TP65S

CE Department

DEC. 08, 2023

A HOT-SELLING MODEL IN HSG LASER

TP65S

Multi functional

Tube Laser Bevel Cutting Machine

Cutting Size:	Φ20-273mm
	□20-200mm
	Side≤273mm
Max Acceleration:	1.2G
Chuck Speed:	120r/min
Machine Speed:	140m/min
Max Tube Weight:	200Kg
Tailing:	220mm

Model: HS-TP65S (3 ~ 4KW)

I.Product Profile

About HS-TP65S

Optical System

Nesting Software

Mechanical System

Control System

Laser Source

Brand	IPG PHOTONICS	Raycus HSG Edition
Power Range	10%-105%	10%-100% (105% CE)
Module Number	Single/Multiple	Single/Multiple
Wall Plug Efficiency	> 40%	>40%
Power Stability	± 1%	± 1%
Yearly Attenuation	< 3%	< 3%
Anti-laser reflection	Yes	Yes
Global after-sale police	Yes (Special mode)	Yes
Warranty	YLS 36months YLR 24months	≥12KW 36months

Strict produce process of Raycus

Step 1:Core compenents check

Inspect whether optical components and electronic components are qualified to ensure material quality

Step 2:Installation process check

In a clean state, ensure that the manufacturing process meets the production requirements according to the precision components

Step 3:Optical fiber installation

Check the quality of each optical fiber and ensure that the installation process is clean

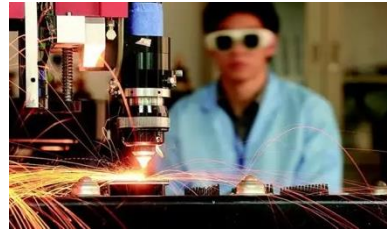
Step 4:Beam combiner install

The core components of the beam combiner are independently developed and manufactured, and the high-quality products meet the requirements

Step 5:Optical lens check

Check whether the end face of the optical fiber is clean to ensure that each optical fiber is at the nanometer level

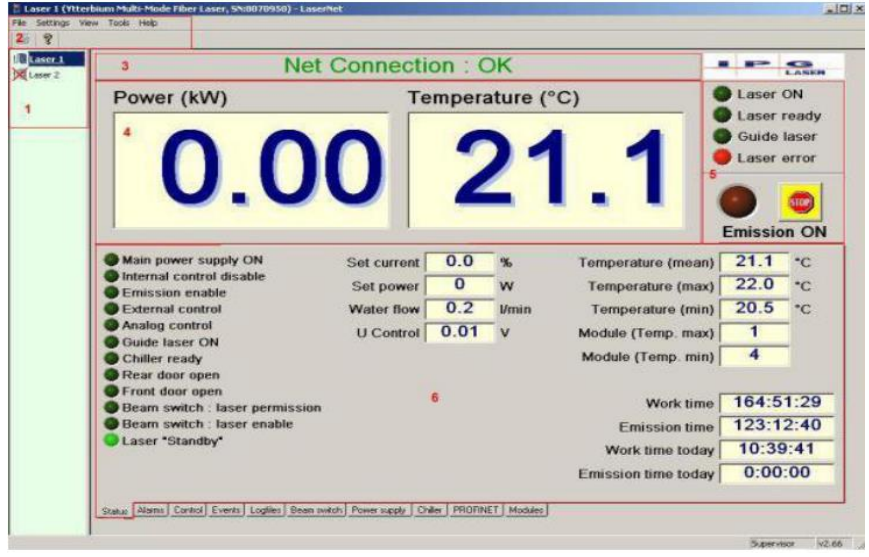
Step 6:Test before shippment



Each laser source will be tested before delivery to ensure that it meets the factory standard

Monitoring softwore of Raycus

VS



① Real Time Monitoring
② Troubleshooting Easily
③ Operation Log Recorde

④Real Time Temerature Monitoring
⑤Real Time Water Flow Monitoring
⑥Real Time Humidity Monitoring

Laser Head

-Adopt Japan Optical Technologies

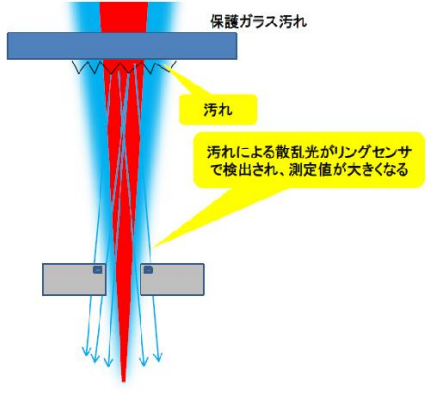
-Spot mode intelligent switching

-High precision polishing technology, low absorption coating scheme

-Design by HSG maintenance and use cost is lower

-Max ±45° beveling angle

Laser Head



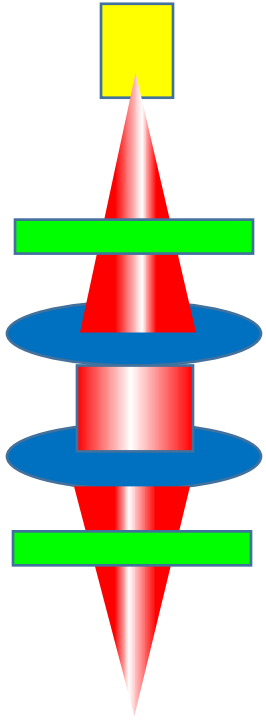
The Special Coating Technology

- ✓ The coating technology developed in Japan is used to prevent dust and pollution.
- ✓ Good coating makes the beam more concentrated and not easy to burn the lens.
- ✓ Normal or cheap protective lens will be exploded when stand long-time high laser power,even casued human safety issue.

High Transmittance

- ✓ Above 99% light transmittance,most laser works for material cutting.
- ✓ More stable focus could make the cutting quality better.
- ✓ The lens absorbs less energy, quickly reaches thermal balance, stable cutting in production.

Laser Head



Japan Special Tightness Technology

1. Reduce the probability of lens pollution.
2. Improve the service life of cutting head.

Double Protective Lenses

1. Change the protective lens faster and more convenient in maintenance.
2. Low replacement cost in long time production.

Laser Head

Bevel angle ±45°

- ✓ Acceleration is 200rad/s²
- ✓ Postioning accuracy ±0.015
- ✓ Beveing cut with round pipe, square pipe, rectangular pipe, channel steel, angle steel, H steel

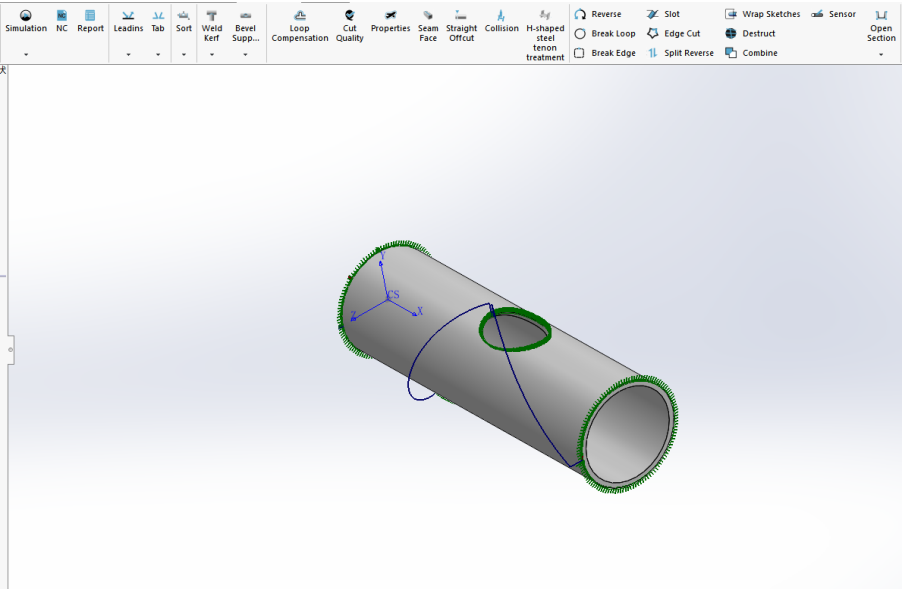
Optical System

Nesting Software

Mechanical System

Control System

Nesting software



-3D drawing software developed based on Solidworks

Solidworks is an excellent 3D design software. The nesting software based on its secondary development can be very intuitive and convenient to quickly switch between design and nesting.

-Supporting various tube types

Closed tubes: round/ square/ rectangular/ runway/ oval/ triangular/D-shaped tube and other closed-shaped tubes

Open tubes: angle/channel/H-beam/I-beam/strip, open rectangle, T-shaped pipe and other open-shaped tubes

-Direct import of assemblies for automatic nesting

Users can directly import the assembly model, and the system will automatically split all the parts and accurately identify the pipe types. In the nesting environment, users can operate all parts, automatically generate tool paths, and complete automatic nesting

Part Design

- Rich templates library
- Parametric draws graphics
- Advanced beveling and chamfering design functios

Part Programming

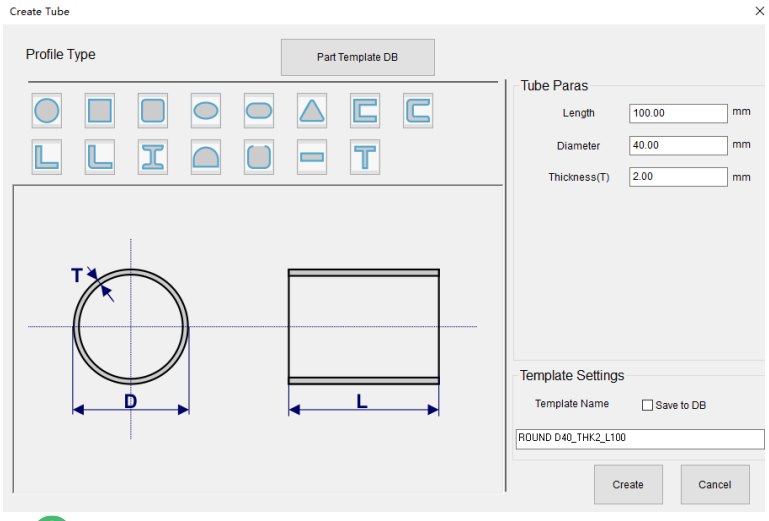
- Automatically/manually generate laser cutting path
- Laser cutting simulation
- Various technologies for tube design

- Lead in&lead out
- Micro joint
- Manual/Auto sorting
- Weld compensation
- Contour compensation
- Cutting process layer
- Weld surface
- Contour chopped

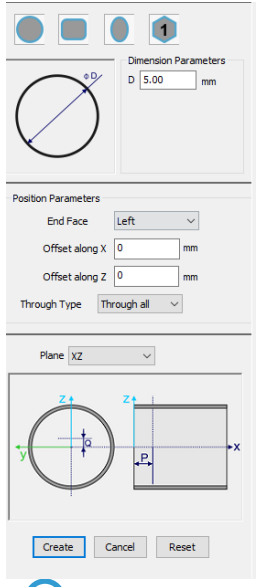
Automatic Nesting

- Pipe stock list
- Import assembly parts then nest directly
- Island coedge,weld compensation coedge
- Nesting based on length and priority

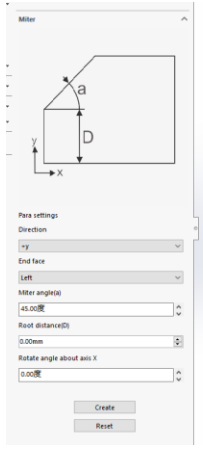
Part Design Function

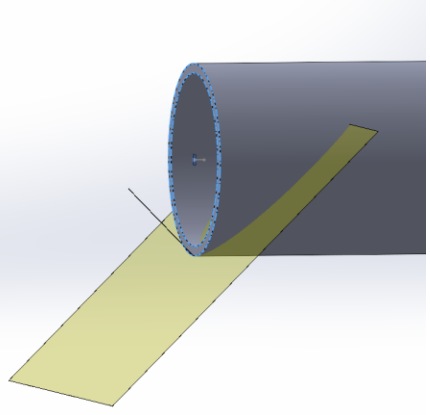


① Parts stock, supporting parametric creation of common tubes



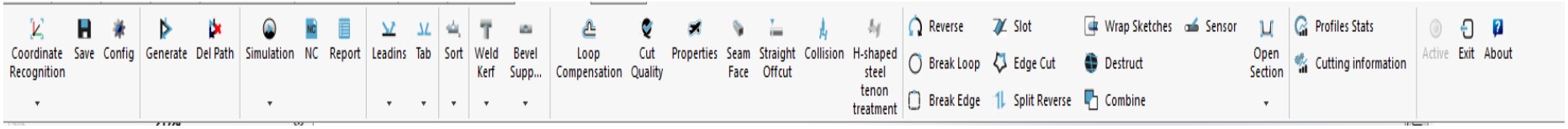
② Design holes function

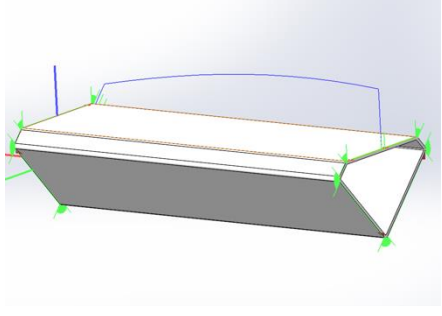




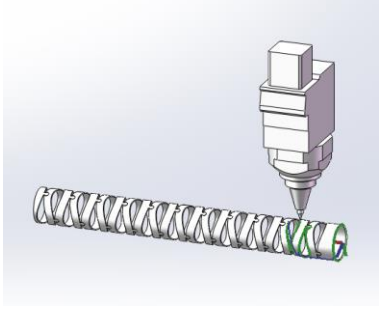
③ Miter function

Part Programming Function

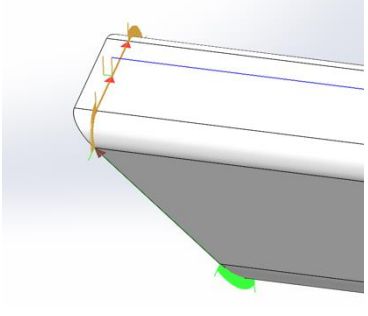




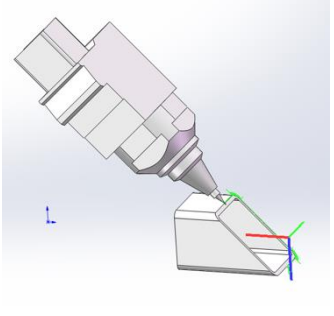
Automatically generate cutting path



Simulation

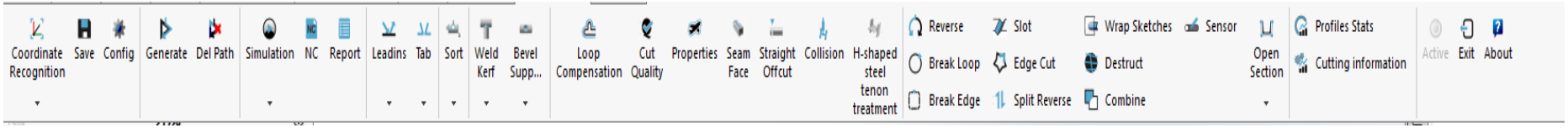


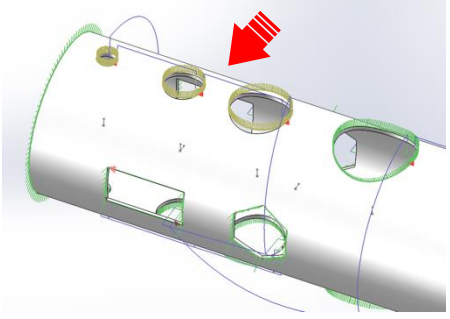
Weld compensation



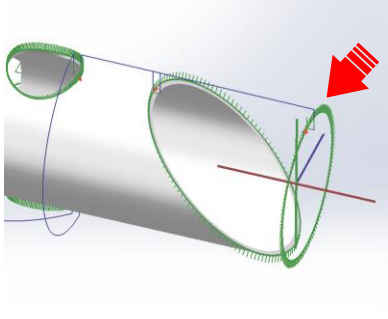
Bevel cutting

Part Programming Function

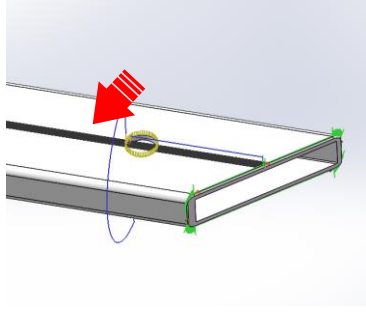




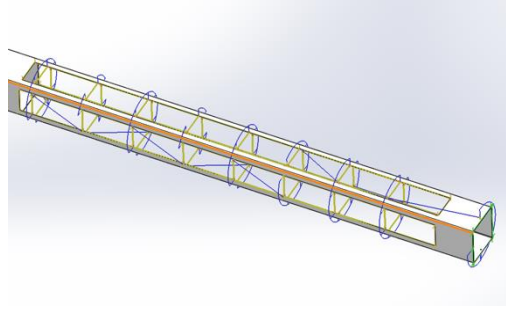
Lock Rotary Cutting



Vertical cutting of edge material



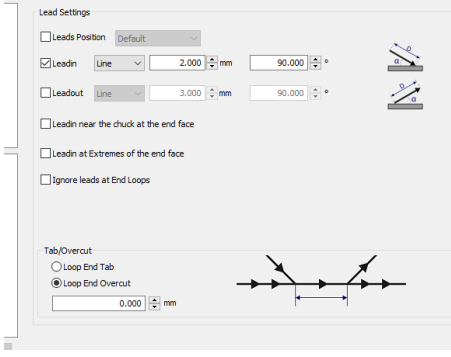
Select weld surface



Long hole cutting

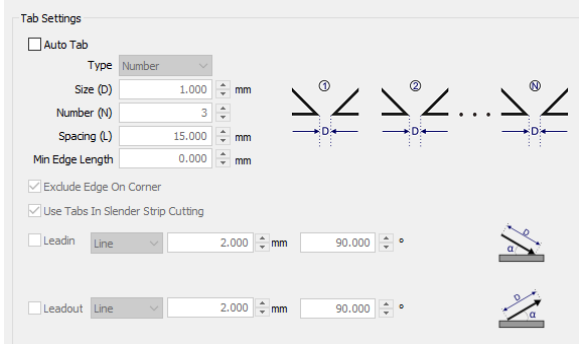
Part Programming Function

Auto/manual Lead Line



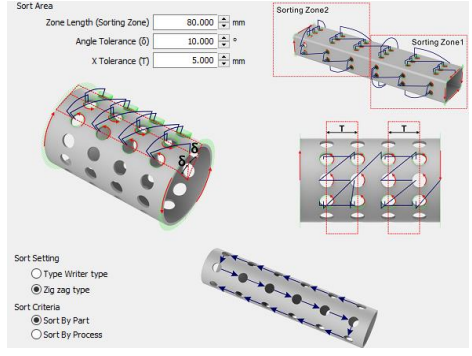
- Select lead line position
- Lead line type : straight line + arc
- Support undercut or overcut

Automatic/manual Micro-joint



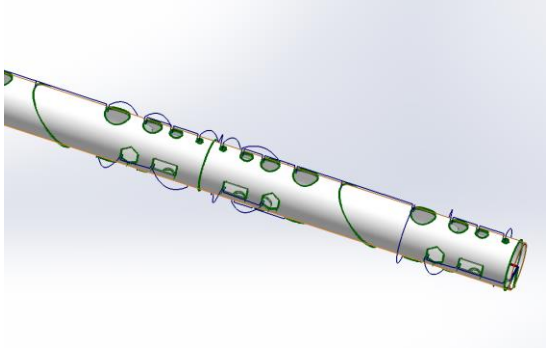
- Micro-connection specification can be selected by quantity or spacing distance
- Setting of parameter
- Setting of lead-in and lead-out lines

Automatic/manual Sorting

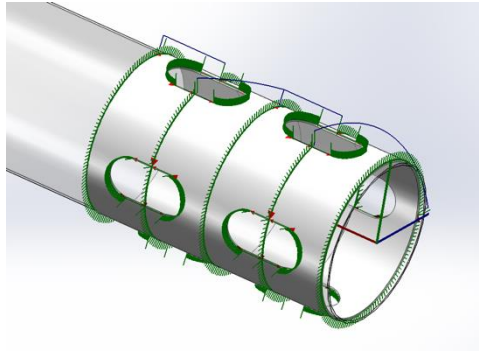


- Support for sorting by input region length
- Supports sorting by parts
- Supports sorting by cut type

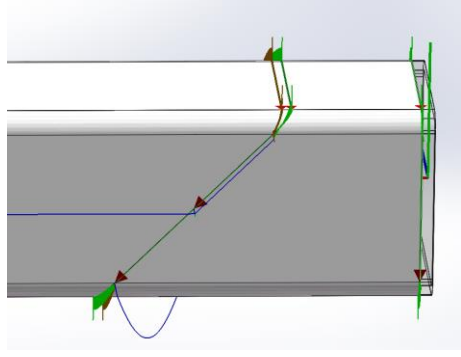
Part Programming Function



Normal coedge

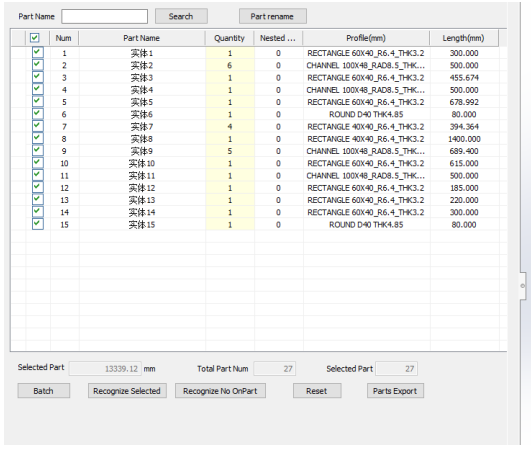


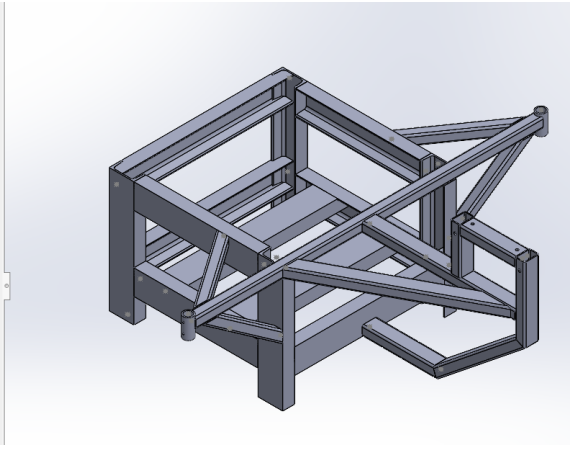
Island coedge



Weld compensation coedge

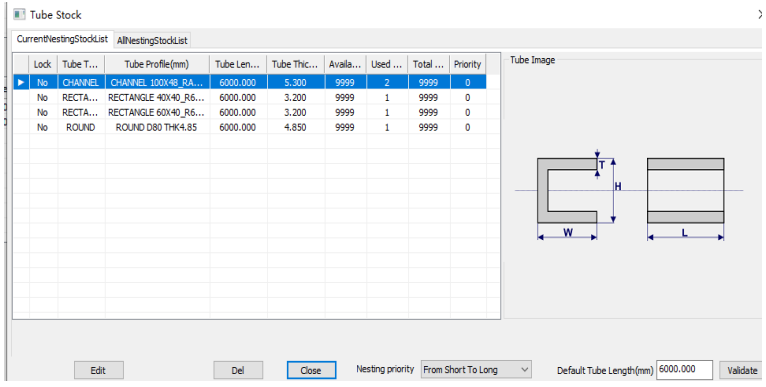
Automatic Nesting Function

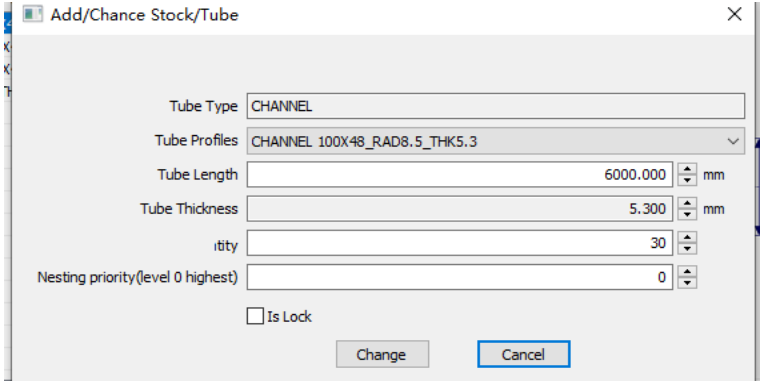




- ✓ Tube database, stock management
- ✓ Direct import assembly automatic nesting
- ✓ Auto-recognition of part type & quantity
- ✓ Various tube types nested at the same time
- ✓ Island coedge/weld compensation coedge
- ✓ Support weld surface selecting
- ✓ Nesting based on length and priority

Tube Database Function

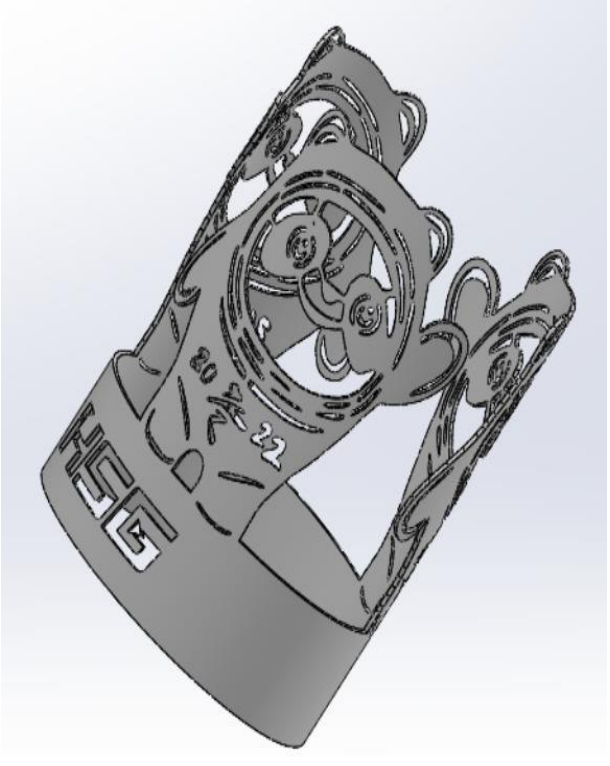




✓Tube stock list, which can realize tube quantity management and automatically reduce after nesting

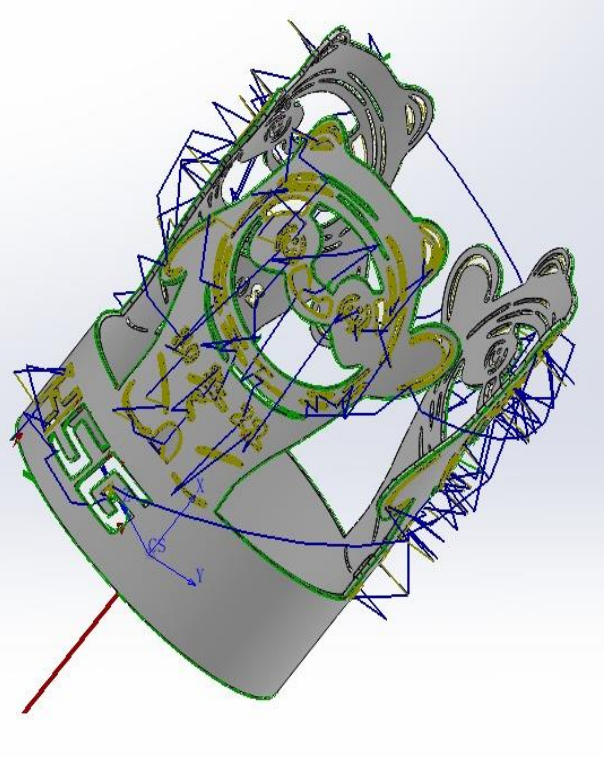
✓Support manual addition and automatic addition of pipe stock

Nesting software



- Identify various parts automatically
- Avoid collision with cutting path simulation
- Tube stock managerment ,count cutting quantity

- Improve nesting efficiency ,less time more work
- One key nesting ,less operation more work
- Reasonable nesting algorithm,less waste more work

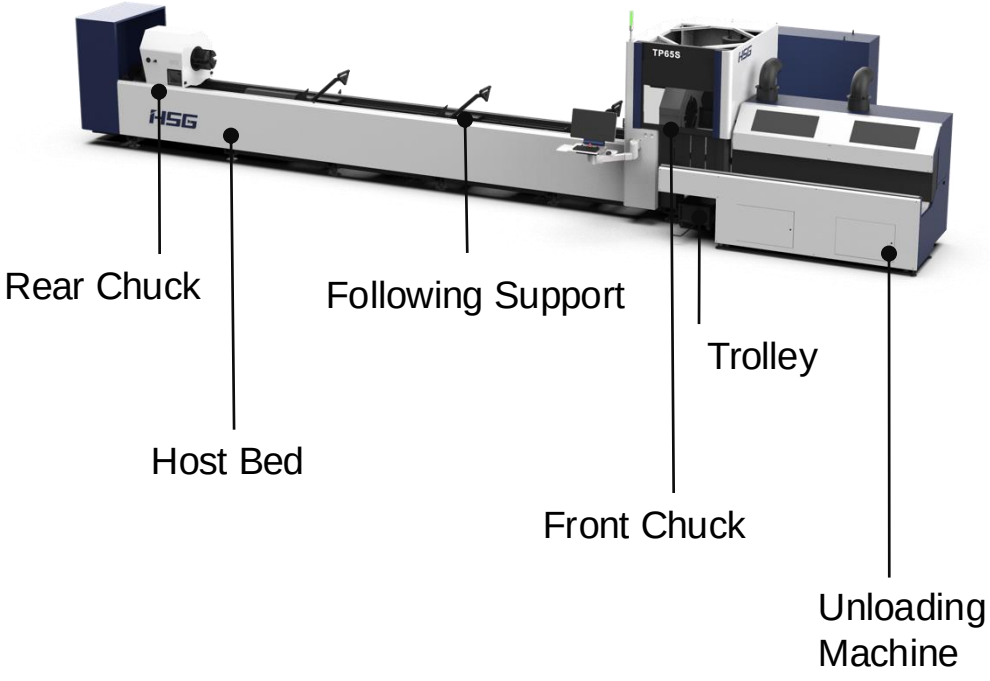


Optical System

Nesting Software

Control System

Components


Rear Chuck
Following Support
Trolley
Host Bed
Front Chuck
Unloading Machine

Carbon structural steel welded bed

Integrated Machine Bed

Carbon structure steel welded bed, integrated pneumatic chuck, beam, cutting head, to ensure stable running

Material: Extra-high Strength Steel

Tensile strength over 500 MPa, increase machine bed worklife.

Process: Full-welding & Stress Free

Full welding process, professional manufacturer process Stress annealing + Vibration Aging + Natural Aging

HSG Processing Procedure of the Bed

Step 1 Welding of Main Frame

Carbon dioxide shielded welding is used. Advantages: stable welding process, no internal defects, least spatter. It has become the most important welding for ferrous metal materials.

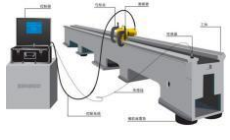
Step 2 Stress Relief Annealing

Super-large fuel heating annealing furnace is used to perform 600° stress-relief annealing on multiple main frames at the same time. The furnace temperature is stable and uniform, and the welding stress is completely removed by electronic monitoring, and the quality is guaranteed.

Step 3 Rough Machining

Quickly removing the blank allowance. As large feed rate and cutting depth as possible to remove as many chips as possible in a short period of time.

Step 4 Vibration Aging



To eliminate the internal residual internal stress. When the vector sum of the residual internal stress and the additional vibration stress in the workpiece exceeds the yield strength of the material through vibration, the material undergoes a small amount of plastic deformation, thereby making the material internal stress relieved.

Step 5 Natural Aging

The bed is placed outdoors in the open air for more than 1 month. Improve the rigidity, increase the anti-deformation ability, and ensure the dimensional stability of the bed.

Step 6 Machining

The CNC pentahedron machining center is used to process the guide rails, racks and other surfaces that require high precision to obtain a high-quality installation base surface to ensure the cutting accuracy of the machine tool.

High-precision Digital Pneumatic Chuck

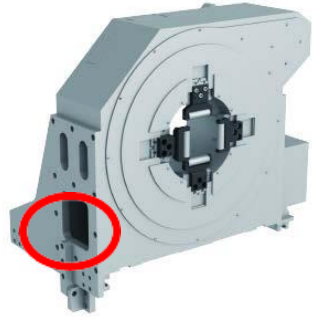
- **Much Larger**

Clamp range from 20 to 273mm,larger than other pneumatic chuck in market,only need change clamper once.

- **More Stable**

Sensor for front/rear chuck opening & clamping ， front/rear chuck ventilation function, smoke-free cutting and increase chuck working life

High-precision Digital Pneumatic Chuck

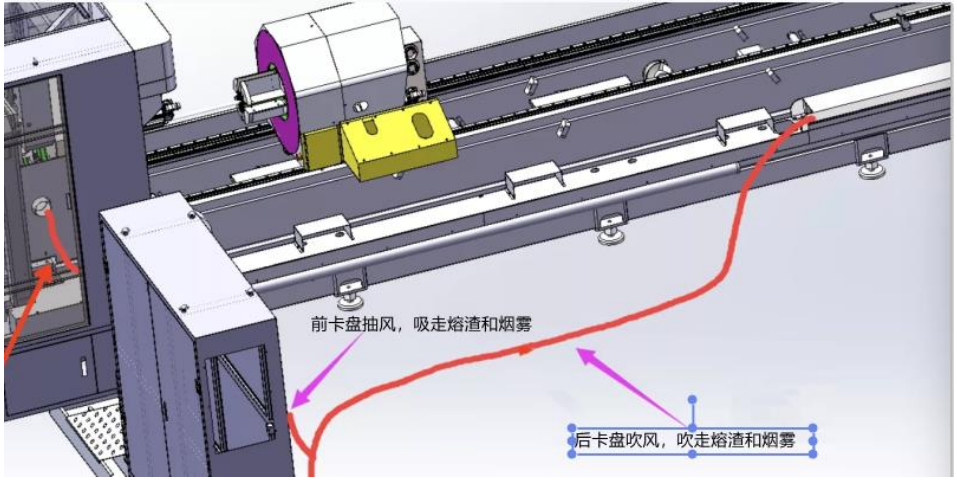


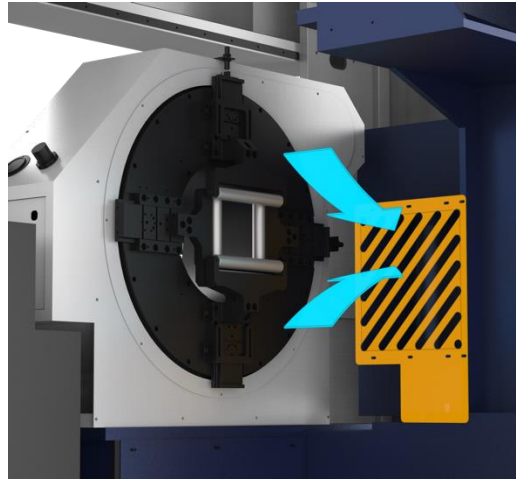
- ✓ Digital pneumatic chuck with digital feedback forms a full closed-loop control system.
- ✓ Fast clamping speed, high working efficiency, low starting air pressure (can be less than 0.18MPa), high clamping accuracy;
- ✓ Wireless real-time monitoring clamper status, empty clamp alarm, high equipment safety, avoid chuck and part's collision;
- ✓ One-key pressure regulation depending on tube's diameter and thickness;

High-precision Digital Pneumatic Chuck

- ✓ Clamp various type tube ,includes round tube ,square tube ,rectangle tube ,oval tube ,I beam ,channer,angel steel,T type tube,and other open type tube
- ✓ Intelligent full-stroke chuck, without manual adjustment, max stand 200kg tube.

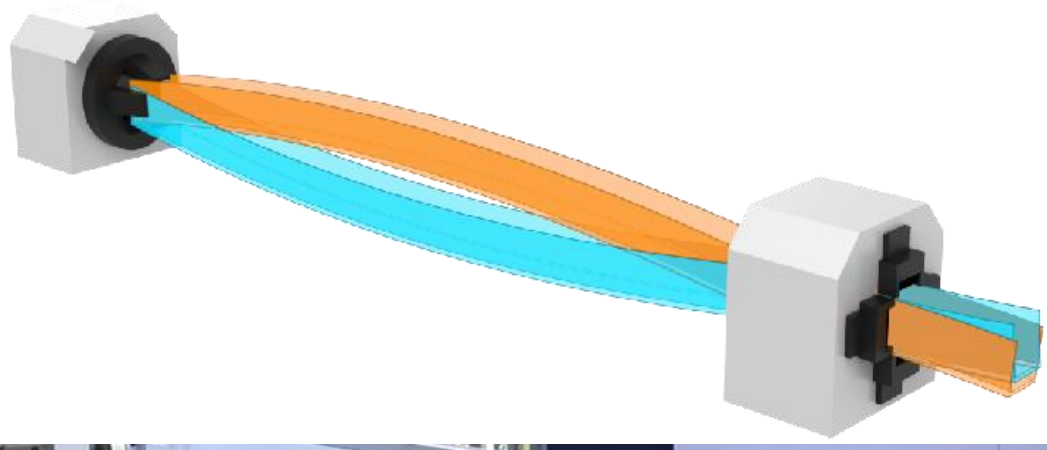
Smoke free cutting





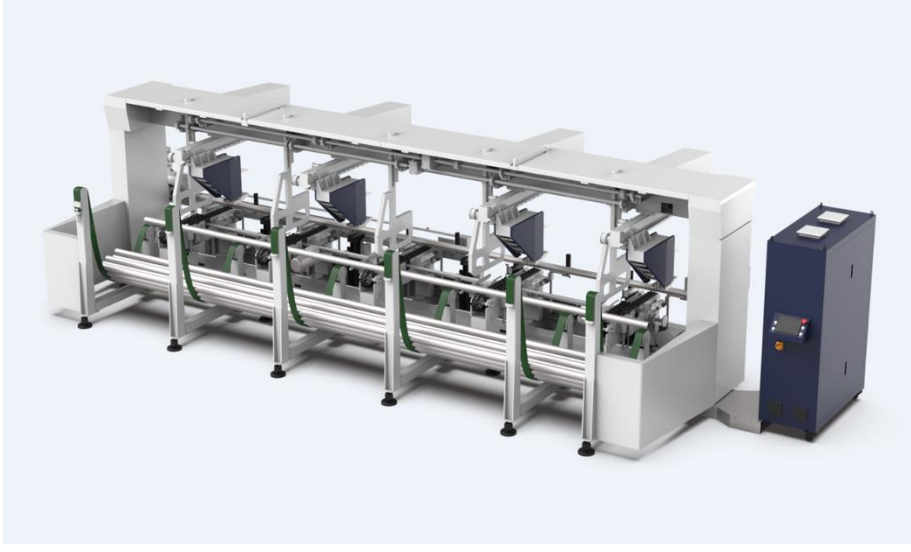
- ✓ Remove slag and smoke avoid the dust go into the chuck
- ✓ Meet environment protective requirement Increase chuck worklife

Following Support



- ✓ Avoid deformation and shakeness when cutting tube
- ✓ Improve feeding efficiency and cutting accuracy
- ✓ Share the weight of tube ,decrease the aging of chuck ,increase the working life of chuck

Standard Pipe loading machine (Optional)



-Wide range of application

round, square rectangular tube

-Maximum storage area

3000Kg

- Max. weight of single tube

120kg

-Loading parameter

φ20 ~ φ200mm

□20 ~ □140mm

Pipe length

3600 ~ 6500mm

Optical System

Nesting software

Mechanical System

Control System

HSG-X Bus Control System (Touch)

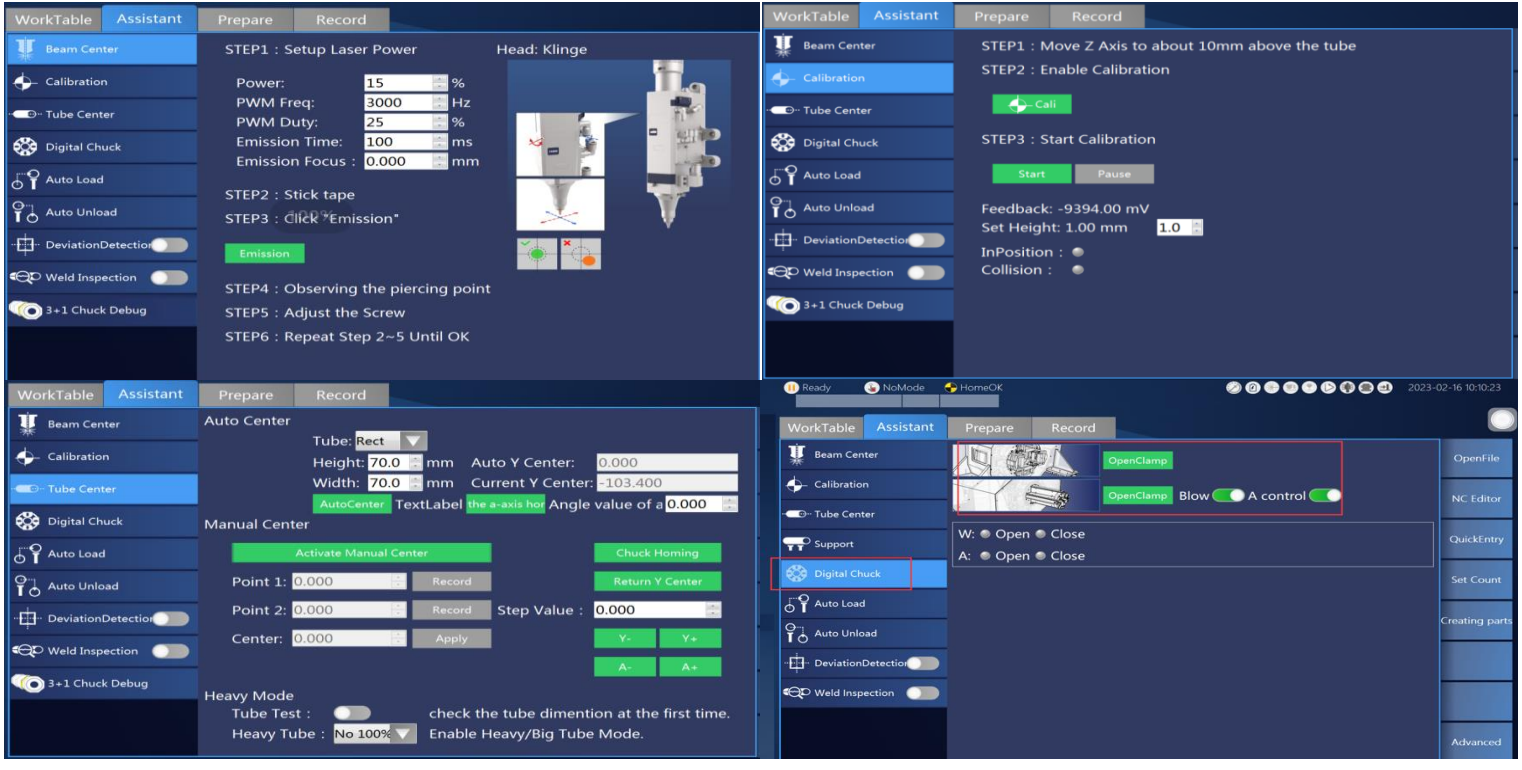
- Simple Operation

The operation interface is intuitive，with rich auxiliary functions，and the operation procedure is simplified

- Stable and efficient

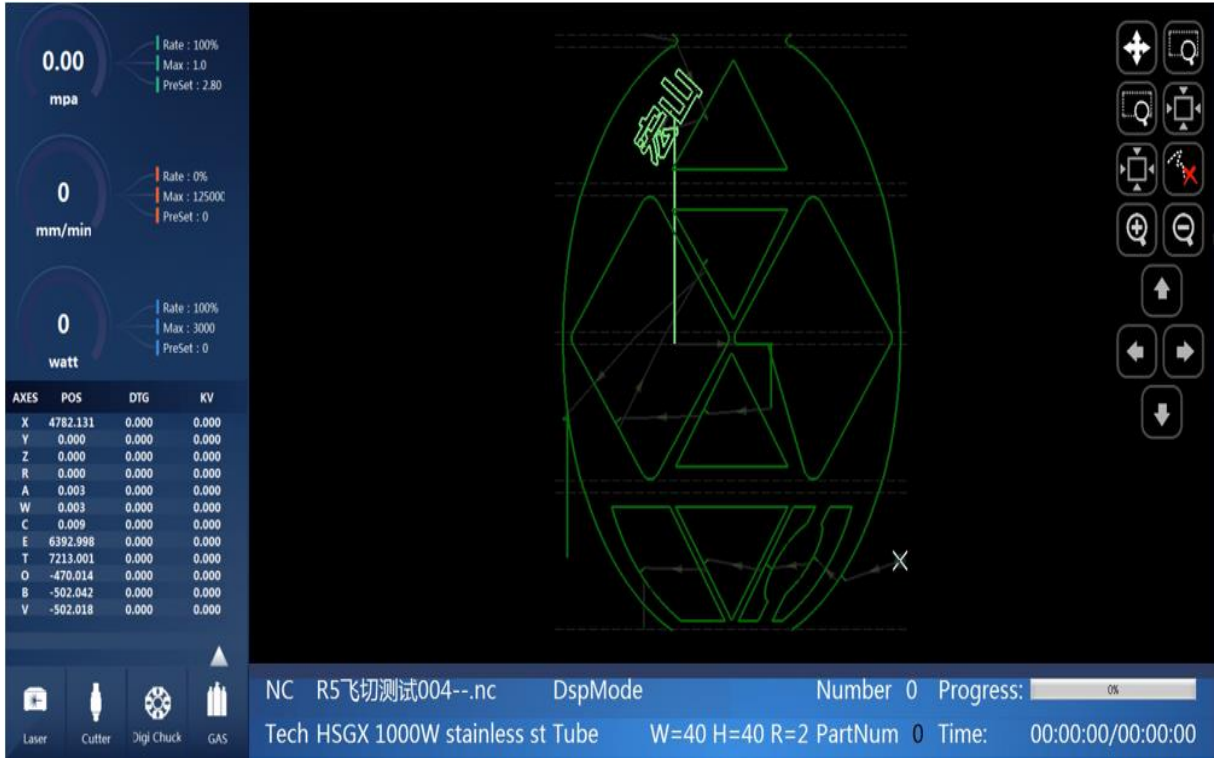
100+ process data automatic matching,machine maintenance automatic management 100+ process data automatic matching on time, efficient and manpower saving

Functional modules



- ✓ Beam control
- ✓ Calibration
- ✓ Tube center
- ✓ Support assistance
- ✓ Auto load
- ✓ Digital chuck

Real time monitoring

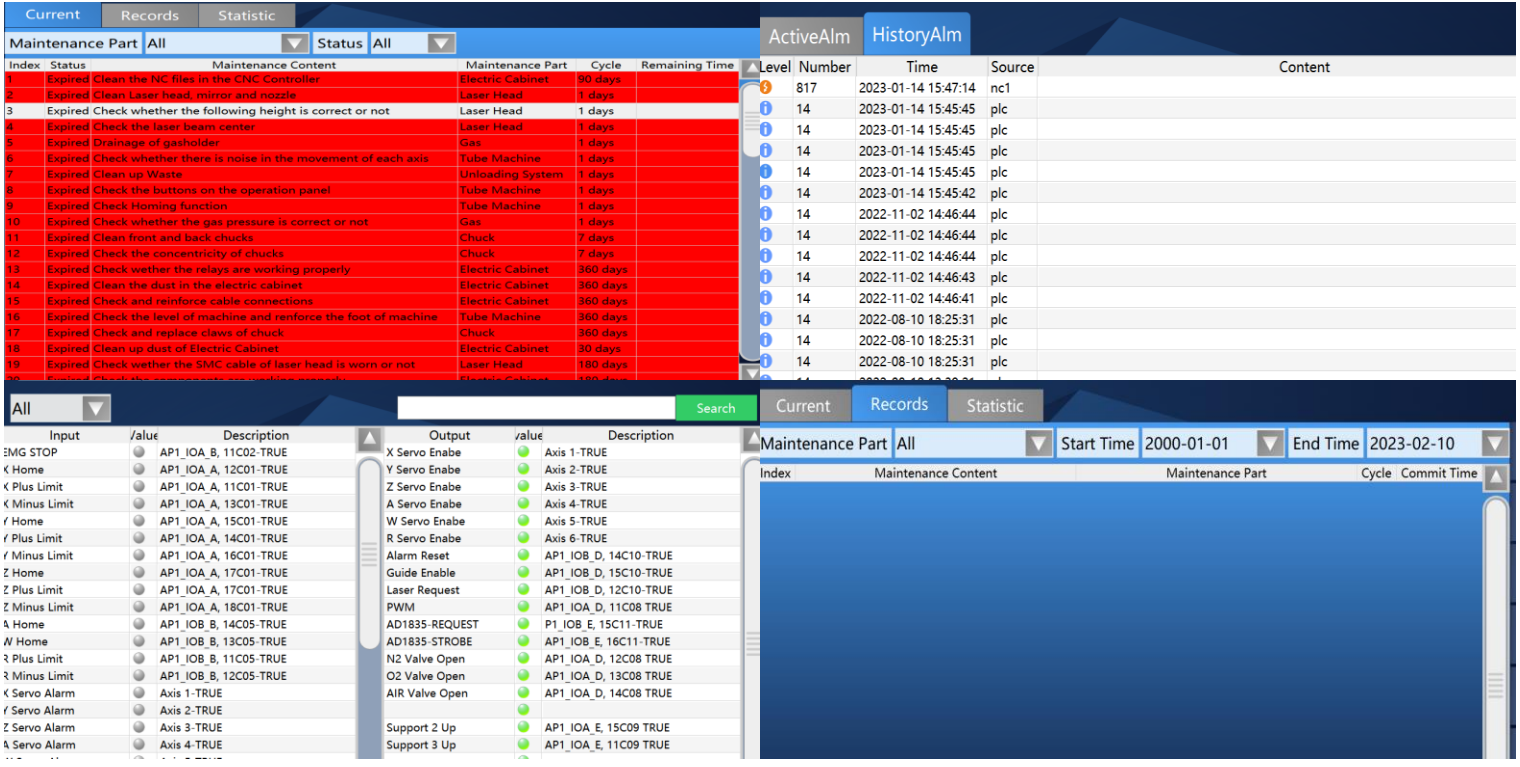


- ✓ Real-time monitoring of cutting power /speed/gas pressure
- ✓ Real-time monitoring current coordinates of each motion axis of the machine
- ✓ The graphic shows the processing path in real time
- ✓ Show the cutting time and cutting qualtity in real time

Cutting Database

- ✓ Various cutting parameters, one-click import
- ✓ Detailed cutting parameters includes chamfer,bevel,piece
- ✓ Standard for reference ,User is real parameters

Maintenance



- ✓ Real time shows alarms
- ✓ Record history alarm
- ✓ I/O port shows in real
- ✓ Maintenance reminder

II.About HSG

HSG Laser, dated back to 2006, is a hi-tech enterprise that integrates research, development, production and sales of metal forming equipment.

About HSG Laser

13
13 branches/subsidiaries/
sub-subsidiaries across the globe

100+
Serve 100+countries
and regions

21000
Sell 21000 sets globally
till now

China Headquarters

Japanese subsidiary

German subsidiary

US subsidiary

About HSG Laser


丸秀工機、レーザ事業スタート

チューブレーザ切断機、発売へ

パイプのプロが満を持して開発

パイプコースターと相乗効果を期待

丸秀工機社長　関 桂太

Location	Model	Installed in
Ibaraki, Japan	TP65S	2020

HSG machines were introduced into Japanese market in Nov. 2020, and were frequently reported by local media.

About HSG Laser

HSG Laser, dated back to 2006, is a hi-tech enterprise that integrates research, development, production and sales of metal forming equipment.

4
Manufacturing Bases in China

96000m²
Occupied Area

8000+ Sets
of Annual Output

Global Headquarters in China
Foshan, Guangdong Province

Puxiang Manufacturing Base in the Southern China
Foshan, Guangdong Province

Manufacturing Base in the Northern, China
Jinan, Shandong Province


Manufacturing Base in the Yangtze River Delta Region, China
Suzhou, Jiangsu Province

About HSG Laser

Since the establishment, HSG Laser always stress on its independent development of software and hardware and has founded 3 R&D centers, applied for 300+ patents and got multiple quality certifications overseas.




3
R&D Centers

9
R&D Laboratories

Japanese
Optical R&D Center

Chinese
Optical R&D Laboratory

QC Process

ASSEMBLY PLATFORMS WITH CE CERTIFICATION, STRICT IN QUALITY CONTROL FLOW

Quality inspection process

STEP1
COLORIMETER

STEP2
FILM THICKNESS GAUGE

STEP5
COLLIMATOR
(beam)

STEP4
HARDNESS TESTER

STEP3
2D CATHETOMETER

STEP6
COLLIMATOR
(bed)

STEP7
INTERFEROMETER

HSG Laser Users


IHSG