

MULTI WIRE SAW

YJ-XQ3420A

Specializing in the research and development, production, and sale of multi-wire cutting machines, grinding and polishing machines, and other processing equipment for hard and brittle materials, as well as diamond wire, thermal field systems, and photovoltaic silicon wafer products.



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PRODUCT INTRODUCTION

With over two decades of dedicated effort, we continuously innovate and achieve breakthroughs."

01



MULTI WIRE SAW

High precision and high speed

Multi Wire Saw 【YJ-XQ3420A】

This machine is mainly used for cutting marble blocks ,
High yield, greatly reducing stone powder pollution.

1.1 Product introduction-Technical parameters



ITEMS	SPECIFICATIONS
Maximum cutting size	3400×2000×2200(mm)
Storage capacity	30Km (φ0.55mm)
Diamond wire diameter	φ0.45 ~ φ0.6mm
Cutting speed	1200-2100m/min
Cutting thickness	10-30mm
Workpiece lifting table stroke	2630mm
Diamond thread tension	Max 308N
Full load power	310KW
Roller size	Φ330-Φ360mm×2100mm
Equipment size	约11m×6.4m×6.7m
Mechanical weight	About 75t

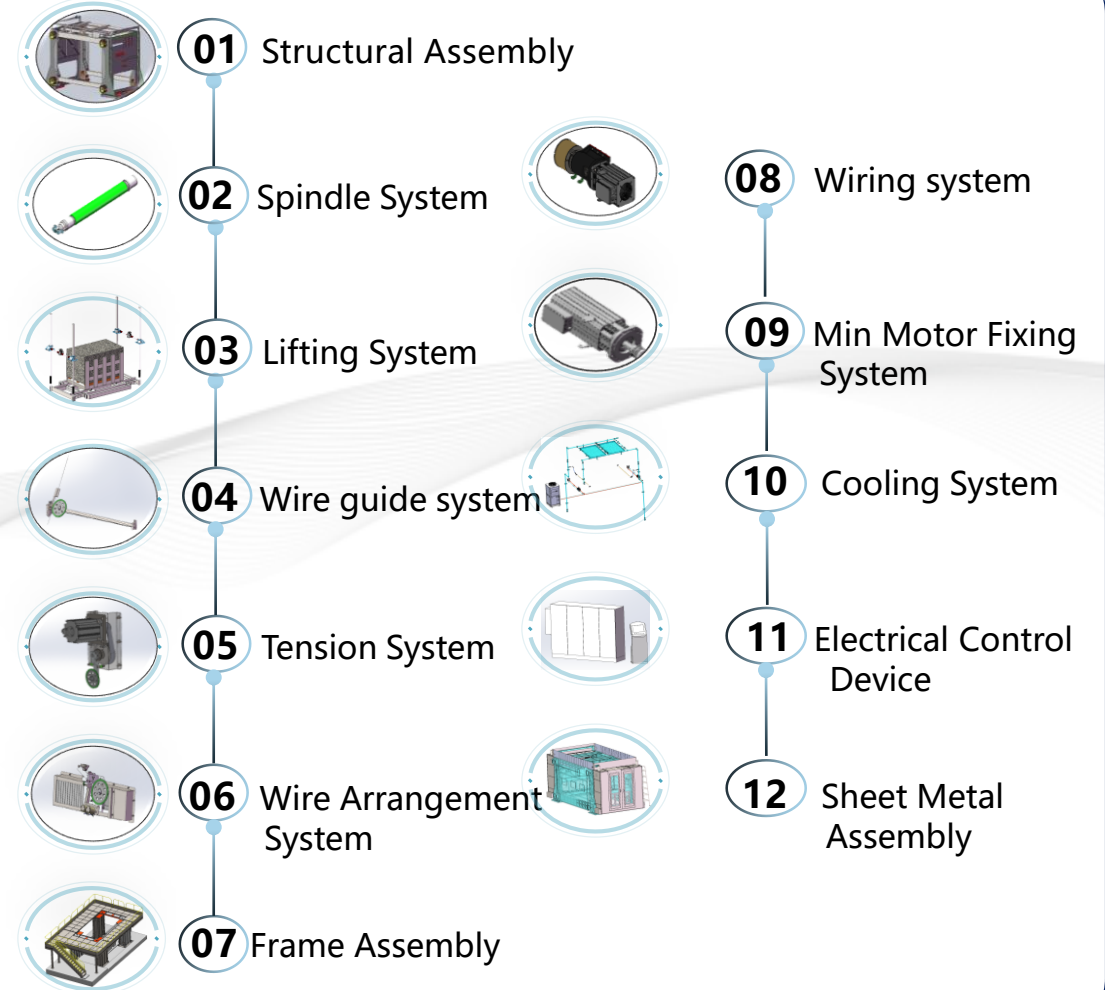
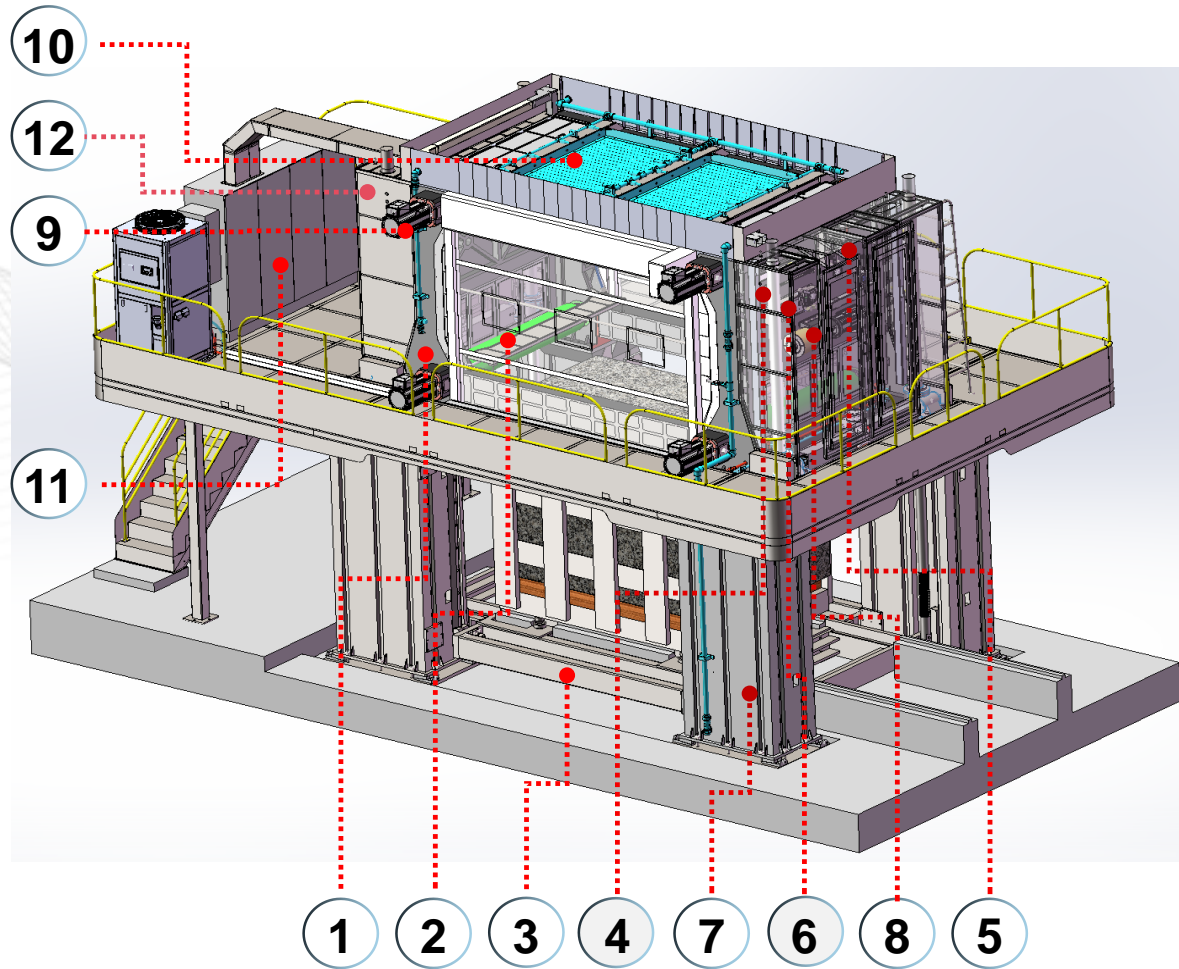


STRUCTURAL CHARACTERISTICS

Strength derives from product innovation.

02

2.1 Structural features-Composition of the equipment

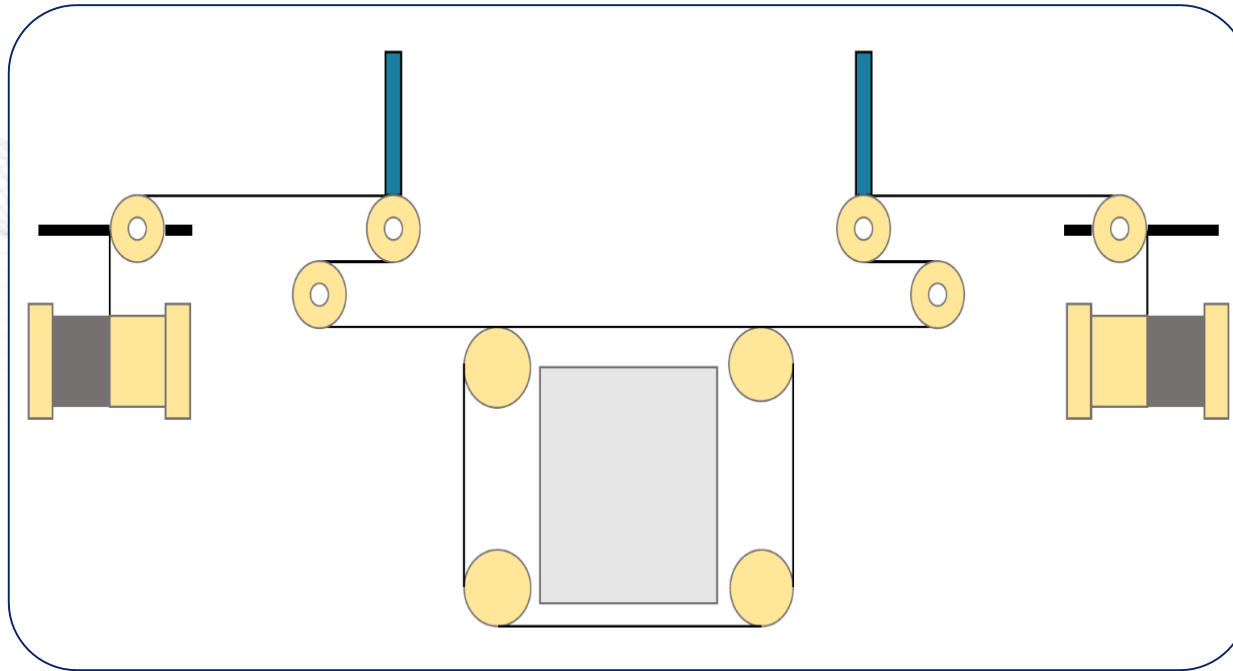


2.2 Structural features-The occupied size of the equipment



machine footprint dimensions (length, width, height) $\approx 12000 \times 6400 \times 6700$ (mm)

2.3 Structural features-Optimize the wiring layout



Drawing on our company's extensive experience in wire-cutting across multiple fields, we've adopted a U-shaped six-pulley design. Paired with highly wear-resistant pulleys, this design enhances wire-running stability and reduces wear.

2.4 Structural features-High rigidity and High precision



● High rigidity

Casting-Type cutting main body

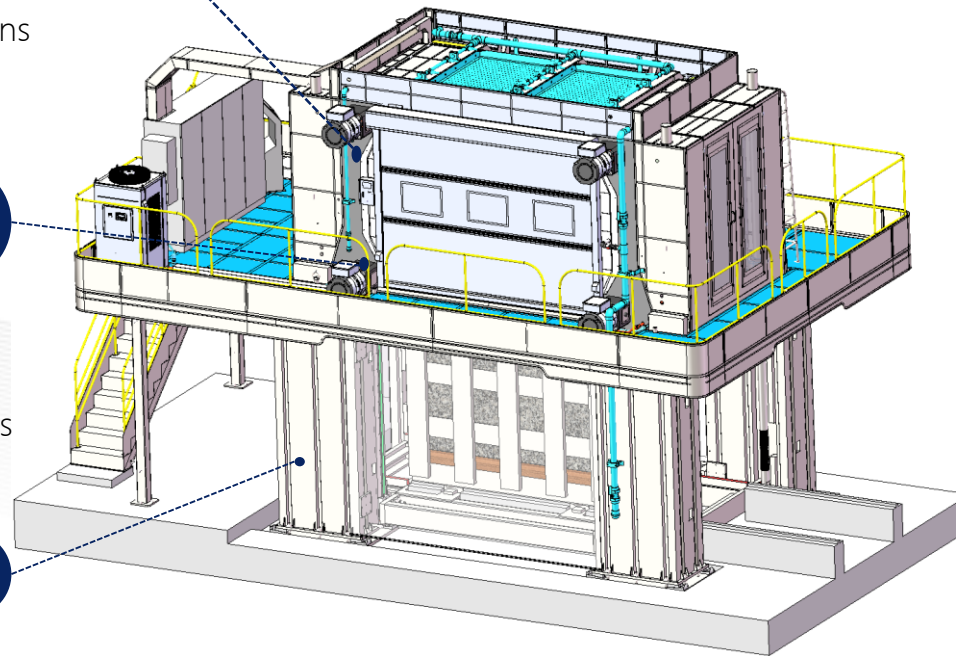
- It provides the basic conditions for applications with high wire speed, high quality, low wire consumption and low wire breakage.

The cutting chamber is integrally connected to the motor fixed seat

- The cutting chamber is integrally connected to the motor fixed seat and is completed through one-time machining, which increases the overall rigidity and ensures the coaxiality.

High-rigidity frame structure

- The base of the frame is of solid structure, with an overall weight of over 40 tons. Under the condition of ensuring the lifting stroke requirement of the workpiece, it effectively reduces the center of gravity of the machine.



● High precision

- The coaxiality of precision machining is less than or equal to 0.03mm;
- The coaxiality of precision machining is less than or equal to 0.03mm;
- The spindle rotation run-out of the bearing box is less than or equal to 0.002mm;
- The run-out of the main roller core is less than or equal to 0.03mm;

The amplitude value is **less than 1mm/s** during high-speed operation

2.5 Structural features-Machine tool thermal control



- **It has improved the cutting heat exchange**

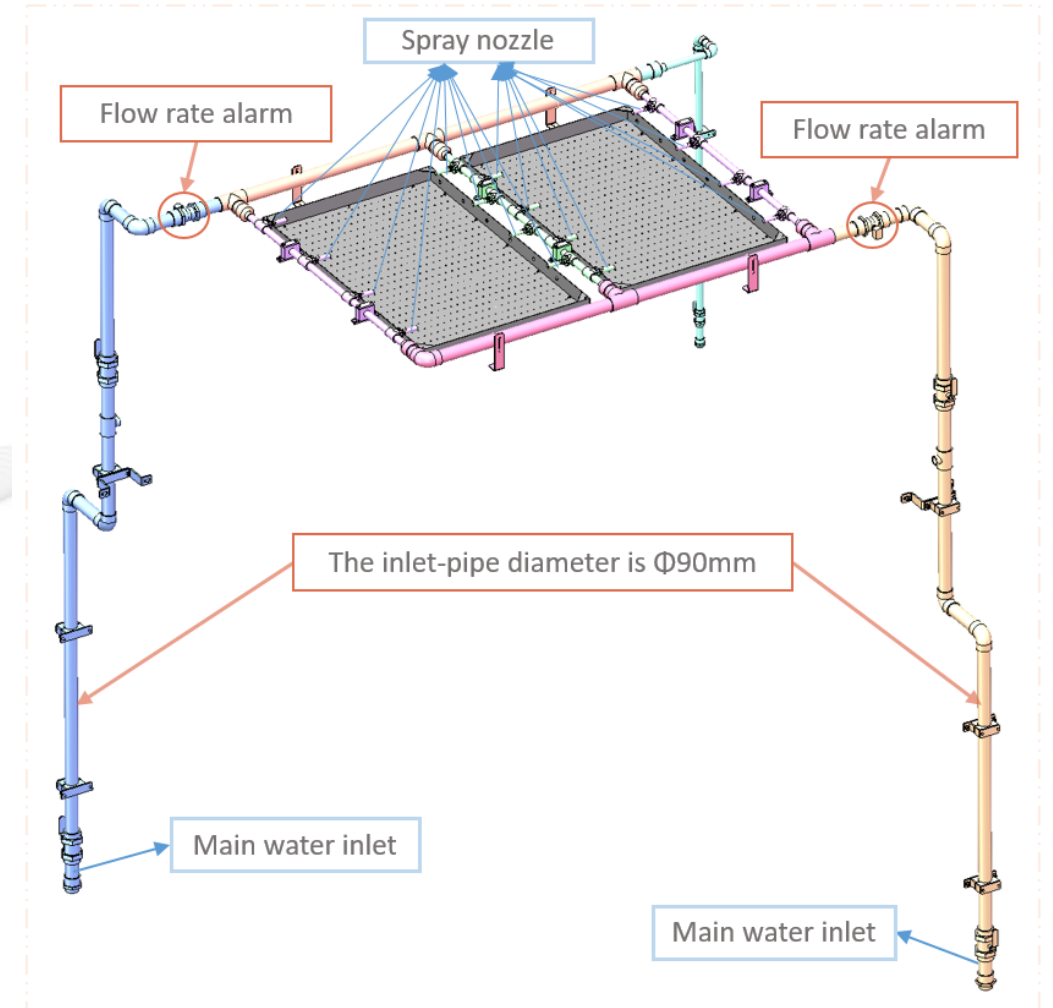
- Starry sky-like spraying.
- Jet spraying :The high-pressure nozzles increase the liquid carried by the diamond wire into the sawing slit.
- Lubricate through roller spraying to prevent dry grinding between the roller and the steel wire.

👍 **Both sides of the main pipeline can be connected for water inlet. It has a large pipe diameter and a large flow rate.**

👍 **The water flow is evenly distributed.**

👍 **It has a flow rate alarm function to prevent dry grinding in the sawing slit.**

👍 **Lubricate the roller to improve its service life.**



2.5 Structural features-Machine tool thermal control

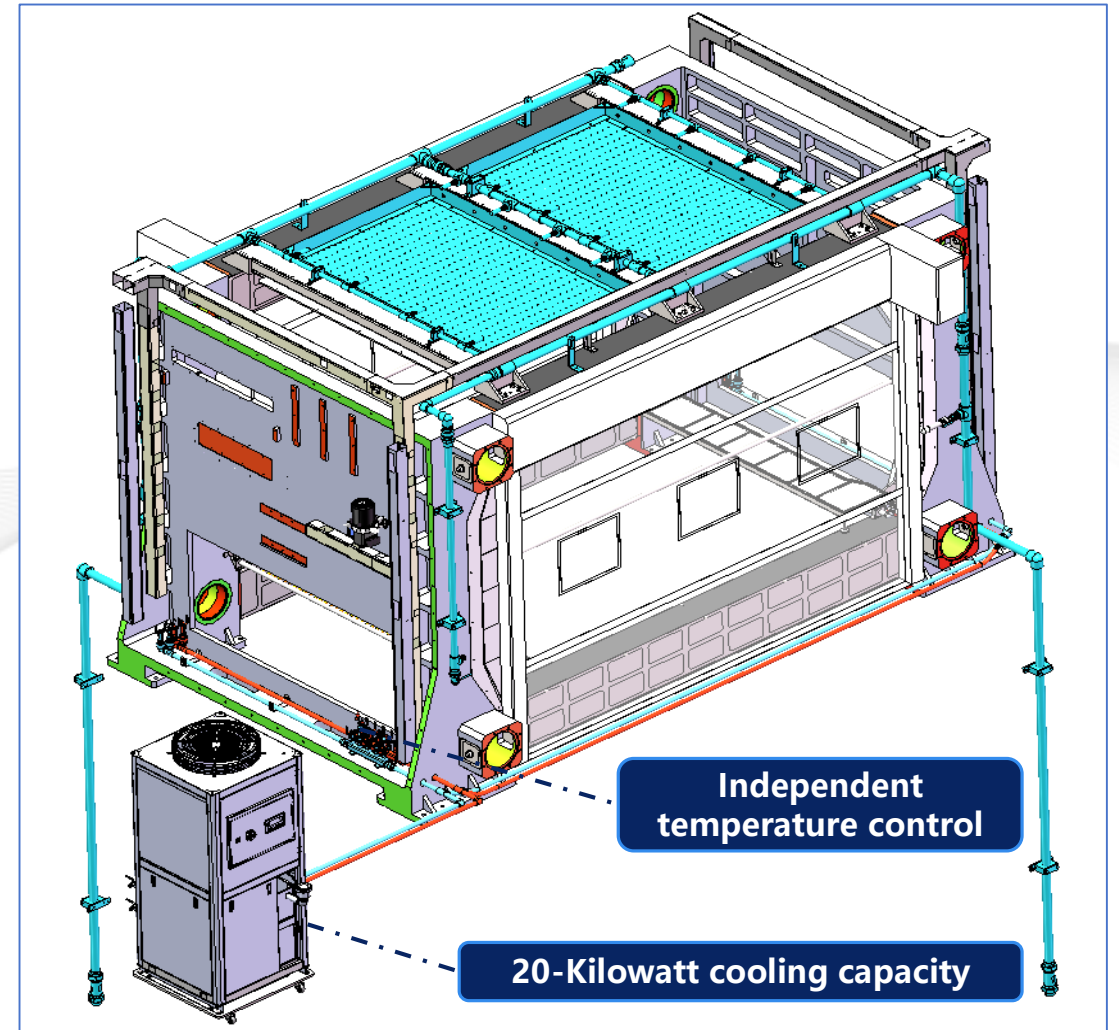


- **Effectively control the mechanical thermal deformation.**

Mechanical thermal deformation will have an adverse impact on the overall stability of the machine during the cutting process.

- Improve the thermal rigidity of the machinery.
- The bearing box is equipped with an independent chiller for temperature control, which features high - efficiency temperature control.
- **Independent temperature control**, The temperature of the shaft box, the wire take-up and pay-off shaft box, and the motor cooling are controlled separately.

The temperature fluctuation range of the bearing box is $\pm 2^{\circ}\text{C}$.



2.6 Structural features-Intelligent control



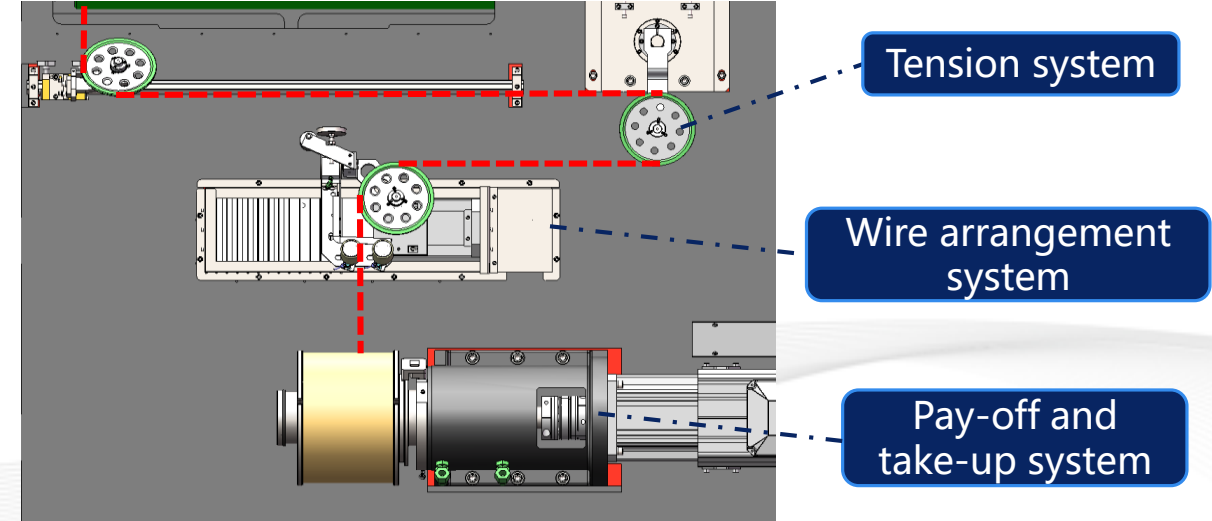
● Tension control

The maximum cutting tension of the equipment can reach 308N. The wire arrangement system uses a specially designed dedicated sensor to achieve **automatic control**.

When the whole machine is running, the tension fluctuation can be controlled within $\pm 5\text{N}$. At the same time, it has the functions of **automatic detection** and wire arrangement deviation correction.

● Broken-wire protection

The equipment is equipped with a broken-wire protection device to ensure that the equipment can stop in a timely manner when the wire breaks, improving **the safety performance of the equipment**.



● Roller anti-cutting protection device

The equipment is equipped with a broken wire protection device, which ensures that the equipment can stop immediately once the wire breaks, thus enhancing the safety performance of the equipment.

2.7 Structural features-Multiple control systems are available for selection



- The control systems of Siemens, Inovance, Fishi, etc, are optional

- It adopts the **common DC bus mode** to realize the collaborative work among various modules, achieving the effect of **energy conservation**. And it can ensure that **the wire doesn't break even in case of power outage**.
- It adopts the world-leading PROFINET bus system, and the fastest bus time can reach 0.25 ms.
- Both the servo drive and the IO system are connected via the PROFINET bus, ensuring the system is stable and reliable.
- The controller has a fast computing speed. The highest interpolation cycle can reach 0.25 ms, and it enables high-precision speed control (with a control accuracy of 0.001% of the rated speed, i.e., 0.001% n_{rated}).



Siemens



INOVANCE

MODEL COMPARISON

Cost reduction and efficiency
enhancement, ensuring safety and stability.

03

3 Comparison of similar models



1

Product function

2

Product precision

3

Product parameter indicators

3.1 Comparison of similar models-Product function



Comparison of the Functions about Jack-up Type Stone Wire Saw between Yujing's and Common Equipments			
Number	Function Comparision Items	Yujing's XQ3420A	The Common Jack-up Type Stone Wire Saw Equipments
1	Feeding Method	It can adopt the feeding method from both sides and be flexibly adjusted according to the site conditions.	Most of them adopt the feeding method from a single side
2	Self-lubrication system	The lead screws,modules,etc,are automatically lubricated	Most of them are manually lubricated
3	Wire reel lifting tools	Each of the left and right wire chambers is equipped with a set of wire reel lifting tools.	It doesn't have this tool
4	Detection of the Synchronization of the Lifting System	The left and right sets of lifting devices are equipped with the synchronization detection function.	It doesn't have this tool
5	Broken-wire Protection Device	Equipped with a broken-wire protection device to enhance safety performance	It doesn't have this tool
6	The function of wire arrangement deviation correction	It is equipped with the function of wire arrangement deviation correction, making the wire network more stable.	Most of them doesn't have this tool
7	Axle box seal	Independently developed bearing boxes and sealing structures have been applied in thousands of sets.	The axles boxes purchased from outside have no guarantee for their performance
8	Energy recovery	In the mode of common DC bus, energy recovery is achieved, reducing energy consumption.	Most of them doesn't have this tool

3.2 Comparison of similar models-Product precision



Comparison of Precision Indicators about Lifting-Type Stone Between Yujing' and Common Equipments				
Number	Item	Yujing's XQ3420A	The Common Lifting-Type Stone Equipments	Conclusion
1	Spindle radial run-out	≤0.002mm	≤0.02mm	Yujing is superior
2	Spindle radial stiffness	≤0.002mm	≤0.005mm	Yujing is superior
3	Spindle axial stiffness	≤0.001mm	≤0.005mm	Yujing is superior
4	The stiffness of take-on and pay-off system	≤0.015mm	≤0.05mm	Yujing is superior
5	Take-on and pay-off shaft axial run-out	≤0.03mm	≤0.05mm	Yujing is superior
6	Take-on and pay-off wheel radial run-out	Radial runout≤0.05mm Axial runout≤0.05mm	-	Yujing is superior
7	Straightness of lifting guide rail	Full travel < 0.05mm	It shall not be greater than 0.01mm per 100mm of travel	Yujing is superior
8	Roller radial run-out	≤0.03mm	≤0.05mm	Yujing is superior
9	Parallelism between wire-winding and wire-arranging	≤0.1mm	-	Yujing is superior
10	Tension control accuracy	±5N	±10N	Yujing is superior
11	Noise	≤85db	-	Yujing is superior
12	Vibration	≤0.8mm/s	-	Yujing is superior

3.3 Comparison of similar models-Product parameter indicators



Comparison of the parameter index about Jack-up Type Stone Wire Saw between Yujing's and Common Equipments				
Number	Item	Yujing's XQ3420A	The Common Lifting-Type Stone Equipments	Conclusion
1	Roller specifications(mm)	Diameter330-360(iron core300)	Diameter275-305mm	The main roller of the Yujing wire saw is thicker
2	Worktable feed stroke	2630mm	——	
3	Maximum linear velocity	2100m/min	Common 1000-1500m/min	The efficiency has been increased by 37%-58%
4	The diameter of the diamond wire(mm)	0.4-0.6mm	0.4-0.6mm	Nearly
5	The tension adjustment range	0-308N	Max200N (The largest one that has been used on site)	Increased by 36%
6	The cutting thickness range	10-30mm	10-30mm	Nearly
7	The storage capacity of wire winding and unwinding	30KM	20-30KM	Nearly
8	weight	About 75T	50-70T	Yujing is superior
9	The materials of the base and the column	Welded part grouted solid base	Casting or Welding	The wire saw of Yujing has higher rigidity
10	Full-road power	310KW	300KW	Nearly
11	Main motor power	Water-cooling	Air-cooling	-
12	Power of the winding and unwinding motor	18.8KW	18.8KW	Nearly
13	Power of the feed-lifting motor	7.5KW*2	7.5KW*2	Nearly
14	Power of the tension motor	7.5KW*2	5.5KW*2	Yujing is superior
15	Power of the wire-arranging motor	0.75KW*2	0.75KW*2	Nearly
16	Cooling method of the spindle motor	Water-cooling	Water-cooling or Without cooling	Nearly
17	System	Siemens/Inovance/Fishi	Siemens/Inovance	Yujing is superior
18	Refrigeration power of the water-cooling chiller	20KW	7KW×2	Yujing is superior

QUALITY ASSURANCE

Ensure quality and production capacity in the self-controlled precision machining workshop.

04

4.1 Production Capacity & Quality Assurance - Manufacturing Equipment



Mechanical machining and manufacturing

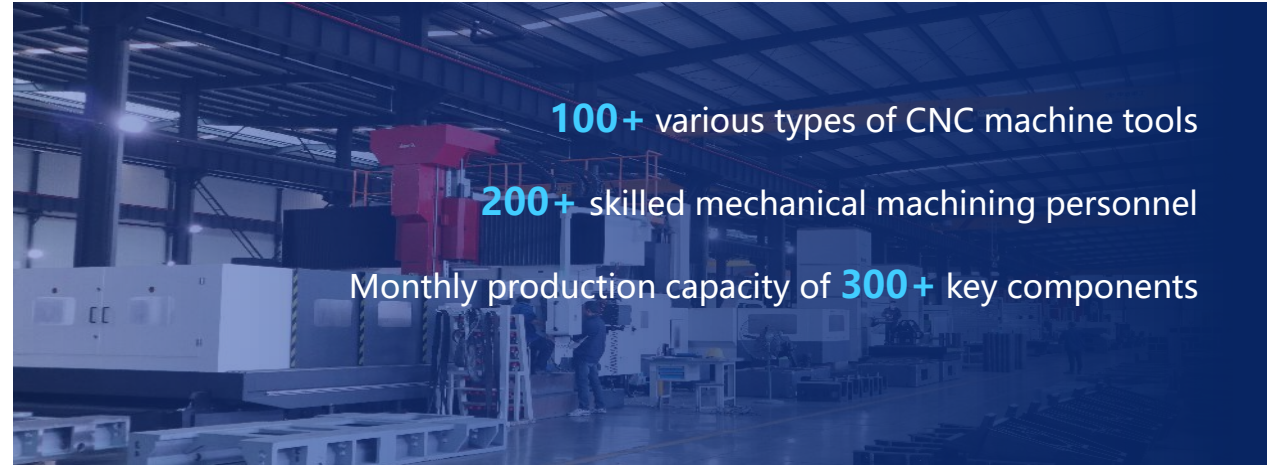
30,000 m² of dedicated machining workshops

Fully enclosed independent bearing box precision machining workshop

Flexible assembly workshop

50,000 m² of dedicated assembly workshop

Fully enclosed independent bearing box and transmission mechanism assembly workshop



4.2 Production Capacity & Quality Assurance - Machining Capability Advantages



- Possessing top-tier domestic industrial-grade machinery for civilian use, ensuring in-house control over critical components.
- Large castings such as bases, main bodies of cutting chambers, and feed slides undergo roughing, fine boring, and grinding of guide rail surfaces.
- High-precision bearing boxes are processed through precision turning, grinding, and assembly in temperature-controlled workshops, followed by running-in.
- Utilizing high-precision coordinate measuring machines for monitoring and verification.



High-precision horizontal boring
machining center



Large-scale gantry machining center



High-precision grinder



THANKS

湖南宇晶机器股份有限公司

Hunan Yujing Machinery Co., Ltd