

**YC WATERJET
CUTTING SOLUTIONS**



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Development of YC

- 1999, YC Industry Co.,Ltd was established by Mr. Guoqiang Min, mainly engaged in manufacturing large production line, including paper roll conveyor line and assembly line.
- 2005, YC started to research and developed UHP water jet cutting equipment and cooperated with German KMT as well.
- 2008, YC started to cooperate with the UK agent , so far it has been 9 years.
- 2009, YC started to cooperate with USA Accustream whom is specialized in water jet parts and pumps.
- 2010, The brand YCWJ had been registered and YC waterjet cutting machines had been sold to more than 30 countries around the world.
- 2014, YC Industry built a new company Wuxi YC Waterjet Technology Co.,Ltd.
- 2015, YC WATERJET started to cooperate with RU agent, YC had sold the products to more than 40 countries and have dealers in UK,Russia, South Africa, Singapore, Korea and Indonesia.



Sales network



Water jet application

This water jet equipment operates with the world's most unique cold-cutting technology, making it suitable for cutting any type of materials in a diverse range of industries. It is widely applied in the industry like steel, nonferrous metal, glass, stone and cemented carbide. In addition, our product is widely seen in the processing of plastic, man-made fiber cloth, paper, composite, food, aviation and car interior decoration processing.etc



Machine

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Cutting head

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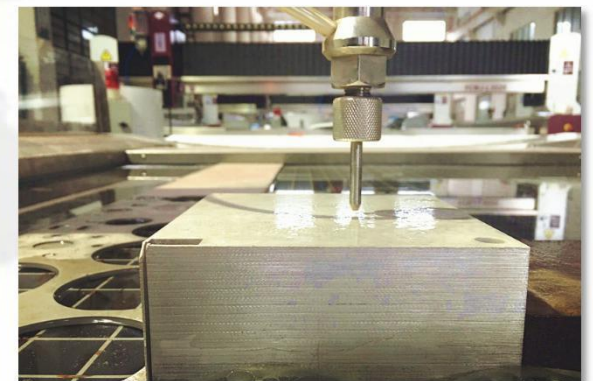
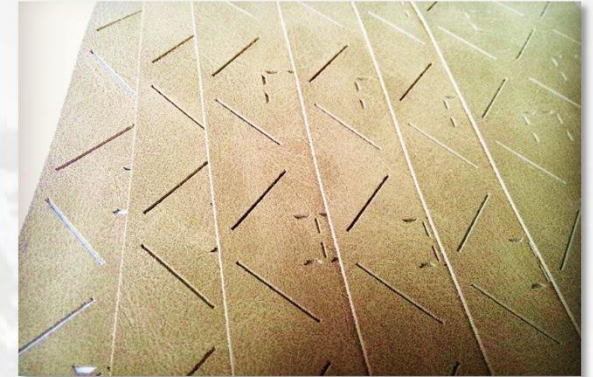
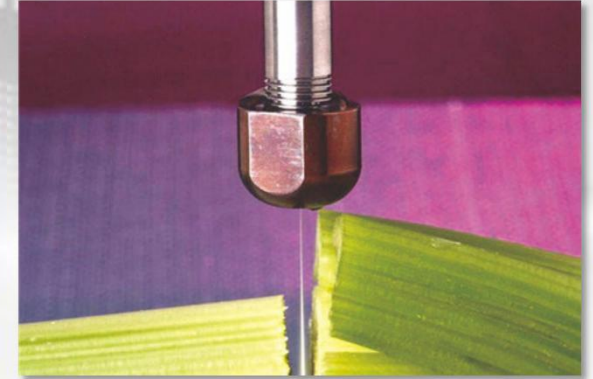
Robotic waterjet

what is water jet cutting

Unlike cleaning technology applications where widespread and even removal matters most of all, the jets used for cutting with water are bundled as closely together as possible. Jet diameters range from 0.1 to 0.5 mm. The pressure to generate the required energy density in the jet is up to 6,000 bar. This complies with the pressure at the bottom of a 6,000 m water column. Depending on the material, thicknesses of up to 300 mm can be cut with pure waterjets.

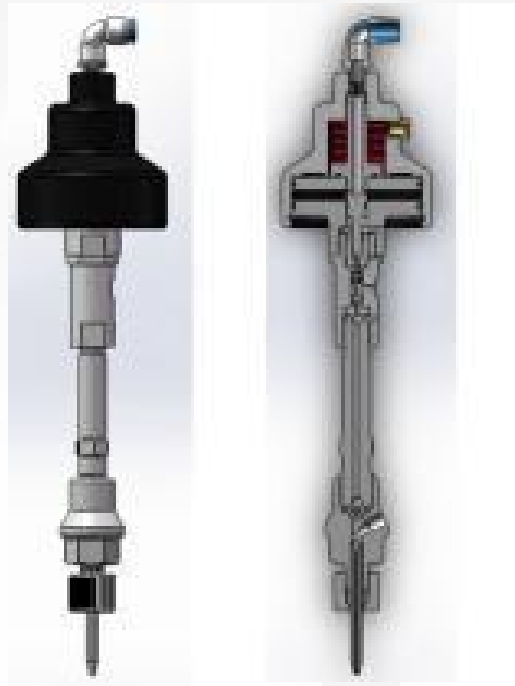
The energy density of pure waterjets is not sufficient for the processing of many technical materials. Solid particles are therefore added to the waterjet for the respective applications. This makes it possible to also process materials that cannot be cut with pure waterjets or to significantly increase cutting performance as compared to working with pure waterjets.

The so-called abrasives are essentially sharp-edged, mineral substances like granite sand or olivine with grain sizes from about 0.1 to 0.3 mm. Depending on the cutting application, the required abrasive quantity is 100 to 800 g/min. Just like cutting with pure waterjets, pressures of up to 6,000 bar are used for abrasive waterjets. The jet diameter is between 0.3 and 1.2 mm. The application limit in view of material thickness for cutting with abrasive waterjets is about 300 mm.

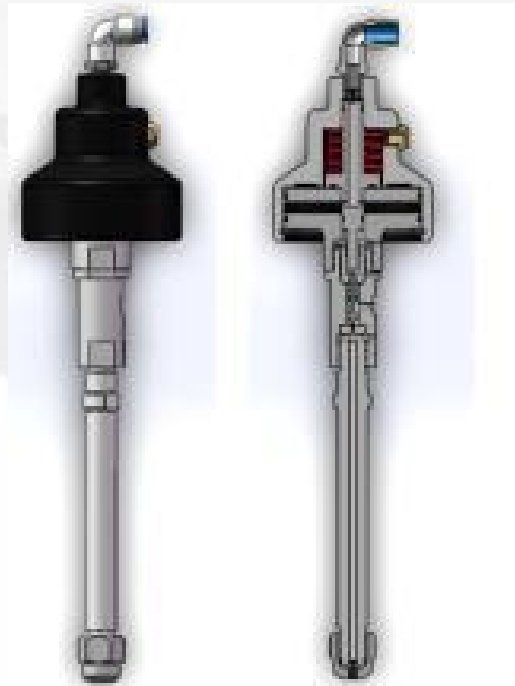


Abrasive cutting & Pure cutting

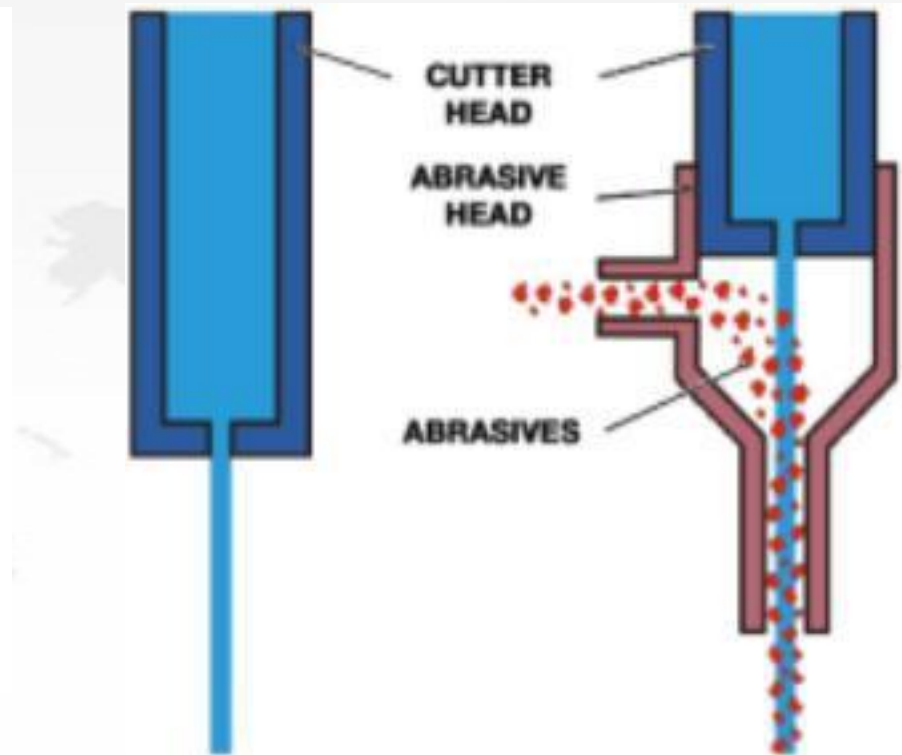
Generally, there are two different types: only water cutting and abrasive cutting. We have to adopt a suitable type depending on the different materials.



Abrasive cutting head



Pure water cutting head

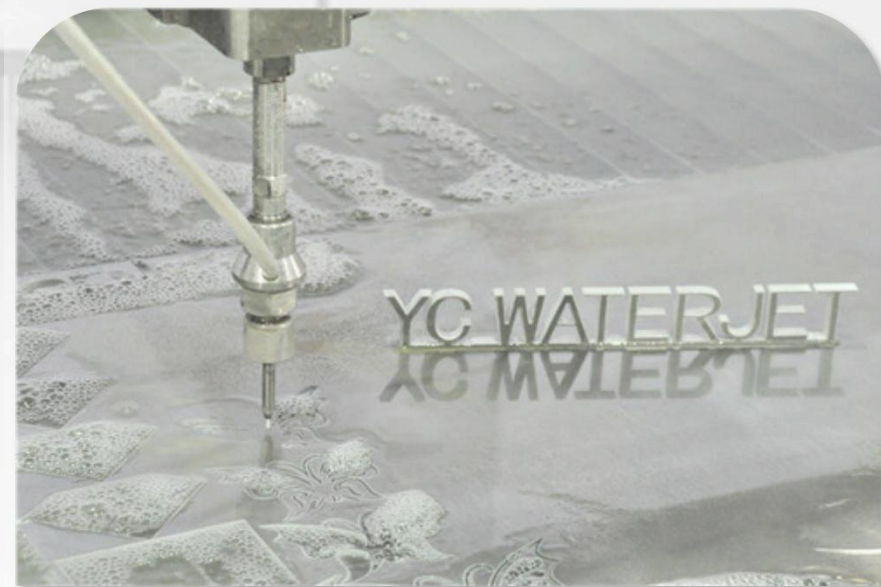


3.1.1

Standard 3 axis waterjet

Cutting accuracy: +/- 0.1mm

Repeat accuracy: +/- 0.05mm



3.1

Machine-Cutting head

3.1.2

Dynamic 5 axis waterjet

The Dynamic 5 axis water jet cutting machine is specially used to cut marble and granite, it can compensate $\pm 10^\circ$ cutting angle. It is one kind of bevel cutting machine.

Due to the water jet cutting is a flexible cutting, therefore, there will be a certain degree of inclination on the product cross section after cutting by the traditional 3 axis water jet cutting. In order to ensure the accuracy of vertical cutting section, it must reduce the cutting speed. However, our 5 axis water jet cutting machine can ensure the accuracy of vertical cutting section by compensating the cutting angle, without reducing the cutting speed. So that it can be used for cutting parquet stone, the parquet flooring does not need to be polished again, which can save time and labor.


Dynamic 5 axis cutting head X,Y,Z axis for transmission A,B axis for compensation $0^\circ - \pm 10^\circ$





Mosaic & Parquet





5 axis cutting&3-dimensional waterjet cutting

Italy ECS control system



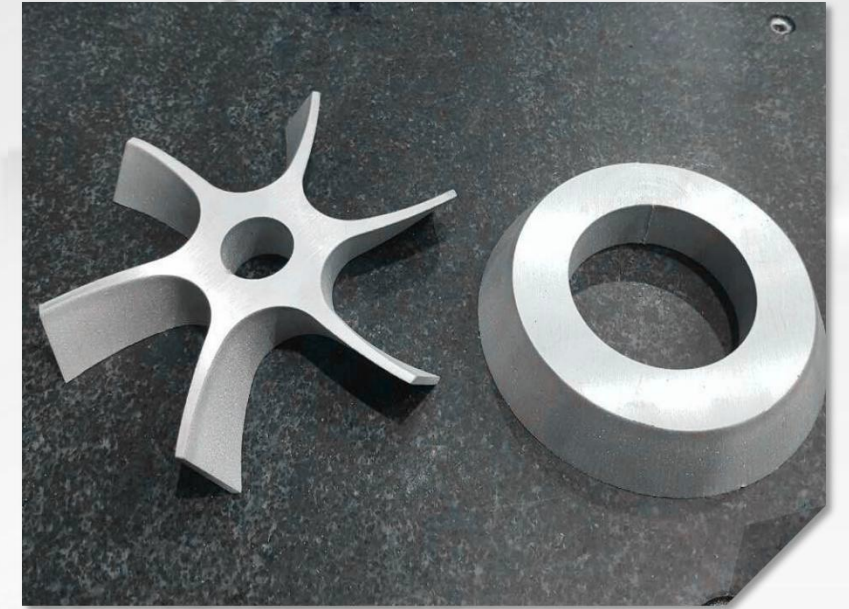
3.1.3

Max 5 waterjet - 3D cutting

The MAX 5 is a newly developed technology, it is specialized for bevel and 3D cutting

3.1

Machine-Cutting head



Technical Parameters:
Bevel axis (A): $\pm 45^\circ$
Rotary axis (C): $\pm 540^\circ$
Control accuracy: $\pm 0.01\text{mm}$
Angle accuracy: 0.01°

Chinese Weihong system
and Intalian ECS system are both
available.

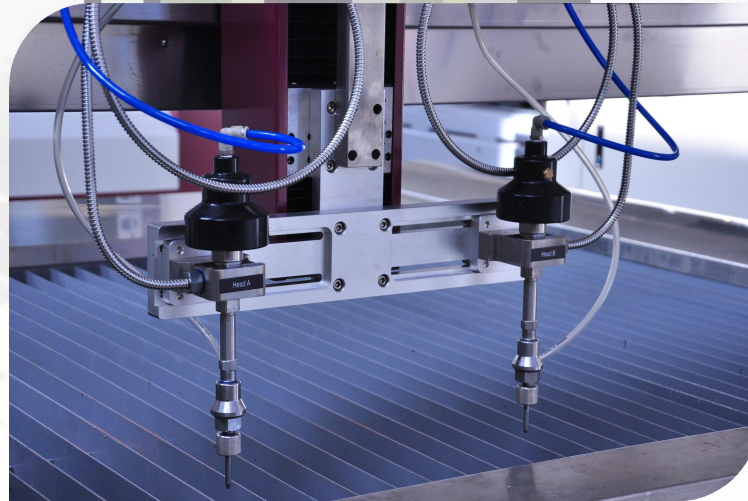
3.1.4

Multi-head

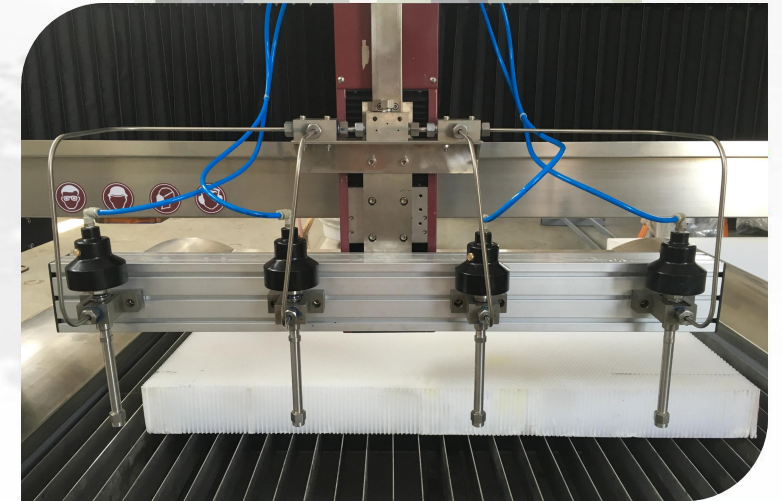
Double cutting head or multiple cutting heads means have two or more cutting heads on a cutting platform, At the same time it can perform the cutting task with the same track. Mainly for large quantities of small parts, the capacity can be double or more under equivalent Energy consumption.



Freestanding double cutting heads



Simple style double cutting heads



Multiple only water cutting heads

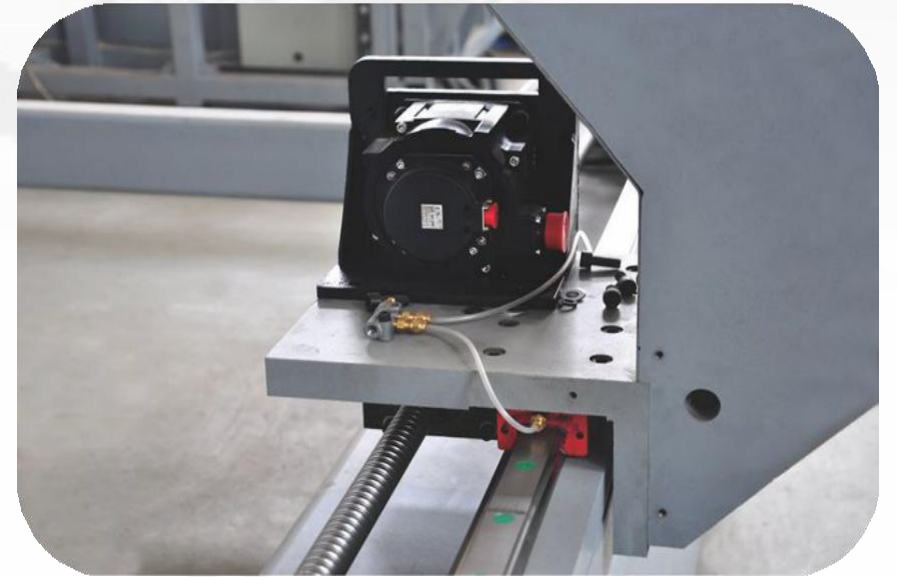
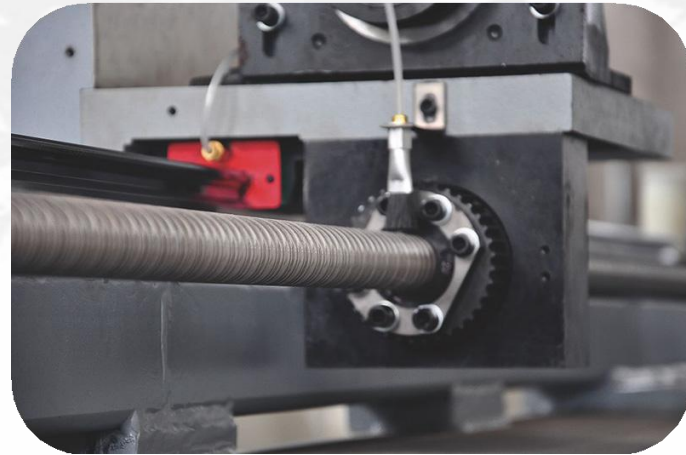
The max quantity for only water cutting is 8 cutting heads.

Water jet cutting platform



YC has been kept concentrating on manufacturing the best water jet cutting machines for the past 11 years. We can provide customized solutions for different customers and applications.

The X axis and Y axis are driven by HIWIN linear guideways and TBI or I+F ball screws which are driven by Mitsubishi/YASKAWA servo motors.

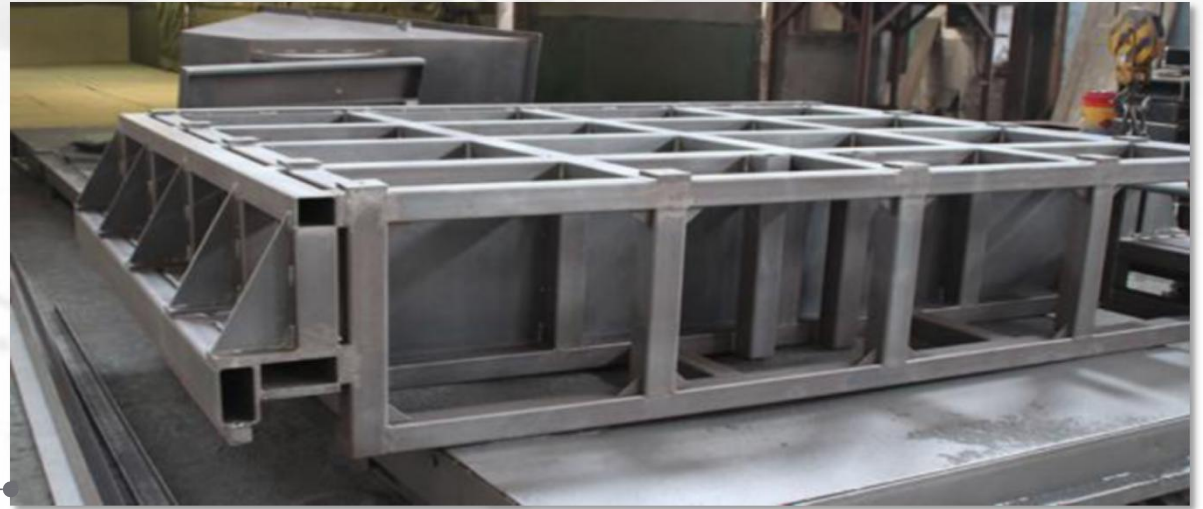


First step is heating treatment which achieve stress relieving,second step is Sand-blasting which is made on the cutting table to remove the oxidation layer.Then the surface will be cleaner with higher roughness, enhancing the adhesiveness of painting on it.

Before sand blasting



After sand blasting

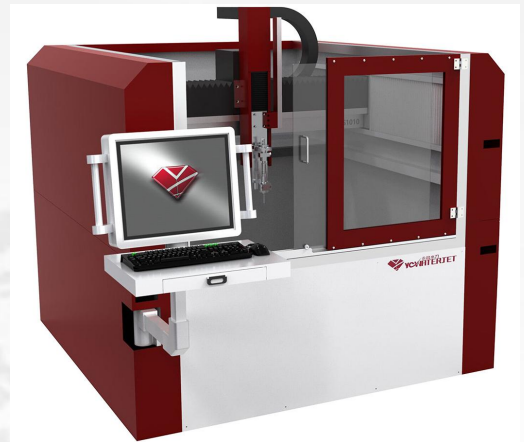


3.2.1

Integral Gantry type

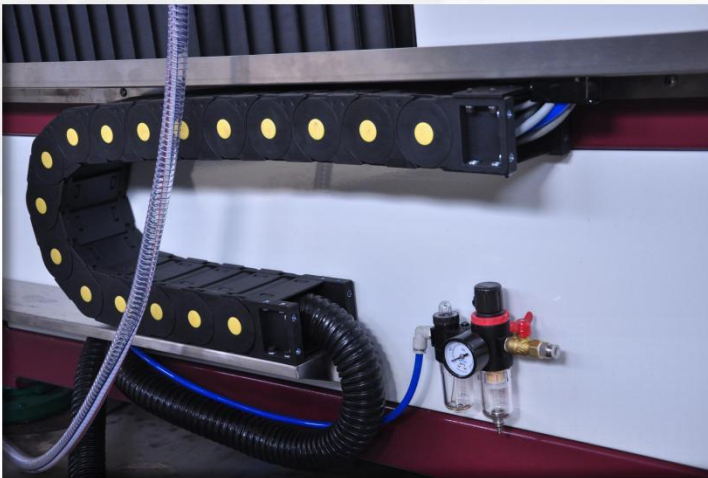
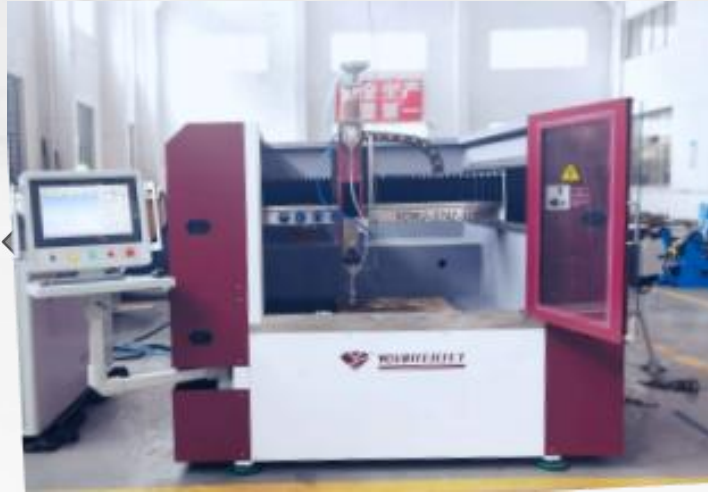
Superior precision and stability are guaranteed by the casting beam and base frame of Y-axis. Lathe bed and water tank are non-detachable, After the heating-treatment of whole machine table (to eliminate the stress of 95%), it is much better than the VSR (to eliminate the stress is 35%),It can ensure the accuracy and stability in long time.

CNC water-Jet Cutting machine(L=Gantry type)						
Parameters		Unit	YCWJ-S0808	YCWJ-S1212	YCWJ-L2015	YCWJ-L3015
Efficient Cutting area		mm	800×800	1200×1200	2000×1500	3000×1500
Axis travel	X	mm	900	1300	2100	3100
	Y	mm	900	1300	1600	1600
	Z	mm	150	150	180	180
Cutting accuracy		mm	+/-0.1			
Positioning accuracy		mm	+/-0.025			
X,Y dry-run speed		m/min	0-15m/min (if need 30m/min speed,we can do as request)			
Cutting speed		m/min	as to detail material and thickness			



3.2

Machine-Cutting platform



3.2 Machine-Cutting platform

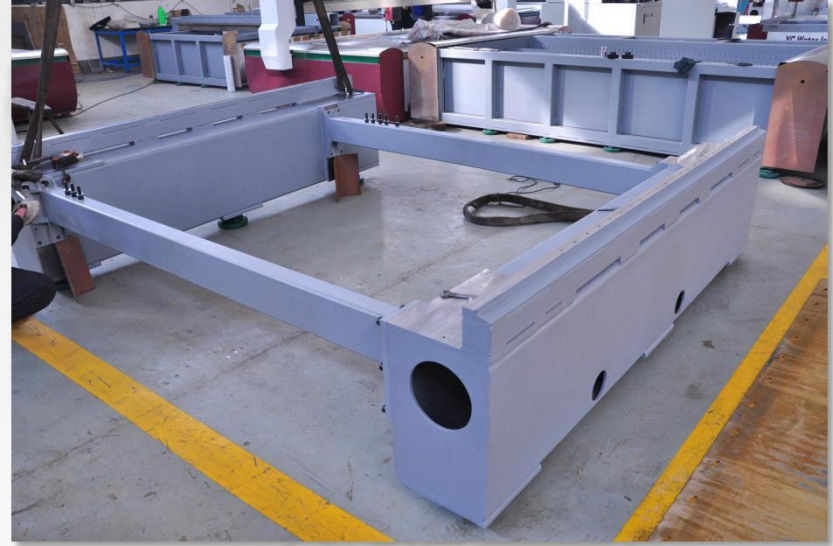
3.2.2

Slip Gantry type



- The Y-direction base of the split machine tool is manufactured as a whole. It is transmitted by the ball screw and linear guide, which are easy to install, and can improve the overall accuracy and stability of the machine tool.
 - Lathe bed and water tank are detachable, which are designed to reduce the pressure from water with sands and machined parts to moving parts.
 - The base of Y-axis is overall manufacturing, It's convenient for disassembly, transportation and assembly.
- The size of cutting platform can be customized.

CNC water-Jet Cutting machine (L=Gantry type)						
Parameters		Unit	YCWJ-L3020	YCWJ-L4020	YCWJ-L4025	YCWJ-L2060
Efficient Cutting area		mm	3000×2000	4000×2000	4000×2500	2000×6000
Axis travel	X	mm	3300	4300	3300	2300
	Y	mm	2300	2300	2800	6300
	Z	mm	180	180	180	180
Cutting accuracy		mm	+/-0.1			
Positioning accuracy		mm	+/-0.025			
X,Y dry-run speed		m/min	0-15 (if need 30m/min speed,we can do as request)			
Cutting speed		m/min	as to detail material and thickness			



3.2 Machine-Cutting platform

3.2.3

Large gantry type



The size of cutting table can be customized, such as 3000mm*8000mm, 3500mm*7000mm, 2000mm*12000mm, the max size can be 4000mm*12000mm.

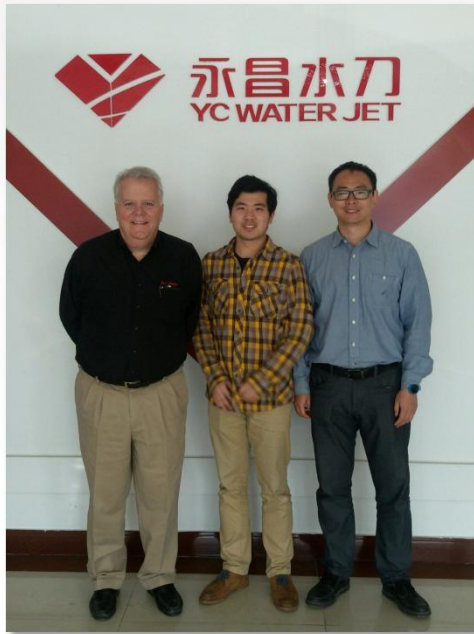
3.2

Machine-Cutting platform

3.3.1

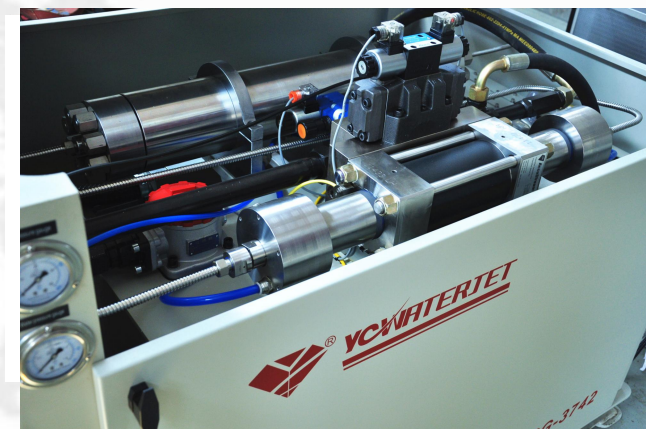
YC high pressure pump

Regarding to the core parts of high pressure pumps, We have been cooperated with USA Hypertherm/Accustream since the year 2008.



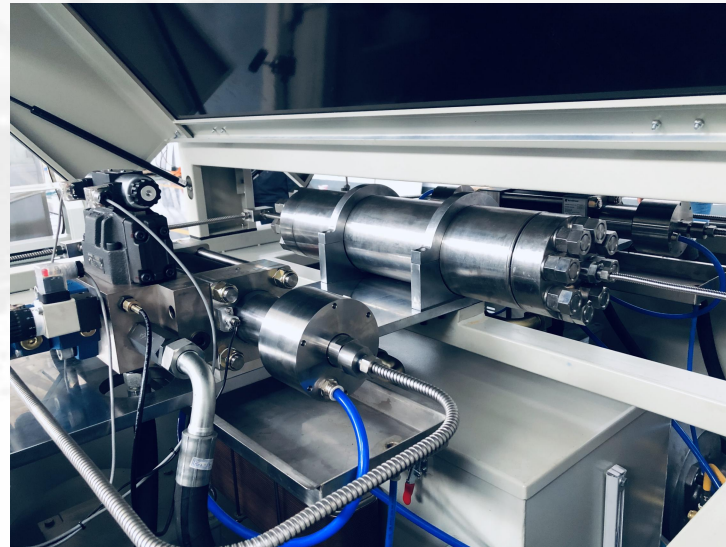
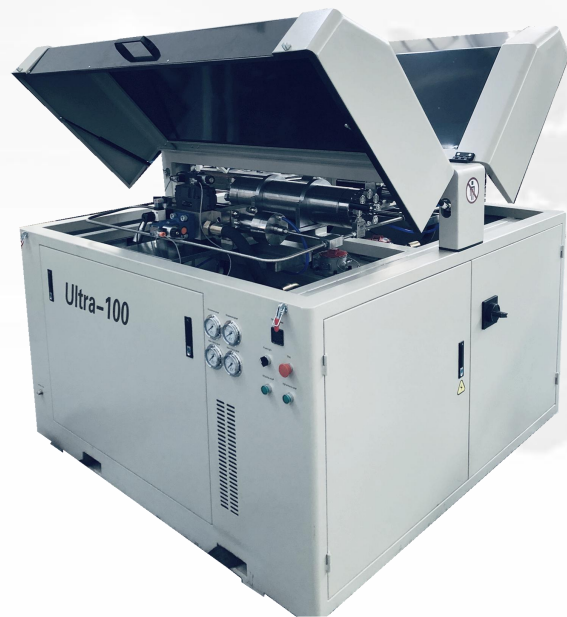
Pump Models

Model	YCG-3742 (60% customers' option)	YCG-5542	YCG-7542 (Ultra 100)
Max Flow	3.7L/min	5.6L/min	7.4L/min
Max Diameter of orifice	0.33mm	0.4mm	0.43mm
Max pressure	420Mpa	420Mpa	420Mpa
Intensifier	Single	Double	Double
Pressure Control	Manual	Manual	Manual
Shifting Control	Electro-hydraulic control	Electro-hydraulic control	Electro-hydraulic control
Intensifier Assembly	Major intensifier assembly from USA (Accustream/ Hypertherm)		
Motor	50HP (37kw)	75HP (55kw)	50Hp×2 (37kw×2)
Power	3 phase,380V/50Hz	3 phase,380V/50Hz	3 phase,380V/50Hz
Size: Width	1300mm	1380mm	1750mm
Size: Length	1800mm	1980mm	1800mm
Size: Height	1500mm	1520mm	1480mm
Weight	1200kg	1598kg	2200kg



Double Intensifier Pump Ultra100

Compared with single-pump type, this double-pump system enables a double increase in both the water flow and cutting efficiency. It also allows the maximum thickness of stainless steel to reach 200mm after the cutting process. These two pumps can work simultaneously. If a problem occurs in one pump, the pump can be powered off and repaired, and it will never affect the other pump. This entire system is suitable for those companies that require 24-hours continuous working.



3.3.2

Other brand pumps



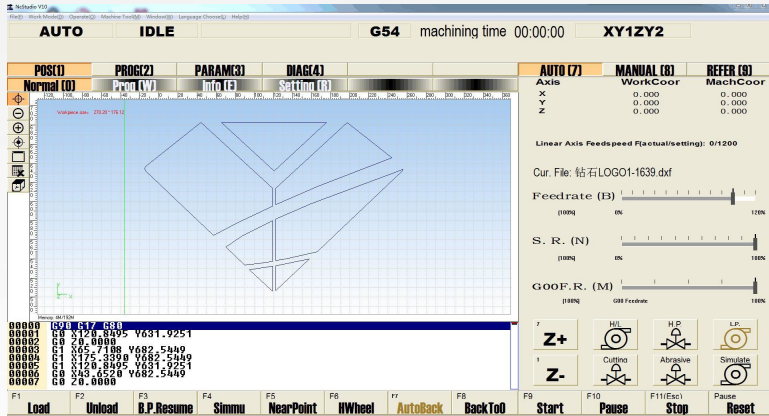
3.3

Machine-Pumps

3.4.1

WEIHONG controller and software

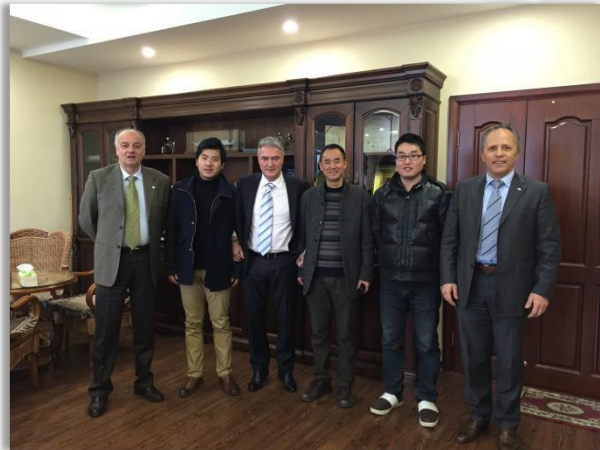
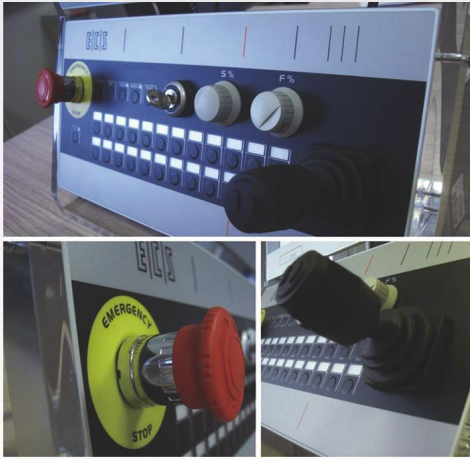
NcStudio 3A/5A



CNC Specification	Number of Axes Supported: 3-5axes
Control Signals	Plus Frequen: 1MHZ Control Mode: Position Control Control signal:Differential signals
Communication	ExternalPCIInteractive with Lambda: PHOENIX bus
Spindle	Analog Voltage Output: 0-10V
Tool Measurement	Tool Measurement Mod: Fixed calibration, Mobile calibration,Firstcalibration & Calibration after tool change
Compensation	Compensation Type: Screw error compensation, Backlash compensation,AQE compensation, Tool compensation
Toolpath File	Supported File Format: *.g/*.nc/*.u?/*?.demo/*.iso/*.eng/*.cut/*.dxf/*.plt/*.txt
Operations	WCS: Supporting WCS G54-G59 and Work Zero saving Processing Technology: Array, Mirror&rotate, Cycle machining
Convenient Operation	Handwheel guide, Breakpoint resume, Tool selection
High-speedHigh-precision Optimization	Interpolation Algorithms: T-type, S-type and LEP algorithms
Software Language	Chinese,English,Russian
Safety & Reliability	Sofeware Alarms: Alarms of program error, operation error, over-travel error, PLC error, and IO communication error

3.4.2

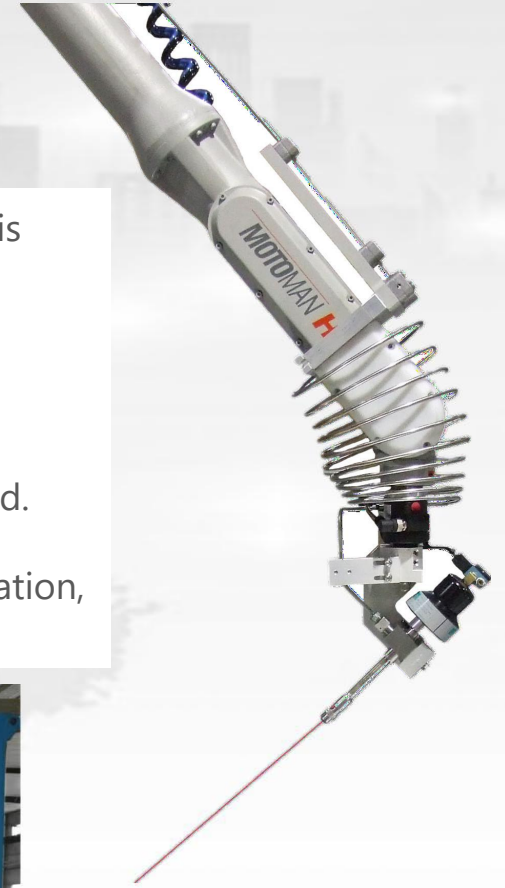
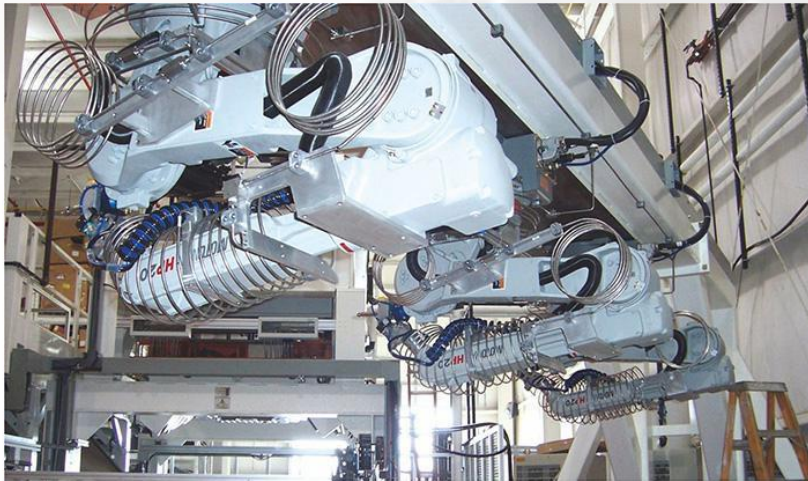
ECS controller & software



Hardware configuration	Up to 16 axes interpolated
	Hardware Architecture dual core (Kontron) with high performance and low power
	Peripheral interface: EtherCAT
	Node EtherCAT to manage EcsLink, Mechatrolink® 2 and analogic drives
	Up to 2048 I/O with EtherCAT
	Monitor 15" LCD - Integrated Touch Screen(Optional)
	Alphanumeric keyboard (Optional)
	Modular machine panel (Optional)
	To choose the basic profile where to operate
	To set of the start and stop points and their parameters
Software Prameters The CNC 905 has also been completed with a small but powerful CAM, the ShapeCAM® that allows:	To apply a series of attributes to the selected profile (changes of Scale, mirror image, rotation)
	To repeat the selected profile until a plate of set dimensions has been completed or on a matrix with a defined number of lines and columns
	To graphically simulate the programmed operation
	To save the operation and to call it back later; the selection is provided by a graphic help
	To automtically select the preset operation or to call it back and to immediately carry it out

Robotic waterjet

1. The robotic waterjet cutting system is applicable for cutting irregular curve. The work piece processed is characterized by smooth incision and optimal consistency.
2. Automatic and high efficiency, the robot cutting machine has excellent applicability by virtue of the intelligent and flexible control.
3. Through the replacement of the fixing mould, the wide range of work pieces production can be realized.
4. This range of water cooled cutting machine is well received due to the performance of energy conservation, environment protection, high economic efficiency, optimal reliability, and easy maintenance.



Cooling system

1.Auto water recycle cooling system:
The oil can be normally cooled, when the operating temperature is around 45 degrees.



Voltage :220v
Power :1100w, 50Hz
Speed :2850r/min
Flow : 65L/min
Absorption process :8M
Water treatment capacity :20t/h

2.Air cooler: It increases the cooling area and the ventilation flow. It is hardly affected by the working environment. With an independent automatic temperature control system and independent cooling circuit, the air cooler start working when the temperature reaches the set value. It is clean, energy saving and environment-friendly.

Max Flow: 500L/min Working
Pressure: 3Mpa
Refrigerating capacity: 55KW/h
Heat interchanging area: 45m²
Fan motor: 550W
Voltage: 380V
Hz: 50/60



Cooling system

3.Refrigerator Chiller:

It can be set to any temperature, and is not subject to the working environment, but the price is the highest.



Refrigerating capacity: 25112 Kcal/h
 Voltage: 380V 50Hz 3 Phase
 Total unit capacity: 10.6KW
 Refrigerant: R22C
 Compressor power: 9KW
 Fan power: 0.25KW*2 PCS
 Chilled water pipe diameter: G1.5"
 Pump flow: 80L/h
 Pump power: 1.1KW
 Head of delivery: 35M
 Dimension :1350*650*1250mm
 Weight: 380KG



4.2

Auto abrasive delivery system

With the functions of shoring and feeding sands for the machine, it also improves the automation and lessens intensity of labor.

- Capacity: 170L
- High accuracy can remain workers when to feed sands



4.3

Water soften system

High-pressure water jet cutting water quality requirements for the job: deionized water. Basic requirements for high pressure water jet cutting system with water quality water is greater than $0.5 \mu m$ impurities must be removed, because in addition to the general water contains a certain amount of fine solid particles, there are many minerals dissolved in water, such as calcium carbonate, manganese, iron and silica, etc., not only reduces the life of the nozzle, but also affect the cohesion of the jet, thereby reducing the cutting efficiency. So be sure to remove it. We would like to recommend you this optional part if your supplied water is low quality.



4.

Optional

Auto sludge removal system

Remove the abrasive from the tank automatically, separate the abrasive and water. Reduce the labor force, improve work efficiency. The absorption pump sucks up the mixture of sand and water from the tank into a collection box when it works. There are plastic woven filter bags in the collection box, water is recycled to the machine tank, sand and the mixture from cutting are collected into filter bags inside. So as to achieve the purpose of automatic collection to make it easy to clean.

Data of Single pump (customer can choose the brand :Ingersoll Rand)

Flow rate: 8 M³/H

Lift: 50 M

Exit pressure: 6 kgf/cm²

Absorption distance: 7 M

Max. Diameter of solid particle which can get through: 4.5mm

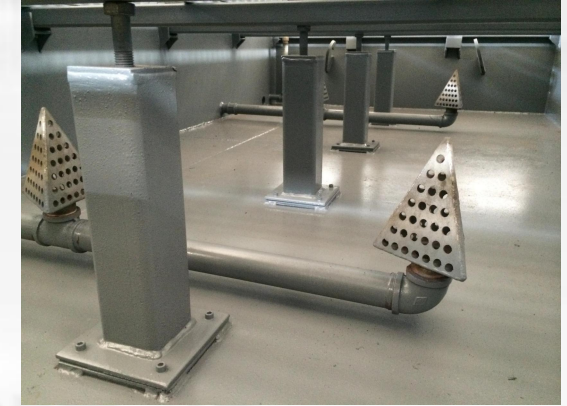
Inlet and outlet diameter of pump: 40mm Power:
compressed air

Max. Inlet pressure: 7 kg f/cm²

Max. Consumption of air: 0.6 mm³ /min

Diameter of air pipe: 10mm

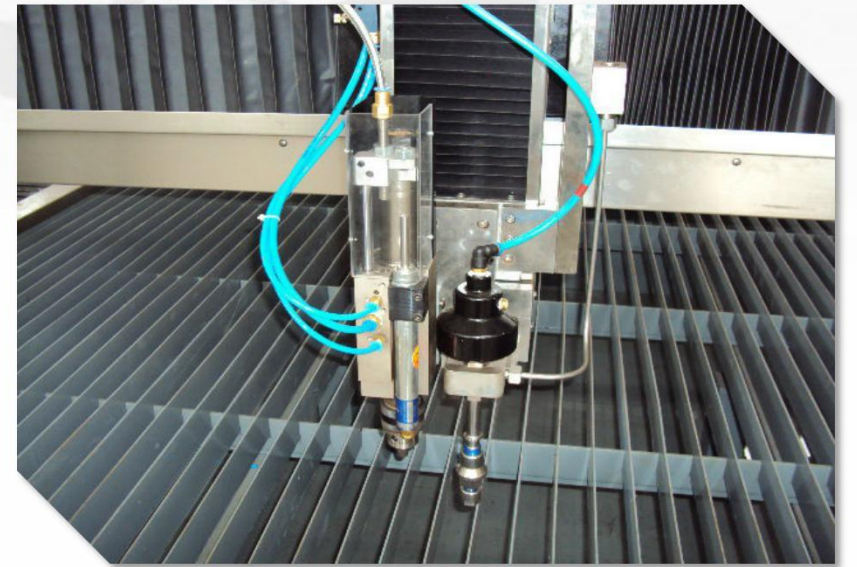
Collection box: 1.6m*1.0m*1.0m



Cutting head with drilling function

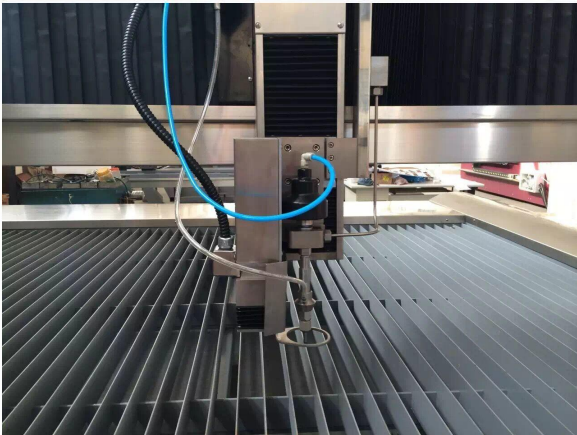
It refers to cutting with automatic drilling function, mainly to increase a fully automated drilling assembly in the traditional waterjet cutting machine, because when cut the smaller pore with waterjet, the accuracy is not high, the efficiency is low. The perfect combination of automatic drilling assembly and CNC waterjet system can achieve the automatic of drilling, feeding and chip removal, pre-drilling before cutting and other functions for smaller pore. It has the ability to complete a one-time cutting drilling, that improve the quality of products, but also improve the efficiency of production.

The pre-drilling function before cutting is mainly used for the multi-layered composite material, because of the characteristics of high-pressure water jets, before cutting and during drilling, water jet will take some time to punch through the material from the surface of material. In the drilling process, the non-multi-layered die-casting material is not affected, and have a certain impact on the multi-layered die-casting composite material, likely to cause stratification. At this time you can use the pre-drilling function, hit a hole as the inlet for cutting. This function is currently the best way to solve the problem of easy stratification when cutting the multi-layered composite material.



4.6 Height track

It adopts intermittent measurement. Compared with real-time tracking, it has longer service life and lower maintenance rate



4.7 Hand-held controller

The hand-held controller is available, with a choice of wired or wireless handwheel. It is designed to control a machine tool remotely. This control console provides a convenient and intuitive solution for tool setting. It overcomes the problem when using a conventional tool setting method and also provides much convenience for observation and operation.



4.8 Hydraulic loading system

1. Overturn angle: 70°(measured up from the horizon)
2. Max. overturning moment load capacity: 350KG
3. The large cutting platform is hydraulically operated to overturn, which enables this hydraulic loader to load or unload an entire piece of stone while ensuring a minimum material loss and a high level of efficiency when the stone loading unit is running.



YC is your ideal partner

- ✓ We have more than enough in production facilities to ensure your order will never be held up waiting for production.
- ✓ We are engaged in machinery manufacturing since the year 1999, Our product manager Mr.Yu has been working here since YC incorporated, and there are more than 5 workers with more than 8 years experience in water jet cutting field.
- ✓ Our Chief engineer Mr. Tian has 20 years experience in water jet cutting field, he started his research when he was a university student. There are two electrical engineers and one mechanical engineer who have over 10 years experience in water jet cutting field. So our technical team can provide you professional technical support.
- ✓ YC is the partner of Accustream/Hyperthem, every year we have technical meetings with engineers from USA.
- ✓ For different customers in different industries we will provide different solutions, Your water jet is tailored based on your individual needs.
- ✓ Engineers overseas service is available. Our engineers will go to many different countries for installation and training every year.





THANKS

YC INDUSTRY CO.,LTD

WUXI YC WATERJET TECHNOLOGY CO.,LTD

Add: No.3 Changfa road, Yangshan town,Wuxi city, China.

Tel: +86-510-83953519 Fax: +86-510-83953128

E-mail: sales@yc-technology.com

Phone: +86 13771171597 Coco Shi

Facebook: [facebook.com/ycwaterjet](https://www.facebook.com/ycwaterjet)

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