CHINA&ITALY

LEADER IN HIGH POWER LASER

APPLICATION INDUSTRY OF CHINA

PENTA LASER

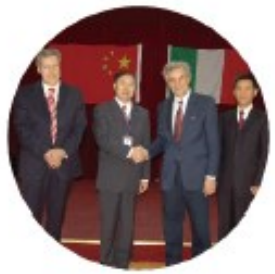
1 ENTERPRISE
COMPANY PROFILE

Founded by Chutian Laser Group and Italian EL.EN. Group, Penta Laser is a Sino-Italian joint-venture dedicated to R&D and manufacturing of high power laser cutting & welding equipment. It has set three main production bases in Wuhan, Wenzhou and Linyi. With world's leading laser processing technology from Italy and core components provided by world-renowned brands, Penta Laser fully executes European standards and delivers high-quality products with stable and reliable performance. To provide prompt and standardized after-sales service for our customers, we have established customer service centers in 50 cities within China and more than 10 countries worldwide.

Adhering to its operation philosophy of "Being Laser Application Expert, Creating Value for Customers", Penta Laser has five R&D centers in Italy, Shanghai, Beijing, Wuhan and Wenzhou. In decades of continuous research, Penta Laser has obtained around 100 laser patents and developed a series of laser equipment at international advanced level. Our BOLT, SWING, 3D GAN3020, pipe cutting WHIRL and other products have received favorable comments from customers. In 2019, Penta Laser succeeded in developing the first 20KW ultra high power intelligent laser cutting machine in China that fills domestic technical gap of such power level and greatly increases benefit for more customers. All these advanced laser equipment are award winners and have been widely applied in machinery manufacturing, locomotive fabrication, aerospace, and sheet-metal production. Overseas markets have welcomed Penta Laser with more and more positive feedback. The first 10KW laser cutting machines assembled in Australia, India,Brazil,Korea and Taiwan are all from us.

Through all these years, Penta Laser has insisted on its quality policy of "Stay Meticulous, Maintain Persistence, Put Quality First, Continue Innovation, Serve with High Quality, and Keep Every Word" all along. We are looking forward to leading technological reform in laser application together with you.

1 ENTERPRISE HISTORY



2007

Penta-Chutian Laser (Wuhan) Co., Ltd. was founded by Chutian Laser Group and Italian EL.EN. Group.

2008

Penta's first laser cutting machine was installed in China Academy of Launch Vehicle Technology (CALT).

2010

PLUS and HYPE-CUT CO_2 High speed laser cutting series were successfully developed.

2012

Penta Laser cooperated with RTM Italy in developing China's first laser welding system for high-speed train MJ6000.

2013

Penta Laser (Wenzhou) Co., Ltd. was founded.

2015

BOLT high power laser cutting machine series were developed and put on the market.

2016

Wenzhou production base put into operation.

China's first laser enterprise processing zone—YiLi Penta Laser Processing Plaza opened up.

2017

The first 10KW laser cutting machine was developed and exported.

Penta's joint R&D Center with Beijing University of Technology was founded.

2018

The first 15KW ultra high power laser cutting machine was released to global market and exported to Taiwan.Penta Laser's annual sales exceeded 1 billion RMB.

Shanghai Laser Application Center was founded.

2019

Successfully developed China's first 20KW laser cutting machine

Start the construction of Lin Yi manufacturing plant in Shandong

1 ENTERPRISE HONORS & AWARDS

Penta Laser always adheres to the management philosophy of "Being Laser Application Expert, Creating Value for Customer", sticking to increase efficiency and lower operational cost by powerful technology strength.

With China's first 15000W & 20000W ultra-high-power intelligent fiber laser cutting machines, Penta Laser provides a complete product portfolio for customers: "BOLT" top-speed fiber laser cutting machines, "BULL" large-format fiber laser cutting machines, "WHIRL" tube laser cutting machines and "GAN" 3D 5-Axis fiber laser cutting machines. From laser cutting to laser welding, and from 2D processing to 3D 5-Axis processing, Penta Laser has taken the lead in developing new "Intelligent Manufacturing". We are embracing Industry 4.0 and leading high-efficiency laser processing to a new era.


省级企业研究院


浙江省模范集体
中共浙江省委 浙江省人民政府
二〇一九年四月


浙江名牌产品
浙江省质量技术监督局
二〇一八年十一月


2017年度星级企业
五星级


奔腾激光（温州）有限公司
2018温州市制造企业五十强
二〇一八年十一月


激光加工技术
校企联合研究中心
奔腾激光


二等奖
奔腾激光（温州）有限公司


副主任单位


会长单位
二〇一七年五月

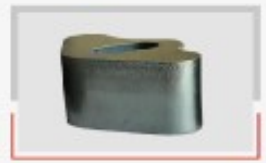

温州市市长质量奖证书

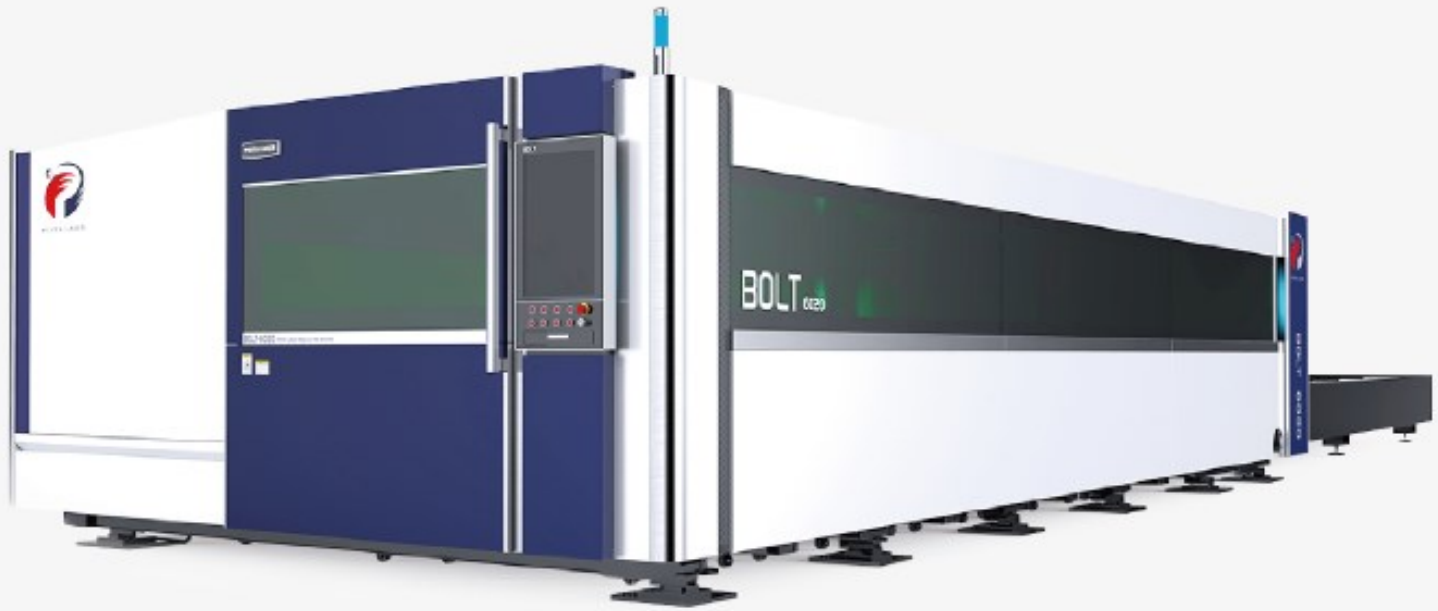

高新技术企业
证书


2017-2018年度
武汉市优秀外商投资企业

2 PRODUCTS

BOLT SERIES TOP SPEED FIBER LASER CUTTING MACHINE
BOLT



TECHNOLOGY INNOVATION

1. Superfast cutting, fly piercing and fast response technology, cutting efficiency increased by 20% – 50%
2. Burr-free piercing, sharp corner, thick plate shinning cutting, extreme thickness cutting, precision part cutting
3. Imported CNC chip system and the latest Smart Manager 5.0 software, low pressure, low cost, high cutting efficiency, higher precision, long-life machine design

Technical specifications

Specifications	Model				
	Bolt 3015	Bolt 4020	Bolt 6020	Bolt 4025	Bolt 6025
Table Travel	3000*1500mm	4000*2000mm	6000*2000mm	4000*2500mm	6000*2500mm
(VDI 3441):(Accuracy)	±0.03mm/m				
Mechanical Repeatability	±0.01mm				
Rapid Speed	200m/min				
Maximum Acceleration	4.0G			2.8G	
Z Travel	100mm				
Laser Power Option	3000W–20000W				
Laser Source Option	IPG/RAYCUS				

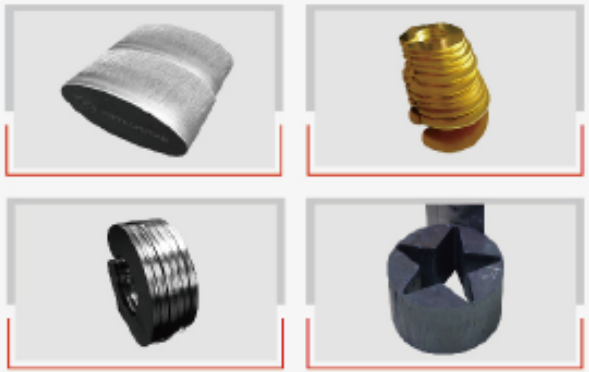
2 PRODUCTS

FIBER-PLUS SERIES FIBER LASER CUTTING MACHINE
FIBER-PLUS

Optional:Bevel Cutting

RANGE OF APPLICATION

Sheet-metal processing, parts & components manufacturing, machinery production, especially suitable for medium-and-thick plate(carbon steel, stainless steel, aluminum alloy) cutting processing. Also applicable to cutting processing of aluminum plate, copper plate and other high-reflective materials.

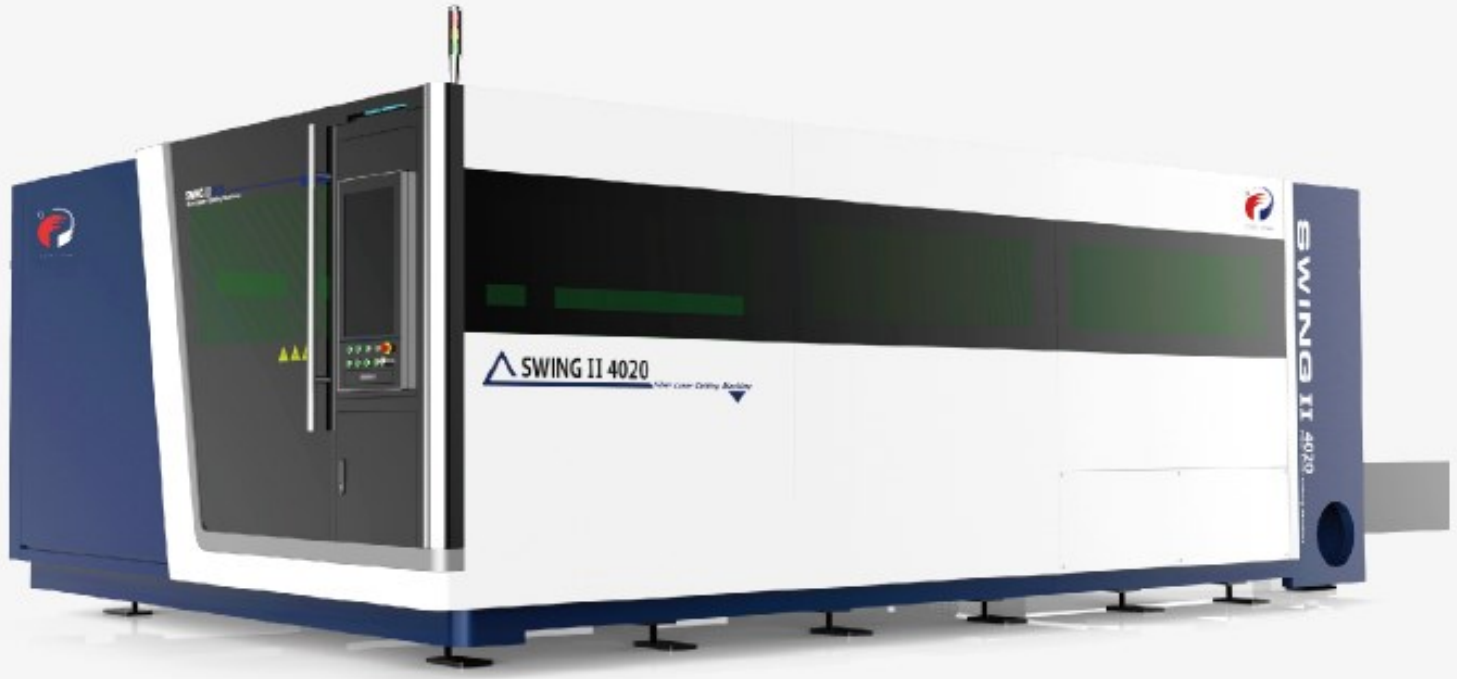


Technical specifications

Specifications	Model						
	Fiber Plus 3015	Fiber Plus 4020	Fiber Plus 4025	Fiber Plus 6020	Fiber Plus 6025	Fiber Plus 8025	Fiber Plus 10025
Table Travel	3000*1500mm	4000*2000mm	4000*2500mm	6000*2000mm	6000*2500mm	8000*2500mm	10000*2500mm
(VDI 3441):(Accuracy)	±0.03mm/m						
Mechanical Repeatability	±0.01mm						
Rapid Speed	120m/min						
Maximum Acceleration	1.7G						
Z Travel	190mm						
Laser Power Option	2KW-20KW						
Laser Source Option	IPG/RAYCUS						
Bevel cutting	Optional						

2 PRODUCTS

SWING SERIES FIBER LASER CUTTING MACHINE
SWING



RANGE OF APPLICATION

High speed cutting for medium-and-thin plate and widely used in sheet metal cutting, light-fixture, kitchen ware, stainless steel decorative materials, case and cabinet etc.

EQUIPMENT CHARACTERISTICS

1. Superfast cutting function.
2. The latest SM5.0 software, multi-function expansion available
3. High power machine protection
4. Superfast pallet exchange, anti-laser radiation cover, partition dust removal, etc.
5. Superior configuration, powerful functions, high cost performance

Technical specifications

Specifications	Model					
	SwingII 3015	SwingII 4020	SwingII 4025	SwingII 6020	SwingII 6025	SwingII 8025
Table Travel	3000*1500mm	4000*2000mm	4000*2500mm	6000*2000mm	6000*2500mm	8000*2500mm
(VDI 3441):(Accuracy)	±0.03mm/m					
Mechanical Repeatability	±0.01mm					
Rapid Speed	110m/min	120m/min				
Maximum Acceleration	1.5G					
Laser Power Option	1000~12000W					
Laser Source Option	IPG/RAYCUS					

2 PRODUCTS

MACHINE FEATURES

1. Automatic clamping and centering, ensuring long-pipe feeding accuracy, high cutting precision and excellent efficiency
2. Available to process square tube,round tube,rectangular tube, Irregular tube etc
3. Nesting software has multi-layer function, able to process complex curve drawings
4. Automatic loading & unloading system is available for lower labor cost and higher cutting efficiency

WHIRL SERIES PIPE LASER CUTTING MACHINE
WHIRL



Technical specifications

Specifications		Model			
Model	Unit	WHIRL PLUS 7510	WHIRL PLUS 8518	WHIRL PLUS 10018	WHIRL PLUS BV8518
Popwer	W	1KW-3KW			
X Travel	(mm)	7500	8500	10000	8500
Y Travel	(mm)	700	560		
Z Travel	(mm)	265	300		
A/P Rotation axis		N x360°			
Straight axis re-positioning accuracy	mm	±0.03			
Straight axis maximum speed	(m/min)	120			
Rotation axis maximum speed	(rpm)	120			
Rotation axis re-positioning accuracy		±8			
Chuck Control	--	Automatic clamping, automatic centering and full travel without changing clamping claws			
Diameter range	mm	20-220			
Pipe Weight	15kg/m	25kg/m			
Auto Loading	m	Optional 8 (L) X2.2 (W) X2.3(H)			
WHIRL PLUS BV 8518---bevel cutting, zero tailing,auto unloading					

3 TECHNOLOGY
TECHNOLOGY INNOVATION

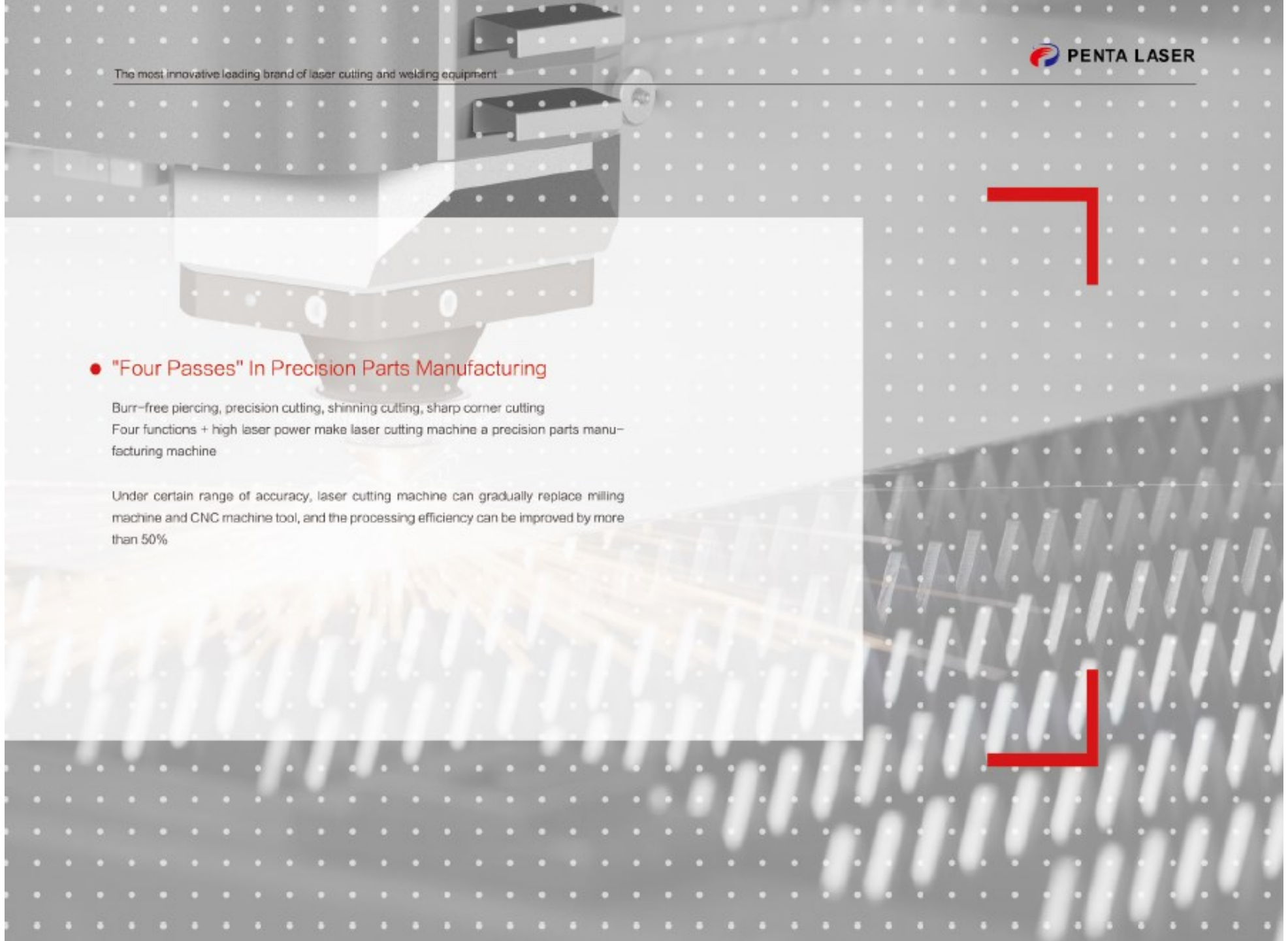
PRECISION CUTTING

Fast piercing and burr-free piercing

Precision cutting

Sharp corner cutting

Thick plate shinning cutting



"Four Passes" In Precision Parts Manufacturing

Burr-free piercing, precision cutting, shinning cutting, sharp corner cutting
Four functions + high laser power make laser cutting machine a precision parts manufacturing machine

Under certain range of accuracy, laser cutting machine can gradually replace milling machine and CNC machine tool, and the processing efficiency can be improved by more than 50%

3 TECHNOLOGY
TECHNOLOGY INNOVATION

INNOVATION

SUPER FAST CUTTING

- Fly piercing and fast response technology, cutting efficiency increased by 20% – 50%
- N2(Air) cutting, suitable for thick plate within 4mm(6KW) and 10mm(15KW)
- Lifespan of protection lens is greatly improved

BEVEL CUTTING

- 45 degree bevel cutting on sheet materials with 2D rotation of cutting head
- Bevel cutting thickness range:3-20mm
- Bevel cutting for lines, circles and complex patterns
- Available in Fiber Plus and Bull Series

IQ CUTTING

- Compared with normal cutting, thin plate cutting speed can be increased by 50%
- Aluminum alloy cutting without burr or little burr
- Shinning cutting can be done with lower power on thicker
- materials

  Cut smaller holes

RASTER

- Storage and recording of processing parts information
- Labeling of parts series numbers and QR codes

WATER-COOLING CUTTING

- Spray a small amount of water to cool material and cutting head down
- Suitable for multihole cutting and complex patterns cutting on thick plate

4 TECHNOLOGY
ADVANCED HARDWARE SYSTEM

INTELLIGENT CUTTING HEAD

1. Originally imported high performance laser cutting head dedicated to laser cutting
2. Non-contact capacitive sensor,automatically align the sheet
3. Auto focus,no focus re-adjustment needed while changing sheet.
4. Smart piercing,2-3 times faster on thick material;
5. Temperature and pressure detection, monitor cutting status in real-time
6. Focus compensation, control focus deviation and ensures stability of long time running

HIGH SYNCHRONOUS SERVO MOTORS

Mechtro-Link is the world' s leading dual-drive synchronization technology of which the control response time reaches nano-second level and synchronicity is 1000 times higher than conventional machine tools. Compared with conventional interface control methods, Mechtro-Link control mode responds faster and has stronger anti-jamming capability, which guarantees the synchronicity of machine tool and the stability of running at high speed, greatly improving the working life of machine tool and servo motors.

DESIGN AND MANUFACTURING OF HIGH PRECISION MACHINE TOOLS

Heat treatment & thermal protection with automatic lubricating device reduce the heat absorption of machine tools, guarantee the precision of the machine in long running and prolong the service life.
8-20 partition suction system.

Super large screen, excellent operation experience and visual effect.

4 TECHNOLOGY
ADVANCED SOFTWARE SYSTEM

OPERATING SYSTEM

SM5.0 is equipped with our cutting parameter database. The cutting parameters can be real-time adjusted during cutting, so as to achieve optimal quality. The software has various piercing parameters which can be set up to 25 layers.

SM5.0 has also optimized multiple piercing modes, e.g. continuous piercing, pulse piercing, blast piercing, etc. The frog jump management is upgraded with smoothier motion and zero pause. With SM5.0, thin plate production efficiency can be improved by over 25%. The system can provide auto gas shut-off during fast moving and more convenient auto edge detection.

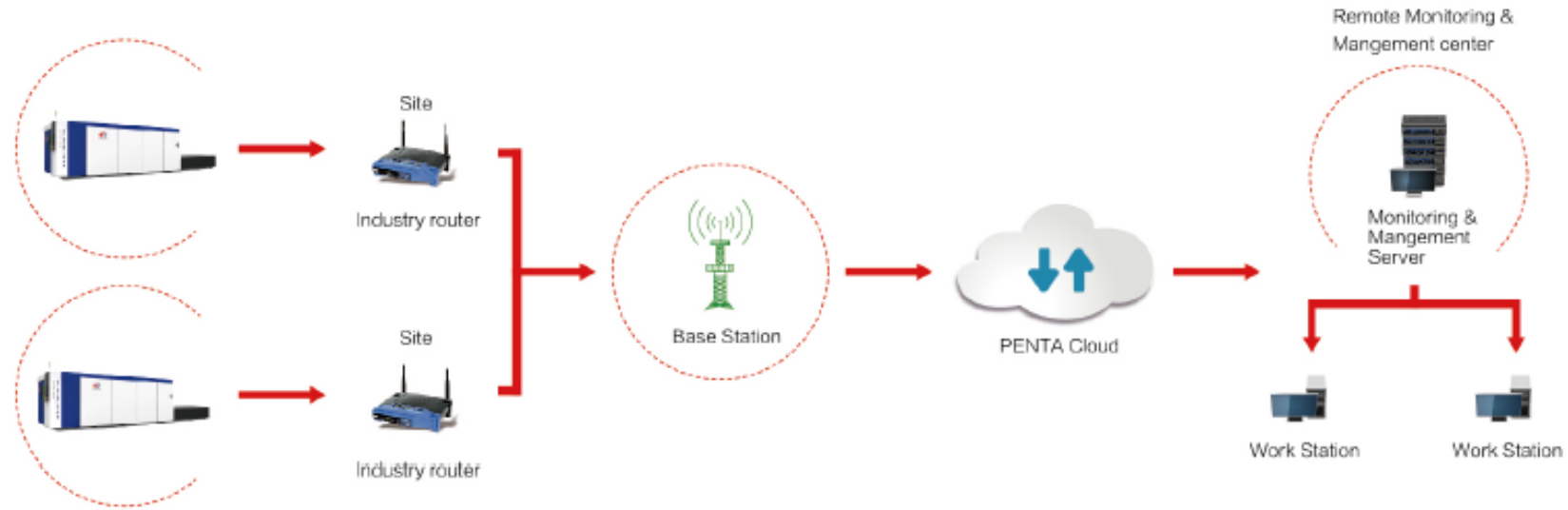
CNC CONTROL

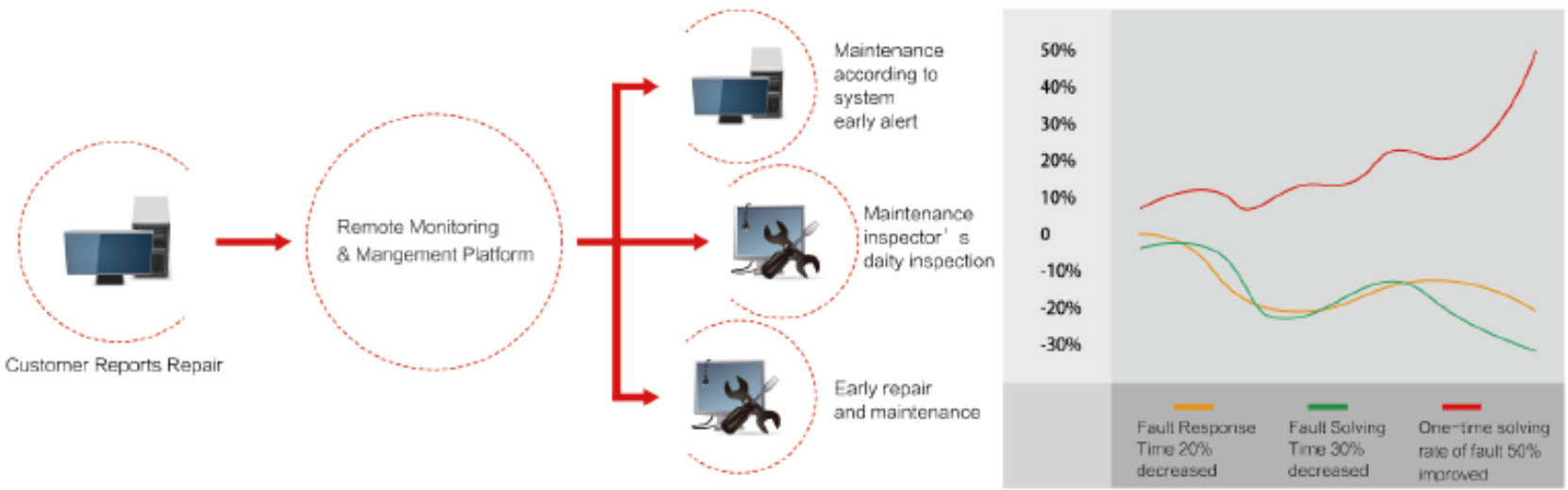
The new Z32 real-time control CNC system has dynamic and geometric impact protection.
With USB interface and ethernet interface, Z32 CNC system can realize remote assistance.
Machine operation state can be monitored in real time via feedback from each sensor.
Self-adaptive real-time control on laser energy can ensure sharp corner cutting quality
Control of Z-axis auto following can eliminate the influence of uneven materials.
Z32 CNC system also has auxiliary gas (N2,O2,compressed air) auto selection function and job resume of gas pressure regulation function.
The control technology, response speed and synchronicity are improved to μs level
The system' s camera nesting and parts recut function can make manufacturing smarter and more convenient.
Anti-collision function leads to smoothier operation.

4 TECHNOLOGY

REMOTE OPERATING AND MAINTENANCE SYSTEM

Penta laser remote operation and maintenance system is based on Internet of Things technology and cloud computing. It sets up a system to monitor and manage remote device based on cloud platform； provides accurate products service and business support by acquisition of remote data and analyzing process data, builds up "UI" interactive platform between enterprise – product – end user for management,control and interaction; controls the situation of product by real-time monitoring; finds the product failure in time to improve after-sales service efficiency and quality; combines actual production, operation and maintenance requirements of customers by anlalyzing production, operation and maintenance process data to set up failure prediction and diagnosis model; completes fault database, operation and maintenance knowledge database; and feeds the relevant empirical information back to the front end of the product life cycle –– the product design stage.


Remote Monitoring &
Mangement center
Site
Industry router
Site
Industry router
Base Station
PENTA Cloud
Monitoring &
Mangement
Server
Work Station
Work Station


Customer Reports Repair
Remote Monitoring
& Mangement Platform
Maintenance
according to
system
early alert
Maintenance
inspector' s
daily inspection
Early repair
and maintenance
50%
40%
30%
20%
10%
0
-10%
-20%
-30%
Fault Response
Time 20%
decreased
Fault Solving
Time 30%
decreased
One-time solving
rate of fault 50%
improved

6 ENTERPRISE VISION

THE GLOBAL LEADING SUPPLIER OF INTELLIGENT LASER SOLUTIONS