KINTEK SOLUTION

Cvd Machine Catalog

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KINTEK SOLUTION

COMPANY PROFILE

>>> About Us

Kintek Solution Ltd is one technology orientated organization, team members are devoted to probing the most efficicent and reliable technology and innovations in the scienticfic researching equipment, fields like biochemical reacting, new materials researching, heat treatment, vaccum creating, refrigerating, as while as pharmaceutical and petroleum extracting equipment.

In the past 20 years, we earned rich experiences in this researing equipment field, we are capable to supply both the equipment and solution according to customer’s needs and realities, we have also developed lots of customer tailer equipment accoding to a specific working purpose, and we have lots of successful projects in many universities and institutes from different countries, like Asia,Europe,North and south America, Australia and New Zealand, middle east, and Africa.

Profession, quick response, hard working, and sincerity is a remarkable label of our team meambers working attitude, which earn us a sound reputation among our clients.

We are here and ready to service our clients from different countries and regions, and share the most efficent and reliable technology together!

Split Chamber Cvd Tube Furnace With Vacuum Station Cvd Machine

Item Number: KT-CTF12

Introduction

Efficient split chamber CVD furnace with vacuum station for intuitive sample checking and quick cooling. Up to 1200℃ max temperature with accurate MFC mass flowmeter control.

Learn More

Furnace model	KT-CTF12-60
Max. temperature	1200℃
Constant work temperature	1100℃
Furnace tube material	High purity quartz
Furnace tube diameter	60mm
Heating zone length	1x450mm
Chamber material	Japan alumina fiber
Heating element	Cr2Al2Mo2 wire coil
Heating rate	0-20℃/min
Thermal couple	Build in K type
Temperature controller	Digital PID controller/Touch screen PID controller
Temperature control accuracy	±1℃
Sliding distance	600mm
Gas precise control unit	
Flow meter	MFC mass flow meter
Gas channels	4 channels
Flow rate	MFC1: 0-5SCCM O2 MFC2: 0-20SCMCH4 MFC3: 0- 100SCCM H2 MFC4: 0-500 SCCM N2
Linearity	±0.5% F.S.
Repeatability	±0.2% F.S.
Pipe line and valve	Stainless steel
Maximum Operating Pressure	0.45MPa
Flow meter controller	Digital Knob controller/Touch screen controller
Standard vacuum unit (Optional)	
Vacuum pump	Rotary vane vacuum pump

Pump flow rate	4L/S
Vacuum suction port	KF25
Vacuum gauge	Pirani/Resistance silicon vacuum gauge
Rated vacuum pressure	10Pa
High vacuum unit(Optional)	
Vacuum pump	Rotary vane pump+Molecular pump
Pump flow rate	4L/S+110L/S
Vacuum suction port	KF25
Vacuum gauge	Compound vacuum gauge
Rated vacuum pressure	6x10-5Pa
Above specifications and setups can be customized	

No.	Description	Quantity
1	Furnace	1
2	Quartz tube	1
3	Vacuum flange	2
4	Tube thermal block	2
5	Tube thermal block hook	1
6	Heat resistant glove	1
7	Precise gas control	1
8	Vacuum unit	1
9	Operation manual	1

Multi Heating Zones Cvd Tube Furnace Cvd Machine

Item Number: KT-CTF14

Introduction

KT-CTF14 Multi Heating Zones CVD Furnace - Precise Temperature Control and Gas Flow for Advanced Applications. Max temp up to 1200℃, 4 channels MFC mass flow meter, and 7" TFT touch screen controller.

Learn More

Furnace model	KT-CTF14-60
Max. temperature	1400℃
Constant work temperature	1300℃
Furnace tube material	High purity Al2O3 tube
Furnace tube diameter	60mm
Heating zone	2x450mm
Chamber material	Alumina polycrystalline fiber
Heating element	Silicon Carbide
Heating rate	0-10℃/min
Thermal couple	S type
Temperature controller	Digital PID controller/Touch screen PID controller
Temperature control accuracy	±1℃
Gas precise control unit	
Flow meter	MFC mass flow meter
Gas channels	4 channels
Flow rate	MFC1: 0-5SCCM O2 MFC2: 0-20SCMCH4 MFC3: 0- 100SCCM H2 MFC4: 0-500 SCCM N2
Linearity	±0.5% F.S.
Repeatability	±0.2% F.S.
Pipe line and valve	Stainless steel
Maximum Operating Pressure	0.45MPa
Flow meter controller	Digital Knob controller/Touch screen controller
Standard vacuum unit(Optional)	
Vacuum pump	Rotary vane vacuum pump
Pump flow rate	4L/S
Vacuum suction port	KF25

Vacuum gauge	Pirani/Resistance silicon vacuum gauge
Rated vacuum pressure	10Pa
High vacuum unit(Optional)	
Vacuum pump	Rotary vane pump+Molecular pump
Pump flow rate	4L/S+110L/S
Vacuum suction port	KF25
Vacuum gauge	Compound vacuum gauge
Rated vacuum pressure	6x10-5Pa
Above specifications and setups can be customized	

No.	Description	Quantity
1	Furnace	1
2	Quartz tube	1
3	Vacuum flange	2
4	Tube thermal block	2
5	Tube thermal block hook	1
6	Heat resistant glove	1
7	Precise gas control	1
8	Vacuum unit	1
9	Operation manual	1

Customer Made Versatile Cvd Tube Furnace Cvd Machine

Item Number: KT-CTF16

Introduction

Get your exclusive CVD furnace with KT-CTF16 Customer Made Versatile Furnace. Customizable sliding, rotating, and tilting functions for precise reactions. Order now!

Learn More

Furnace model	KT-CTF16-60
Max. temperature	1600℃
Constant work temperature	1550℃
Furnace tube material	High purity Al2O3 tube
Furnace tube diameter	60mm
Heating zone	3x300mm
Chamber material	Alumina polycrystalline fiber
Heating element	Silicon Carbide
Heating rate	0-10℃/min
Thermal couple	S type
Temperature controller	Digital PID controller/Touch screen PID controller
Temperature control accuracy	±1℃
Gas precise control unit	
Flow meter	MFC mass flow meter
Gas channels	3 channels
Flow rate	MFC1: 0-5SCCM O2 MFC2: 0-20SCMCH4 MFC3: 0- 100SCCM H2 MFC4: 0-500 SCCM N2
Linearity	±0.5% F.S.
Repeatability	±0.2% F.S.
Pipe line and valve	Stainless steel
Maximum Operating Pressure	0.45MPa
Flow meter controller	Digital Knob controller/Touch screen controller
Standard vacuum unit(Optional)	
Vacuum pump	Rotary vane vacuum pump
Pump flow rate	4L/S
Vacuum suction port	KF25

Vacuum gauge	Pirani/Resistance silicon vacuum gauge
Rated vacuum pressure	10Pa
High vacuum unit(Optional)	
Vacuum pump	Rotary vane pump+Molecular pump
Pump flow rate	4L/S+110L/S
Vacuum suction port	KF25
Vacuum gauge	Compound vacuum gauge
Rated vacuum pressure	6x10-5Pa
Above specifications and setups can be customized	

No.	Description	Quantity
1	Furnace	1
2	Quartz tube	1
3	Vacuum flange	2
4	Tube thermal block	2
5	Tube thermal block hook	1
6	Heat resistant glove	1
7	Precise gas control	1
8	Vacuum unit	1
9	Operation manual	1

Slide Pecvd Tube Furnace With Liquid Gasifier Pecvd Machine

Item Number: KT-PE12

Introduction

KT-PE12 Slide PECVD System: Wide power range, programmable temp control, fast heating/cooling with sliding system, MFC mass flow control & vacuum pump.

Learn More

Furnace model	KT-PE12-60
Max. temperature	1200℃
Constant work temperature	1100℃
Furnace tube material	High purity quartz
Furnace tube diameter	60mm
Heating zone length	1x450mm
Chamber material	Japan alumina fiber
Heating element	Cr2Al2Mo2 wire coil
Heating rate	0-20℃/min
Thermal couple	Build in K type
Temperature controller	Digital PID controller/Touch screen PID controller
Temperature control accuracy	±1℃
Sliding distance	600mm
RF Plasma unit	
Output Power	5 -500W adjustable with ± 1% stability
RF frequency	13.56 MHz ±0.005% stability
Reflection Power	350W max.
Matching	Automatic
Noise	<50 dB
Cooling	Air cooling.
Gas precise control unit	
Flow meter	MFC mass flow meter
Gas channels	4 channels
Flow rate	MFC1: 0-5SCCM O2 MFC2: 0-20SCMCH4 MFC3: 0- 100SCCM H2 MFC4: 0-500 SCCM N2
Linearity	±0.5% F.S.

Repeatability	±0.2% F.S.
Pipe line and valve	Stainless steel
Maximum Operating Pressure	0.45MPa
Flow meter controller	Digital Knob controller/Touch screen controller
Standard vacuum unit(Optional)	
Vacuum pump	Rotary vane vacuum pump
Pump flow rate	4L/S
Vacuum suction port	KF25
Vacuum gauge	Pirani/Resistance silicon vacuum gauge
Rated vacuum pressure	10Pa
High vacuum unit(Optional)	
Vacuum pump	Rotary vane pump+Molecular pump
Pump flow rate	4L/S+110L/S
Vacuum suction port	KF25
Vacuum gauge	Compound vacuum gauge
Rated vacuum pressure	6x10-5Pa
Above specifications and setups can be customized	

No.	Description	Quantity
1	Furnace	1
2	Quartz tube	1
3	Vacuum flange	2
4	Tube thermal block	2
5	Tube thermal block hook	1
6	Heat resistant glove	1
7	RF plasma source	1
8	Precise gas control	1
9	Vacuum unit	1
10	Operation manual	1

Inclined Rotary Plasma Enhanced Chemical Deposition (Pecvd) Tube Furnace Machine

Item Number: KT-PE16

Introduction

Introducing our inclined rotary PECVD furnace for precise thin film deposition. Enjoy automatic matching source, PID programmable temperature control, and high accuracy MFC mass flowmeter control. Built-in safety features for peace of mind.

Learn More

Furnace model	PE-1600-60
Max. temperature	1600℃
Constant work temperature	1550℃
Furnace tube material	High purity Al2O3 tube
Furnace tube diameter	60mm
Heating zone length	2x300mm
Chamber material	Japan alumina fiber
Heating element	Molybdenum Disilicide
Heating rate	0-10℃/min
Thermal couple	B type
Temperature controller	Digital PID controller/Touch screen PID controller
Temperature control accuracy	±1℃
RF Plasma unit	
Output Power	5 -500W adjustable with ± 1% stability
RF frequency	13.56 MHz ±0.005% stability
Reflection Power	350W max.
Matching	Automatic
Noise	<50 dB
Cooling	Air cooling.
Gas precise control unit	
Flow meter	MFC mass flow meter
Gas channels	4 channels
Flow rate	MFC1: 0-5SCCM O2 MFC2: 0-20SCMCH4 MFC3: 0- 100SCCM H2 MFC4: 0-500 SCCM N2
Linearity	±0.5% F.S.

Repeatability	±0.2% F.S.
Pipe line and valve	Stainless steel
Maximum Operating Pressure	0.45MPa
Flow meter controller	Digital Knob controller/Touch screen controller
Standard vacuum unit(Optional)	
Vacuum pump	Rotary vane vacuum pump
Pump flow rate	4L/S
Vacuum suction port	KF25
Vacuum gauge	Pirani/Resistance silicon vacuum gauge
Rated vacuum pressure	10Pa
High vacuum unit(Optional)	
Vacuum pump	Rotary vane pump+Molecular pump
Pump flow rate	4L/S+110L/S
Vacuum suction port	KF25
Vacuum gauge	Compound vacuum gauge
Rated vacuum pressure	6x10-5Pa
Above specifications and setups can be customized	

No.	Description	Quantity
1	Furnace	1
2	Quartz tube	1
3	Vacuum flange	2
4	Tube thermal block	2
5	Tube thermal block hook	1
6	Heat resistant glove	1
7	RF plasma source	1
8	Precise gas control	1
9	Vacuum unit	1
10	Operation manual	1

Plasma Enhanced Evaporation Deposition Pecvd Coating Machine

Item Number: KT-PED

Introduction

Upgrade your coating process with PECVD coating equipment. Ideal for LED, power semiconductors, MEMS and more. Deposits high-quality solid films at low temps.

Learn More

Sample holder	Size	1-6 inches
	Rotate speed	0-20rpm adjustable
	Heating temperature	≤800℃
	Control accuracy	±0.5℃ SHIMADEN PID Controller
Gas purge	Flow meter	MASS FLOWMETER CONTROLLER (MFC)
	Channels	4 channels
	Cooling method	Circulating water cooling
Vacuum chamber	Chamber size	Φ500mm X 550mm
	Observation port	Full view port with baffle
	Chamber material	316 Stainless steel
	Door type	Front open type door
	Cap material	304 Stainless steel
	Vacuum pump port	CF200 flange
	Gas inlet port	φ6 VCR connector
Plasma power	Source power	DC power or RF power
	Coupling mode	Inductively coupled or plate capacitive
	Output power	500W—1000W
	Bias power	500v
Vacuum pump	Pre- pump	15L/S Vane vacuum pump
	Turbo pump port	CF150/CF200 620L/S-1600L/S
	Relief port	KF25
	Pump speed	Vane pump:15L/s□Turbo pump:1200l/s□1600l/s
	Vacuum degree	≤5×10-5Pa
	Vacuum sensor	Ionization/resistance vacuum gauge/film gauge
System	Electric power supply	AC 220V /380 50Hz

Rated power	5kW
Dimensions	900mm X 820mm X870mm
Weight	200kg

Cylindrical Resonator Mpcvd Diamond Machine For Lab Diamond Growth

Item Number: KTWB315

Introduction

Learn about Cylindrical Resonator MPCVD Machine, the microwave plasma chemical vapor deposition method used for growing diamond gemstones and films in the jewelry and semi-conductor industries. Discover its cost-effective advantages over traditional HPHT methods.

Learn More

Microwave system	• Microwave frequency 2450±15MHZ, • Output power 1□10 KW continuously adjustable • Microwave output power stability: • Microwave leakage ≤2MW/cm2 • Output wave guide interface: WR340, 430 with FD-340, 430 standard flange • Cooling water flow: 6-12L/min • System standing wave coefficient: VSWR ≤ 1.5 • Microwave manual 3 pin adjuster, excitation cavity, high-power load • Input power supply: 380VAC/50Hz ± 10%, three-phase
Reaction chamber	• Vacuum leakage rate • The limit pressure is less than 0.7 Pa(Standard setup with Pirani vacuum gauge) • The pressure rise of chamber shall not exceed 50Pa after 12 hours of pressure maintaining • Working mode of reaction chamber: TM021 or TM023 mode • Cavity type: Cylindrical resonant cavity, with maximum bearing power of 10KW, made of 304 stainless steel, with water-cooled inter-layer, and high purity quartz plate sealing method. • Air intake mode: Top annular uniform air intake • Vacuum sealing: The bottom connection of the main chamber and the injection door are sealed with rubber rings, the vacuum pump and bellows are sealed with KF, the quartz plate is sealed with a metal C-ring, and the rest are sealed with CF • Observation and temperature measurement window: 8 observation port • Sample load port in front of chamber • Stable discharge within the pressure range of 0.7KPa~30KPa (the power pressure shall be matched)
Sample holder	• Diameter of sample table≥72mm, effective use area≥66 mm • Base plate platform water-cooled sandwich structure • Sample holder can be lifted and lowered evenly electrically in the cavity
Gas flow system	• All metal welding air disk • Welding or VCR joints shall be used for all internal gas circuits of the equipment. • 5 channels MFC flow meter, H2/CH4/O2/N/Ar. H2: 1000 sccm ;CH4:100 sccm; O2: 2 sccm; N2: 2 sccm; Ar: 10 sccm • Working press 0.05-0.3MPa, accuracy ±2% • Independent Pneumatic valve control for each channel flow meter
Cooling system	• 3 lines water cooling, real-time monitoring of temperature and flow. • The system cooling water flow is ≤ 50L/min • The cooling water pressure is
Temperature sensor	• The external infrared thermometer has a temperature range of 300-1400 ℃ • Temperature control accuracy

Control system	• Siemens smart 200 PLC and touch screen control are adopted. • The system has a variety of programs, which can realize the automatic balance of growth temperature, accurate control of growth air pressure, automatic temperature rise, automatic temperature drop and other functions. • The stable operation of the equipment and comprehensive protection of the equipment can be achieved through the monitoring of water flow, temperature, pressure and other parameters, and the reliability and safety of the operation can be guaranteed through functional interlocking.
Optional function	• Center monitoring system • Substrate basing power

Bell-Jar Resonator Mpcvd Diamond Machine For Lab And Diamond Growth

Item Number: KTMP315

Introduction

Get high-quality diamond films with our Bell-jar Resonator MPCVD machine designed for lab and diamond growth. Discover how Microwave Plasma Chemical Vapor Deposition works for growing diamonds using carbon gas and plasma.

Learn More

Microwave system	• Microwave frequency 2450±15MHZ, • Output power 1□10 KW continuously adjustable • Microwave output power stability: • Microwave leakage ≤2MW/cm2 • Output wave guide interface: WR340, 430 with FD-340, 430 standard flange • Cooling water flow: 6-12L/min • System standing wave coefficient: VSWR ≤ 1.5 • Microwave manual 3 pin adjuster, excitation cavity, high-power load • Input power supply: 380VAC/50Hz ± 10%, three-phase
Reaction chamber	• Vacuum leakage rate • The limit pressure is less than 0.7 Pa(Standard setup with Pirani vacuum gauge) • The pressure rise of chamber shall not exceed 50Pa after 12 hours of pressure maintaining • Working mode of reaction chamber: TM021 or TM023 mode • Cavity type: Butterfly resonant cavity, with maximum bearing power of 10KW, made of 304 stainless steel, with water-cooled inter-layer, and high purity quartz plate sealing method. • Air intake mode: Top annular uniform air intake • Vacuum sealing: The bottom connection of the main chamber and the injection door are sealed with rubber rings, the vacuum pump and bellows are sealed with KF, the quartz plate is sealed with a metal C-ring, and the rest are sealed with CF • Observation and temperature measurement window: 4 observation ports • Sample load port in front of chamber • Stable discharge within the pressure range of 0.7KPa~30KPa (the power pressure shall be matched)
Sample holder	• Diameter of sample table≥70mm, effective use area≥64 mm • Base plate platform water-cooled sandwich structure • Sample holder can be lifted and lowered evenly electrically in the cavity
Gas flow system	• All metal welding air disk • Welding or VCR joints shall be used for all internal gas circuits of the equipment. • 5 channels MFC flow meter, H2/CH4/O2/N/Ar. H2: 1000 sccm ;CH4:100 sccm; O2: 2 sccm; N2: 2 sccm; Ar: 10 sccm • Working press 0.05-0.3MPa, accuracy ±2% • Independent Pneumatic valve control for each channel flow meter
Cooling system	• 3 lines water cooling, real-time monitoring of temperature and flow. • The system cooling water flow is ≤ 50L/min • The cooling water pressure is
Temperature sensor	• The external infrared thermometer has a temperature range of 300-1400 ℃ • Temperature control accuracy

Control system	• Siemens smart 200 PLC and touch screen control are adopted. • The system has a variety of programs, which can realize the automatic balance of growth temperature, accurate control of growth air pressure, automatic temperature rise, automatic temperature drop and other functions. • The stable operation of the equipment and comprehensive protection of the equipment can be achieved through the monitoring of water flow, temperature, pressure and other parameters, and the reliability and safety of the operation can be guaranteed through functional interlocking.
Optional function	• Center monitoring system • Substrate basing power

Rf Pecvd System Radio Frequency Plasma-Enhanced Chemical Vapor Deposition

Item Number: KT-RFPE

Introduction

RF-PECVD is an acronym for "Radio Frequency Plasma-Enhanced Chemical Vapor Deposition." It deposits DLC (Diamond-like carbon film) on germanium and silicon substrates. It is utilized in the 3-12um infrared wavelength range.

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Equipment form	• Box type: the horizontal top cover opens the door, and the deposition chamber and the exhaust chamber are integrally welded; • The whole machine: the main engine and the electric control cabinet are integrated design (the vacuum chamber is on the left, and the electric control cabinet is on the right).
Vacuum chamber	• Dimensions: Φ420mm (diameter) × 400 mm (height); made of 0Cr18Ni9 high-quality SUS304 stainless steel, the inner surface is polished, fine workmanship is required without rough solder joints, and there are cooling water pipes on the chamber wall; • Air extraction port: Double-layer 304 stainless steel mesh with 20mm front and rear intervals, anti-fouling baffle on the high valve stem, and air equalization plate at the exhaust pipe mouth to prevent pollution; • Sealing and shielding method: the upper chamber door and the lower chamber are sealed by a sealing ring to seal the vacuum, and the stainless steel network tube is used outside to isolate the radio frequency source, shielding the harm caused by radio frequency signals to people; • Observation window: Two 120mm observation windows are installed on the front and side, and the anti-fouling glass is resistant to high temperature and radiation, which is convenient for observing the substrate; • Air flow mode: the left side of the chamber is pumped by the molecular pump, and the right side is the air inflated to form a convective working mode of charging and pumping to ensure that the gas flows evenly to the target surface and enters the plasma area to fully ionize and deposit the carbon film; • Chamber material: the vacuum chamber body and the exhaust port are made of 0Cr18Ni9 high-quality SUS304 stainless steel material, the top cover is made of high-purity aluminum to reduce the weight of the top.
Host skeleton	• Made of section steel (material: Q235-A) , the chamber body and the electric control cabinet are integrated design.
Water cooling system	• Pipeline: The main inlet and outlet water distribution pipes are made of stainless steel pipes; • Ball valve: All cooling components are supplied with water separately through 304 ball valves, and the water inlet and outlet pipes have color distinctions and corresponding signs, and the 304 ball valves for the water outlet pipes can be opened and closed separately; The target, RF power supply, chamber wall, etc. are equipped with water flow protection, and there is a water cut-off alarm to prevent the water pipe from being blocked. All water flow alarms are displayed on the industrial computer; • Water flow display: The lower target has water flow and temperature monitoring, and the temperature and water flow are displayed on the industrial computer ; • Cold and hot water temperature: when the film is deposited on the chamber wall, cold water is passed through 10-25 degrees to cool the water, and it is advanced when the chamber door is opened. Pass hot water 30-55 degrees warm water.
Control cabinet	• Structure: vertical cabinets are adopted, the instrument installation cabinet is a 19-inch international standard control cabinet, and the other electrical component installation cabinet is a large panel structure with a rear door; • Panel: The main electrical components in the control cabinet are all selected from manufacturers that have passed CE certification or ISO9001 certification. Install a set of power sockets on the panel; • Connection method: the control cabinet and the host are in a conjoined structure, the left side is the room body, the right side is the control cabinet, and the lower part is equipped with a dedicated wire slot, high and low voltage, and the RF signal is separated and routed to reduce interference; • Low-voltage electrical: French Schneider air switch and contactor to ensure reliable power supply of equipment; • Sockets: Spare sockets and instrumentation sockets are installed in the control cabinet.

Ultimate vacuum	• Atmosphere to 2×10-4 Pa≤24 hours, (at room temperature, and the vacuum chamber is clean).
Restore vacuum time	• Atmosphere to 3×10 -3 Pa≤15 min (at room temperature, and the vacuum chamber is clean, with baffles, umbrella stands, and no substrate).
Pressure rise rate	• ≤1.0×10 -1 Pa/h
Vacuum system configuration	• The composition of the pump set: backing pump BSV30 (Ningbo Boss) + Roots pump BSJ70 (Ningbo Boss) + molecular pump FF-160 (Beijing); • Pumping method: pumping with soft pumping device (to reduce the pollution to the substrate during pumping); • Pipe connection: the vacuum system pipe is made of 304 stainless steel, and the soft connection of the pipe is made of; • Metal bellows; each vacuum valve is a pneumatic valve; • Air suction port: In order to prevent the membrane material from polluting the molecular pump during the evaporation process and improve the pumping efficiency, a movable isolation plate that is easy to disassemble and clean is used between the air suction port of the chamber body and the working room.
Vacuum system measurement	• Vacuum display: three lows and one high (3 groups of ZJ52 regulation + 1 group of ZJ27 regulation); • High-vacuum gauge: ZJ27 ionization gauge is installed on the top of the pumping chamber of the vacuum box near the working chamber, and the measuring range is 1.0×10 -1 Pa to 5.0×10 -5 Pa; • Low-vacuum gauges: one set of ZJ52 gauges is installed on the top of the pumping chamber of the vacuum box, and the other set is installed on the rough pumping pipe. The measuring range is 1.0×10 +5 Pa to 5.0×10 -1 Pa; • Working regulation: CDG025D-1 capacitive film gauge is installed on the chamber body, and the measuring range is 1.33×10 -1 Pa to 1.33×10 +2 Pa, vacuum detection during deposition and coating, used in conjunction with constant vacuum butterfly valve use.
Vacuum system operation	There are two modes of vacuum manual and vacuum automatic selection; • Japan Omron PLC controls all the pumps, the action of the vacuum valve, and the interlocking relationship between the work of the inflation stop valve to ensure that the equipment can be automatically protected in case of misoperation; • High valve, low valve, pre-valve, high valve bypass valve, in-position signal is sent to PLC control signal to ensure more comprehensive interlock function; • The PLC program can carry out the alarm function of each fault point of the whole machine, such as air pressure, water flow, door signal, over-current protection signal, etc. and alarm, so that the problem can be found quickly and conveniently; • The 15-inch touch screen is the upper computer, and the PLC is the lower computer monitoring and control valve. Online monitoring of each component and various signals are sent back to the industrial control configuration software in time for analysis and judgment, and recorded ; • When the vacuum is abnormal or the power is cut off, the molecular pump of the vacuum valve should return to the closed state. The vacuum valve is equipped with an interlock protection function, and the air inlet of each cylinder is equipped with a cut-off valve adjustment device, and there is a position set the sensor to display the closed state of the cylinder;
Vacuum test	• According to the general technical conditions of GB11164 vacuum coating machine.

Drawing Die Nano-Diamond Coating Hfcvd Equipment

Item Number: MP-CVD-100

Introduction

The nano-diamond composite coating drawing die uses cemented carbide (WC-Co) as the substrate, and uses the chemical vapor phase method (CVD method for short) to coat the conventional diamond and nano-diamond composite coating on the surface of the inner hole of the mold.

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Comparation table between traditional and nano diamond coated drawing die

HFCVD technical composition		
Technical Parameters	Equipment composition	System Configuration
Bell Jar: Dia. 500mm, Height 550mm, SUS304 stainless steel chamber; inner stainless steel skin insulation, lifting height is 350mm;	A set of vacuum chamber (bell jar) main body (jacketed water-cooling structure)	Vacuum chamber (bell jar) main body;The cavity is made of high-quality 304 stainless steel; Vertical bell jar: the jacketed water-cooling jacket is installed on the overall periphery of the bell jar. The inner wall of the bell jar is insulated with stainless steel skin, and the bell jar is fixed on the side . Accurate and stable positioning ; Observation window: horizontally arranged in the middle of the vacuum chamber 200mm Observation window, water cooling, baffle, side and upper configuration 45 Degree bevel angle, 50° observation window (observe the same point as the horizontal observation window, and the sample supporting platform); the two observation windows maintain the existing position and size.Bell jar bottom is 20mm higher than the plane of the bench , set cooling; the holes reserved on the plane, such as large valves, air release valves, air pressure measurement, bypass valves, etc., are sealed with metal mesh and reserved for installing electrodes Interface;
Equipment table: L1550* W900*H1100mm	One set of drag sample table device (adopting double-axis drive)	Sample holder device: Stainless steel sample holder (welding water cooling) 6- position device; it can be adjusted separately, only up and down adjustment, the up and down adjustment range is 25mm, and the left and right shaking is required to be less than 3% when going up and down (that is, the left and right shaking of rising or falling by 1mm is less than 0.03mm) , and the sample stage does not rotate when rising or falling.
Ultimate vacuum degree: 2.0×10-1Pa ;	A set of vacuum system	Vacuum system: Vacuum system configuration: mechanical pump + vacuum valve + physical bleed valve + main exhaust pipe + bypass; (provided by the vacuum pump supplier), the vacuum valve uses a pneumatic valve; Vacuum system measurement: Membrane pressure.
Pressure rise rate : ≤5Pa/h;	Two channels mass flow meter gas supply system	Gas supply system: The mass flow meter is configured by Party B, two-way air intake, the flow rate is controlled by the mass flow meter, after the two-way meeting, it enters the vacuum chamber from the top , and the inside of the air intake pipe is 50mm
Sample table movement: up and down range is ± 25m; it is required to shake left and right ratio when up and down by ± 3%;	One set of electrode device (2 channels)	Electrode device: The length direction of the four electrode holes is parallel to the length direction of the support platform, and the length direction is facing the main observation window with a diameter of 200mm .
Working pressure: use membrane gauge pressure gauge, measuring range: 0 ~ 10kPa; work constant at 1kPa ~5kPa,the constant pressure value changes plus or minus 0.1kPa;	A set of cooling water system	Cooling water system: The bell jar, electrodes, and bottom plate are all equipped with circulating water cooling pipelines, and are equipped with insufficient water flow alarm device 3.7: control system. Switches, instruments, instruments and power supply for bell lifting, deflation, vacuum pump, main road, bypass, alarm, flow, air pressure, etc. are set on the side of the stand, and are controlled by a 14 -inch touch screen; the equipment has a fully automatic control program without manual intervention, and can store data and call data
Air intake position: air intake at the top of the bell jar, and the position of the exhaust port is located directly below the sample holder;	Control system	

Control System: PLC controller + 10-inch touch screen	A set of automatic pressure control system (original pressure control valve imported from Germany)	
Inflation system: 2 channels mass flow meter, flow range: 0-2000sccm and 0-200sccm; Pneumatic valve valve	Resistance Vacuum Gauge	
3.1.10 Vacuum pump: D16C vacuum pump		

Technical indicators	Traditional drawing die	Nano-diamond coated drawing die
Coating Surface Grain Size	none	20~80nm
Coating diamond content	none	≥99%
Diamond Coating Thickness	none	10 ~ 15mm
Surface roughness	Ra≤0.1mm	Class A: Ra≤0.1mm Class B: Ra≤0.05mm
Coating drawing die inner hole diameter range	Φ3 ~ Φ70mm	Φ3 ~ Φ70mm
Service life span	Life span depends on working conditions	6-10 times longer
Surface friction coefficient	0.8	0.1

915Mhz Mpcvd Diamond Machine

Item Number: MP-CVD-101

Introduction

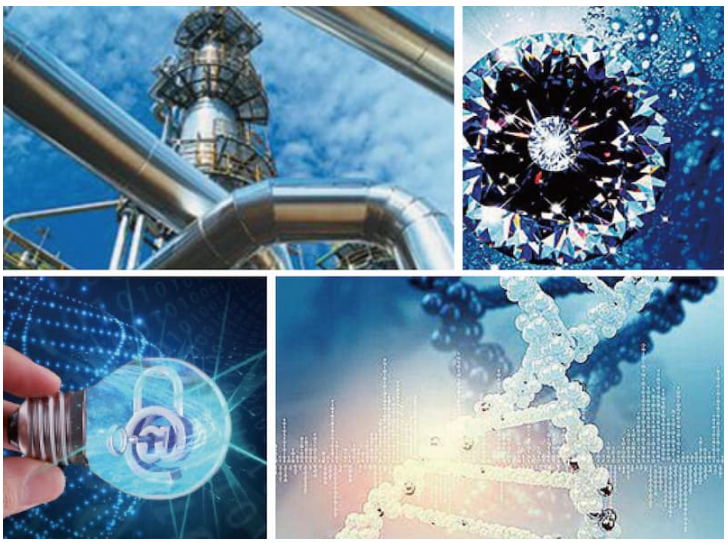
915MHz MPCVD Diamond Machine and its multi-crystal effective growth, the maximum area can reach 8 inches, the maximum effective growth area of single crystal can reach 5 inches. This equipment is mainly used for the production of large-size polycrystalline diamond films, the growth of long single crystal diamonds, the low-temperature growth of high-quality graphene, and other materials that require energy provided by microwave plasma for growth.

Learn More

Microwave system (according to optional power supply)	• Operating frequency:915±15MHz • Output power:3-75kW continuously adjustable • Cooling water flow:120/min • System standing wave coefficient:VSWR≤1.5 • Microwave leakage:
Vacuum system and reaction chamber	• Leakage rate • The ultimate pressure is less than 0.7Pa (this machine comes with imported Pirani vacuum gauge) • The pressure rise in the cavity shall not exceed 50Pa after 12 hours of maintaining pressure. • Reaction chamber working mode: TM021 or TM023 mode • Cavity type: cooled cylindrical cavity, can carry power up to 75KW, high purity ,Stone ring seal. • Inlet method: Top sprinkler head inlet. • Observation temperature measurement window: 8 observation holes, evenly distributed horizontally. • Sampling port: bottom lifting sampling port
Sample holder system	• Sample stage diameter ≥200mm, single crystal effective use area ≥130mm,The effective use area of polycrystalline is ≥200mm. Substrate platform water-cooled sandwich structure, vertical straight up and down.
Gas system	• Full metal welded gas plate 5-7 gas lines • All internal air circuits of the equipment use welding or VCR connectors.
System cooling	• 3-way water cooling, real-time monitoring of temperature and flow. • System cooling water flow 120L/min, cooling water pressure
Temperature measurement method	• External infrared thermometer, temperature range 3001400 M

serial number	Module name	Remark

1	Microwave power supply	Standard domestic magnetron: Yingjie Electric / Distinguish power supply Domestic solid-state source: Watson (+30,000) Imported magnetron: MKS/ pastoral (+100, 000)
2	Waveguide, three pins, mode converter, upper resonator	Self made
3	Vacuum reaction chamber (upper chamber, lower chamber, connectors)	Self made
4	Infrared thermometers, optical displacement components, brackets	Infrared thermometers, optical displacement components, Fuji Gold Siemens + Schneider brackets
5	Water-cooling table motion components (cylinders, workpieces, etc.)	
6	Ceramic thin film vacuum gauge,Pirani vacuum gauge	Inficon
7	Vacuum valve components (ultra-high vacuum gate valve, precision pneumatic valve*2, electromagnetic vacuum charging differential valve)	Fujikin + Zhongke + Himat
8	Vacuum pump and connecting pipe fittings, tee, KF25 bellows*2, adapter	Pump: Flyover 16L
9	Metal microwave sealing ring*2; metal vacuum sealing ring*1; Quartz plate	Quartz: Shanghai FeilihuaSemiconductor Grade High Purity Quartz
10	Circulating water components (joints, diverter blocks, flow detectors)	Japanese SMC/CKD
11	Pneumatic part (CKD filter, airtac multi-way solenoid valve, pipe fittings and adapters)	
12	Gas connector, EP gas pipe, VCR connector, filter 0.0023μm *1, filter 10μm*2	Fujikin
13	Machine casing, stainless steel table, universal wheels, feet, bracket fastening screws, etc	custom processing
14	Gas flow meter*6 (including one pressure control)	Standard seven-star , optional Fuji Gold (+34,000) / Alicat (42,000)
15	Gas plate processing (5-way gas, filter*5, pneumatic valve*5, manual valve*6, pipeline welding)	Fuji Gold
16	PLC automatic control	Siemens + Schneider
17	Molybdenum table	



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