mm				
X/Y-axis positioning accuracy	±0.05mm				
X/Y-axis repeated positioning accuracy	±0.02mm				
Maximum speed	130m/min				
Maximum acceleration	1G				
Dimensions (length x width x height)	9300*3460*2180mm				
Maximum load	700KG				
Total weight(KG)	7085	7095	7125	7165	7175
Phase	Three-phase				
Rated voltage of power supply	380V				
Frequency	50Hz				
Power supply protection grade	IP54				

Note: 1. The accuracy of the workpiece depends on factors such as the type of workpiece, pre-treatment conditions, sheet size, and position within the working area.
2. Also, technical specifications are subject to change without prior notice and the actual order agreement shall prevail.

CUTTING PARAMETERS
CUTTING PARAMETERS (SF3015HM)

Materials	Thickness (mm)	1.5KW	2KW	3KW	4KW	6KW	Gas
		Cutting Speed (m/min)					
Stainless steel	1	23-30	30-35	30-45	40-50	45-55	N2/Air
	2	7.0-12	10- 15	20-25	25-30	30-35	N2/Air
	3	4.5-5.5	5.0-6.5	8.0- 10	9.0- 13	18-22	N2/Air
	4	2.0-2.5	4.0-5.0	5.0-6.0	7.0-9.3	10-14	N2/Air
	5	1.4- 2.0	2.0-2.3	3.0-3.6	4-4.5	8.0- 10	N2/Air
	6	1.0- 1.2	1.5-2.0	2.0-3.0	3.5-4.5	4.3-5.0	N2/Air
	8		0.8-1.2	1.0- 1.5	2.0-3.0	3.0-4.0	N2/Air
	10			0.5- 1.0	1.2- 1.6	1.8-2.5	N2/Air
	12			0.4-0.6	0.8- 1.2	1.0-1.5	N2/Air
	14					0.8-1.2	N2/Air
	16					0.6-1.0	N2/Air
	20					0.4-0.7	Air
Carbon steel	1	23-26	25-35	30-40	35-45	40-45	N2/Air
	2	4.2-6.5	10- 15	15- 20	15-20	20-28	N2/Air
	3	3.0-4.5	3.5-5.5	3.5-4.5	7.0-9.0	12-17	N2/Air
	4	2.3-3.0	3.0-3.2	3.0-3.5	3.0-4.0	8.0- 10	N2/Air
	6	1.7-2.5	2.0-2.7	2.5-3.5	2.0-3.0	2.5-3.3	O2
	8	1.2- 1.6	1.3-1.7	1.8-2.3	2.0-3.0	2.3-3.0	O2
	10	1.0- 1.2	1.0- 1.6	1.4-1.8	2.0-2.5	2.0-2.5	O2
	12	0.8- 1.0	0.8-1.2	1.0- 1.4	1.5- 2.0	1.8-2.2	O2
	14	0.6-0.7	0.8-1.0	0.8- 1.0	1.0- 1.5	1.4-1.7	O2
	16	0.5-0.6	0.7-1.0	0.7- 1.1	0.7- 1.2	1.0-1.6	O2
	20			0.5-0.7	0.6-0.8	0.6-1.2	O2
	25				0.4-0.6	0.5-0.7	O2
	30					0.4-0.6	O2

Note: 1. The cutting parameter table is for reference only and the actual cutting materials will prevail due to differences in carbon content.

2. The dark areas cannot be processed as a full sheet and are only suitable for sample cutting. Please be aware of this.

CUTTING PARAMETERS
CUTTING PARAMETERS (SF3015HM)

Materials	Thickness (mm)	1.5KW	2KW	3KW	4KW	6KW	Gas
		Cutting Speed (m/min)					
Brass	1	15-20	15-25	25-30	30-35	40-45	N2/Air
	2	4.8-6.0	8.0- 11	12- 17	15- 18	20-25	N2/Air
	3	1.5-2.0	3.0-4.5	5.0-6.0	8.0-10	12-15	N2/Air
	5	0.5-0.7	1.3-1.7	1.8-2.5	3.0-4.0	5.0-6.0	N2/Air
	6		0.6-0.8	0.8- 1.0	2.0-2.5	3.0-4.0	N2/Air
	8				0.8- 1.2	1.5-2.5	N2/Air
	10					1.0-1.5	N2/Air
	12					0.8-1	N2/Air
Aluminum	1	15-23	20-25	30-35	35-40	50-55	N2/Air
	2	6.0-8.0	10- 15	14-20	17-25	25-30	N2/Air
	3	2.0-3.0	4.0-5.0	8.0- 10	10-13	13-16	N2/Air
	4	1.0- 1.7	2.0-2.5	5.0-6.5	6.0-7.5	10-13	N2/Air
	5	0.5-0.8	1.0-2.0	2.5-3.5	4.0-5.0	5.0-6.0	N2/Air
	6		0.6- 1.0	1.2- 1.5	2.5-3.5	3.0-4.0	N2/Air
	8			0.7- 1.3	1.0-2.0	2.0-3.0	N2/Air
	10				0.8-1.2	1.0-2.0	N2/Air
	12				0.4-0.6	0.7-1.2	N2/Air
	14					0.5-1.0	N2/Air
	16					0.4-0.6	N2/Air

Note: 1. The cutting parameter table is for reference only and the actual cutting materials will prevail due to differences in carbon content.
2. The dark areas cannot be processed as a full sheet and are only suitable for sample cutting. Please be aware of this.

COST BENEFIT ANALYSIS

COST BENEFIT ANALYSIS (SF3015HM)

Items		1.5kW			2kW			3kW		
		Air compress	O2	N2	Air compress	O2	N2	Air compress	O2	N2
Electricity consumption	Laser source power(kW)	5.5			6.1			10		
	Water chiller power(kW)	2.7			2.8			3.8		
	Air compressor power(kW)	15	/	/	15	/	/	15	/	/
	Machine tool host(kW)	12	12	12	12	12	12	12	12	12
	Dust removal equipment(kW)	3	3	3	3	3	3	3	3	3
Consumables and gas consumption(RMB/H)		0.5	4.5	60.5	0.5	4.5	60.5	0.5	4.5	60.5
Total power(kW)		38.2	23.2	23.2	38.9	23.9	23.9	43.8	28.8	28.8
Total power consumption(kW/H)		22.9	13.9	13.9	23.3	14.3	14.3	26.3	17.3	17.3
Total operating costs(1RMB/kwh)		23.4	18.4	74.4	23.8	18.8	74.8	26.8	21.8	77.8

If compressed air is use the cutting auxiliary gas, the cost will be actual operating electricity of the air compressor + machine tool electricity + consumables like the d as protective lenses and cutting nozzles.

Note: 1. The electricity rate and gas price listed above are for reference only, and prices may vary in different regions.

2. Consumptions of auxiliary gas will differ depending on the thickness of the plates being cut. As an example, 8mm carbon steel is used for oxygen consumption and 1mm stainless steel is used for nitrogen consumption. These numbers are for reference only.

COST BENEFIT ANALYSIS

COST BENEFIT ANALYSIS (SF3015HM)

Items		4kW			6kW		
		Air compress	O2	N2	Air compress	O2	N2
Electricity consumption	Laser source power(kW)	12.5			16		
	Water chiller power(kW)	7.8			8.5		
	Air compressor power(kW)	15	/	/	15	/	/
	Machine tool host(kW)	12	12	12	12	12	12
	Dust removal equipment(kW)	3	3	3	3	3	3
Consumables and gas consumption(RMB/H)		0.5	4.5	60.5	0.5	4.5	60.5
Total power(kW)		50.3	35.3	35.3	54.5	39.5	39.5
Total power consumption(kW/H)		30.2	21.2	21.2	32.7	23.7	23.7
Total operating costs(1RMB/kwh)		30.7	25.7	81.7	33.2	28.2	84.2

If compressed air is use the cutting auxiliary gas, the cost will be actual operating electricity of the air compressor + machine tool electricity + consumables like the d as protective lenses and cutting nozzles.

Note: 1. The electricity rate and gas price listed above are for reference only, and prices may vary in different regions.

2. Consumptions of auxiliary gas will differ depending on the thickness of the plates being cut. As an example, 8mm carbon steel is used for oxygen consumption and 1mm stainless steel is used for nitrogen consumption. These numbers are for reference only.

ADVANTAGES OF LASER CUTTING
ADVANTAGES OF LASER CUTTING
(SF3015HM)

Items	Plasma cutting	Laser cutting	Laser cutting advantages
Positioning accuracy	0.4mm (especially 10m bed)	0.14mm (especially 10m bed)	High precision
Section taper	5mm (especially 40mm thick)	0.4mm (especially 40mm thick, 20kW and above)	No need for fine processing
Kerf	4-6.0mm	0.2-1.6mm	Save 6-9% of materials
Bleed and co-edge	10mm	3-4mm	Save 6-9% of materials
Heat affected zone	0.5-2.0mm	0.1-0.4mm	Less heat absorption, less deformation
Cutting effect	Average	Excellent, less slags	No need for sanding
Cutting speed	Average	Very fast	High production efficiency
Piercing	Can't cut small holes	Diameter-depth ratio of 10-20%	Save drilling and handling
Working environment	Smoky	Clean	Healthy and environmentally friendly

CONFIGURATION LIST
CONFIGURATION LIST (SF3015HM)

No.	Item	Qty	Brand
	Laser source		
1	Laser source	1	Raycus
	Laser cutting head		
1	Laser cutting head	1	Raytools
	Machine tool · host		
1	Transmission system	6	SENFENG
2	Machine tool and accessories	1	SENFENG
3	Reducer	6	Japan SHIMPO
4	Electrical and pneumatic systems	1	France SCHNEIDER RAYCEE
5	AC servo motor and driver	7	Fuji
6	Water chiller	1	Tongfei
	CNC control system		
1	CNC control system	1	FSCUT 3000DE

Note:
This is the optimal configuration verified by our company. If you change the brand or configuration, it may cause irreversible effects. Please be aware of this.
The warranty period for the entire machine (excluding consumables, force majeure natural disasters, wars and violations, human damage, and other reasons) is 1 year.

CUTTING SAMPLES (SF3015HM)

CUTTING SAMPLES

LASER DEVICE
SF3015HM-LASER SOURCE

1.5-3kW

4-6KW

1. Excellent beam quality and small output fiber core diameter.
2. More efficient when cutting medium and thin plates, 50% faster.
3. The new generation of optical devices adopts multiple anti-reflective structure, allowing efficient cutting of various metal materials.
4. New generation of intelligent software (intelligent APP mode), real-time monitoring of operating indicators.
5. The electro-optical conversion efficiency exceeds 40%, and cutting is more energy-saving, thus effectively reducing customer cutting costs.
6. The modulation frequency range has been upgraded from the original 1-5kHz to 1-20kHz, which can be applied to diversified processes
7. Small size and light weight, easier to integrate.
8. The sealing and reliability are further improved, and the protection level is upgraded to IP66.

LASER HEAD
SF3015HM- CUTTING HEAD

1.5-3kW

4-6KW

1. Efficient cooling: Both collimator and focusing lens groups have cooling structures, plus nozzle cooling airflow, which effectively protects the nozzle and ceramic body and extends the continuous working time.
2. Fast focusing: Collimator focusing is used, which has a faster focus movement speed and a larger focusing range than focusing.
3. Multiple protective lenses: Four protective lenses are designed to effectively reduce the pollution when replacing optical fibers and lower protective lenses, thereby extending the life of collimating and focusing lenses
4. Optimized structure: Integrated body design to ensure sealing. Improved QBH, QD, G5 fiber optic interfaces to enhance compatibility with lasers, so that they will no longer get stuck due to water leakage, rust, etc.

LATHE BED SYSTEM
SF3015HM- MACHINE BED SYSTEM

High-strength machine bed

Durable and non-deformable

Technology	Core	Feature
The high-strength machine bed is welded with high-quality steel plates and pipes.	After welding, the bed undergoes stress-relief annealing, secondary aging treatment and precision machining of large gantry milling machines, which ensures adequate structural stability and vibration resistance, enabling the bed to withstand higher accelerations.	The bed body has no internal connections, preventing heat generated during cutting from affecting processing accuracy. This also ensures long-term use without deformation and extends the service life of the equipment.

Aviation-grade high-strength aluminum beam

Strong structural stability and shock resistance

Technology	Feature
The beam is made of aviation-grade high-strength aluminum alloy that is extruded and then subjected to heat treatment. After precision machining, the beam possesses excellent overall rigidity and surface quality. As an aluminum alloy, it also features corrosion resistance, lightweight and high strength.	The internal structure has been optimized through finite element analysis to ensure excellent dynamic performance during high-speed laser processing. This means that high-speed cutting of various shapes can be achieved while meeting precision requirements.

Pneumatic system

Precise control

Core

The pneumatic system is equipped with control valves and proportional regulating valves from well-known brand RAYCEE. By electrical control, the pressure and flow of each gas can be accurately adjusted.

Feature

Cutting auxiliary gas (O2, N2, compressed air, etc.)

One machine with two uses

Double the efficiency

Feature

This equipment has a dual function of cutting plates and pipes at the same time, making it truly versatile and doubling its efficiency.

Intelligent spiral negative pressure dust removal

Green and smart

Core

The dust removal system intelligently opens or closes the exhaust vents according to the current cutting position, thereby achieving timed, partitioned and segmented exhaust.

Feature

The dust removal system cooperates with the sealing structure at the bottom of the base to achieve smokeless cutting.

z-axis modular

Safety protection, easy maintenance

Core

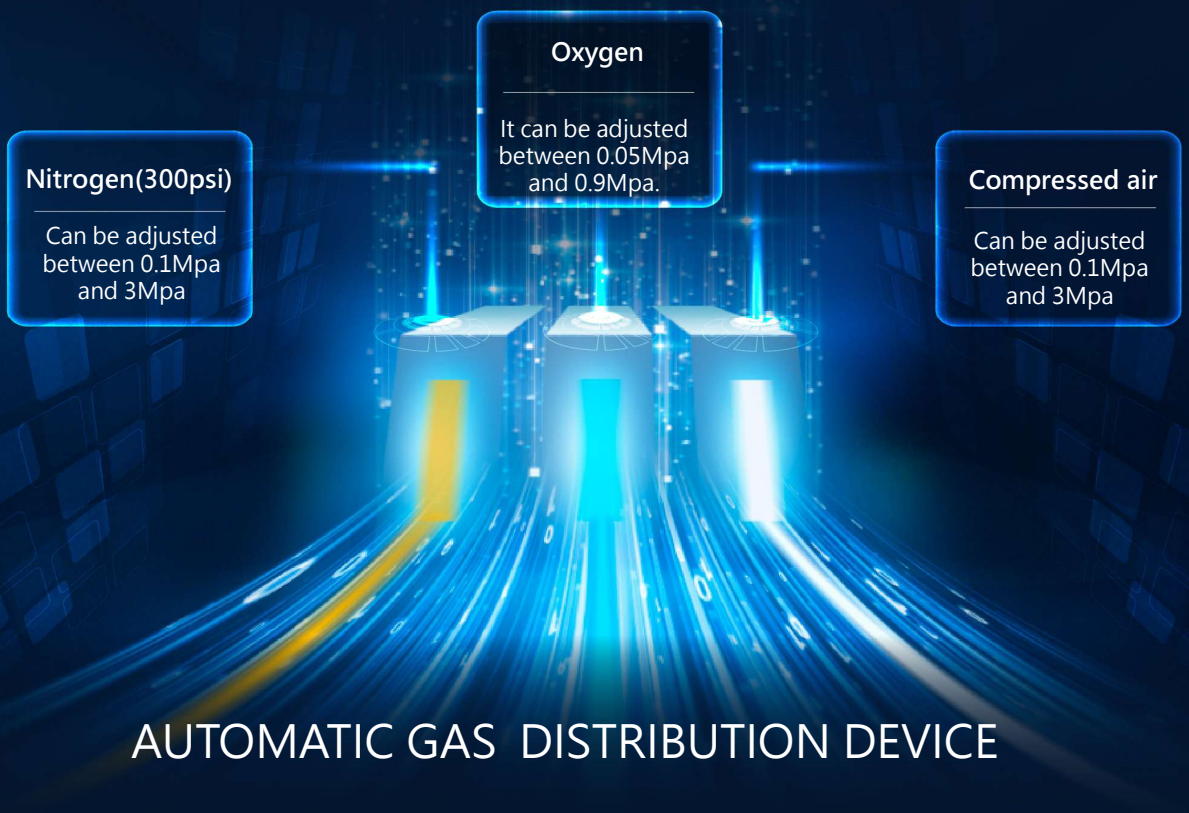
The modular z-axis has good sealing performance and is not easily contaminated, thus reducing equipment failure rate.

Feature

Modular installation and replacement greatly reduces maintenance time and difficulty.

AUTOMATIC GAS DISTRIBUTION DEVICE

AUTOMATIC GAS DISTRIBUTION DEVICE



AUTOMATIC GAS DISTRIBUTION DEVICE

Precise Gas Control

Equipped with two gas channels, namely nitrogen (air) and oxygen. Each gas channel can independently control its flow and pressure.

- · The software terminal automatically selects auxiliary gas.
- · The type and pressure of the auxiliary gas can be automatically set and selected through the CNC program, eliminating the need for manual operation.
- · The actual gas pressure at the cutting head outlet can be easily read and displayed in real-time on the panel.

NUMERICAL CONTROL SYSTEM
NUMERICAL CONTROL SYSTEM

FSCUT3000DE

FSCUT3000DE CNC system

Convenient operation and efficient cutting

FSCUT3000DE is a bus control system suitable for this pipe cutting machine with follow support and two chucks. It supports high-precision and high-efficiency cutting of square pipes, round pipes, runway-type and oval-shaped stretched pipes, as well as angle steel and channel steel. Its performance characteristics are as follows:

- It supports real-time deviation compensation of the pipe core, reducing the clamping requirements for pipes, thus greatly improving the piercing accuracy.
- It is based on bus real-time system, as well as follow and control integration, making pipe corner cutting faster and corner following more stable, thus making the cutting quality more reliable.
- It supports automatic selection of auxiliary gas type and gas pressure.
- It supports feeding and cutting with hollow chucks, greatly shortening the total length of the machine bed and achieving a high degree of automation.
- It supports automatic loading and unloading, cycle processing, and standard automated feeding actions.
- It supports flying cut
- It supports real-time feedback from the encoder and is equipped with error measurement tools to obtain the optimal motion parameters of the machine tool.
- It supports pipe process data base to facilitate export and save technology.
- It supports contactless piercing, resulting in high perforation efficiency.
- It is compatible with cutting software TubePro and professional version of TubesT nesting software.

AFTER-SALE SERVICE
AFTER-SALE SERVICE

Personnel training to improve production efficiency

· Before the equipment is shipped

The buyer can arrange 1-2 operators to our factory or exhibition hall for a one-week training. The specific time is subject to the customer service department of our company.

· Equipment warranty

The buyer can also apply for another operator (1-2 people) to our company for free training.

· Training

Including laser principle, equipment structure, process description, equipment maintenance, laser safety protection, operation procedures and simple troubleshooting.

· Requirement

The trainees shall be mechanical, electrical or optical assistant engineers or engineers, who can operate the machine after passing the assessment of equipment operation, laser basic principles, laser safety protection, maintenance, etc.

Packaging and transportation to ensure the equipment quality

· Packing

Standard packaging, suitable for long distance car transportation, with moisture proof, rust proof and shock proof. It indicates the lifting center of gravity and lifting parts, suitable for the overall lifting.

· Shipping

Car transportation. Our company is responsible for freight and insurance.

· Packing list and certificate

A detailed packing list and quality certificate shall be attached to each packing box. Equipment instructions and all other documents and materials are also attached in it. The packing list is outside the packing box, and the certificate is inside.

Equipment installation is professional and high-quality

1 Equipment installation

The delivery place is the installation site of your company, and our company will send engineers to conduct the equipment installation;

2 Equipment test

After installation, debugging is performed to ensure the normal function of equipment;

3 On-site training

Conduct training on equipment maintenance, safety protection, operating procedures and simple troubleshooting at the customer site for 7 days to ensure the normal use;

4 On-site acceptance

The engineer can leave after the customer's on-site acceptance (the customer can veto).

Customization Service

HONOUR ENJOY CUSTOMIZED

In the digital age, the intelligent transformation of the metal processing manufacturing industry is imperative, and building a fully-automatic factory is the only way to achieve this transformation. Customized metal forming automation solutions become a top priority.

05 Item
International PCT patent

520 Item
Domestic technology patent

At present, the core components such as laser generator, laser processing head and laser numerical control system have been successfully developed by our company, which are widely used in cutting, welding, cladding and automation fields. It has formed a whole industry chain development model integrating cutting, bending, welding, cladding and automation, covering laser cutting equipment, laser welding equipment, laser cladding equipment, laser cleaning equipment, bending center and laser processing flexible production line, which are widely used in power towers, construction machinery, shipbuilding, bridge formwork, aerospace and other industries. With its strong advantages, Jinan Senfeng Laser Technology helps enterprises to reduce the production cycle and save manufacturing costs, so as to obtain greater economic benefits in the competition.

Custom standards

1. Understand the current situation of the customer's industry and the specific production situation. Identify problems and understand customer needs;
2. Conduct in-depth exchanges with customers on site, and customize metal forming automation solutions according to their pain points and needs;
3. Significantly different from competitors' models and formulate the most suitable solutions;
4. According to the customized plan, provide R&D and production from drawings to complete machines, and control every procedure until the customer is satisfied.

Five Star Service

5-STAR SERVICE IN QUICK RESPONSE

Jinan Senfeng Laser Technology always adheres to the concept of "customer first", provides high-quality global services with dedicated and professional quality. In the face of the epidemic, we did not back down but solved problems for customers in time, which won the favor and trust of customers at home and abroad.

Efficient

Efficient

24 hours a day, 7 days a week, 365 days a year to answer repair calls;
Within 10 minutes, professional technical engineers shall reply, 1 hour to determine the maintenance plan, and 1 working day to dispatch engineers.

Exclusive solution customized service: according to the specific situation of customers, customized service plan;

Service engineer certification system: each service engineer after strict training and assessment, with a certificate post;

Professional

Professional

FAQ training: according to the equipment model, make the FAQ and train customers by the certified engineer;

Online one-to-one guidance: experienced senior engineers guide customers to solve problems through telephone, video and other network ways;

Once is good: a equipment debugging in place, similar problems once repair.

Reassuring

Reliable

Pre-service: theory + practical operation training, self-diagnosis training for common faults, quick repair guidance for difficult faults, reminder of use precautions;

Regular service: regular maintenance reminder, regular door-to-door service, regular sales promotion activities;

Value-added services: equipment hardware and software upgrade service, financial leasing service, delayed warranty service.

SENFENG

Jinan Senfeng Laser Technology Co.,Ltd.

Jinan Senfeng Laser Technology Co.,Ltd.
E-mail: senfeng@sfcnclaser.com
Tel/WhatsApp: +86 13210546543
Website: www.senfenglaser.com
Add: No. 1777 Kejia Road, High-tech Zone, Jinan City, Shandong Province, PRC