



LP Vacuum

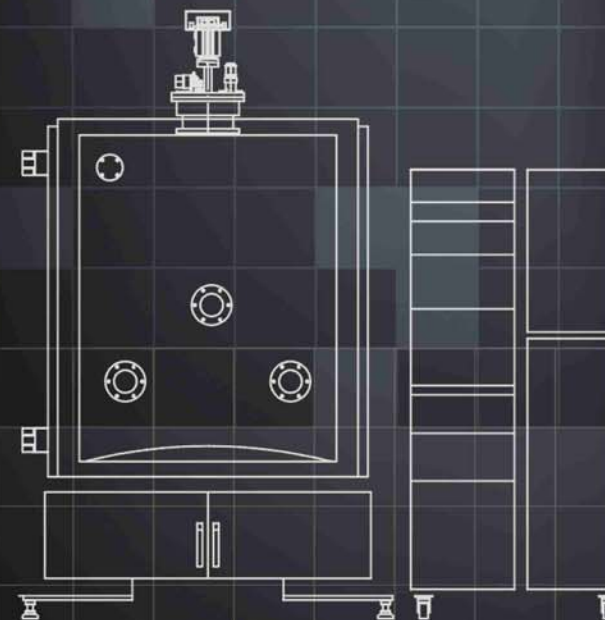


VACUUM COATER

YOUR BEST PARTNER ON VACUUM COATING TECHNOLOGY

$$1.125 \left( \frac{L}{2} H \frac{L}{2} \right) \left( \frac{L}{2} H \frac{L}{2} \right)^s 1.1 \left( \frac{L}{2} H \frac{L}{2} \right)$$

Air,  $n_s = 1.5, n_L = 1.38$



**LUNG PIEN VACUUM INDUSTRY CO., LTD.**  
**龍翩真空科技股份有限公司**

No. 2, DaTong Rd., Wuqi Dist., Taichung City, Taiwan  
TEL: +886-4-2659-5018 FAX: +886-4-2659-5011-2  
Customer Service Hot Line: +886988-753-727  
Customer Service: service@lp-vacuum.com.tw  
Website: www.lp-vacuum.com.tw



**POLYBELL INTERNATIONAL CO., LTD.**  
**歐周國際貿易股份有限公司**

No. 207, Sec. 2, Wuqi Dist., Taichung City, Taiwan  
TEL: +886-4-2665-5180 FAX: +886-4-2662-9260  
E-mail: sales@polybell.com.tw  
polybellco@gmail.com  
Website: www.polybell.com.tw

Certified Distributer



Lung Pien Vacuum Industry Co., Ltd.

<http://www.lp-vacuum.com.tw>



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LUNG PIEN VACUUM INDUSTRY CO., LTD.

ISO 9001:2008



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## ■ Corporate Profile

Lung Pien Vacuum Industry Co., Ltd. is established in 1991 and focuses on vacuum coating technology development for years. It has been the most professional optical vacuum coater manufacturer in Taiwan. Lung Pien specializes in the production of optical vacuum coaters for metal coating, sunglass coating, plastic, and glass coating. Especially, we designed optical vacuum coaters (for IR or AR coating) for optical market, which is most popular today. Our product is suitable for lens, head-lights, decorations, digital camera lens, lens and covers for mobile telephones, and even pick-up heads of DVD players.

## ■ Our Vision and Value

Due to rising awareness and concern for human health and the environment, Lung Pien continues to invest in developing vacuum coating equipment for surface finishing industry. Our superior quality coater is high competitive to similar products from Japan and Germany. As a result, we have significant sales of 1,500 vacuum coaters to customers worldwide (Vietnam, Indonesia, Thailand, Singapore, Malaysia, India, Iran, Egypt and China). We offer customers turn-key system solutions and technical support service, including customized equipment design, production layout planning, on-site training, and technical consultation for manufacturing process.

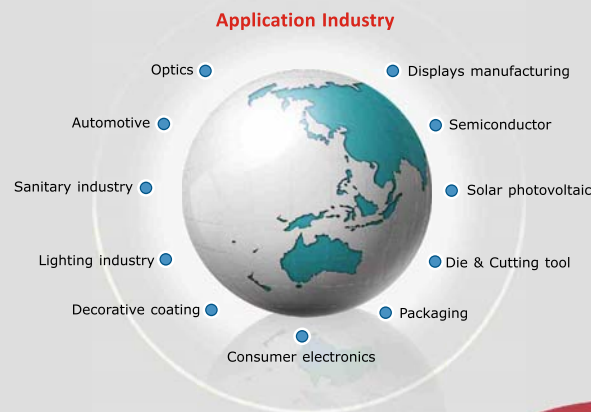


## ■ Vacuum Coating: Industrial Perspective and Applications

Vacuum Coating is today most widely used thin film coating technology at various business sectors. Its coating operation is under an ultra-high vacuum environment. The target deposition material is vaporized into atomic particles. When the particles deposit on the surface of substrate, an elegant coating layer is created and which can resist the damage from wearing and high temperature erosion. Physical vapor deposition (PVD) and chemical vapor deposition (CVD) are two major mechanisms for vacuum coating.

## ■ Advantages

Very high transfer efficiencies · High speed coating · Low application costs



## ■ Corporate Value



## ■ LP-BSA / BS

### Features:

- Process control system runs on Windows system interface and easy to use
- Repeatable and reliable coating
- High performance layer monitoring system is equipped for enhanced production result
- All processing are automatically controlled, which requires less workers per shift and training time

### Application:

- Plastic/ helmet lens
- Sunglass lens
- Optical lens



## Technical Specification:

System/ Model		LP-1100 BSA	LP-1300 BSA	LP-1500 BSA
<b>Chamber Size</b>	Diameter	1100mm	1300mm	1500mm
	Substrate-Dome	φ 950mm	φ 1200mm	φ 1400mm
<b>Main Performance</b>	Ultimate Pressure	10 <sup>-6</sup> Torr		
	Operation Pressure	From 1 atm to 5x10 <sup>-5</sup> Torr within 15 minutes (No load)		
<b>Pumping System</b>	Rotary Pump	3,000 L/ min	6,000 L/ min	10,000 L/ min
	Booster Pump	600 m <sup>3</sup> / hour	1,500 m <sup>3</sup> / hour	3,000 m <sup>3</sup> / hour
	Diffusion Pump	20,000 L/ sec x 1	45,000 L/ sec x 1	45,000 L/ sec x 1
	Meissner Trap	Cryogenic Refrigerator (-110 ~ -140°C)		
<b>Layer Monitoring System</b>	Crystal Monitor	Single Sensor/ Six-pcs Sensor Head		
<b>Vacuum Gauge</b>	-	Pirani + Cold Cathode (1ATM ~ 10 <sup>-6</sup> Torr)		
<b>Evaporation Power Supply</b>	ERH/ Thermal	10KW	15KW	15KW
<b>Rotation System</b>	-	Planetary or Dome		
<b>Ion Source</b>	-	Optional		
<b>Cooling water flow rate</b>	-	80 L/ min	100 L/ min	120 L/ min
<b>Cooling Tower</b>	-	15 RT (Water Pressure: 4kg/ cm <sup>2</sup> ; Pressure Drop: 2kg/ cm <sup>2</sup> )		
<b>Cooling Water</b>	-	Inlet: 18°C; Outlet: 25°C; Standard: 20±1°C		
<b>Polycold</b>	-	Option		
<b>Air Compressor</b>	-	3HP (Air Pressure: 6 ~ 8 kg/ cm <sup>2</sup> )		
<b>Electrical Control System</b>	-	PLC+PC base (Windows System)		
<b>Total Power Requirement</b>	-	30 KW	40 KW	50 KW



## ■ LP-BSD



### Feature:

- Dual chamber for independent loading operations.
- Four kinds of coating process modes available for selection.
- Option: RF generators or magnetron sputtering source can be installed for surface coating.
- LP-BSD series is compatible with HMDS surface coating module. With this module, it could satisfy the applications that require functionality of hydrophobic water proof, and gas barrier.

### Applications:

- Decorative items
- Headlamp reflector/ Alloy tyre ring
- Cosmetic containers/ perfume bottles
- Mirror backs/ metal-made products
- NCVM applications/ metallic finish

### Technical Specification:

System/ Model	LP-1300 BSD	LP-1600 BSD	LP-1800 BSD
Chamber Size	Diameter	1300mm	1600mm
	Height	1300 ~ 1800 mm	1600 ~ 2000 mm
Capacity	-	§ 375x1400mmX6	§ 380x1700mmX8 § 450x1700mmX6
	-		§ 400x1700mmX8 § 540x1700mmX6
Main Performance	Ultimate Pressure	10-6 Torr	
	Operation Pressure	From 1 ATM to 5x10 <sup>-3</sup> Torr within 15 minutes (No load)	
View Windows	Set	1	
Number of Filaments	Pcs	18 ~ 22	20 ~ 26
Pumping System	Rotary Pump	6,000~10,000L/min	8,500~15,000L/min
	Booster Pump	1,500~3,000m <sup>3</sup> /hour	2,000~5,000 m <sup>3</sup> /hour
	Diffusion Pump	3,000~45,000 L/sec	45,000L/ sec
	Holding Pump	300 ~ 600 L/ min (Optional)	45,000 L/ sec *2
Vacuum Gauge	-	Pirani + Cold Cathode (1ATM ~ 10 <sup>-6</sup> Torr)	
Control Box	Set	1	
High Vacuum Valve	-	28~36 inch	36 inch
Roughing Valve	-	6inch	8inch
Foreline Valve	-	6 inch	
Leak Valve	-	2 inch	
Holding Valve (option)	-	1 inch	
Evaporation Power Supply	-	30KW	50KW
System Operation	-	Automatic/ Manual	
Cooling water flow rate	-	100 L/min	120 L/min
Cooling Tower	-	15 RT (Water Pressure: 4kg/ cm <sup>2</sup> ; Pressure Drop: 2kg/ cm <sup>2</sup> )	
Cooling Water	-	Inlet: 18°C; Outlet: 25°C; Standard: 20±1°C	
Polycold	-	Optional	
RF Generator	-	Optional	
Air Compressor	-	3HP~5HP (Air Pressure: 6 ~ 8 kg/ cm <sup>2</sup> )	Air Pressure:8kg/cm <sup>2</sup>
Electrical Control System	-	PLC	
Meissner Trap	-	Cryogenic Refrigerator (-110 ~ 140°C )(Optional)	
Total Power Requirement	-	75KW	95KW

## ■ LP-BSPD

### Features:

- Dual chamber for independent loading operations.
- Four kinds of coating process modes available for selection.
- Option: RF generators or magnetron sputtering source can be installed for surface coating.
- LP-BSD series uses planetary rotation mechanism to achieve good film uniformity on curved surface substrates.



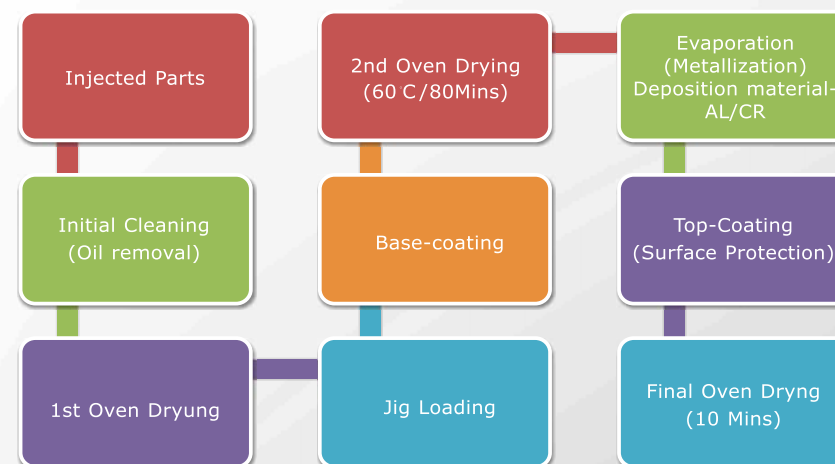
### Application:

- Decorative items
- Cellphone housing
- NCVM applications
- Metallic finish



### ■ Technical Specification:

Vacuum Metallization Cycle (BSD Series)  
(From PU (UV) spray painting to vacuum coating)



### Remark:

- 1) UV spray painting would require less time for drying if compared with PU type.
- 2) If required different colors on surface of injected part, it can be done by adding the color concentrate into top-coat paint.

## LP-HS



### Application:

- Colorful decoration items
- Cellphone housing
- Cosmetic containers
- Mirror/ plastic/metal products



### Technical Specification:

System/ Model		LP-1100 HS	LP-1300 HS
Chamber Size	Diameter	1100mm	1300mm
	Height	1100mm	1500mm
Capacity	-	§ 220x1000mm X6	§ 250x1400mm X8
View Window	Set	1	
Number of Boat	Pcs	4	5
Main Performance	Ultimate Pressure	10 <sup>-6</sup> Torr	
	Operation Pressure	From 1 ATM to 2x10 <sup>-4</sup> Torr within 5 minutes (No load)	
Pumping System	Rotary Pump	6,000 L/ min	6,000~10,000 L/ min
	Booster Pump	1,500 m <sup>3</sup> / hour	2,500 m <sup>3</sup> / hour
	Diffusion Pump	20,000 L/ sec	45,000 L/ sec
High Vacuum Valve	-	24 inch	36 inch
Roughing Valve	-	6 inch x1	
Foreline Valve	-	6 inch x1	
Leak Valve	-	2 inch x1	
System Operation	-	Automatic/ Manual	
Evaporation Power Supply	-	10KW	30KW
Vacuum Gauge	-	Pirani+Cold Cathode (1ATM ~ 10 <sup>-6</sup> Torr)	
Control Box	set	1	
Cooling Tower	-	15 RT (Water Pressure: 4kg/ cm <sup>2</sup> ; Pressure Drop: 2kg/ cm <sup>2</sup> )	
Cooling Water	-	Inlet: 18°C; Outlet: 25°C; Standard: 20±1°C	
Polycold	-	Optional	
Air Compressor	-	3HP (Air Pressure: 6 ~ 8 kg/ cm2)	
Meissner Trap	-	Cryogenic Refrigerator (-110 ~ 140°C)	
Total Power Requirement	-	40KW	45 KW

## LP-EBA

### Features:

- Capable of equipping Ion Source or plasma gun for depositing multi-layer and precise optical coatings.
- When equipped substrate reverse mechanism, it would greatly reduce the processing time, get higher throughput, and lower production cost per unit.
- With its hi-performance layer monitoring system and computerized system, it can fulfill precise thickness requirement for optical layer coating
- Process control system runs on Windows system interface and easy to use
- Repeatable and reliable coating



### Applications:

- APS/ DSC / DSLR Camera Lens
- PTV/ Liquid Crystal Projector Lens
- Dichroic filter/ mirror
- IR/ UV cut filter
- DVD pick-up head and CCTV Lens
- AR coating



### Technical Specification:

System/ Model		LP-900 EBA	LP-1100 EBA	LP-1300 EBA
Chamber Size	Diameter	900mm	1100mm	1300mm
	Substrate-Dome	φ 820mm	φ 950mm	φ 1200mm
Main Performance	Ultimate Pressure	10 <sup>-7</sup> Torr		
	Operation Pressure	From 1 ATM to 2x10 <sup>-5</sup> (2.7x10 <sup>-3</sup> pa)Torr within 30 minutes (No load)		
	Substrate Temp	350℃ (Max)		
Pumping System	Rotary Pump	3,000 L/ min	3,000 L/ min	3,000 L/ min
	Booster Pump	600 m³/ hour	600 m³/ hour	1,500 m³/ hour
	Diffusion Pump	20,000 L/ sec X1	15,000 L/ sec X2	45,000 L/ sec X1
Layer Monitoring System	Optical Monitor	LP Broad Band Monitor 380mm~1,050mm		
	Crystal Monitor	Single Sensor/ Six-pcs Sensor head		
Vacuum Gauge	-	Pirani+Cold Cathode (1ATM ~ 10 <sup>-9</sup> Torr / 1ATM ~ 10 <sup>-7</sup> Pa)		
Evaporation Source	E-Beam	Plasmatech 6KW/ 10KW		
	ERH/ Thermal	3KW	6KW	6KW
Rotation System	-	Planetary or Dome		
Ion Source	-	Optional		
Cooling water flow rate	-	80 L/ min	100 L/ min	150 L/ min
Cooling Tower	-	Water Pressure: 4 Kg/ cm²; Pressure Drop: 2 Kg/ cm²		
Cooling Water	-	Inlet: 18℃; Outlet: 25℃; Standard: 20±1℃		
Polycold	-	Optional		
Air Compressor	-	3HP (Air Pressure: 6 ~ 8 kg/ cm2)		
Grounding Resistance	-	Under 5Ω		
Electrical Control System	-	PLC+PC (Windows system)		
Total Power Requirement	-	35KW	40 KW	60 KW
Meissner Trap	-	Cryogenic Refrigerator (-110 ~ 140℃)		
Environment Requirement	Class 100,000 Clean Room; Epoxy flooring; Air-conditioning; Temp. 25±3℃; HUM:50±10%			

■ **LP-EBA**



**Features:**

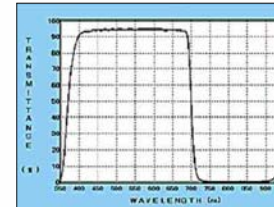
- Auto control system
- High performance pumping system
- Thermal evaporation system
- E-beam gun evaporation system/ Ion source system
- Reliable film deposition/ Repeatable coatings



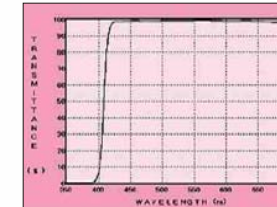
System/ Model		LP-1500 EBA	LP-1800 EBA
<b>Chamber Size</b>	Diameter	1500mm	1800mm
	Substrate-Dome	§ 1400mm	§ 1600mm
<b>Main Performance</b>	Ultimate Pressure	10 <sup>-7</sup> Torr / 10 <sup>-5</sup> Pa	
	Operation Pressure	From 1 ATM to 2x10 <sup>-5</sup> Torr within 30 minutes (No load)	
	Substrate Temp	350°C (Max)	
<b>Pumping System</b>	Rotary Pump	5,000 L/ min	6,000 L/ min
	Booster Pump	1,500 M <sup>3</sup> / hour	2,600 M <sup>3</sup> / hour
	Diffusion Pump	45,000 L/ sec X1	45,000 L/ sec X2
	Meissner Trap	Cryogenic Refrigerator (-90 ~ -140°C)(Optional)	
<b>Heating System</b>	Micro Heater	36KW	42KW
	Optical Monitor	LP Broad Band Monitor	
<b>Layer Monitoring System</b>	Crystal Monitor	Single Sensor/ Six-pcs Sensor Head	
	Vacuum Gauge	- Pirani + Cold Cathode (1ATM ~ 10 <sup>-7</sup> Torr / 1ATM ~ 10 <sup>-7</sup> Pa)	
<b>Evaporation Source</b>	E-Beam	JOEL/ Plasmatech 6KW/ 10KW/ 15KW	
	ERH/ Thermal	6KW	
<b>CRotation System</b>	-	Planetary or Dome	
<b>Ion Source</b>	-	Optional	
<b>Plasma Gun</b>	-	Optional	
<b>Cooling water flow rate</b>	-	150 L/min	180 L/min
<b>Cooling Tower</b>	-	Water Pressure: 4kg/ cm <sup>2</sup> ; Pressure Drop: 2kg/ cm <sup>2</sup>	
<b>Cooling Water</b>	-	Inlet: 18°C; Outlet: 25°C; Standard: 20±1°C	
<b>Polycold</b>	-	Optional	
<b>Air Compressor</b>	-	3HP(Air Pressure:6~8 kg/cm <sup>2</sup> ) 3-5HP(Air Pressure:8kg/cm <sup>2</sup> )	
<b>Grounding Resistance</b>	-	Under 5Ω	
<b>Electrical Control System</b>	-	PLC+ PC base (Windows System)	
<b>Total Power Requirement</b>	-	80KW	110KW
<b>Environment Requirement</b>	Class 100,000 Clean Room; Exopy Flooring;Air-conditioning;Temp.25±3°C;HUM50±10%		

■ **UV/IR Cut Filters**

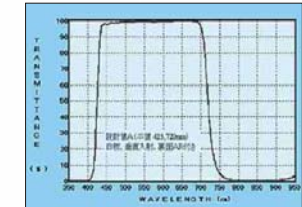
IR Cut Filter for CCD



UV Cut Filter for CCD

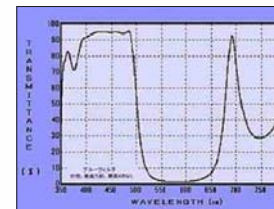


UV+IR Cut Filter for CCD

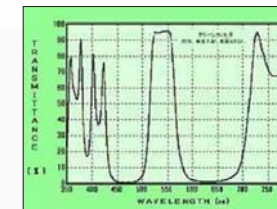


■ **Color Management Filters**

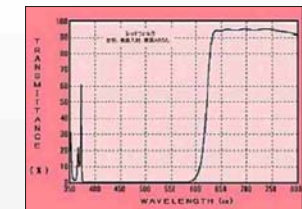
Blue Color Filter



Green Color Filter

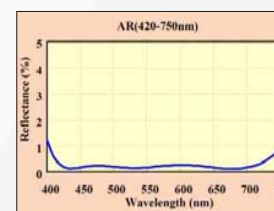


Red Color Filter

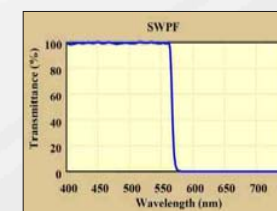


■ **Variety of Thin Film Filters**

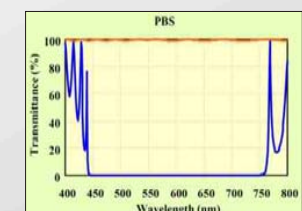
Anti-Reflection



Short Wavelength Pass Filter



Polarizing Beam Splitter





## ■ AF Vacuum Coating System



AF vacuum coater is based on the improved BSPD system scheme and can be easily operated because of its automatic control system and module programming. By combining with optimized process design of optics and electronics manufacturing, our AF vacuum coater can generate stable production rate and quality output. This model is specifically designed to produce anti-fingerprint film layer on the surface of smart-phone, E-book, and tablet PC.

## ■ Contact Angle Measurement UCA-100



### Feature :

- Detailed mechanism design : By the example of 10.1' tablet screen, AF vacuum coater is outperformed than the general optical vacuum coater by the production capacity of 3.5~4 times.
- It is equipped with RF plasma treatment device, which would improve the bonding between the substrate and deposited film.
- A combination of evaporation and sputtering source, this can greatly improve the wearing resistance of the coated surface.
- Specifically designed control valve that would decrease the defect rate.
- Dual-chamber door enables shorter cycle time between loading and coating.

Chamber Size	φ 1500mm x 1800mm
Rotary System	Planetary or Dome
Evaporation Source	Evaporation + sputtering (Medium frequency power supply)
Substrate surface treatment	RF Device
Substrate heating Device	Yes
Ultimate Pressure	10 <sup>-7</sup> Torr
Space Requirement	L7000 x W7000 x H3700 mm
Power Requirement	Three-Phase , 220/380V, 60/50Hz, 90Kw
Flow Rate Requirement	120 L/min
Air Pressure Requirement	6~8kg/cm <sup>2</sup>
Total Weight	8000kg

## ■ LP-BS

### Features:

- Control operation : AUTOMATIC / MANUAL by touch panel.
- Provides many groups of coating parameters; customer can depend on the different product to establish process during the coating.
- Rotational speed and coating voltage control by MANUAL/ AUTOMATIC, user friendly.
- Crystal monitor with controller and single sensor to running accurate coating.



### Application:

#### Suitable for Various decorative item:

Alloy tyre ring, auto light, cosmetic containers, perfume bottles, mirror backs, and plastic, glass and iron products.

## Technical Specification:

System/ Model		LP-500 BS	LP-700 BS	LP-800 BS
Chamber Size	Diameter	500mm	700mm	800mm
	Height	500mm~700 mm	800mm~900 mm	800mm~1000 mm
View Window	Set	1	1	1
Main Performance	Ultimate Pressure	10 <sup>-6</sup> Torr(10 <sup>-4</sup> Pa)		
	Operation Pressure	From 1 atm to 3x10 <sup>-4</sup> Torr(4x10 <sup>-3</sup> Pa)within 10 minutes(No load)		
Pumping System	Rotary Pump	600 L/min	1500 L/min	3000 L/min
	Booster Pump	-	300m3/hr	600m3/hr
	Diffusion Pump	10 inch	16~18 inch	16~22 inch
High Vacuum Valve		10 inch	16~18 inch	16~22 inch
Roughing Valve		1 inch	2 inch	3 inch
Foreline Valve		1 inch	2 inch	3 inch
Leak Valve		1 inch	1 inch	1 inch
System Operation		Automatic/ Manual		
Evaporation Power Supply		6~10KW		
Vacuum Gauge		Full Rang Gauge(1ATM ~10 <sup>-7</sup> Torr / 1ATM~10 <sup>-5</sup> Pa)		
Control Box	Set	1		
Cooling water flow rate		20 L/ min	50L/ min	80L/ min
Cooling Tower		3~5 RT (Water Pressure: 4kg/ cm <sup>2</sup> ; Pressure Drop: 2kg/ cm <sup>2</sup> )		
Cooling Water		Inlet: 18℃; Outlet: 25℃; Standard: 20±1℃		
Air Compressor		1HP~3HP (Air Pressure: 5 ~ 8 kg/ cm2)		
Total Power Requirement		20KW	25KW	30KW

### Note:

- Aside from the standard outfit, Diffusion Pump, the High Vacuum Pump can be used with Cryo Pump or Turbo Pump....etc. according to the customers' need to select.
- Other accessories: Layer Monitoring System, E-Beam Gun, Meissner Trap....etc.

## ■ In-line sputtering coating system



### Features:

- Combination of modulated systems and a clean and practical appearance design
- Easy-To-Use control interface for mass production
- Optimized vacuum system that enable workers spending less time on maintenance.
- High performance magnetron sputtering electrode design for production efficiency
- Patented lower part return wire and valve door design.
- Vacuum chamber is made of high quality stainless steel for the purpose of easy maintenance and repairing.
- Our equipment can be customized in accordance with the customer's specification.

### Applications:

- Mobile phone, projector case, notebook, EMI shielding



### ■ POLYCOLD®

Fast Cycle Water Vapor  
Cryopump Polycold PFC Eco-Friendly / CE Certified

- PFC-552HC
- PFC-672HC
- PFC-1102HC



## ■ G-12100 E-Beam Gun

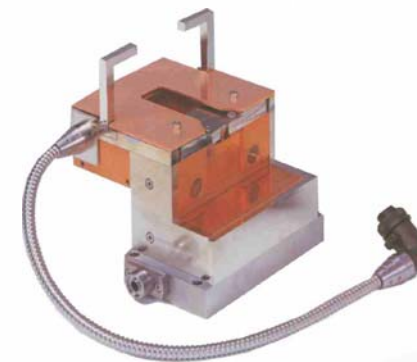
### Feature:

- Easy maintenance
- Stable Beam Size
- Long life filament
- Beam Deflection Permanent Magnet - 270°



## PLASMATECH E-Beam Source provider

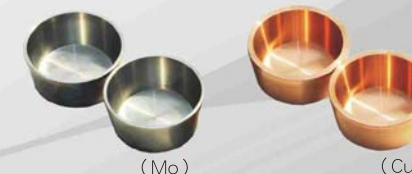
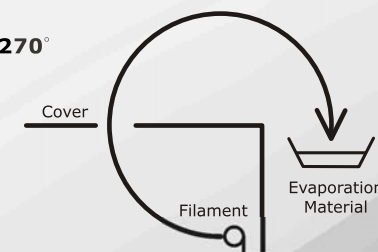
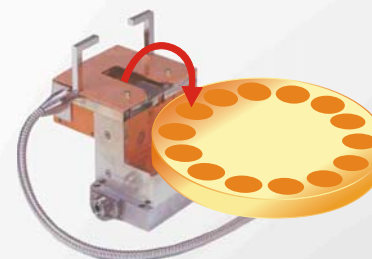
PLASMATECH Co., Ltd. is established in 1985 and a professional manufacturer of E-beam source and power supply that are widely used in thin-film coating equipment. All EB source and power supply products are solely made in Japan.



## ■ Power Supply for EB Source

Advantage	Result
Long life of EB filament	Long time operation
Durable power supply	Stability
Beam control(programmable)	Uniformity and - reproducibility

## ■ Beam Deflection Permanent Magnet - 270°





## OLYMPUS



OLYMPUS Optical Measurement Device

### ■ USPM-RU-W

Olympus' USPM-RU-W NIR Micro-Spectrophotometer performs fast, accurate spectrometry across a wide range of wavelengths of visible light to near-infrared. The ability to easily measure reflectivity of extremely small areas or curved surfaces that cannot be measured using ordinary spectrophotometers, makes the USPM-RU-W optimally suited for analyzing optical elements or minute electronics parts.

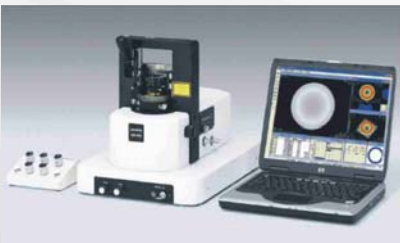
### ■ USPM-RU III

The USPM-RU III is a reflectometer that provides highly accurate spectral reflectivity measurements of small, curved, and thin samples without interference from rear surface-reflected light.



#### Applications:

- Reduces Light Reflected From Surfaces
- Reflectivity Measurement for Minute Areas
- Quick Results
- X-Y Chromaticity diagrams and L\*a\*b\* Measurement
- Hard-coat Thickness Measurement



### ■ KIF-PU

#### Applications:

- Transmitted Wave Measurement for objective lenses such as DVD, HD-DVD, Blu-Ray Disk players Transmitted Wave Measurement For optical pick-up, Optical system components.
- Measurement of Transmitted Waves and flatness for Optical components such as small mirrors and prisms.

### ■ HYPER CLEAN

HYPER CLEAN is a high quality cleaning liquid applied by wiping and demonstrates highly effective all-round performance. This performance has attracted widespread attention, for its superior cleaning ability on all kinds of surface, its removal of a very wide range of dirt and stains, as well as its exceptional safety for users and its non-polluting, sustainable characteristics. The ecological HYPER CLEAN series is recommended as the ideal substitute for conventional wipe-on cleaner liquids containing ether, acetone, IPA or thinner.

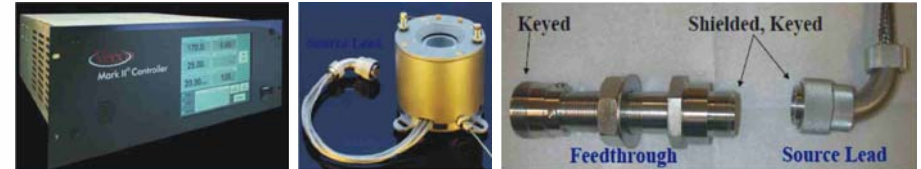


E.E-Clean



### Mark II+ Ion Source

(Filament Cathode-Water Cooled)  
Industry Standard for Optical Coating Systems  
The World's Most Widely Used Assist Source



- High ion beam current supports high-rate deposition processes
- Low energy ions minimize substrate damage
- Broad divergent beam improves process uniformity and maximizes substrate loading
- Removable anode assembly enables easy and rapid maintenance without the need to uncouple water lines
- Integrated feedthroughs and cabling provide greater simplicity and reliability



Patented innovations optimize our next generation of gridless End-Hall ion beam products for critical deposition processes, advancing technical and economic benefits experienced in process applications.

#### Features& Benefits:

The design of the KRI EH1000 ion beam product incorporates the latest technical developments along with inputs from our valued customers, assuring productivity even in the most rigorous of environments.

#### Applications:

EH1000 product line produces a high current and low energy ion beam ideally suited for surface treatment and thin film growth

#### applications which include:

- Ion Beam Assisted Deposition (IBAD)
- In-Situ Substrate Precleaning
- Hard Carbon Based Coatings



100% Oxygen,  $V_a = 200$  Volt,  $I_a = 5$  Amp



Controllers



**JEOL Ltd. (Japan)**  
**Electron Beam Sources and Power Supplies**

■ **BS-60050EBS**

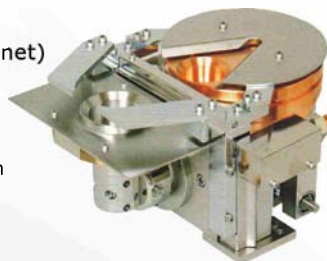
Electron Beam Source with reduced backscattered electrons



- Electron source minimizing backscattered electrons entering substrate.
- Reduces film absorption.
- External accelerating voltage selection while keeping high vacuum.
- Wide beam scanning range up to 50 mm in diameter.
- Incorporates a 270° permanent magnet, electromagnet, and long lasting filament.
- Simple design featuring contamination resistance and easy maintenance.

■ **Electron beam deflection angle: 180° (electromagnet)**

- Workable pressure: 7x10<sup>-2</sup>Pa~5x10<sup>-5</sup>Pa
- Weight: Approximately 16kg
- Corresponding Power Supply: JST-3F · JST-10F · JST-16F
- Application: Optical thin film and Optoelectronic thin film



■ **RF120 series RF Generator**

High-frequency power source 13.56MHz RF power supply used in the machining/fabrication of thin films and etching sputtering, CVD, such as ion plating.

	RF-12010	RF-12020	RF-12030	RF-12040
High-frequency output	750w	1.5kw	3kw	6kw
Output connector	N-type	N-type	LS2-type	LS2-type
Input voltage	AC 200 V ± 10V, three phase, 50/60 Hz			
Input current	AC 5A	AC 8A	AC 20A	AC 35A

■ **EB evaporation material/ Thermal evaporation material**

High index evaporation material	TiO <sub>2</sub> , Ti <sub>2</sub> O <sub>3</sub> , Ti <sub>3</sub> O <sub>5</sub> , ZrO <sub>2</sub> , CeO <sub>2</sub> , SiO <sub>2</sub> , ZnS, Ta <sub>2</sub> O <sub>5</sub> , Fe <sub>2</sub> O <sub>3</sub> , Ge, Si...
Med. Index evaporation material	Al <sub>2</sub> O <sub>3</sub> , CeF <sub>3</sub> , PbF <sub>2</sub> , MgO, NdF <sub>3</sub> ...
Low index evaporation material	MgF <sub>2</sub> , SiO <sub>2</sub> , AlF <sub>3</sub> , BaF <sub>2</sub> , CaF <sub>2</sub> , LiF <sub>3</sub> ...
Compound evaporation material	ITO(In <sub>2</sub> O <sub>3</sub> +SnO <sub>2</sub> ),OM(Al <sub>2</sub> O <sub>3</sub> +ZrO <sub>2</sub> ), OS(TiO <sub>2</sub> +ZrO <sub>2</sub> ), OH(ZrO <sub>2</sub> +TiO <sub>2</sub> )...
Waterproof evaporation material	Super hard water repellent...
Other consumables	BOAT (Material type: Mo, Ta, W), W/FILAMENT...



**Pump Oil**

MORESCO  
Rotary Pump:  
NEOVAC MR-100/MR200  
Vacuum Rotary Pump Oil



**DOW CORNING**

Diffusion Pump Oil  
DC-702 DC-704 DC-705  
LION DIFFUSION PUMP OIL A/S  
NEOVAC SX/SY Diffusion pump Oil



High Vacuum Grease  
HIVAC-G



**Quartz Crystals**

Inficon

Thin Film Deposition Controller



IC6 Controller



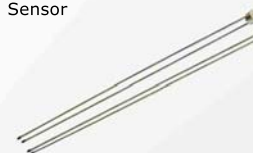
**Cito**

RF Power Generators



**Rotary Sensor**

Single Sensor



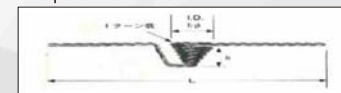
Six-pcs / Twelve-pcs Sensor Head



**EB-Filament**



Evaporation Filament



**Evaporation Boat**

