SENFENG

SF3015H4

High-power Laser Cutting Machine

TECHNICAL SOLUTIONS

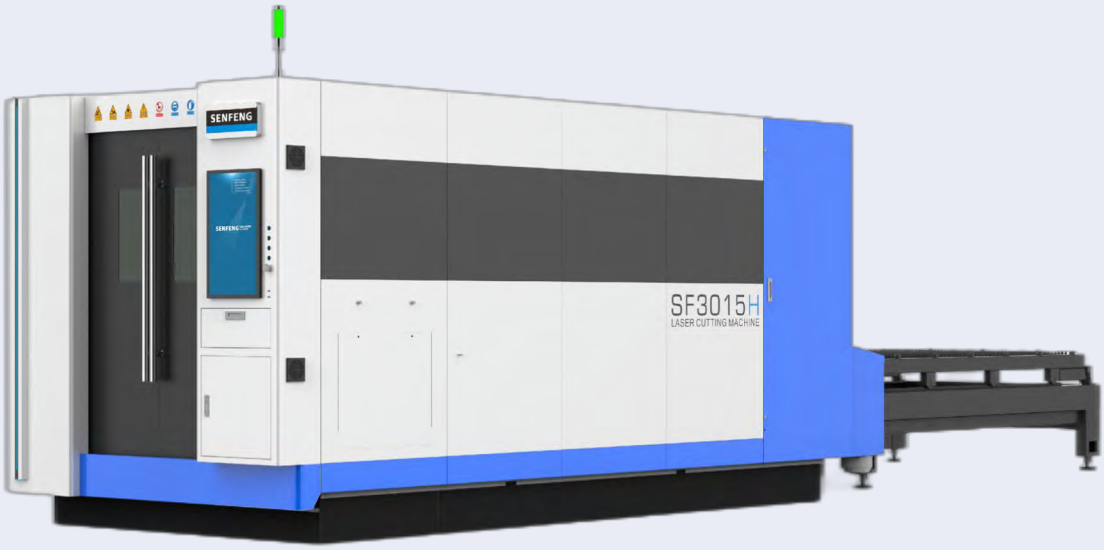
CONTENTS

The Fourth Generation·Versatile and Efficient

SF3015H4

High Power Laser Cutting Machine

- Heavy-duty and thermally isolated hollow bed
- Intelligent surrounding spiral negative pressure dust removal
- Laser cutting process database
- Storm cutting system



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TECHNICAL PARAMETERS

Items	Parameters		
	12kW	20kW	30kW
Work area (length x width)	3000*1500mm		
X-axis travel	1530mm		
Y-axis travel	3050mm		
Z-axis travel	390mm		
X/Y-axis positioning accuracy	±0.05mm		
X/Y-axis repeated positioning accuracy	±0.02mm		
Maximum speed	180m/min		
Maximum acceleration	1.5G		
Dimensions (length x width x height)	8551*2270*2340mm		
Maximum load of workbench	2000KG		
Total weight	6160	5700	7080
Phase	Three-phase		
Rated voltage of power supply	380V		
Frequency	50HZ		
Power supply protection grade	IP54		

Note: 1. The accuracy of the workpiece depends to some extent on factors such as workpiece type, preparation, sheet size and position.
2. The above technical parameters are subject to change without notice, and the final technical parameters are subject to the order agreement.

CUTTING PARAMETERS （SF3015H）

Materials	Thickness(MM)	12kW	20kW	30kW	Gas
		Cutting speed (m/min)			
Stainless steel	6	13-15	18-22	22-25	N2/air
	8	8-10	13-16	18-22	N2/air
	10	6.5-7.5	11-13	14-18	N2/air
	12	5-5.5	9-11	12-14	N2/air
	14	3-3.5	7-9	10-12	N2/air
	16	2-2.3	6-7	8-9	N2/air
	18	1.3-1.5	3.5-4.5	6-7	N2/air
	20	1.2-1.4	3.5-4.5	5-6	N2/air
	25	0.7-0.9	1.8-2.5	2.5-3	N2/air
	30	0.25-0.3	1.4-1.6	1.5-2	N2/air
	35	0.2-0.25	0.8- 1.2	1.2- 1.5	N2/air
	40	0.15-0.2	0.5-0.8	0.8-1.2	N2/air
	45	0.05-0.1	0.3-0.5	0.75-0.8	N2/air
	50	0.05-0.1	0.2-0.3	0.6-0.8	N2/air
	60		0. 15-0.2	0. 15-0.2	N2/air
	70		0. 1-0. 13	0. 1-0. 13	N2/air
	80			0.08-1.1	N2/air
	90			0.05-0.06	N2/air
Carbon steel	5	15-18	23-28	24-30	N2/Air
	6	10-13	18-20	25-28	N2/Air
	8	7-10	14-16	18-22	N2/Air
	10	6-6.5	9-12	14-17	N2/Air
	14	1.6-1.8	6-8	8-10	N2/Air
	16	1.5-1.6	5-6	7.5-8.5	N2/Air
	18	1.35-1.5	3.2-4	5.5-6.5	N2/Air
	20	1.3-1.4	2.7-3.2	5-5.5	N2/Air
	25	0.8-1	1.4- 2.6	3-3.5	N2/Air
	30	0.4-0.5	1.2- 2.2	1.3- 2.8	O2
	35	0.3-0.4	0.9- 1.8	1.0- 2.0	O2
	40	0.25-0.3	0.8-1.2	0.9- 1.8	O2
	50	0. 18	0.3-0.7	0.8-1.2	O2
	60		0. 17-0.22	0.5-0.6	O2
	70			0.2-0.3	O2
	80			0.12-0.15	O2

CUTTING PARAMETERS （SF3015H）

Materials	Thickness (MM)	12kW	20kW	30kW	Gas
		Cutting speed (m/min)			
Brass	5	13- 16	18-20	18-20	N2/air
	8	6.0-8.0	9.0-11	10-15	N2/air
	10	4.5-5.5	6.0- 8.5	7.0- 10	N2/air
	12	1.8-2	4.0-6.0	4.0-7.0	N2/air
	14	1.2-1.4	2.5-3.5	3.0-4.5	N2/air
	16	0.8-1.0	2.0-3.0	1.5-2.5	N2/air
	20	0.3-0.5	0.8-1.0	0.7-1.0	N2/air
	30		0.5- 0.6	0.4- 0.6	N2/air
Aluminum	5	15- 17	21-24	20-24	N2/air
	8	6.5- 9.0	16-20	15-20	N2/air
	10	5.0-6.0	14- 16	8.0-13	N2/air
	16	1.3- 1.8	2.0-3.0	5.0-7.0	N2/air
	20	0.8- 1.2	1.5-2.2	2.0-3.5	N2/air
	30	0.3-0.5	0.5-0.8	0.8-1.0	N2/air
	35	0.25-0.3	0.4- 0.6	0.6- 0.7	N2/air
	40	0.2-0.25	0.3- 0.5	0.4-0.6	N2/air
	50	0. 1-0.15	0.15-0.2	0.3-0.4	N2/air
	60		0.1-0.15	0.2-0.3	N2/air

Note: 1. Due to the difference in carbon content of materials, the cutting parameters are for reference only, and the actual material shall prevail.

2. The dark part means that the whole metal plate cannot be processed, but the sample can be cut, please be informed.

COST BENEFIT ANALYSIS （SF3015H）

Items		12kW			20kW			30kW		
		Air	O2	N2	Air	O2	N2	Air	O2	N2
Power consumption (peak power consumption)	Laser source(kW)	32			57			90		
	Water chiller power(kW)	18			28			35		
	Air compressor power(kW)	22	/	/	37	/	/	37	/	/
	Machine tool host (kW)	22	22	22	22	22	22	22	22	22
	Dust removal equipment(kW)	3	3	3	3	3	3	3	3	3
Consumables and gas consumption(kW)		0.5	4.5	60.5	0.5	4.5	60.5	0.5	4.5	60.5
Total power(kW)		97	75	75	147	110	110	187	150	150
Total power consumption(kW/H)		58.2	45	45	88.2	66	66	112.2	90	90
Total operating cost (1RMB/kWh)		58.7	49.5	105.5	88.7	70.5	126.5	112.7	94.5	150.5

If the cutting auxiliary gas is compressed air that has been dried, the cost is the air compressor electricity consumption + machine tool electricity consumption + consumables (protective lenses and nozzles).

Note: 1. The electricity and gas prices listed above are for reference only and may vary from region to region.

2. The auxiliary gas consumption will be different when cutting plates of other thicknesses. The oxygen column takes 25mm carbon steel as an example, and the nitrogen column takes 1mm stainless steel as an example. The values are for reference only and are subject to actual use.

ADVANTAGES OF LASER CUTTING
(SF3015H)

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)	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 （SF3015H）

No.	Items	Quantity	Brands
	Laser source		
1	Laser source	1	SENFENG
	Laser cutting head		
1	Laser cutting head	1	SENFENG TYRFING
	Machine tool · host		
1	Transmission system	4	Taiwan LAPPING/SENFENG
2	Machine tool and accessories	1	SENFENG
3	Machine bed burn-proof parts	1	Graphite (optional refractory bricks)
4	Reducer	3	France MOTOREDUCER/Japan SHIMPO
5	Electrical and pneumatic systems	1	France SCHNEIDER Japan SMC & Taiwan AirTAC
6	AC servo motor and driver	4	INOVANCE
7	Water chiller	1	HANLI
	CNC system		
1	CNC system	1	Senfeng Mimir LS6000M

Note: 1. 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.

2. The warranty period for the entire machine (excluding consumables, force majeure natural disasters, wars and violations, human damage, and other reasons) is 2 years.

CUTTING SAMPLES

SF3015H-LASER SOURCE

12kW~30kW optional

1. High electro-optical conversion efficiency

2. High output power and superior beam quality

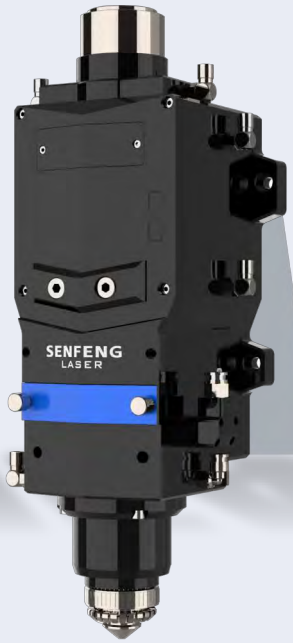
3. High power stability, high reliability and long life

4. All-fiber structure, featuring compact, maintenance-free and low cost

SF3015H-LASER HEAD

12kW-15kW

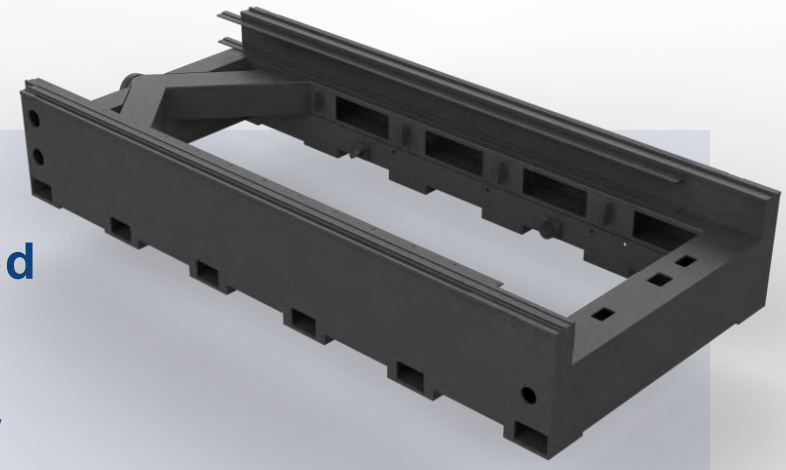
20kW



30kW

1. Full optical temperature monitoring
2. Air leak monitoring
3. Protection window installation monitoring
4. The three protective lenses are tightly sealed against dust
5. All lenses are independent modules

SF3015H-MACHINE BED SYSTEM



Heavy-duty heat-isolated hollow bed

Higher processing efficiency

Technology

Welding is followed by stress relief annealing, secondary aging treatment, and precision machining using a super large gantry milling machine to ensure sufficient structural stability and shock resistance of the bed body, allowing it to withstand high acceleration.

Feature

The bed body has no internal connections to prevent heat transfer and accuracy decrease during cutting and ensure long-term use without deformation, thus improving its service life.

Aviation-grade high-strength aluminum beam

Strong structural stability
Strong impact resistance

Technology

The beam is made of high-strength aviation-grade aluminum alloy and undergoes extrusion, quenching, heat aging treatment, and precision machining. It has excellent rigidity and surface quality and is corrosion-resistant, lightweight, high in rigidity, and has good toughness due to the properties of aluminum alloy.

Feature

The internal structure is optimized through finite element analysis to ensure perfect dynamic performance during high-speed laser cutting. This allows for high-speed cutting of various shapes while maintaining accuracy.

SF3015H-MACHINE BED SYSTEM

Intelligent surrounding spiral negative pressure dust removal

Green and smart

Core

The dust removal system is designed to divide the cutting area into sections and exhaust in a time-sharing, zonal, and segmented manner according to the current cutting position.

Feature

It is also equipped with a sealed bottom structure to achieve smoke-free cutting.

Pneumatic system

Precise control

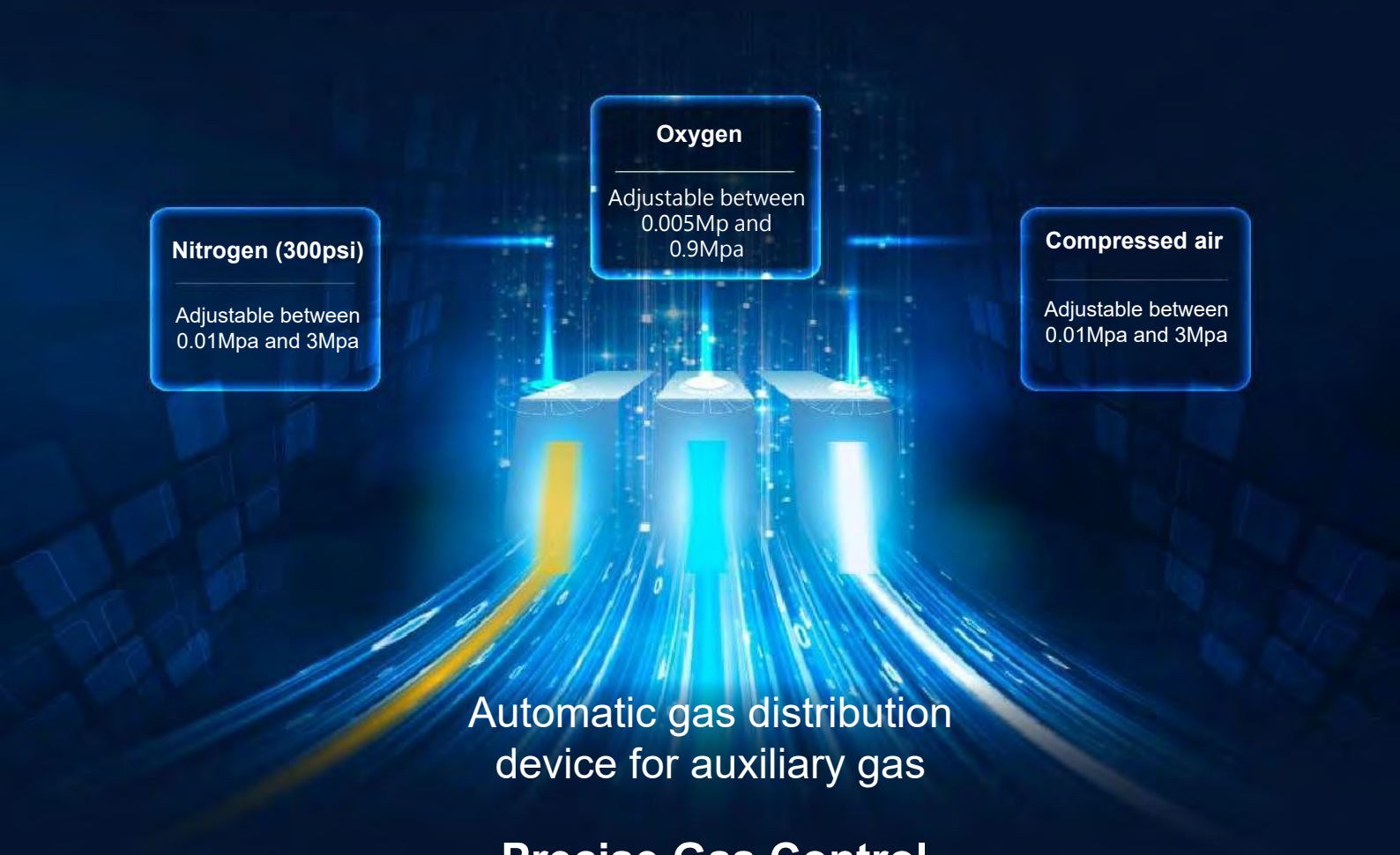
Core

The gas system is equipped with well-known brands of SMC and AirTAC control valves and proportional regulating valves, which controls the pressure and flow of each gas through electricity.

Feature

Auxiliary cutting gases (O2, N2, compressed air etc.).

AUTOMATIC GAS DISTRIBUTION DEVICE



Automatic gas distribution device for auxiliary gas

Precise Gas Control

SF3015H laser cutting machine is equipped with three different gases, namely air, nitrogen (300psi) and oxygen, and the flow and pressure of each gas path can be controlled independently.

- ·The equipment software terminal is equipped with the function of automatically selecting auxiliary gas.
- · The type and air pressure of the auxiliary gas can be automatically set and selected through the numerical control program without manual operation.
- · The actual air pressure at the outlet of the cutting head can also be easily read and instantly displayed on the panel.

SF3015H-NUMERICAL CONTROL SYSTEM

Senfeng Mimir
LS6000M

Storm Cutting System-Senfeng Mimir LS6000M

Fast Operation and Efficient Cutting

The SF3015H cutting machine, featuring the Senfeng Mimir LS6000M system, is a high-end intelligent bus system designed for ultra-high power fiber laser cutting of 8kW and above. It is widely used in metal forming industries, including sheet metal fabrication, advertising, kitchenware, sanitary ware, construction machinery, shipbuilding, aerospace, and automotive parts processing. It boasts stable and reliable performance, easy deployment and debugging, safe production, rich functions, and excellent performance. It is currently the most advanced bus-based dedicated laser cutting system available on the market. The system provides modular, personalized, automated, and information-based solutions and is capable of caching memories and comes equipped with a powerful cutting process database. It provides various cutting parameters for different thicknesses and materials, ensuring easy operation and high cutting efficiency.

- User-friendly interface with text display of error analysis reports.
- Supported drawing formats include native DXF and G-code for direct processing.
- Equipped with a cutting process database, the cutting parameters can be adjusted in real-time during cutting to achieve the best processing quality.
- The features of non-contact perforation, lightning perforation, multi-stage perforation, slag removal during perforation, and classification significantly enhance the efficiency and stability of high-power cutting, thereby improving the core competitiveness of the equipment.
- Optimized functions including rapid-movement methods, "leapfrog" and automatic gas shut-off during the rapid movement.
- Perfect nesting information display reduces plate waste and improves quantity statistics efficiency.

SF3015H-NUMERICAL CONTROL SYSTEM

SF NEST

Nesting Software SF-Nest

Automatic programming for better utilization

The SF3015H CNC laser cutting machine is equipped with SF-Nest, a professional laser cutting software. It offers advanced features like automatic programming, nesting, layout optimization, text processing, and process settings, which maximizes sheet metal management and utilization.

- It supports loading drawings in formats such as DXF, DWG, AI, PLT, and NC. It offers features like changing cutting order, optimizing cutting paths, and optimizing cutting speed.
- Fast and high-efficiency nesting algorithms minimizes material waste. It supports nesting multiple sheets and offers various nesting modes, including automatic, manual, and manual + automatic combinations. Additionally, it supports both automatic and manual nesting for irregular-shaped sheets.
- It enables gap optimization between parts, embedded nesting within parts, symmetrical flipping, rotational nesting, and avoidance of shape overlap and collisions. These features enhance material utilization by maximizing the efficiency of sheet layout.
- Intelligent sorting algorithm minimizes tool travel distance. It provides a quick manual sorting option and supports multiple shared edge tool path generation modes. Users can preview the nesting layout and export PDF reports for layout documentation.
- It supports view adjustments, graphic drawing, editing, matrix copying of shapes, and shared edge segment cutting. These features optimize cutting efficiency and enhance the utilization of sheet metal.
- It supports 7 different color layer mapping options and offers various processing techniques such as adding lead-in lines, micro-joints, sealing, kerf compensation, cooling points, processing direction, chamfering, and bridging.
- The software can generate various types of processing sheets, quotation sheets, and other statistical documents. It is fully compatible with the Mimir cutting process.

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, Fengyun system 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.

Professional

Professional

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;

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.