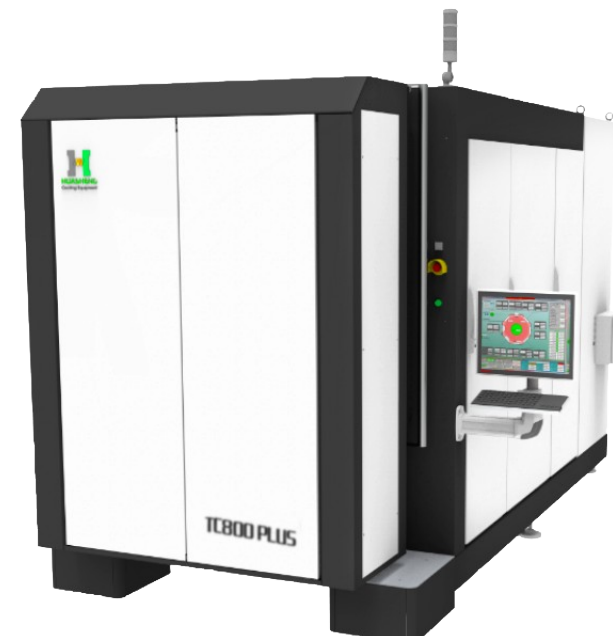


2025

Introduction of HUASHENG TC800PLUS

To be the top surface solution provider in the World



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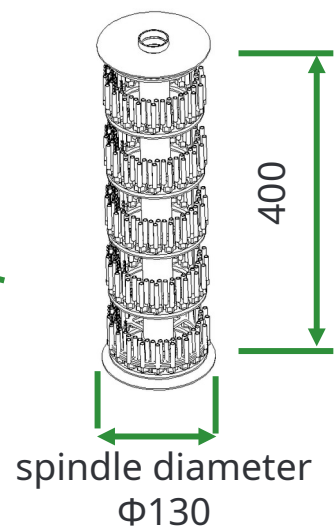
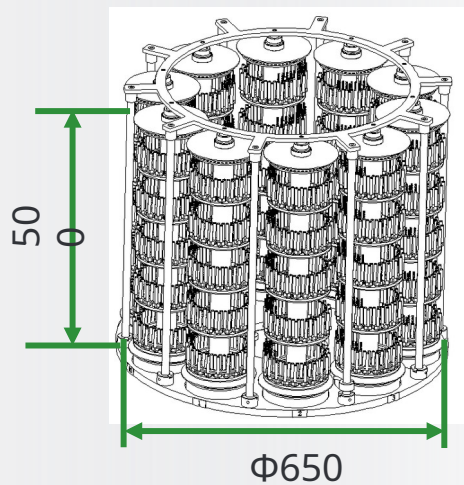
01

TC800PLUS Model Parameter

TC800PLUS Model Parameter

Coating
time

3~6h

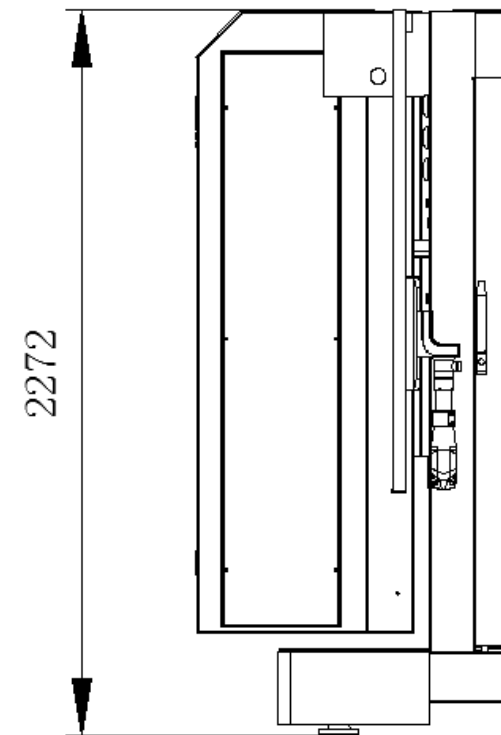
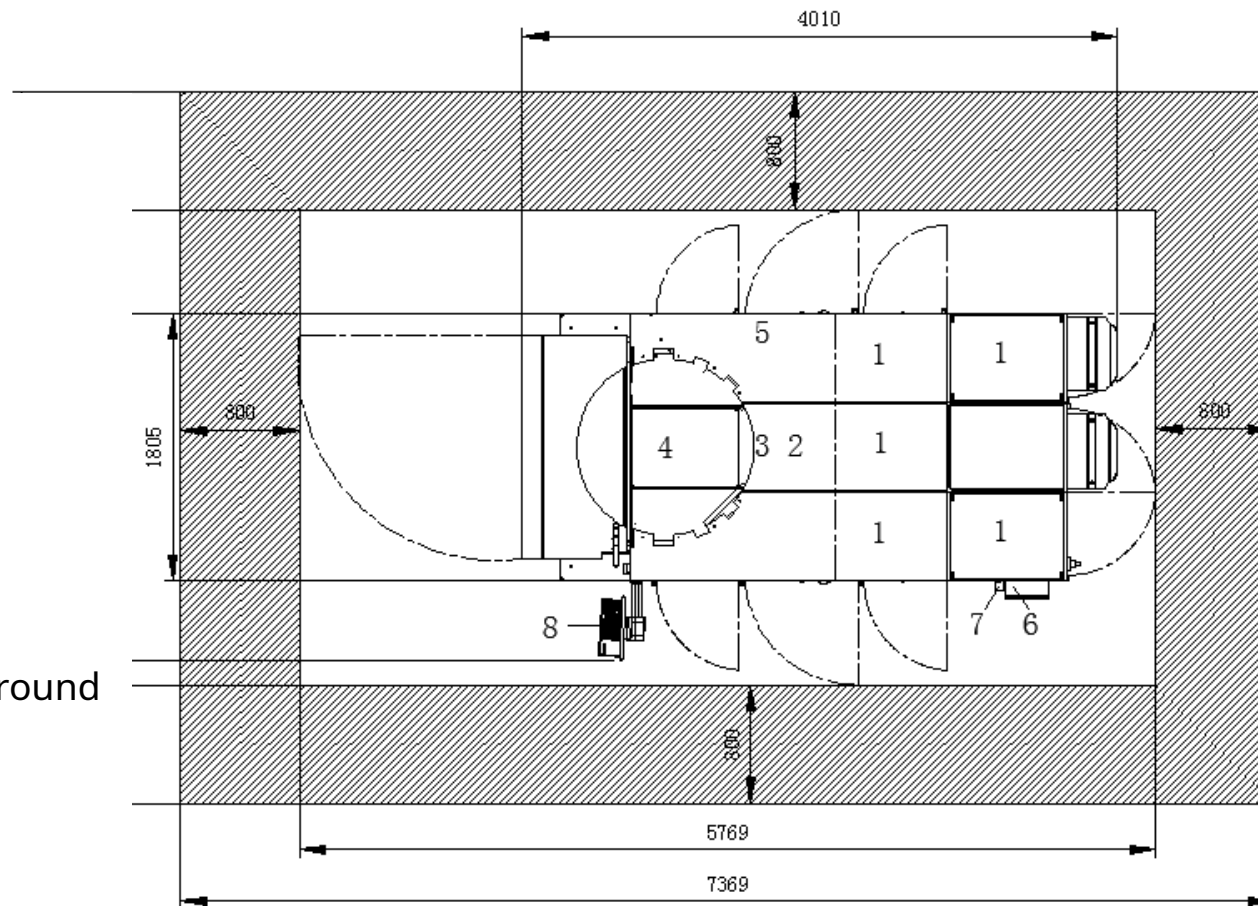


Effective
coating
area



TC800PLUS layout

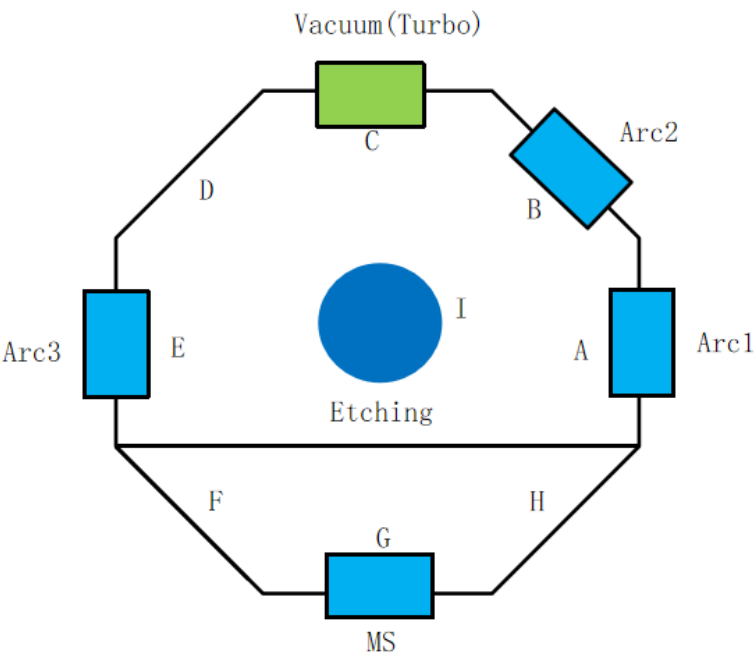
1. Electrical cabinet
2. Foreline pump
3. Molecular pump
4. Chamber
5. Cooling Water Inlet
6. Power supply inlet box
7. Process Gas Inlet
8. Operating system
9. 800mm safe passage around equipment



TC800PLUS Model Parameter

Coating technology	Equipment size(mm)
WET	L4100*W1850*H2300
Rodcutter loading capacity (D4*50L)	Max.service temperature(°C)
2400pcs	200
Maximum loading weight(kG)	Volume(m ³)
500	1
Effective coating area(mm)	Coating time(h)
Φ650*400	3~6

TC800PLUS layout



Model	TC800 PLUS
Ion source (cathode + anode)	1 Set
Arc sources	3*Arc+1*Cathode
Arc source arrangement	Misaligned arrangement
Advantages	High cost effective and short production cycle

02

TC800PLUS Technology Characteristics

TC800PLUS Model Introduction

Fast deposition: high hardness, low friction coefficient diamond-like coating (ta-C).

Huasheng independently developed a new composite machine TC800PLUS, which combines the advantages of ion source, magnetron sputtering, and multi-arc ion plating technology to meet different film performance requirements.



Plasma Etching

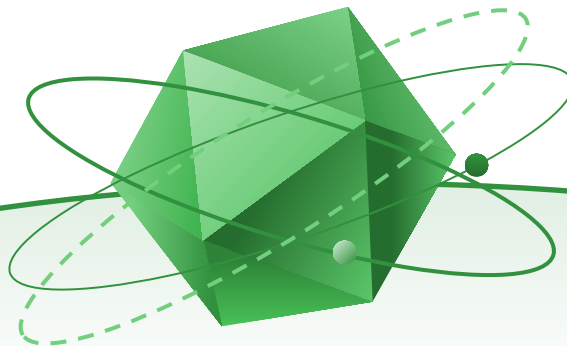
- ✓ High-energy plasma effectively cleans product surfaces
- ✓ Atomic level etching to maintain the surface roughness of the original product
- ✓ Post-maintenance is convenient and flexible

Transition layer deposition: Magnetron sputtering

- ✓ Non-balanced magnetic field design, high utilization rate of targets
- ✓ Optional transition layer: Cr, WC, Ti...
- ✓ High-quality coating, lower film stress

ta-C layer: multiarcion plating

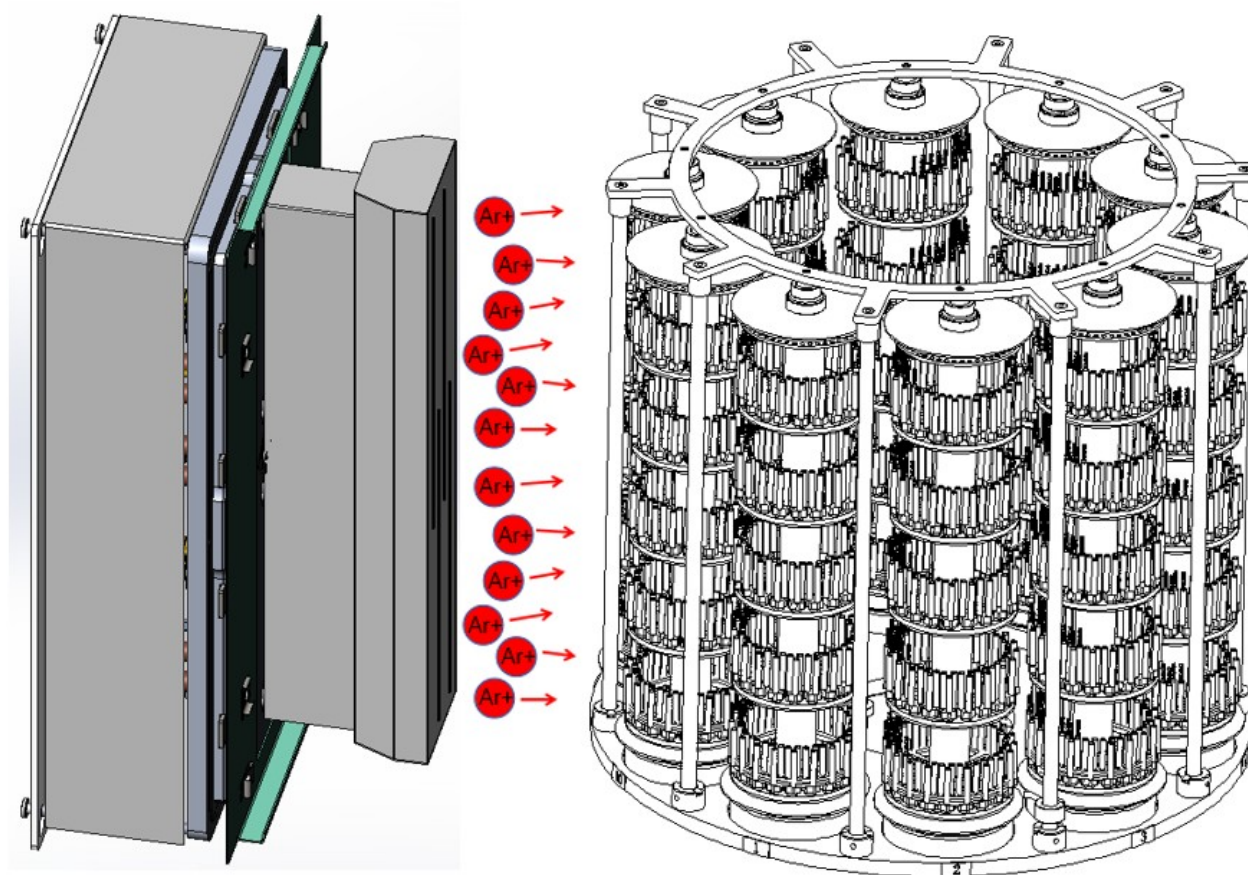
- ✓ 3 large diameter graphite multi-arc target sources
- ✓ High deposition efficiency and uniform film distribution
- ✓ Permanent magnet superimposed pulsed electromagnetic field
- ✓ High coating hardness and high wear resistance



Equipment Characteristics

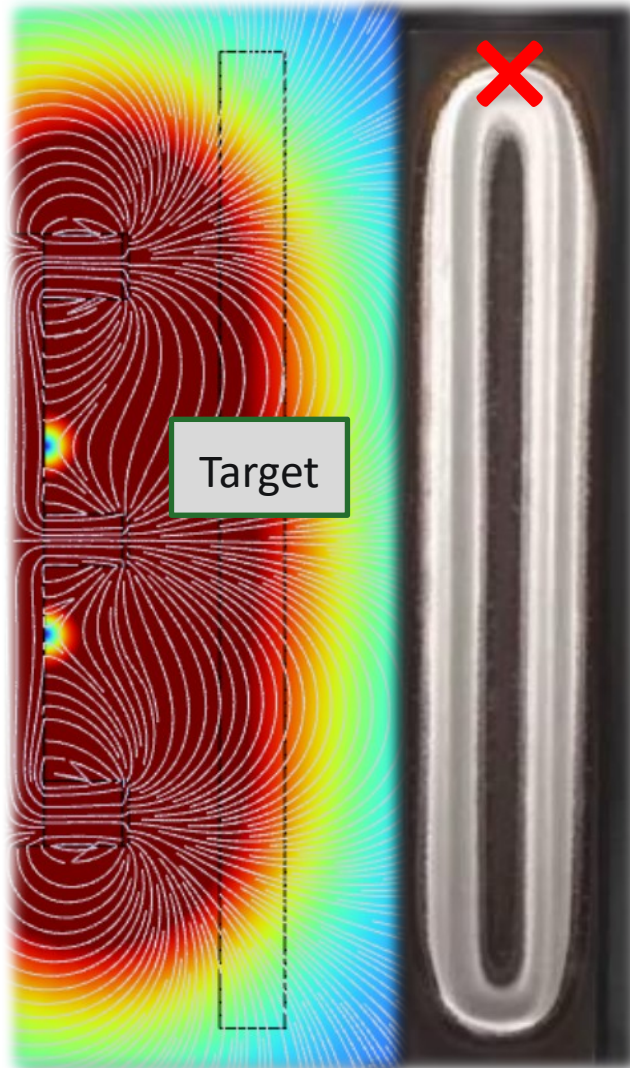
- Uniformity
- Diffractivity
- Adjustable etching strength
- No maintenance

WET

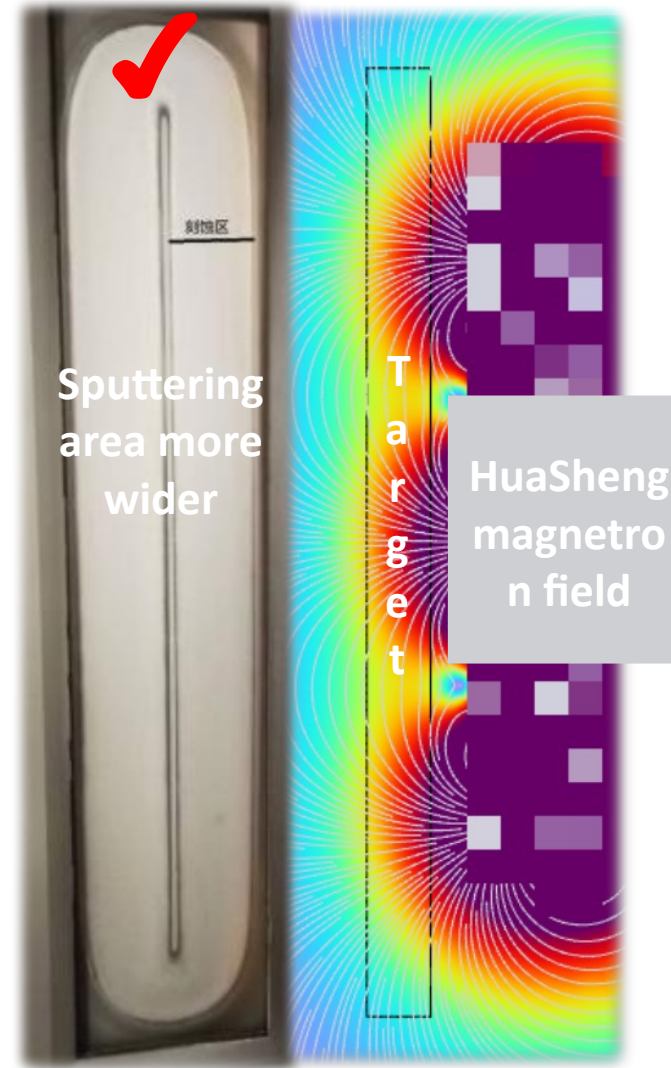


Characteristics of Cathode of Huasheng Magnetron Sputtering

Magnetron field of competitor



HuaSheng magnetron field



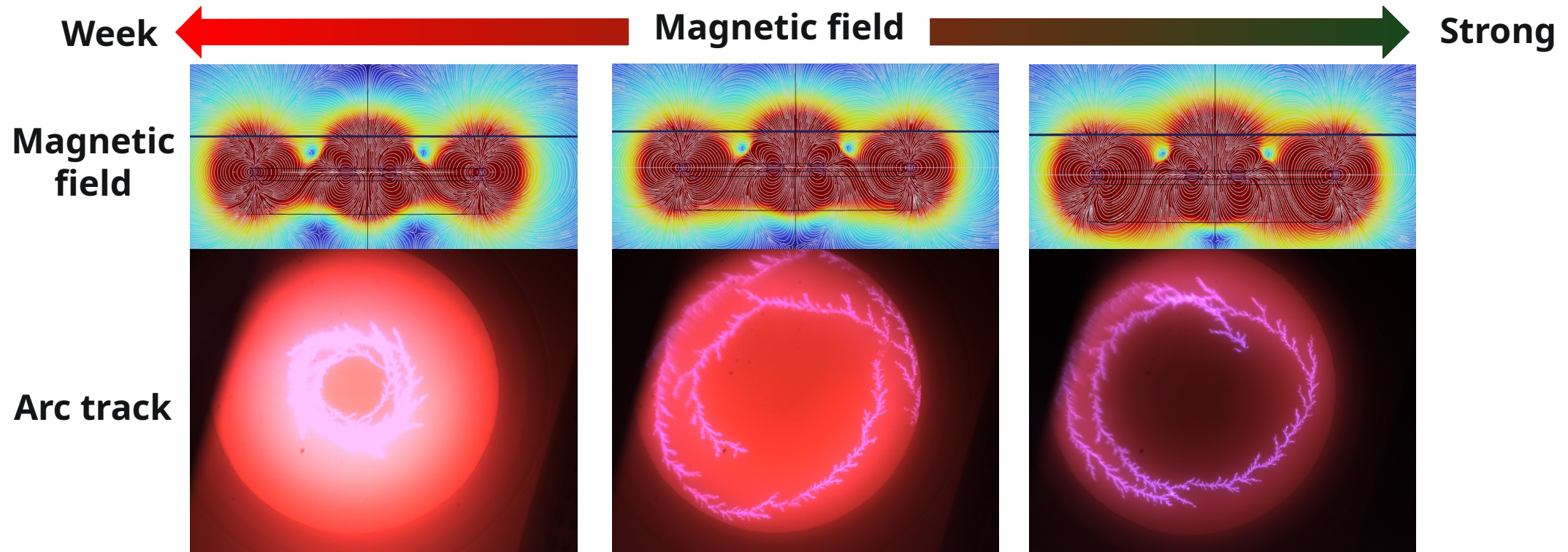
HuaSheng special magnetic field for arc

✓ Adjustable magnetic field

✓ Less droplets

✓ High deposition rate

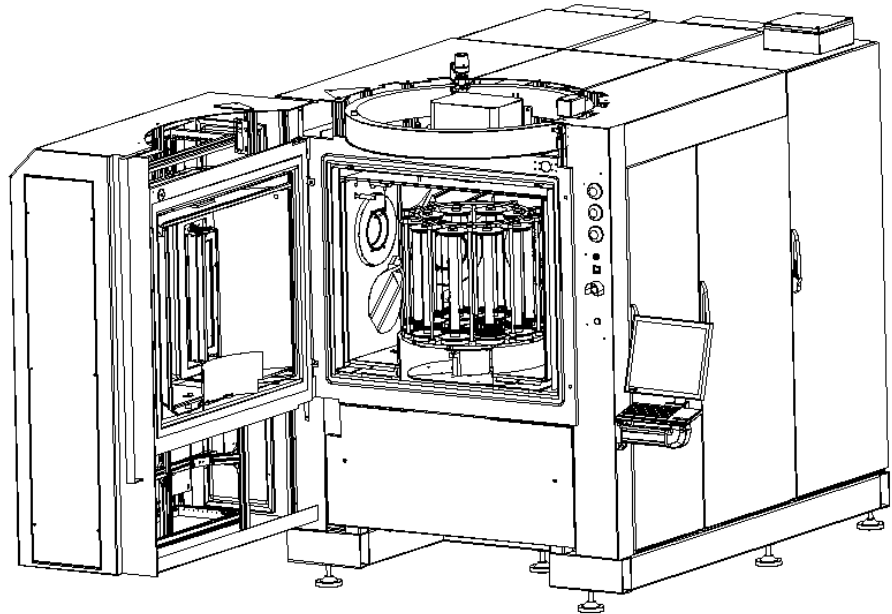
✓ High ionization



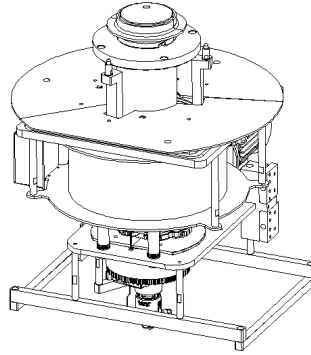
03

TC800PLUS Key Component

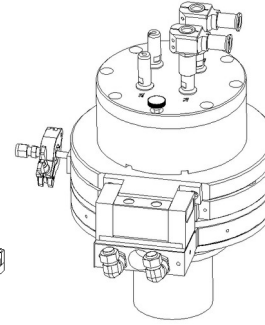
key component



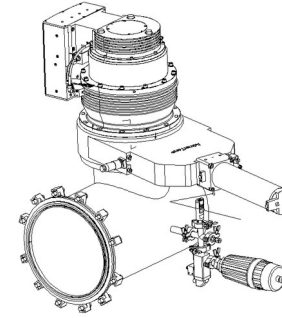
Main equipment



Bias module



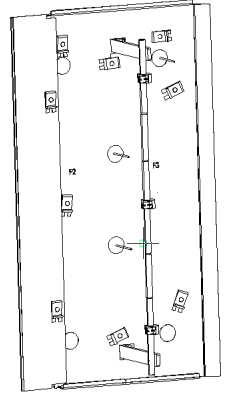
Etching module



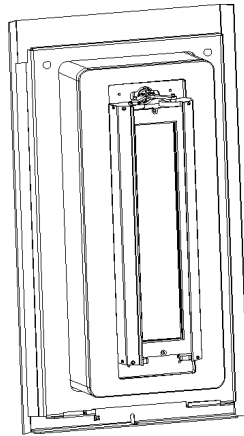
Vacuum module



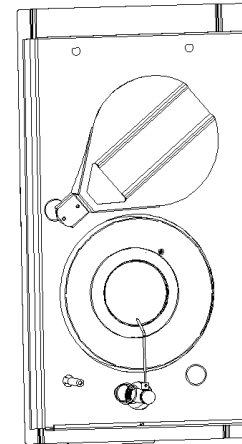
Tungsten etching



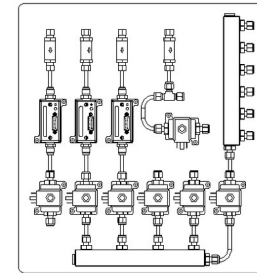
temperature measurement



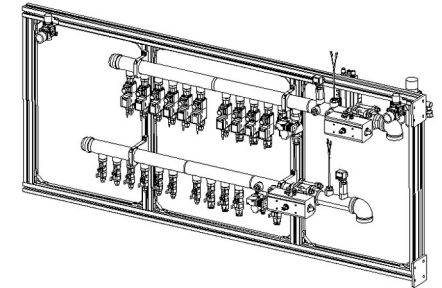
Magnetron cathode module



Arc source Module



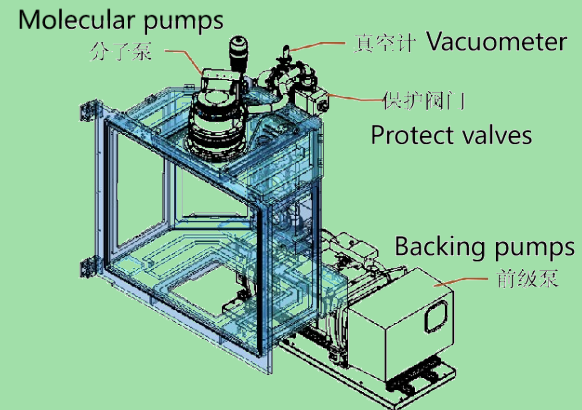
Process Gas Module



Waterway module

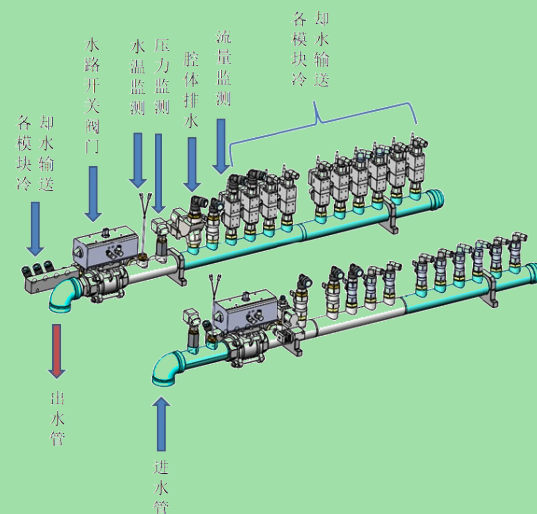
key component

Vacuum system



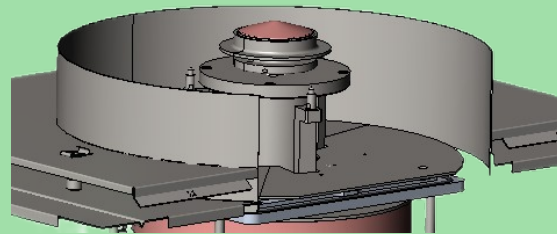
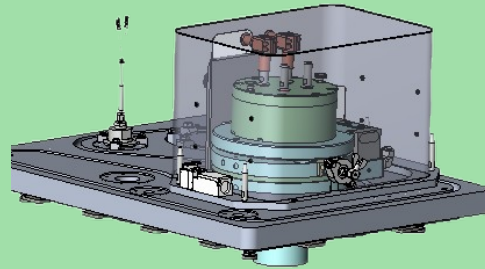
- Pump the vacuum chamber to the required vacuum level for the coating
- You can choose cavity pressure control mode or flow control mode
- Achieves precise control of gases

Waterway system



- Provide cooling water for each functional module
- Protect components and seals of each module when working at high temperatures
- Each branch individually monitors flow and temperature

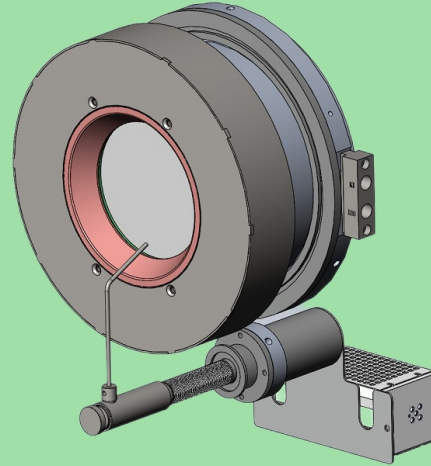
Ion Source Control System



- Hot electrons are emitted through the filament to ionize argon. Under the action of negative bias, argon ions accelerate and bombard the workpiece to clean the surface of the workpiece and improve the bonding force of the film layer.

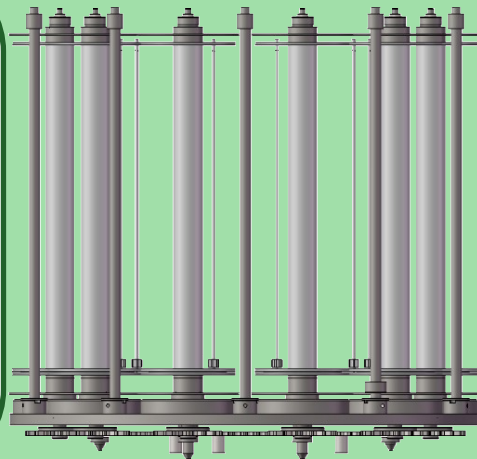
key component

Arc source



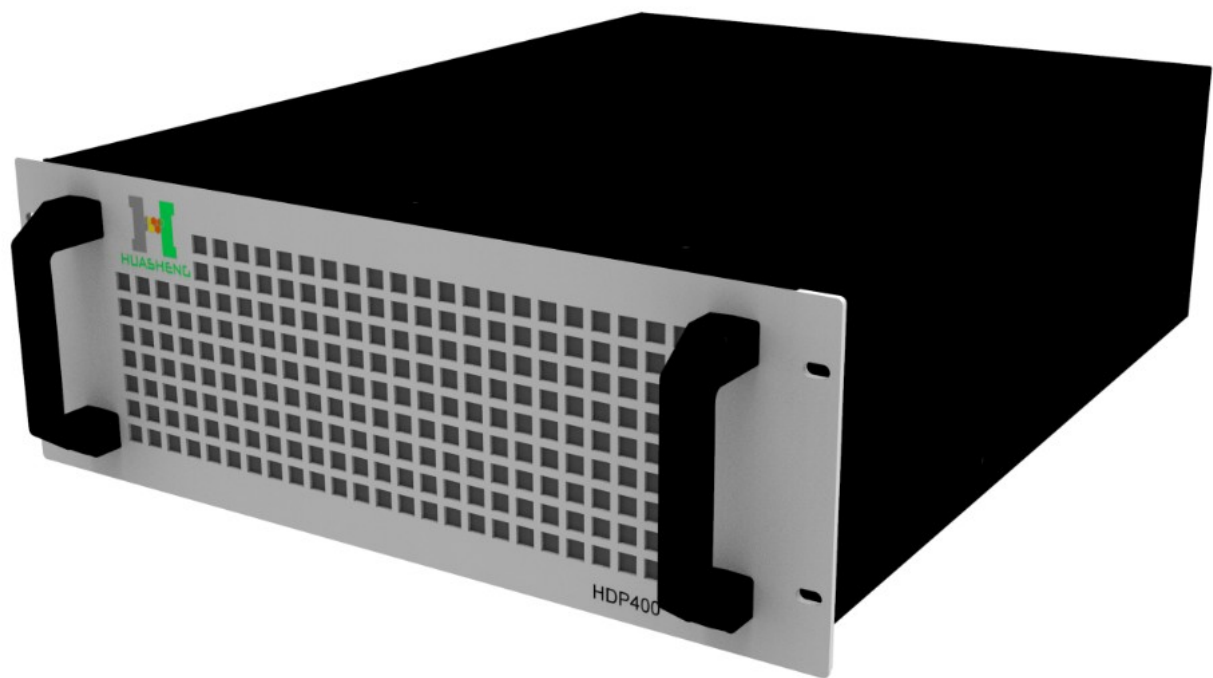
- Optimize plasma anode and improve film performance
- Less droplets, smoother surface
- Plasma auxiliary power supply, high target utilization rate and lower cost
- Quick-change cathode magnetic field matches different coating materials
- Hidden arc ignition structure makes maintenance easy

Carousel



- Driven by a variable frequency motor, it can be continuously adjusted from 1 to 3 rpm
- The spindle adopts magnetic fluid seal
- The turntable realizes the revolution of the disk and the rotation of each tree through gear transmission.

Arc source power supply (HDP400)

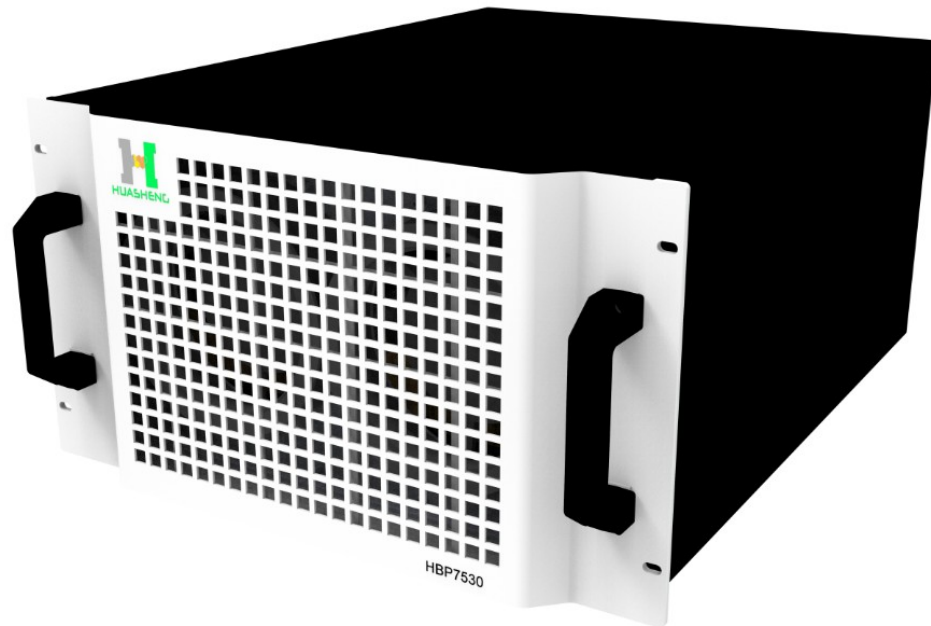


Project	Parameter
Voltage	73V
Power	12kW
Frequency	0.1~500Hz
Duty cycle	5~95%
Current	4~400A

Bias power supply (HUASHENG)



- | | |
|--|---|
| <ul style="list-style-type: none">• Constant voltage output, providing negative bias for turntable. | <ul style="list-style-type: none">• Make the workpiece clean more thoroughly and improve the adhesion of the film layer. |
| <ul style="list-style-type: none">• During etching, argon ions are accelerated to bombard the workpiece surface. | <ul style="list-style-type: none">• By changing the value of negative bias voltage, the film performance can be adjusted. |



Project

Parameter

Voltage

20-1000VDC

Power

30kW

Frequency

1~30KHz

Duty cycle

1~99%

Current

400V/75A
1000V/30A

The list of core components

Serial number	Name	Quantity	Brand	Parameter description
1	Molecular pumps	1	Leybold	Pumping speed 1600L·s-1 Ultimate pressure <10-8mbar
2	Dry pump	1	Leybold	500m3/h screw pump
3	Bias power supply	1	Huasheng	HBP7530 , 90kW/set , DC Pulse , DC1000V
4	Arc power source	3	Huasheng	Target diameter 130mm, equipped with MAG4 electromagnetic + permanent magnet
5	Arc power supply	3	Huasheng	Pulse DC, 10kW, 400A, 500Hz
6	Magnetron cathode	1	Huasheng	Target size L500*W100*T10mm
7	Magnetic power supply	1	ADL	10kW 800VDC
8	Ion source	1	Huasheng	Central hot filament DC etching source, 200A

*please refer to the technical agreement for latest information

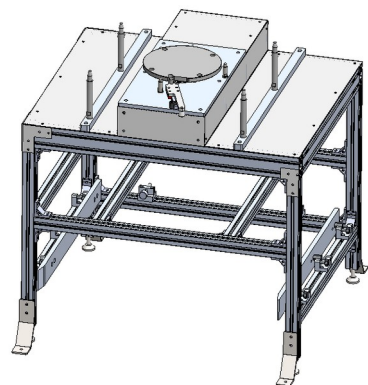
The list of core components

Serial number	Name	Quantity	Brand	Parameter description
9	Flowmeter	3	sevenstar	1L2 set, 0.2L1 set
10	automated system	1	Huasheng	Beckhoff PC/PLC, 19-inch touch screen, Siemens electrical appliances
11	Chamber	1	Huasheng	316L material (octagon: W1200XH1000mm)
12	Workpiece transmission system	1	Huasheng	Variable frequency motor 0.5~3 revolutions, load bearing 500KG, magnetic fluid seal
13	Vacuum measurement	2	Inficon	Composite gauge MPG400, Pirani PSG500
14	Pneumatic control	1	SMC	Solenoid valves, cylinders and sensors
15	Cooling Water Control System	1	SMC	Water temperature, flow sensor, pressure sensor

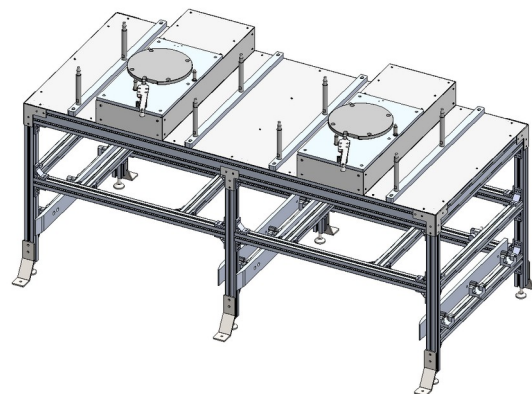
*please refer to the technical agreement for latest information

Optional Accessories

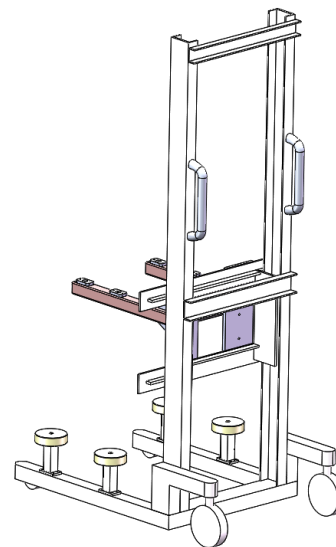
- Work bench for one operator



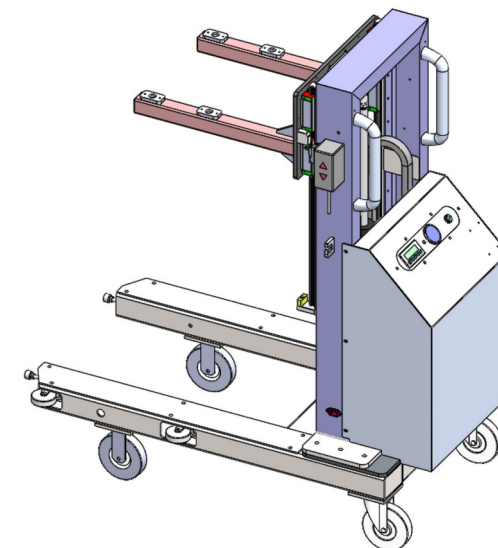
- Work bench for two operators



- Forklift for loading and unloading carousal (manually operated)



- Forklift for loading and unloading carousal (semi-automatic mode)



TC800PLUS Key Components

Serial number	Name	Brand
1	Molecular pumps	Leybold/Edwards
2	Dry pump	Leybold/Edwards
3	Arc power	Hua Sheng
4	Magnetron power supply	ADL
5	Bias power supply	Hua Sheng
6	Mass flow meter	Qi Xing
7	Vacuometer	Inficon
8	Control system	Beckhoff
9	Main electrical components	Siemens

TC800 PLUS Equipment electrical parameters

Model	TC800PLUS
Voltage	3*380/220V (3L+N+PE)
Current	3*135A
Power	90kW
Frequency	50/60Hz
Water Cold22~26°C	5-5.5bar
Compressed air	5-6.5bar
Process gas : Ar/N ₂ /H ₂	1.0-1.2bar

TC800PLUS consumption

Model	TC800PLUS
Minimum purity	(Ar) 99.9992%
	(N ₂) 99.9992%
	(H ₂) 99.996%
	(N ₂) 99.996%
Consumption per batch	Ar 35LConsumption per batch: 35L
	N ₂ 110LConsumption per batch: 110L
	H ₂ 15LConsumption per batch: 15L
	N ₂ 100LConsumption per batch: 100L
Chilled water	The maximum cooling capacity is about 40kW Flow rate 100 L/min (Consumption is about 10 L/batch)
Power	Average power is about 35kW/h About 2.5h per batch (specifically subject to process)

04

ta-C Coating and Application

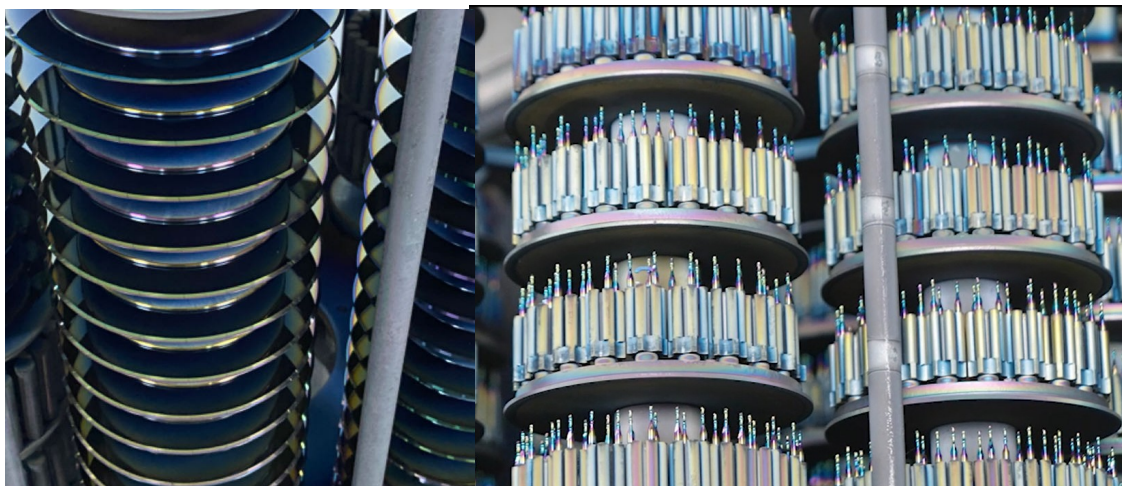
HUASHENG®TC200 coating



HuaSheng® TC200

Appli- cation

- ◆ Processing of aluminum-silicon alloy (Si < 12%)
- ◆ Processing of aluminum substrate
- ◆ Plastic processing

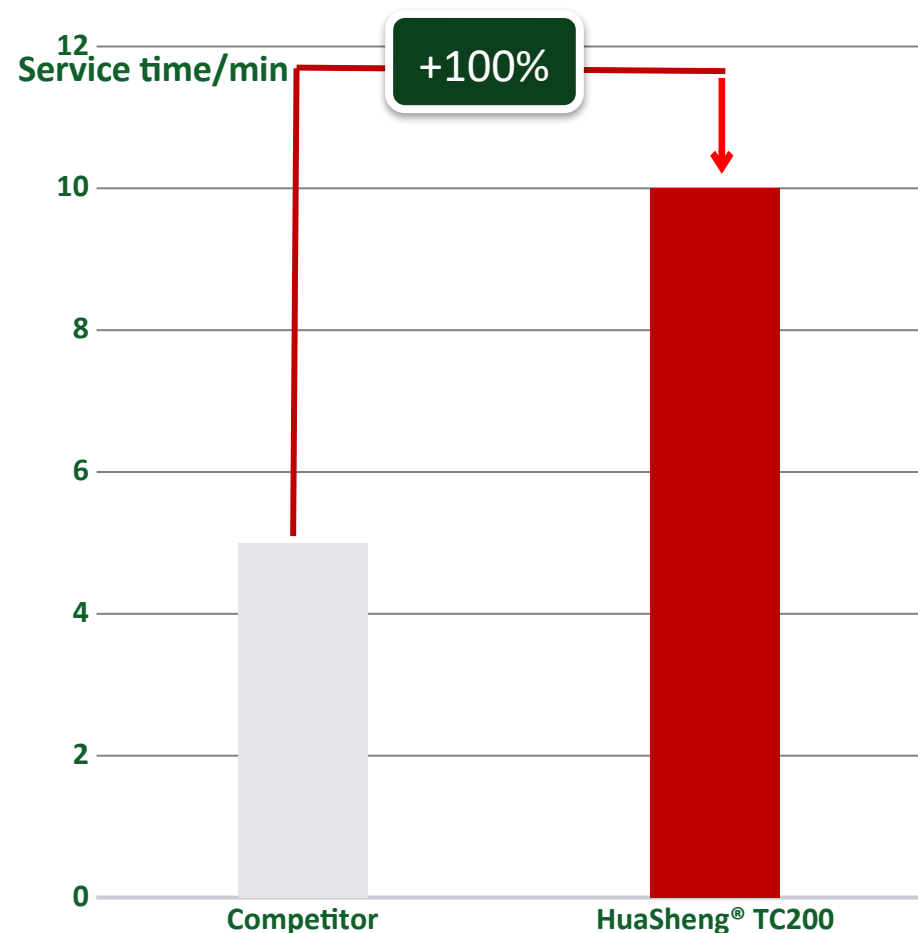


Coating composition	ta-C
Coating color	dazzling
Coating thickness (μm)	0.35 ± 0.05
Coating hardness (Gpa)	> 40
Friction coefficient (dry)	0.1
Coating temperature ($^{\circ}\text{C}$)	<200
Maximun operating temperature ($^{\circ}\text{C}$)	450

Coating structure	Coating performance
Optimal transitional layer structure from the base layer to the top layer	Minimize stress distribution to enhance coating performance
Optimize the ratio of sp2 to sp3 bonds to adjust the hardness of the coating	Balancing the hardness and the occurrence of large surface particles, leading to a longer service life during the processing of aluminum alloys and copper

HUASHENG®TC200 milling performance

**Case : aluminum-based board
(3W ; 70 microns copper
thickness)**



tools :

- 1.8*9

workpiece :

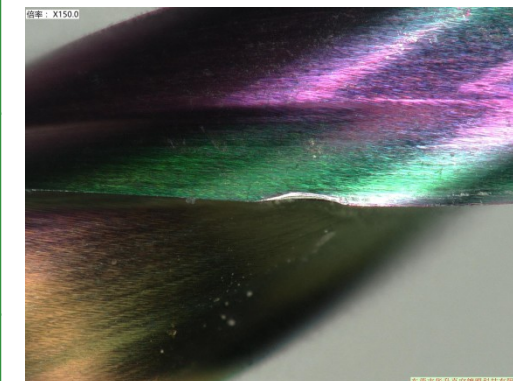
- aluminum-based board (3W ; 70 microns copper thickness)

Test conditions : blind hole cutting

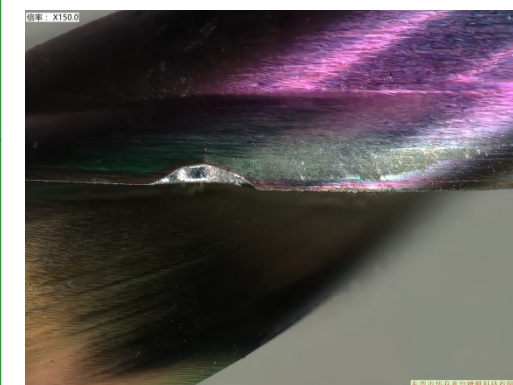
- Cutting speed $V_c = 264\text{m/min}$
- milling speed $F = 0.96\text{m/min}$
- Cutting depth $a_p = 4.8\text{mm}$
- Cooling method: air cooling

Test results :

- Huasheng TC200-coated tool can process 10 meters ;
- K manufacturer's T-coated tool can process 5 meters ;
- The cutting life is improved by 100%



10m wear
diagram-TC200



5m wear
diagram-Manufacturer

Data source: Huasheng Cutting Laboratory

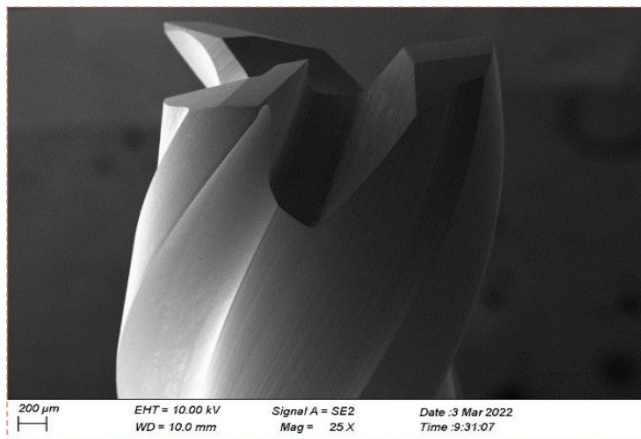
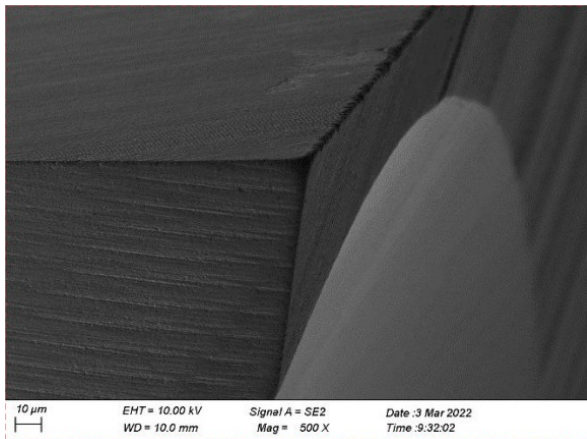
HUASHENG®D08 coating



HuaSheng® D08

Appli- cation

- ◆ PCB drilling and milling
- ◆ Aluminum alloy milling
- ◆ Copper alloy milling

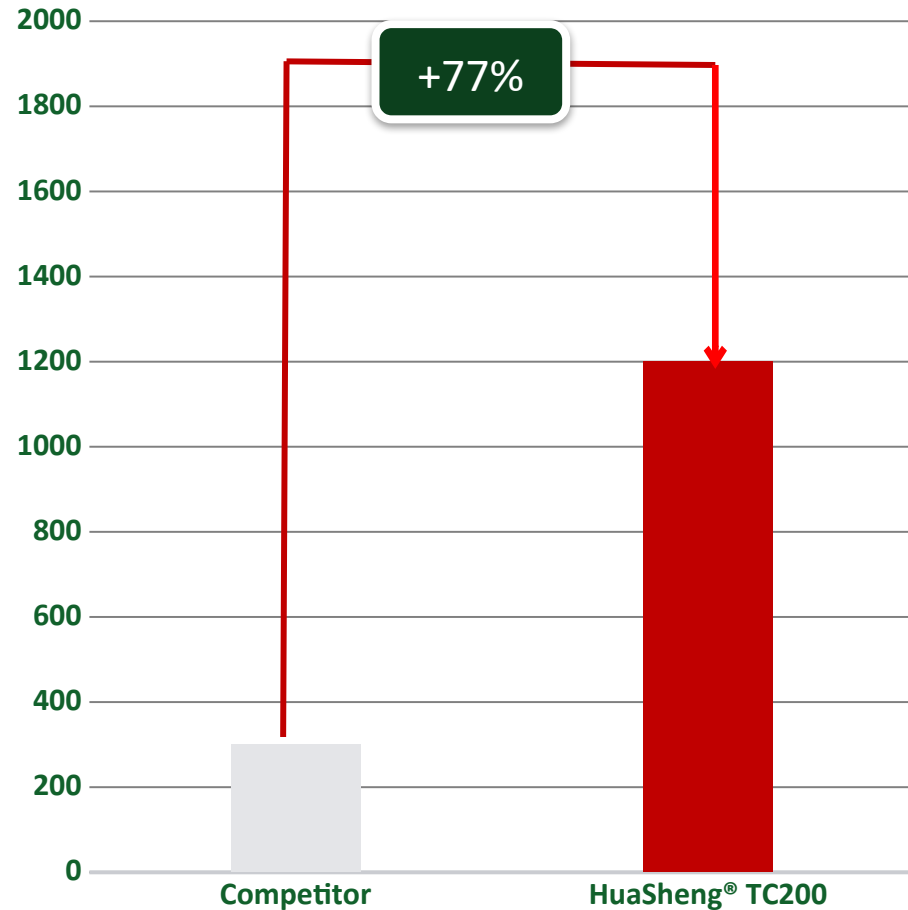


Coating composition	C
Coating color	black
Coating thickness (μm)	0.8-1.0
Coating hardness (Gpa)	> 40
Friction coefficient (dry)	0.1
Coating temperature ($^{\circ}\text{C}$)	<200
Maximun operating temperature ($^{\circ}\text{C}$)	450
Coating structure	Coating performance
Optimized transitional layer	Enhanced coating adhesion
Optimal balance of coating hardness, toughness, and internal stress	Improved coating wear resistance and resistance to crack propagation without sacrificing hardness
Extremely smooth coating surface	Excellent chip removal to reduce cutting forces

HUASHENG®D08 aluminum alloy processing

Case : 6061 aluminum alloy

Service time/pcs



tool specifications :

- D2H6-D6L45

workpiece material:

- 6061 aluminum alloy

Test condition: Full-slot end milling for rough machining

- Cutting speed $V_c = 100.5\text{m/min}$
- Feed per tooth $f_z = 0.12\text{mm/z}$
- Cutting depth $a_p = 1\text{mm}$

Test results :

- Observe the tool every 16 seconds (1 slot) to check for tool breakage;
- Currently, HuaSheng D08 can process up to 1200-1500 pieces of products ;

Data source: Huasheng Cutting Laboratory

TC Customized payment





Your Ideas, Our Solution

THANKS