



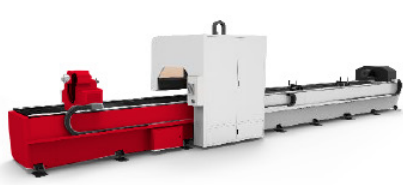
OMNITEC
— LÁSER —



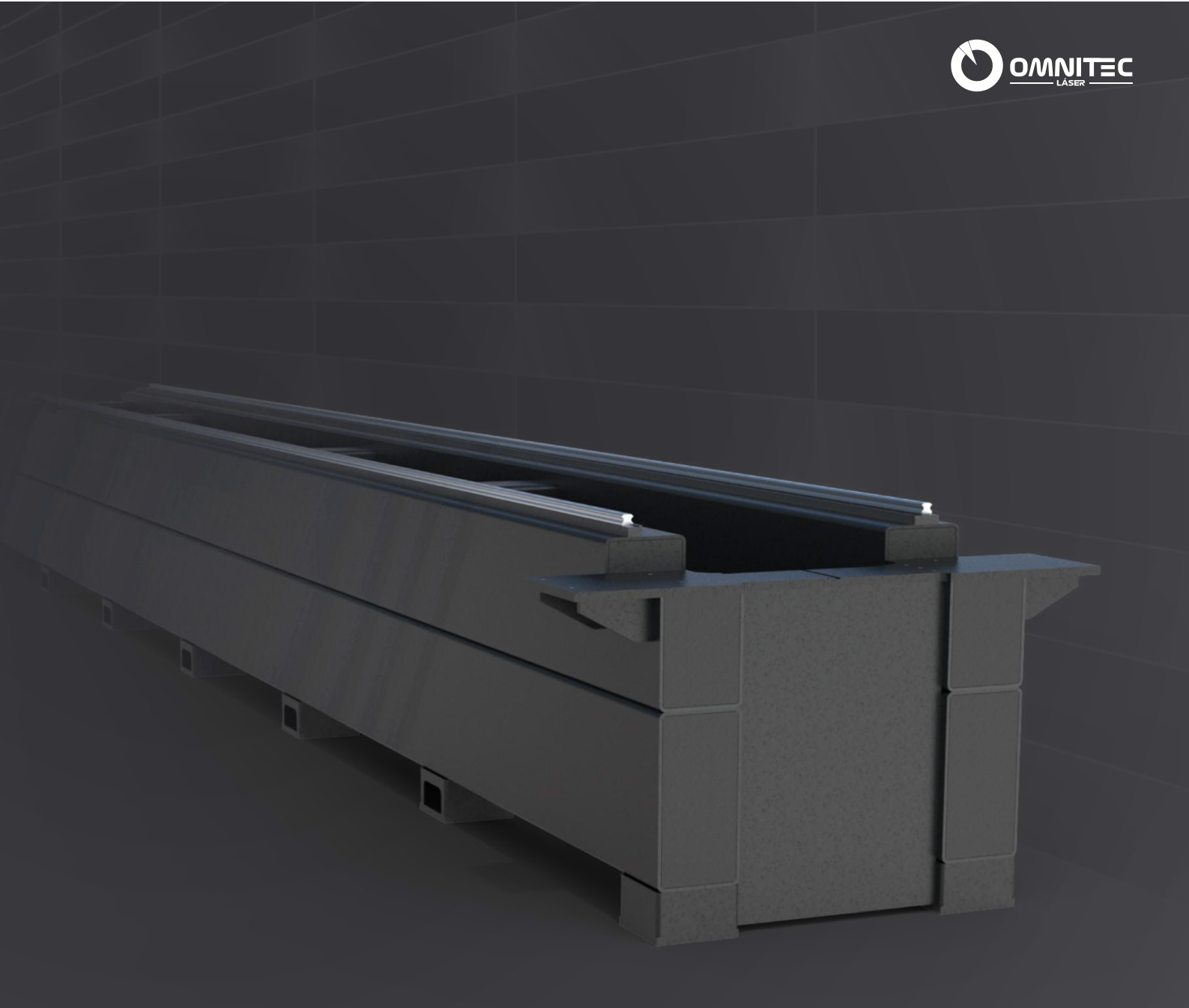
SMART Tube SERIES

6025 Two Chuck

Tube Cutting System



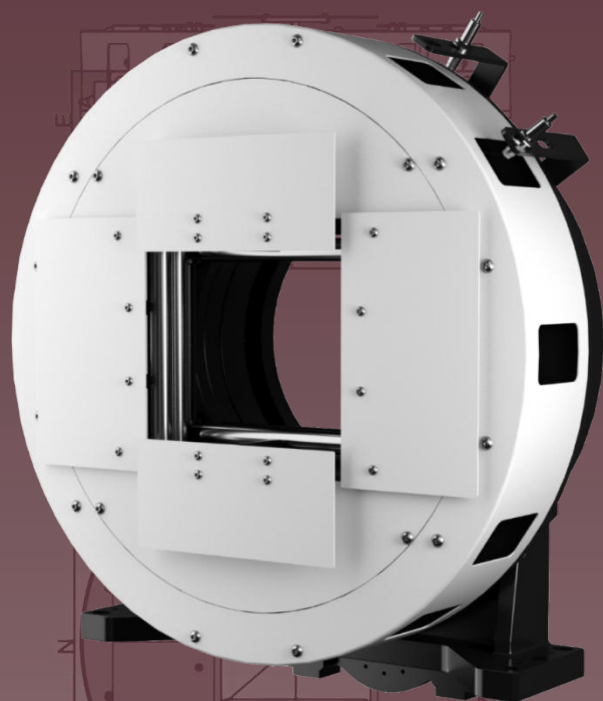
MODEL	SMART Tube 6025	SMART Talos 9035/9565
Pipe loading length	6000mm	9000mm
Laser Source	Fiber & 2000W – 6000W	
CNC System	FSCUT5000	
Chuck diameter	Φ20mm – Φ230 / Φ20mm – Φ280 / Φ20mm – Φ350	
Position Accuracy (X and Y axis)	0.05mm	
Reposition Accuracy (X and Y axis)	0.03mm	
Power Supply Requirement	380V 50/60Hz 3PH	



High strength machine bed

The bed adopts welded structure, rough machining after annealing, and then vibration aging treatment, which can completely eliminate the stress of welding and machining, with good rigidity, high precision, and can keep long time use without deformation.

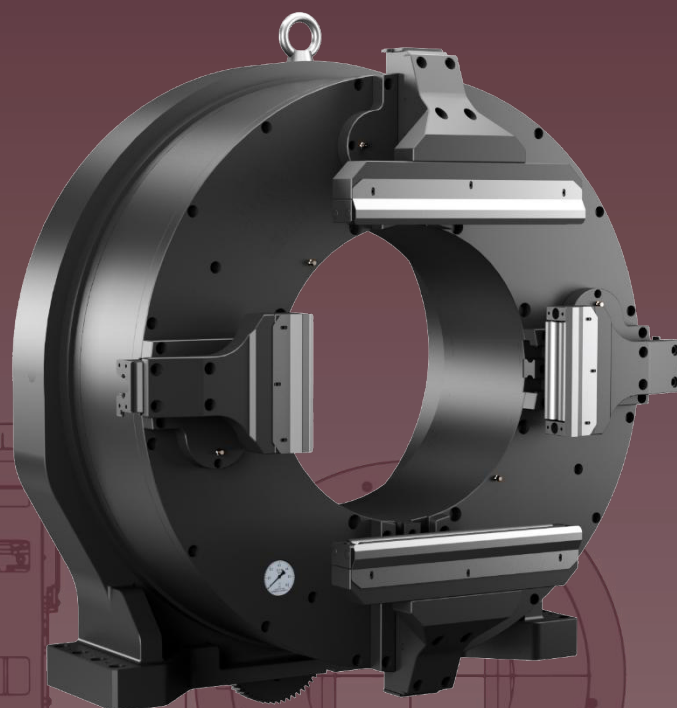
Gear rack and high precision linear guide, smooth transmission, high precision, equipped with automatic loading and unloading device, greatly improve the productivity of the machine.



D230

Full-stroke clamping,
automatic and precise
centering, fast automated
processing

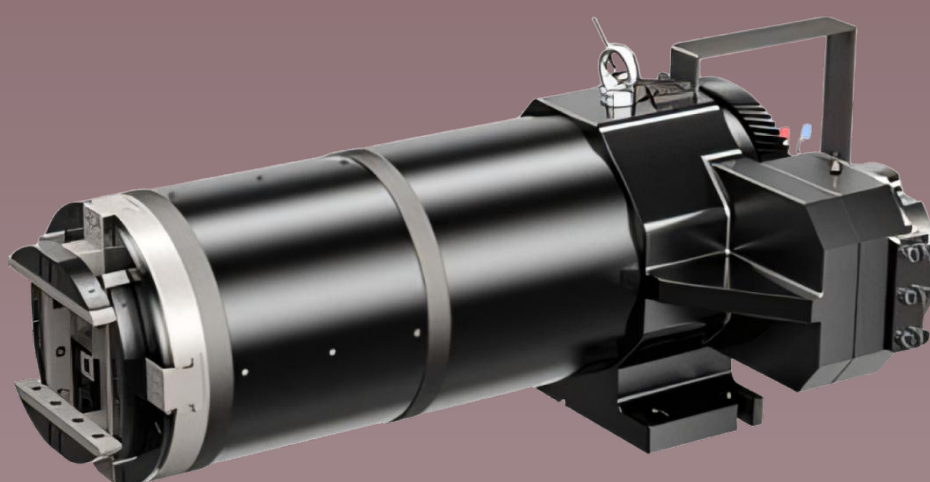
Double rows of
rollers for effective
correction of pipe
bending



D350

Clamping stroke
 $\Phi 20\text{mm}-\Phi 230\text{mm}$
 $\Phi 20\text{mm}-\Phi 280\text{mm}$
 $\Phi 20\text{mm}-\Phi 350\text{mm}$

Chuck load capacity
up to
 $\Phi 230\text{mm}$ 500KG
 $\Phi 280\text{mm}$ 650KG
 $\Phi 350\text{mm}$ 780KG

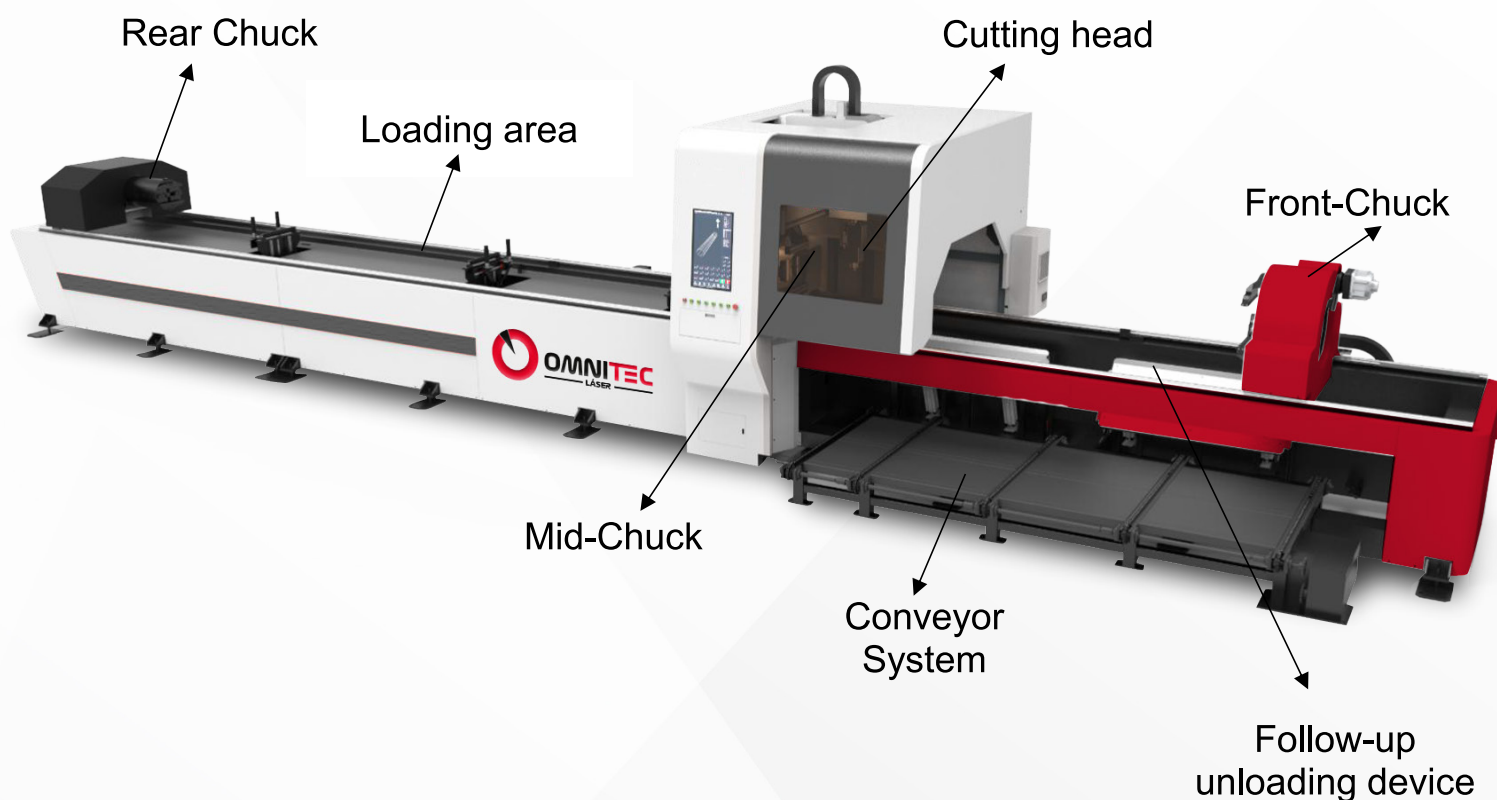


Fast clamping,
adjustable clamping
force, stable and
reliable clamping

Integral support
base structure,
improve support
bearing stability

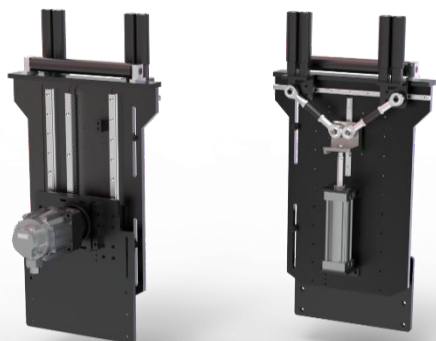
Highly rigid long
cantilever structure
design for heavy
pipe clamping

Optional clamping
of various profiles
to keep the pipe
from slipping off



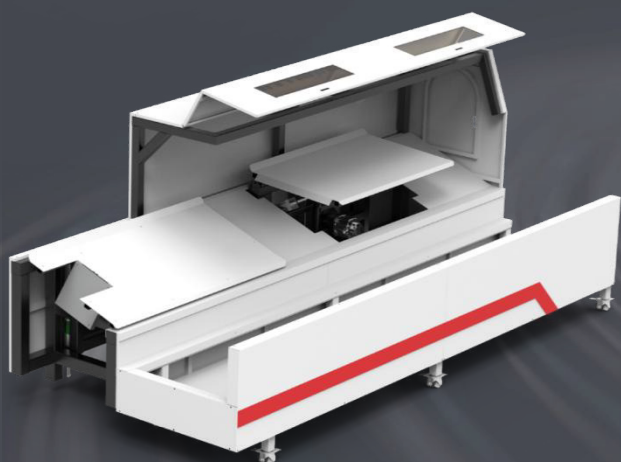
2-Chuck to Realize zero-tail cutting

The chucks are divided into 2-3 sets of pneumatic chucks at the front, middle, and rear. The 2-3 sets of chucks are driven by servo motors and can move along the Y-axis direction and rotate synchronously. Under the logical action set by the system, it is possible to realize the pull-type cutting of the pipe, which greatly improves the cutting accuracy, and can conditionally realize zero-tail cutting (depending on the cutting size of the workpiece and the specific cutting process).



Bed follower centering bracket

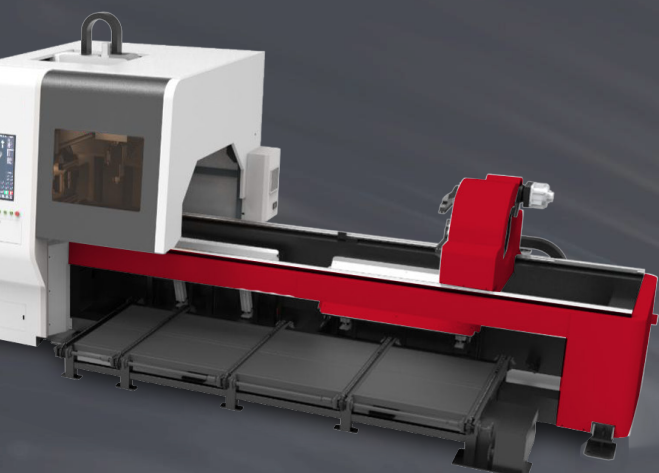
Fully automatic servo-following control, while the pipe is being cut, the support device always follows the change of the pipe rotation radius to ensure effective support and prevent the pipe from sagging, and it can chuck and clamp the pipe fed by the loading frame during loading to improve the processing accuracy.



Follow-up unloading device

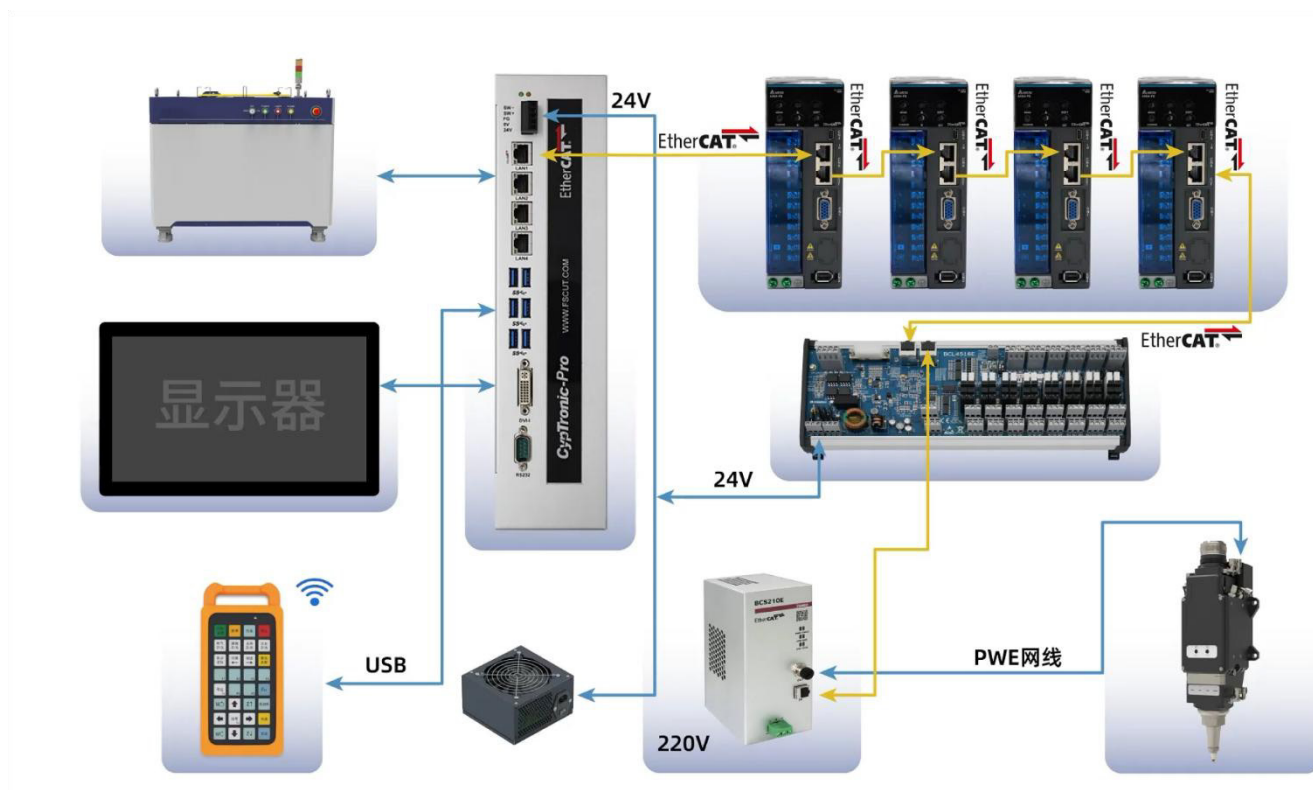
The follow-up unloading device adopts the servo motor to drive the screw to control the lifting of the feeding plate.

The system will automatically control the material receiving action of each group of material receiving devices according to the length of the workpiece, that is, it can be lifted and turned synchronously, and only one of the components can be used to act independently, and the material receiving plate can be automatically turned over for unloading. The position can also use the flip action to realize waste screening, making the machine more intelligent, more convenient and efficient.



Unloading conveying System

The unloading conveying chain device is composed of multiple sets of horizontal chain conveying components, which are responsible for receiving the cut pipes and transporting them out horizontally. The operation of the chain is controlled by the frequency conversion motor.



CNC control system **FSCUT5000**

Plate surface
height tracking
control (follow
function)

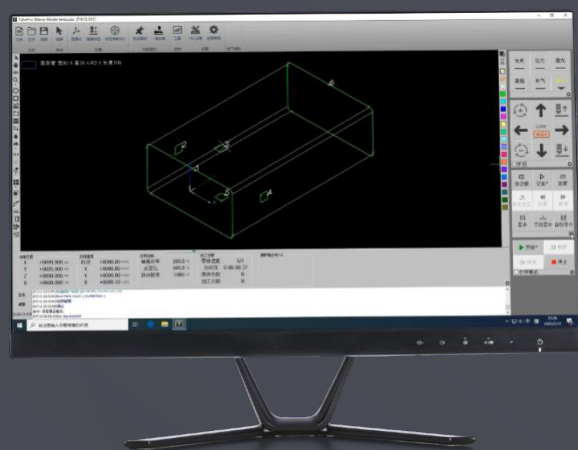
Laser power
slope control

Height sensor
auto-calibration
function

Corner cutting
control function

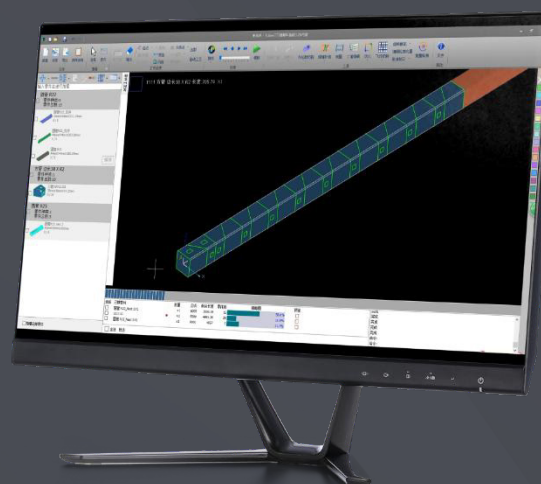
Common
edge cutting
function

Bus-based
system and
motor MES can
be extended



TubePro

Operating Software



Tubes T

Nesting Software



Standard

Cutting head

- ⊙ Self-focusing fiber optic cutting head
- ⊙ Multi-protection lens, drawer type mirror holder
- ⊙ Better optical configuration and smooth and efficient airflow design for better cutting quality and efficiency
- ⊙ Optional flat/bevel cutting head



MAX



Raycus



reci

LASERS

Higher photoelectric conversion efficiency

>30%

Better and more stable beam quality. Stronger anti-high reflection capability.

Second generation fiber optic transmission system to ensure more stable and precise cutting results in thick plate cutting.



Option: Bevel cutting

- ⊙ Auto focus fiber cutting head
- ⊙ Multiple protective lenses, drawer-type lens holder
- ⊙ Better optical configuration and efficient airflow design to improve cutting quality and efficiency
- ⊙ Stable rotating mechanism with bevel cutting head, can achieve $\pm 45^\circ$ bevel cutting

Option: Semi-Auto or Auto loading system



Semi-Auto loading system

- Manually hoist a bundle of pipes to the loading rack, and the machine tool automatically sorts, measures length and loads the pipes, and transports the pipes to the bottom of the cutting head.
- Applied to standard rectangular tubes, round tubes, square tubes and OB tubes
- The weight of a single pipe is $\leq 200\text{KG}$.
- The loading capacity of the silo is $\leq 3\text{T}$.

Auto loading system

- Manually hoist a bundle of pipes to the loading rack, and the machine tool automatically sorts, measures length and loads the pipes, and transports the pipes to the bottom of the cutting head.
- The maximum cross-section of a single pipe is $\Phi 200\text{mm}$.
- The weight of a single pipe is $\leq 240\text{KG}$.
- The loading capacity of the silo is $\leq 3\text{T}$.
- Modular design, servo drive, independent control system.
- Applicable to pipes whose cross-section is axisymmetric.

TECHNICAL SPECIFICATIONS

Machine Model	SMART Tube 6025
Chuck Diameter	Φ20mm – Φ230
Cutting material type	Round tube, square tube, rectangular tube, oval tube
Pipe loading length	6000 mm
Maximum length of pipe downfeed	2500 mm/6000mm
Maximum single tube weight	400Kg/pc
Laser cutting thickness	1~12mm(Carbon Steel); 1~8mm(Stainless Steel)
Overall power	38KW
Number of phases/power supply rating/voltage frequency	3/380V/50/60Hz , Voltage fluctuation <10%
Total power protection level	IP54
Working air source	0.5~1MPa
Maximum idling speed (m/min)	100
Maximum idling speed (rad/min)	80
Accelerated speed	1G
XY positioning accuracy	±0.05mm
XY repeatable positioning accuracy	±0.03mm
A/B axis	Infinite rotary
Machine Size	13300*2800*2500(mm)(without topping)

MACHINE CONFIGURATION

NO.	Sub-item name	Specifications and Grades	Quantity	Remarks
1	Machine tools and accessories	Linear guide: Hiwin Rack and pinion: APEX Speed Reducer: Modoli	1 set	
2	Chuck size	Φ20mm-Φ230mm Φ20mm-Φ350mm (Optional)	3 set	
	Number of chucks	Standard 2 chucks		
3	Feeding system	Semi auto-loading	1 set	Max. loading length 6 m
	Unloading system	Semi auto-unloading	1 set	Max. down length 2.5m
4	Laser cutting head	RayTools	1 set	
	Height tracking sensor	BCS100E Elevator	1 set	
5	High pressure proportional valve	SMC	1 set	
	Low pressure proportional valve	SMC	1 set	
6	Laser generator	RAYCUS 6000W	1 set	
7	CNC control system	FSCUT5000	1 set	
	Servo Motor	Inovance	1 set	
8	Electrical components	Schneider	1 set	
	Operating System	WINDOWS 10	1 set	
	Monitor	19" screen	1 set	
9	Operating Software	Laser tube cutting machine operating system	1 set	
	Industrial Control Machine	CNC host, with USB interface, network interface, DVI interface, etc.	1 set	
	Control cabinets, operating consoles, handheld operating units, etc.	Huagong Xingxing supporting models	1 set	
	CAD/CAM software	TubesT nesting material	1 set	
10	Regulated power supply	HG STAR supporting models		
	Chillers	HG STAR supporting models		
Optional	Screw type air compressor set	HG STAR supporting models		
	Dust Collector	HG STAR supporting models		

SPARE PARTS AND TOOLS

NO.	Spare parts name	Specification parameters	Quantity
1	Double nozzle 1.0	Raytools BM111 dedicated	5
2	Double nozzle 1.5	Raytools BM111 dedicated	5
3	Double nozzle 2.0	Raytools BM111 dedicated	5
4	Double nozzle 2.5	Raytools BM111 dedicated	5
5	Double nozzle 3.0	Raytools BM111 dedicated	5
6	Double nozzle 3.5	Raytools BM111 dedicated	5
7	Double nozzle 4.0	Raytools BM111 dedicated	5
8	Single layer nozzle 1.5	Raytools BM111 dedicated	5
9	Single layer nozzle 2.0	Raytools BM111 dedicated	5
10	Single layer nozzle 2.5	Raytools BM111 dedicated	5
11	Single layer nozzle 3.0	Raytools BM111 dedicated	5
12	Single layer nozzle 3.5	Raytools BM111 dedicated	5
13	Single layer nozzle 4.0	Raytools BM111 dedicated	5
14	Fiber optic protection mirror	Raytools BM111 dedicated	20 pieces
15	Ceramic Body	Raytools BM111 dedicated	10 pieces
16	Laser Cleaning Kit	Raycus dedicated	1 set
17	Laser protective glasses	Fiber laser dedicated	1 pair
18	Keyboard and mouse set Bertru handheld set		1 set
19	Footing		1 set

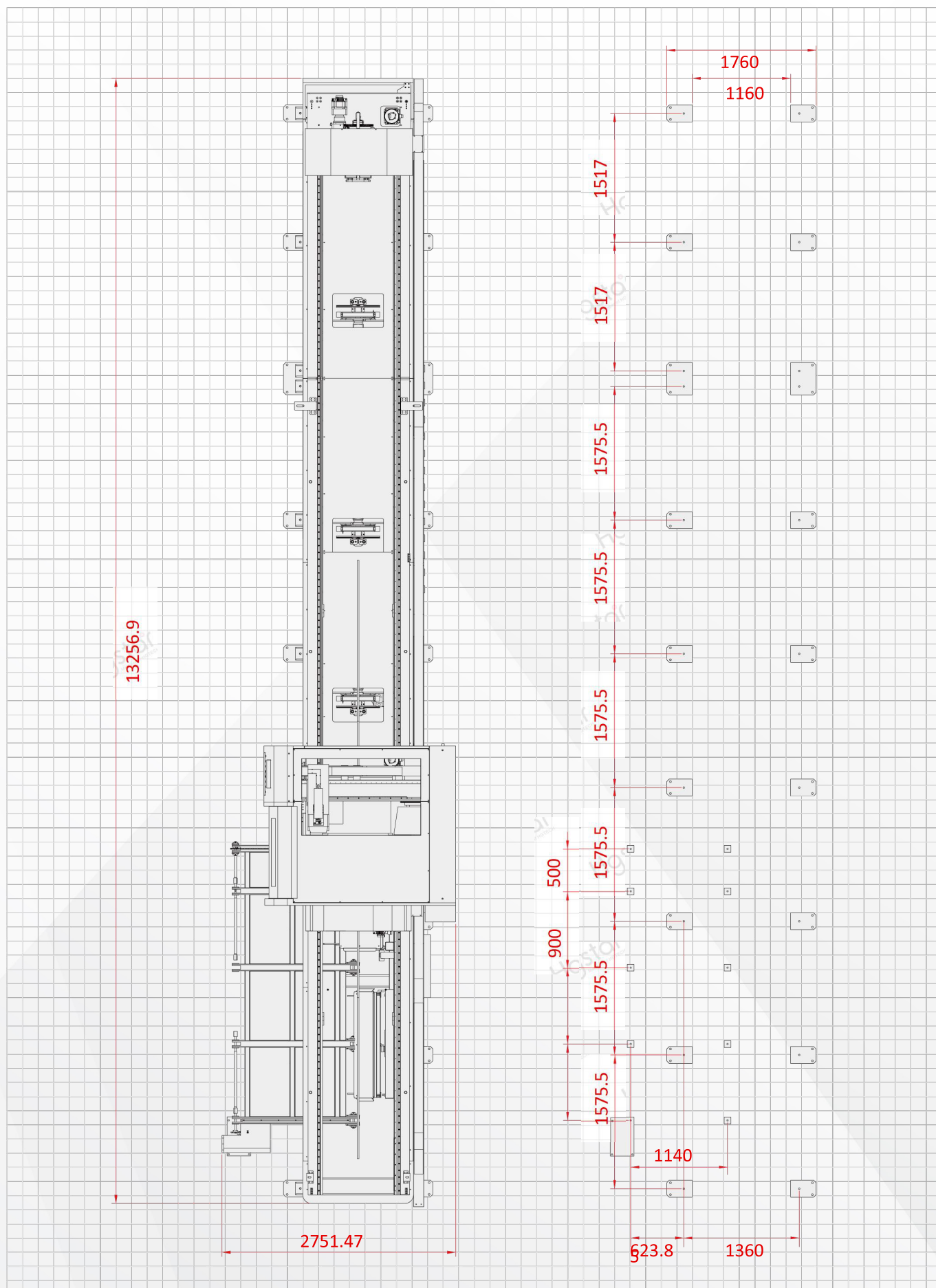
RELATED TECHNICAL REQUIREMENTS

NO.	Requirement
1	The processed pipe should be free of serious rust, rust will affect the quality of the cut section.
2	The tubes should not be stored in the open air, and should be placed flat, preferably with oil on the surface or in a package. Make sure the front end should be flush and the burr residual height of both ends $\leq 5\text{mm}$. bundles of pipes should ensure the same length and the maximum error is less than 300mm.
3	For the welded pipe, the external weld is basically flat and the height needs to be less than 0.3mm. the height of the internal cavity weld needs to be less than 2mm.
4	The twist and bend of the pipe should be no less than "GB/T 6728-2002 Cold-formed hollow section steel size, shape, weight and allowable deviation".
5	The pipe requires flat and straight, with a bend of 1 mm/1m (4 mm/10m).
6	Twist in the direction of the length of the pipe, the total twist should be less than 0.02% of the total length.
7	The outer diameter tolerance of the profile is not greater than $\pm 0.5\%$ of the outer diameter, minimum 0.2mm (according to GB/T 17395-1998 standardized outer diameter deviation grade D4).
8	The safety of people and equipment should be taken care of when loading the tubes. The loading needs to be carried out by a traveling crane and operated and transported by qualified and certified professionals. The traveling crane is required to have fast and slow speed functions, and the bundle needs to use the slow speed function to approach the loading table when approaching the equipment.
9	Workpiece processing accuracy: on the basis of material error, the position error is IT12, and the shape contour error is IT12.
10	Cut pipe 0-6mm section roughness with the material material, thickness, etc. have different variations.
11	The use of the party must be required by the instructions for regular maintenance of the machine, due to the lack of regular maintenance caused by the damage to the machine, we have the right not to provide maintenance.
12	<p>To ensure the cutting effect and tube deformation, the relationship between tube thickness and tube diameter (maximum diagonal) is required as follows</p> <p>Pipe diameter greater than $\phi 50$:</p> <p>$1/40$ of the pipe diameter \leq pipe thickness $\leq 1/10$ of the pipe diameter</p> <p>Pipe diameter greater than $\phi 50$:</p> <p>$0.8\text{mm} \leq$ pipe thickness $\leq 1/10$ of the diameter of the pipe</p> <p>For the bending disturbance exceeds the relevant standards can not guarantee the cutting effect.</p>
13	For automatic loading, it needs to be placed in the prescribed direction and position, not at random.

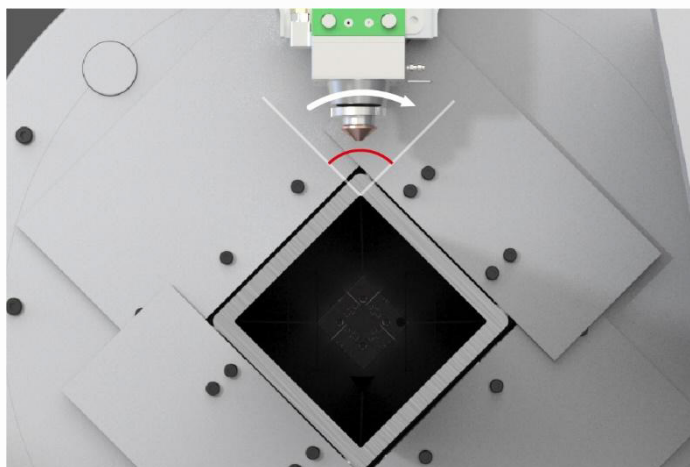
EQUIPMENT WORKING CONDITIONS

NO.	Sub-item	Name	Requirement	Remark
1	Power supply	Laser/Water Cooler	22.5KVA	
		Machine tools	14KVA	
		The rest of the accessories	27KVA	
		Stability of three-phase power supply	380V±5%, 60Hz	Max. loading length 6 m
		Three-phase power imbalance	<2.5%	Max. down length 2.5m
		Grounding	<40hm	
2	Water	Chiller water	Cooling water for chillers: distilled water (conductivity <10)	
3	Gas	Cutting gas	Auxiliary air: water-free and oil-free compressed air, pressure 0.5 to 0.8 MPa Oxygen (O2): purity ≥ 99.95 % Nitrogen (N2): purity ≥ 99.95 % Cutting head protective gas (N2): purity > 99.995%	
4	Working conditions	Temperature requirements	5-35 degrees Celsius	
		Humidity requirements	Less than 70%	
		Foundation requirements	No vibration source should be nearby	
5	Materials	For carbon steel and stainless steel tubes: high quality surface and no rust		

MACHINE OCCUPATION MAP

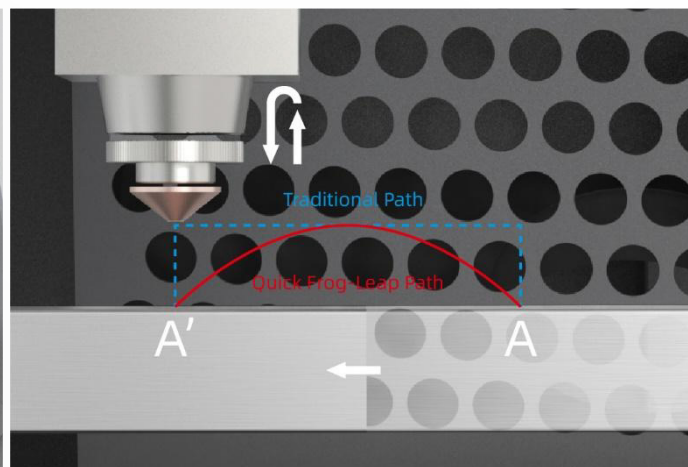


EXCELLENT FUNCTION



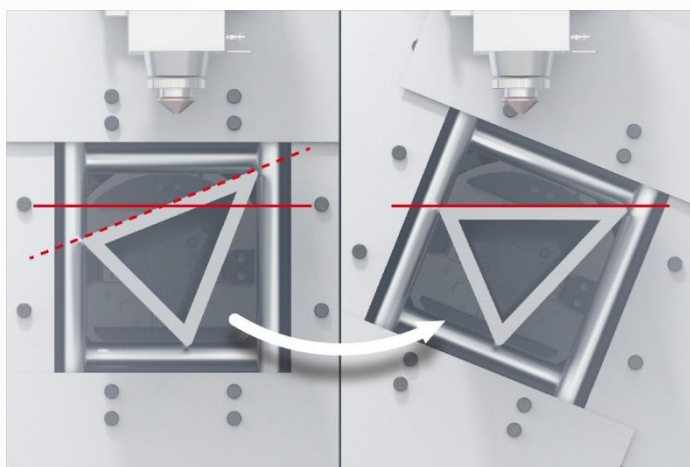
Corner Technique

The proper setting of corner technique including gas pressure, laser peak power and duty cycle will improve and perfect corner production efficiency and quality.



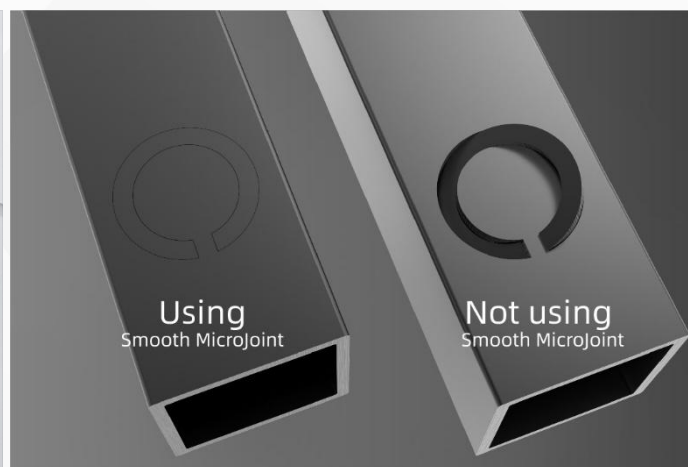
Quick Frog-Leap

TubePro will optimize laser head lifting path and maintain XYB axes motions while laser head traveling to next toolpath to achieve high efficiency production.



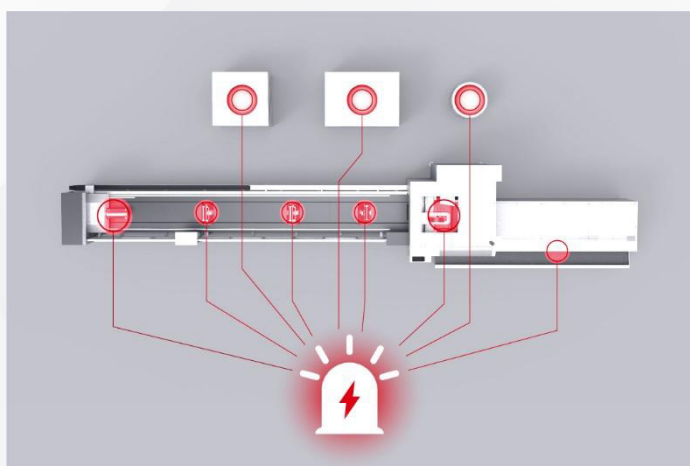
Side leveling

Single-sided leveling can correct a flat pipe surface of the pipe to a horizontal state, and



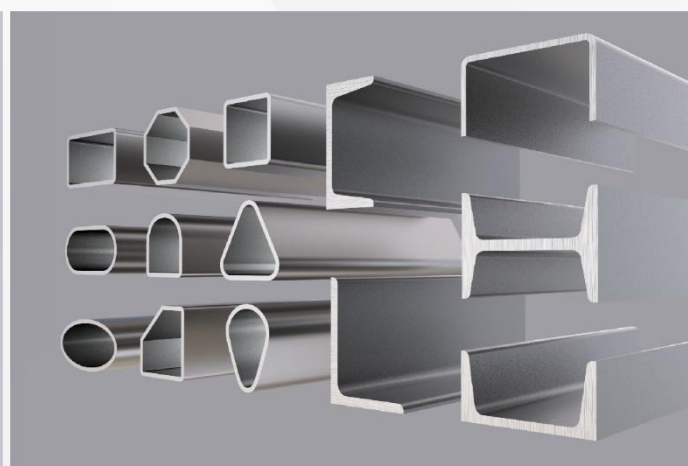
Smooth MicroJoint

Smooth cutting and easy unloading ensure high efficiency



Monitoring alarm

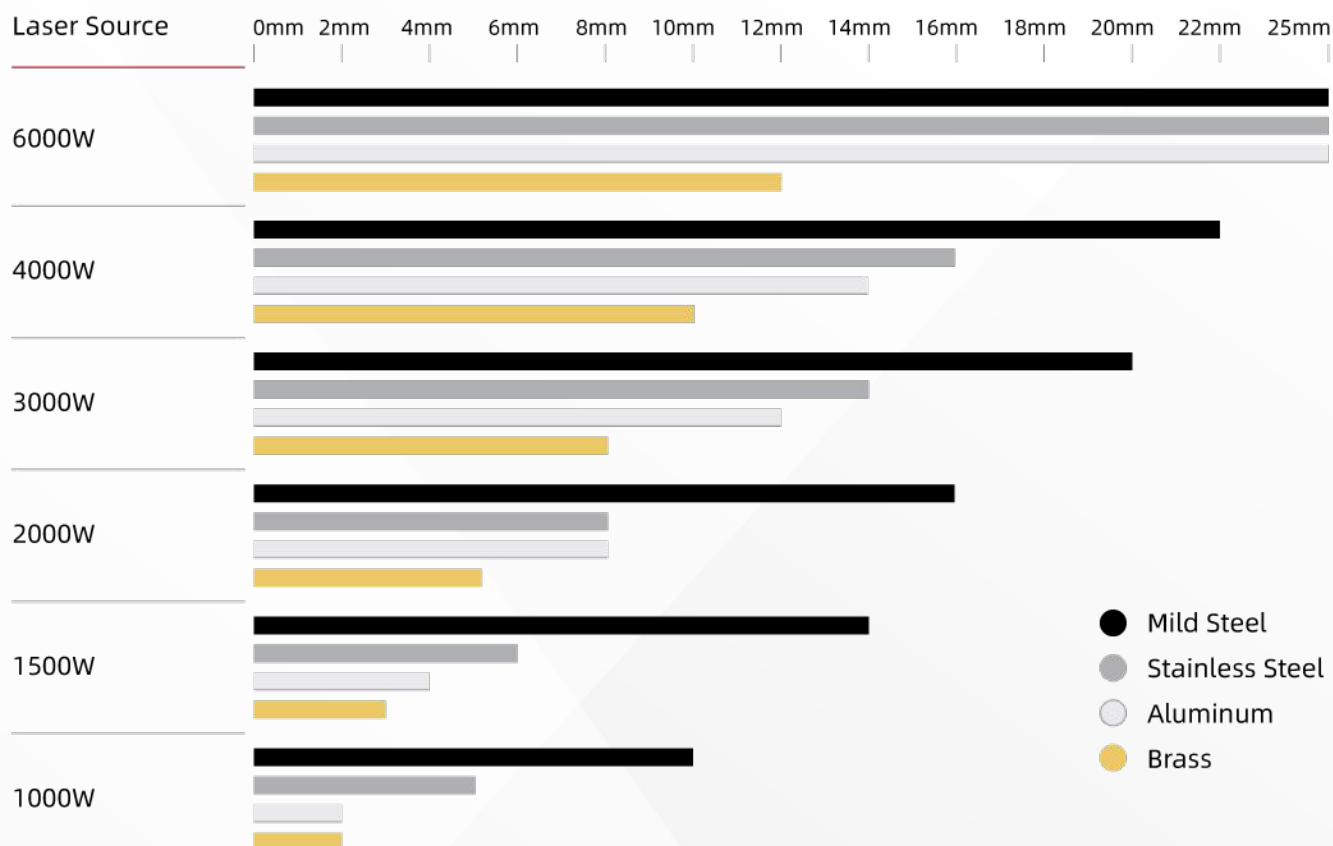
During the operation of the machine tool, all cutting heads, chucks, water coolers and other functions will be monitored, and if there is a fault, it will alarm in real time



Free Form Tube &

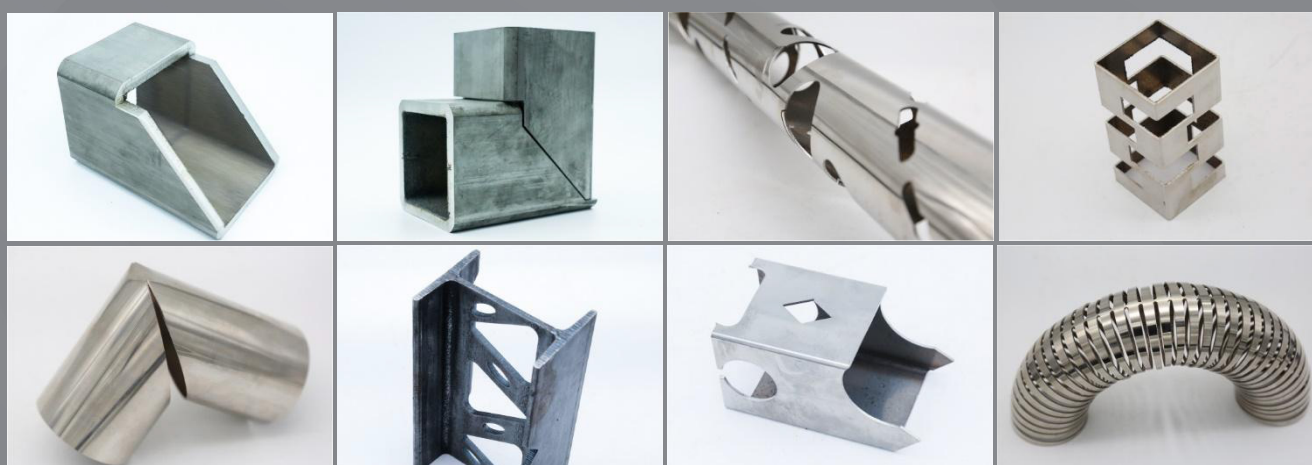
TubePro supports profiles and free form tube production of U/L/H/T channels, Obround, oval and polygon etc.

CUTTING PARAMETER

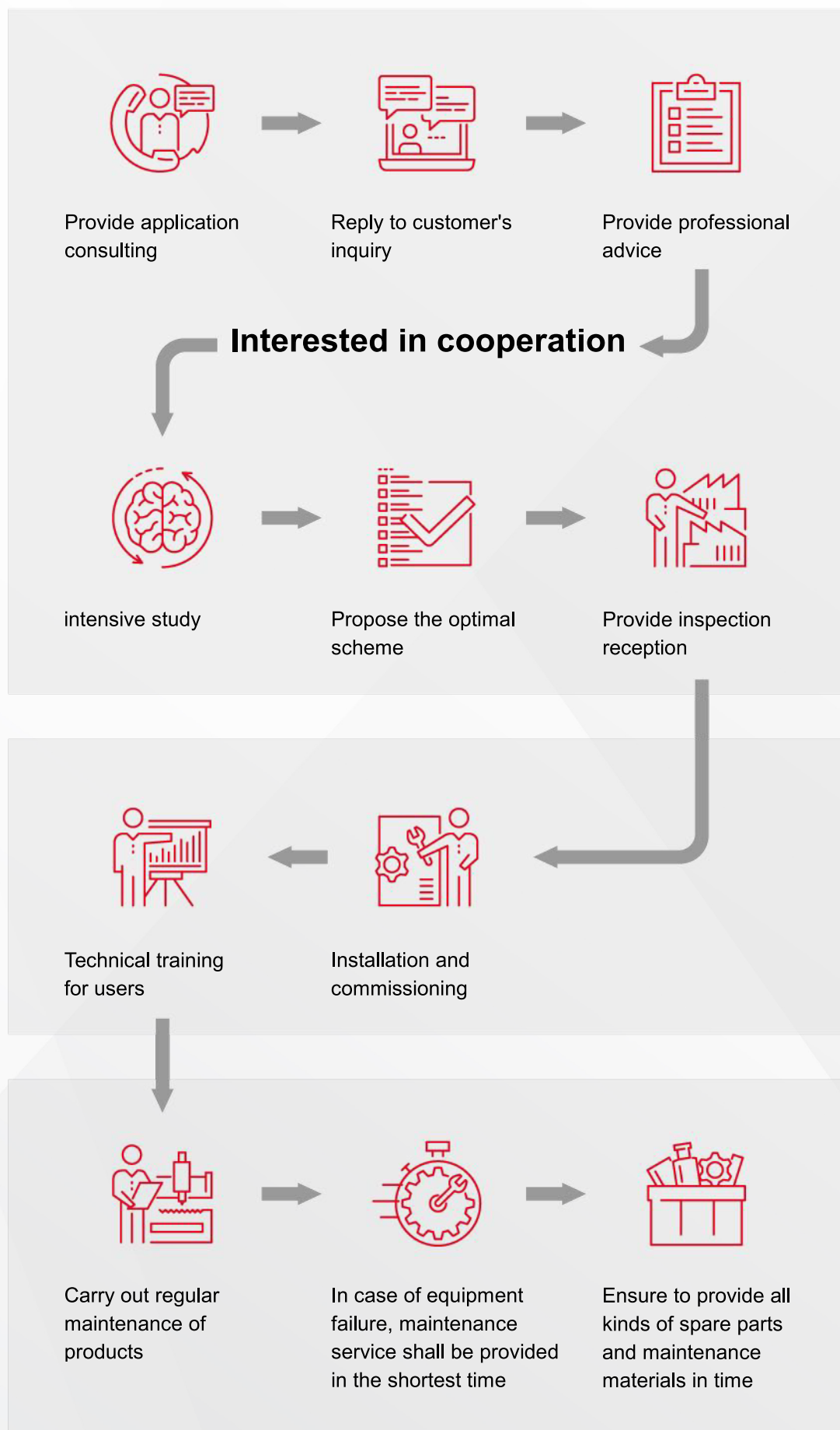


Cutting Samples

Applicable to cutting carbon steel, stainless steel, aluminum, brass , alloy metals, etc.



SERVICE PROCESS

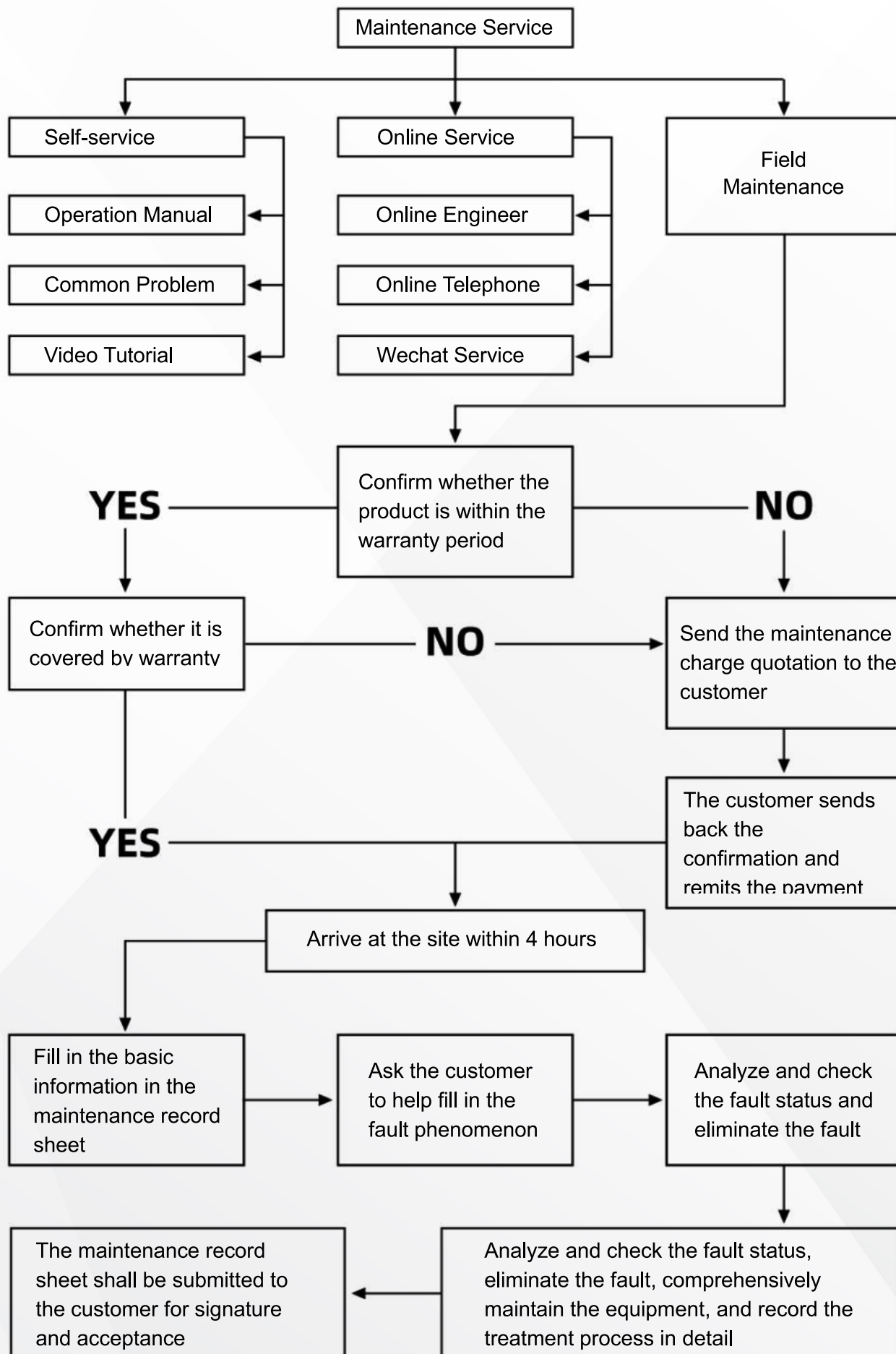


Pre-sales
Service

On-sale

After-sale
Service

SERVICE MAINTENANCE PROCESS



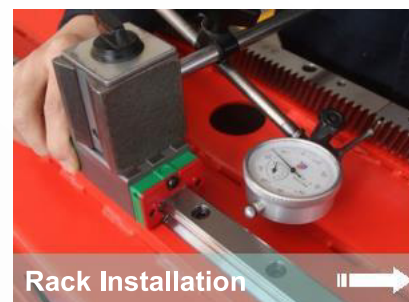
SERVICE QUALITY INSPECTION



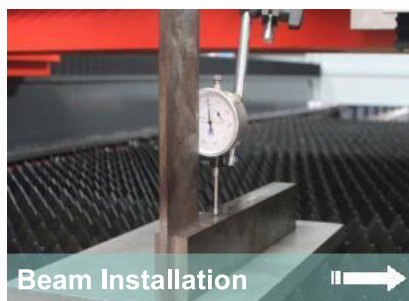
Adjust the height of the feet according to the test results of the strip level to ensure the accuracy of subsequent installation



Use photoelectric autocollimator to detect the straightness and flatness of the guiderail to ensure that the detection value is within the standard range



The relative position of the guide rail and the guide rail is locked and clamped by the measuring rod. Statistics and analysis of measurement data to ensure that they are parallel



After the beam is installed, use a three-coordinate measuring instrument to check the coaxiality to ensure the relative perpendicularity of the X / Y / Z three-axis



The laser interferometer tests the X-axis positioning accuracy to ensure the accuracy of the whole machine



The laser interferometer tests the Y-axis positioning accuracy to ensure the accuracy of the whole machine



The laser interferometer tests the Z-axis positioning accuracy to ensure the accuracy of the whole machine



Simulate the high-intensity test of various harsh conditions in the actual use of the equipment, and at the same time, according to the requirements of use, rationalize the improvement to ensure the factory pass rate and improve the reliability of the equipment



Adopt sealed composite aluminum foil moisture-proof low-pressure packaging and thick wooden boards to protect the fuselage to prevent bumps and collisions during shipping, and minimize unnecessary mechanical losses that may occur during transportation

SERVICE DELIVERY PROCESS

1

Machine Inspection



2

Component Fixing



3

Protective Film Wrapping



4

Wooden Boxseal



5

Edge Reinforcement



6

Separate Packaging



7

Lifting Rail



8

Container Loading



9

Transportation





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