



# 乙先股份有限公司 I SHIEN CORP.

Vacuum process equipment design, sell, repair



- 真空製程設備
- 真空系統耗材
- 真空幫浦
- 電子鎗
- 離子鎗
- 韓國鍍鎳材料
- 韓國S.I.T總代理

## 關於乙先

- 1982年 本公司成立於新竹市，主要營業項目為維修及販賣真空幫浦，與新竹科學園區內多家廠商配合。
- 1990年 轉型研發真空系統，以小型研究系統為主，主要供應各學術單位實驗使用。
- 1995年 開始研發小型量產設備，提供各晶元及光電廠研發用。
- 2002年 隨著台南科學工業園區的成立，公司業務進而拓展至台南永康區，提供南台灣客戶更方便的服務。
- 2005年 投入系統研發實驗室，目的為開發穩定的製程系統。
- 2007年 製程系統成功研發出多靶源共濺鍍系統。
- 2010年 投入小型的濺鍍鍍膜代工
- 2012年 與韓國專業系統製造商S.I.T簽訂台灣總代理

## About I SHIEN

- 1982 The company was established in in Hsinchu City, the principal place of business projects for the repair and sale of vacuum pump work with multiple vendors in the Hsinchu Science Park.
- 1990 transformation developed vacuum system small study mainly supply various academic institutions experimental use.
- 1995 began the development of a small amount of production equipment, Epistar optical power plant developed with.
- 2002 with the establishment of the Tainan Science-Based Industrial Park, the company's business and then expand to Tainan Yongkang District, more convenient services to customers in southern Taiwan.
- 2005 for the development of a stable process system and thus put into the system stable process.
- 2007 process system successfully developed a multi-target source sputtering system.
- 2010 small investment sputter coating foundry
- 2012 with Korean professional system manufacturers S.I.T signed distributor in Taiwan

## 營業項目

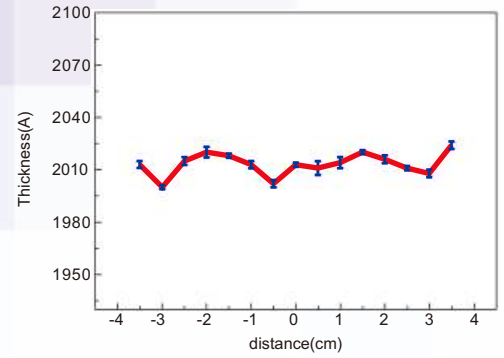
- 高真空蒸鍍系統 (電子鎗、OLED、熱阻式)
- 磁控濺鍍系統 (DC Sputter、RF Sputter、CO Sputter、IN-Line Sputter)
- 電漿化學氣相沈積系統
- 離子乾式蝕刻系統
- 真空快速升溫爐
- 爐管製程系統
- 電子鎗
- 離子鎗
- 射頻電源供應器
- 直流電源供應器
- 氣體質量流量控制器
- 高真空幫浦 (Diffusion、Cryo、Turbo)
- 低真空幫浦 (Dry、Roots、Scroll、Rotary)
- 真空零組件

## Operating items

- High-vacuum vapor deposition system (electron gun, an OLED, thermal resistive)
- Magnetron sputtering system (DC Sputter, RF Sputter, CO Sputter, IN-Line Sputter)
- Plasma chemical vapor deposition system
- Plasma dry etching system
- Vacuum rapid heating furnace
- Furnace processing system
- Electron gun
- Ion gun
- RF power supply
- DC Power Supply
- Gas mass flow controller
- High vacuum pump (Diffusion, Cryo, Turbo)
- The Low vacuum pump (Dry, Roots, Scroll, Rotary)
- Vacuum components

# 太陽能薄膜系統

C.I.G.S Co-Sputtering System



Project 1

Spectrum processing:  
Peak possibly omitted: 3.699 keV

Processing option: All elements analyzed (Normalised)  
Number of iterations = 3

Standard:  
O SiO2 4Jun1999 12:00 AM  
Al Al2O3 4Jun1999 12:00 AM  
Zn Zn 4Jun1999 12:00 AM

Element	Weight%	Atomic%
O K	36.76	62.38
Al K	19.23	19.35
Zn L	44.01	18.27
Totals	100.00	

Comment:

# 反應式離子蝕刻系統

R.I.E System



# 電漿化學氣相沈積系統

PEVD System



型號 Model	PE-CVD - 250~500
腔體 Chamber	∅ 250-500mm
抽氣幫浦 Pumping Station	Turbo
最低壓力 Ultimate Pressure	< 10 <sup>-6</sup> Torr
抽氣效能 Based Pressure	8x10 <sup>-5</sup> Torr < 40 Min
濺鍍靶源 Sputter Source	13.56 MHZ ~ 2GHZ
機板加熱旋轉 SUB.Heater and rotator	Heter 800°C Rotator 60 RPM
操作方式 Control	Auto / Manual

## 多靶源共濺鍍系統

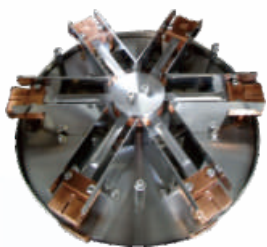
Co-Sputtering System

型號 Model	SPVD-300~600
腔體 Chamber	∅ 300~600mm
抽氣幫浦 Pumping Station	Cryo / Turbo
最低壓力 Ultimate Pressure	$< 10^{-7}$ Torr
抽氣效能 Based Pressure	$8 \times 10^{-6}$ Torr $< 40$ Min
濺鍍靶源 Sputter Source	RF&DC 1~3 Source
機板加熱旋轉 SUB.Heater and rotator	Heter 500°C Rotator 60 RPM
操作方式 Control	Auto / Manual



## 熱阻式蒸鍍機

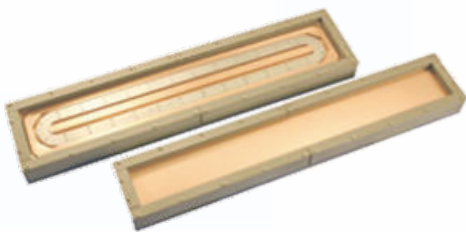
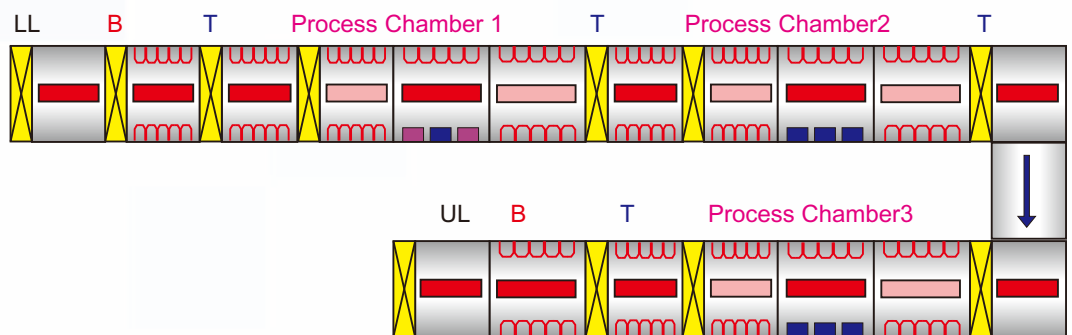
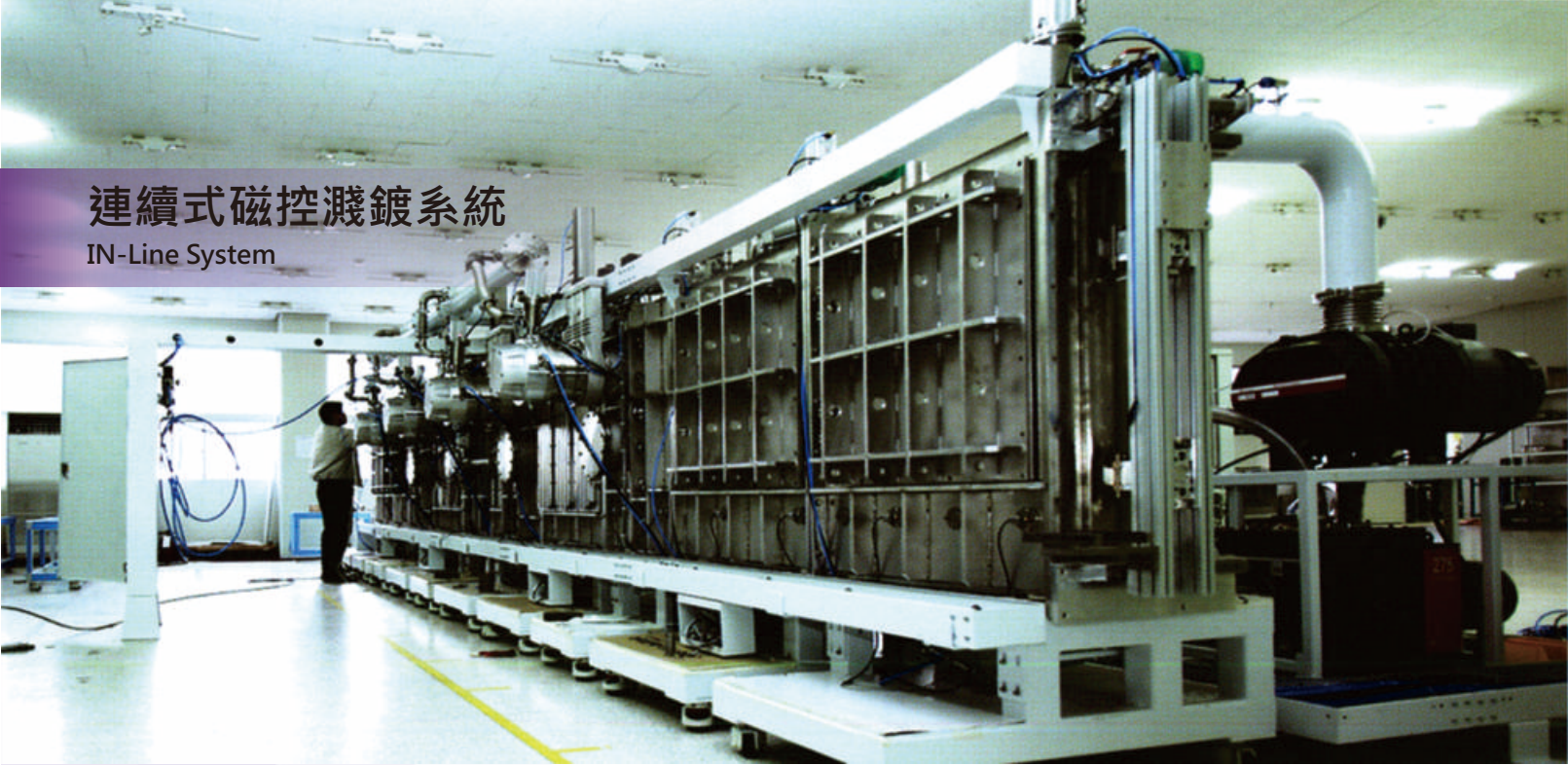
PLED / OLED Thermal Evaporation System



型號 Model	HPVD-300~600
腔體 Chamber	∅ 300~600mm
抽氣幫浦 Pumping Station	Cryo / Turbo
最低壓力 Ultimate Pressure	$< 10^{-7}$ Torr
抽氣效能 Based Pressure	$8 \times 10^{-6}$ Torr $< 40$ Min
濺鍍靶源 Sputter Source	1~11 Source With Shield
機板加熱旋轉 SUB.Heater and rotator	Heter 500°C Rotator 60 RPM
操作方式 Control	Auto / Manual

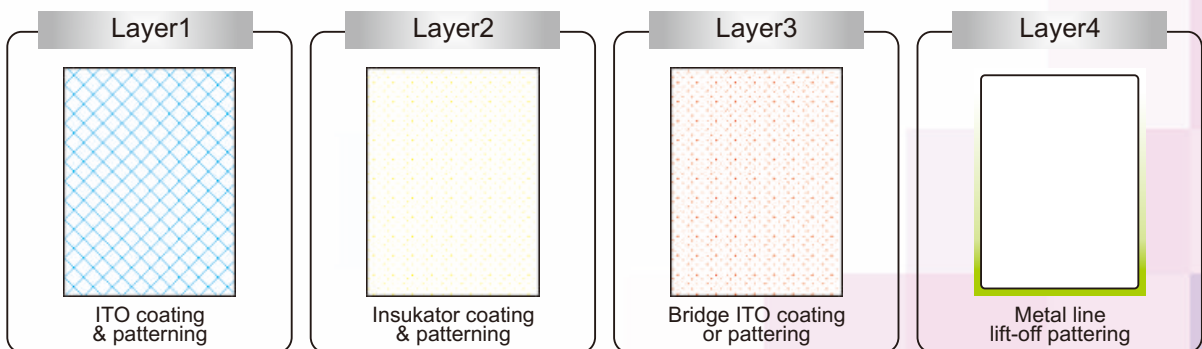
# 連續式磁控濺鍍系統

IN-Line System



No	Symbol	Name	Notice
1	LL	Loading Chamber	Load Substrates into the Vacuum Chamber
2	B	Buffer Chamber	Between Low and High Vacuum Chamber
3	T	Transfer Chamber	Between Buffer and Process Chamber
4	P	Process Chamber	Treatment or Deposition Process Chamber
5	UL	Unloading Chamber	Unload Substrates from the Vacuum Chamber
6		Heating Source	Heating Source Inner Chamber
7		Deposition Source	Plasma Treatment, Deposition, or Other Source
8		Carrier	Substrates Carrier

- Drive & Sense ITO pattern is same layer position
- Sense ITO pattern is connected to each other
- Drive ITO pattern is SiO<sub>2</sub> insulation layer to avoid the interference pattern over it connected Bridge ITO
- Sense and Drive ITO pattern formed on the same Layer Having no need for calibration of the touch sensitivity



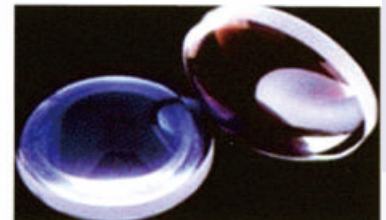
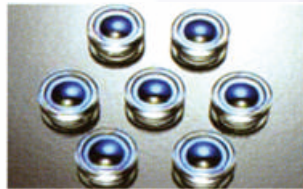
The Multi-Touch display layers a protective shield over a capacitive panel that senses your touch using electrical fields. It then transmits that information to the Retina display below it. So you can glide through albums with Cover Flow, flick through photos and enlarge them with a pinch, zoom in and out on a section of a web page, and control game elements precisely.

# 多層鍍膜系統

Multi-coating System Application

## Application

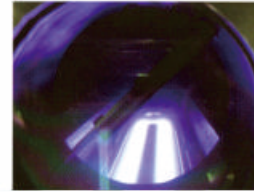
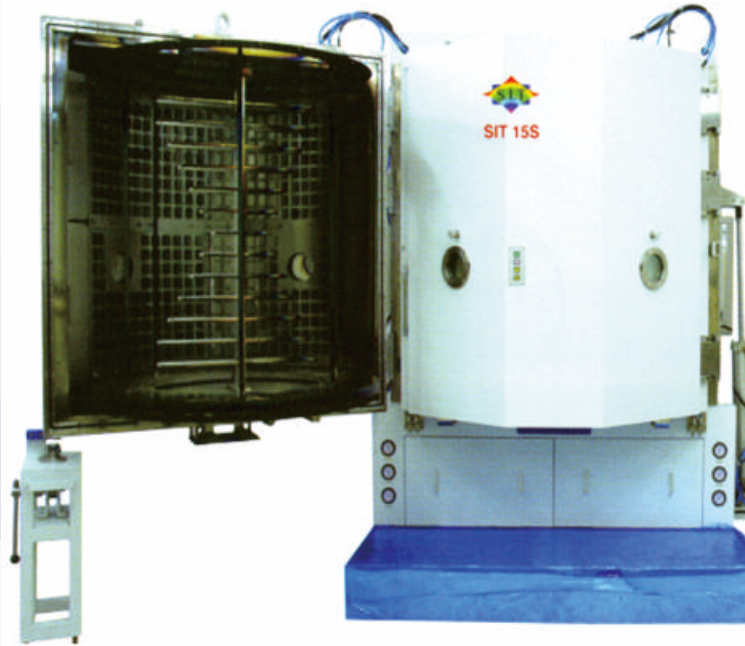
- GLASSES-AR,BBAR,RX Lens
- Color Fitter-LCD,DLP Projection
- Optical Dichroic Filter-Welding Filter,Laser Protector Filter
- Band Pass Filter-Laser Window,Sensor Window,UV/IR Cut Filter
- IR Cut Filter-CCD Camera,Mobile Phone Camera,Illuminator
- Polarization Beam Splitters-Beam Splitting,Spectrometry,DVD-RW
- Metal Mirror,Color Glass,Lamp & Reflector
- Hydrophobic coating



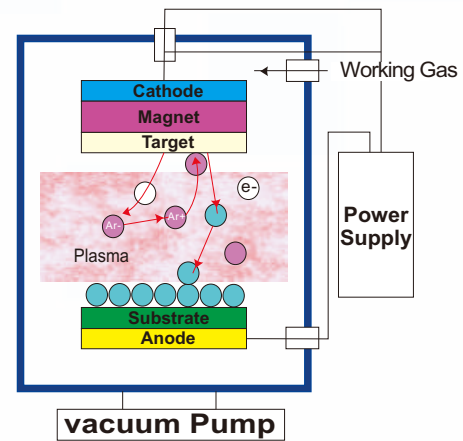
DESCRIPTION		MODEL	SIT-750	SIT-900	SIT-1200	SIT1350	SIT-1650	SIT-2050
Chamber	Diameter[mm]		Ø750	Ø900	Ø1200	Ø1350	Ø1650	Ø2050
	Height[mm]		1000	1080	1280	1400	1600	1950
Pumping System	Oil Rotary Pump		E2M175 178m <sup>3</sup> /hr[50Hz],214m <sup>3</sup> /hr[60Hz]		E2M275 292m <sup>3</sup> /hr[50Hz],350m <sup>3</sup> /hr[60Hz]		412J or E2M275	
	Mechanical Booster Pump		Eh500		Eh1200		Eh2600	
	Oil Diffusion Pump		24"1Set - 1400l/s		24"2Set - 2800l/s		28"2Set - 38000l/s	
	Option		Cryo - Pumps,Turbo Molecular Pumps,or Other Pump Available					
Substrate Heater	Halogen Lamp		0~400℃,5Wx3EA3 Set		0~400℃,1000Wx5EA 3Set		0~400℃,1000Wx5EA 6Set	
	Micro-sheath Heater		[Option]					
Substrate Holder Type			Dome,Planetary of Flip Over/Rotation Speed:0 to 25rpm					
Thin Fikm Deposition Control System			Physical Type-IC/6 [Inficon] / Optical Monitor System [Option]					
Vacuum Measurement System			High Vacuum Sensor : 1,Low Vacuum Sensor : 2 [Several types are available]					
Ekectronic Control System			Touch Screen/PC and PLC Based Control System					
Lon Beam Source			SHS-E04[End Hall Type]					
Electron Beam Source			SIES-180 or JEOL System available.Capacity:18cc,25cc/Deflection Angle:180°,270° [Option]/Number of Pocket:6,8,12etc.					
Resistance Evaporation Source			Input Power:0 to 200V AC/Output Power:9V 4kVA[Optuon]					
Auto Pressure Cpntrol System			Defrost,Cooling for Chamber [option]/Cooling for Diffusion Pump					
Cold Trap			[Option]					
Pumping Speed[up to 3.0x10 <sup>-5</sup> Torr]			Within 10min.[Unloaded,Not Heated,and Cleaned Condition]					
Ultimate Pressure			10-7Torr [Unloaded,Not Heated,and Cleaned Condition]					
Customer Requests			Power Consumption : AC 220 or 380V 3-ph.40~100kw/Air Pressure:6kg/cm <sup>2</sup> /Cooling Wanter:18 to 25℃,3~4kg/cm <sup>2</sup>					
Order Design			Other Size,Other Component Available					

# 濺鍍&熱蒸鍍系統

Batch sputter & Thermal evaporation System



Sputtering Plasma



Sputtering Schematic

DESCRIPTION		MODEL	SIT90S	SIT12S	SIT15S
Chamber	Diameter[mm]		Ø900	Ø1200	Ø1500
	Height[mm]		1300	1500	1600
Pumping System	Oil Rotary Pump		E2M175 [or E2M275] 178m <sup>3</sup> /hr[50Hz], 214m <sup>3</sup> /hr[60Hz]	E2M275 292m <sup>3</sup> /hr[50Hz], 350m <sup>3</sup> /hr[60Hz]	412J or E2M275
	Mechanical Booster Pump		EH1200	EH2600	Eh2600
	Oil Diffusion Pump		24"1Set - 1400l/s	24"2Set - 2800l/s	28"2Set - 38000l/s
	Option		Turbo Molecular Pumps,Cryo - Pumps,or Other Pump Available		
Substrate Holder			[Option]Micro-sheath Heat,Cartridge Heater		
Substrate Holder Type			Turn Table/Jig 10EA[1SET-1Door]	Turn Table/Jig 16EA[1SET-1Door]	Turn Table/Jig 22EA[1SET-1Door]
Vacuum Measurement System			High Vacuum Sensor : 1,Low Vacuum Sensor : 2 [Several types are available]		
Electronic Control System			Tonch Screen/PC and PLC Based Control System		
Ion Beam Source			[Option]		
Resistance Evaporation Source			slls-L10[Anode Layer Liner Ion Source Type]		
Auto Pressure Cpntrl System			[Option]Input Power:0 to 380V AC / Output Power:9V 30kVA[Optuon]		
Cold Trap			Defrost,Cooling for Chamber [option]/Cooling for Diffusion Pump [Option]		
Pumping Speed[up to3.0x10 <sup>-5</sup> Torr]			Within 10min.[Unloaded,Not Heated,and Cleaned Condition]		
Ultimate Pressure			10-7Torr [Unloaded,Not Heated,and Cleaned Condition]		
Customer Requests			Power Consumption : AC 220 or 380V 3-ph.40~100kw/Air Pressure:6kg/cm <sup>2</sup> /Cooling Wanter:18 to 25°C,3~4kg/cm <sup>2</sup>		
Order Design			Other Size,Other Component Available		

# 離子鎗

Ion Beam Gun



Ion Beam Gun



Feedthrough



Ion Beam Operation Unit



Ion Beam Power Unit

## Ion Beam Gun

- Type: End Hall
- Cooling Water: 18 to 23°C, more than 30L/min
- Ion Energy: 40~120eV
- Beam Current: Up to 2Amp

## Gas Feed Through

- In/Out Connection: 1/8 inch SUS Tube Fitting
- Hole Dimension: Ø25

## Water Feed Through

- In/Out Connection: 3/8 inch One Touch Fitting
- Hole Dimension: Ø25

## Electrode Feed Through

- Voltage: 300V AC max
- Current: 30A max
- Hole Dimension: Ø25

## Power Supply

- Input Power : 208~230V 1-ph AC 5KVA
- Frequency: 50/60HZ
- Anode Voltage: 50~250V DC
- Anode Current: 1~16A
- Emission current: 1~15A
- Cathode current: 5~30A

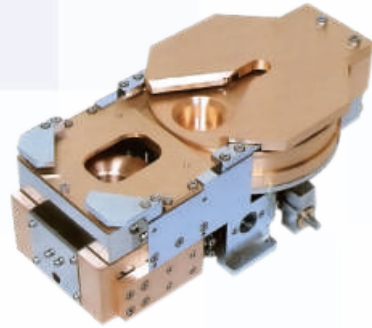


# 電子鎗

Electreon Beam Source



Electron Beam Source (Deflection 180°)



Electron Beam Source (Deflection 270°)



EB Operation Unit



EB Control Power Unit



Components Parts

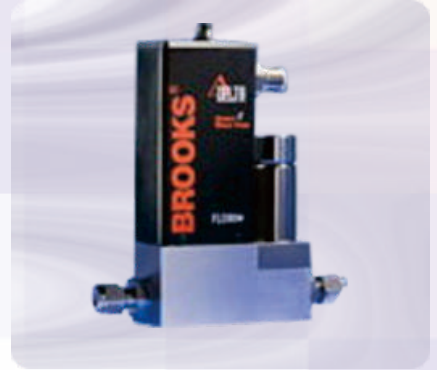
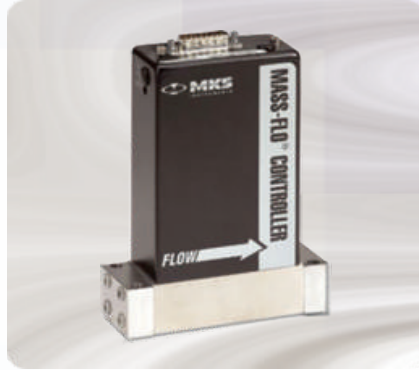
## Electron Beam Gun System

Description	Details
E-Beam Deflection	180° or 270° Deflection
Max Power Output	10kW(10kV,1A)
Electron Beam Scan	Magnetic Circular Coil
Crucible Holder	180ccX6ea,25ccX8ea,25ccX12ea
Cooling Water	Over 10Liter/Min (1kg/cm <sup>2</sup> or More)
Crucible Indexer	Automatic Motor Drive(Optional)

## Electron Beam Power System

Description	Details
Output	DC 4to-10kV / 0 to 1A
Beam Control	Internal/External(Optional)
Input Power	220VAC,3Phase,10KVA
Grounding	First Earth(Under 10 <sup>-3</sup> Ω)
SCAN Frequency	X-SCAN:50Hz,Y-SCAN:500Hz

氣體產品  
Gas Products



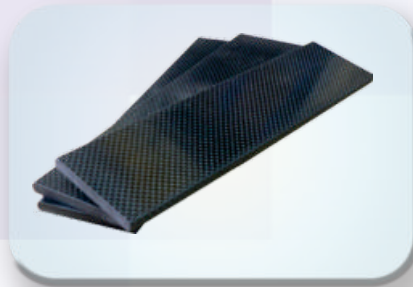
專業

迅速

過濾器  
Filter



幫浦維修包  
Pump repair kits



鎢舟  
Tungsten boat



各式法蘭  
Kinds of flange



各式管件  
Kinds of pipe fitting



電子鎗坩鍋  
E-gun crucible



可升降旋轉加熱模組  
Liftable Rotating heating module



電流導入電極  
the current introducing electrode



原配件訂做  
Genuine Parts made



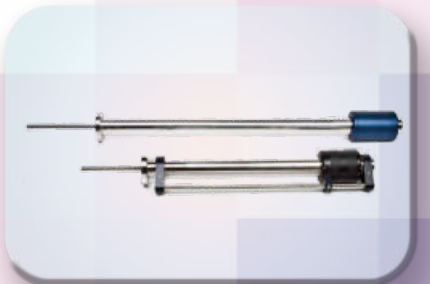
可調角度濺鍍靶  
Adjustable angle sputter target



磁控濺鍍靶  
Magnetron sputter target



線性傳輸棒  
linear transmission rods



# 高真空幫浦

High-Vacuum Pump



Turbo pump



Diffusion pump



Cryo pump



Ion pump

**cerlikon**  
leybold vacuum

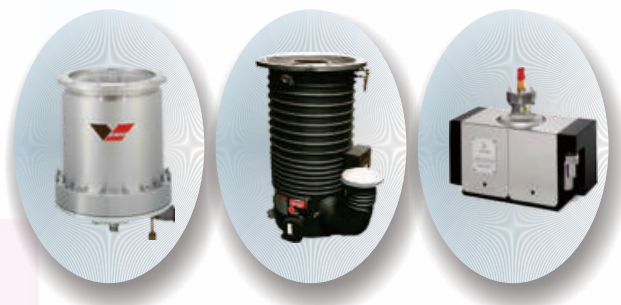
**ULVAC**



**ALCATEL**



**PFEIFFER VACUUM**



真空幫浦  
Vacuum Pump

**oerlikon**  
leybold vacuum

ALCATEL

**BECKER**

**Busch**

**STOKES**  
VACUUM Inc.



**VARIAN**



**EBARA**

**ULVAC**

**ORION**



**Kashiyama**

**Welch**  
Rietschle Thomas

**PFEIFFER** VACUUM



# 真空壓力計

Vacuum gauge

ULVAC

adixen

by Alcatel Vacuum Technology

INFICON

EDWARDS

GRANVILLE-PHILLIPS



DUNIWAY  
STOCKROOM CORP.

mks  
Technology for Productivity



# 真空閥門

Vacuum valves

VAT

Leader in Vacuum Valves

ULVAC

oerlikon  
leybold vacuum

PFEIFFER VACUUM



OSAKA VACUUM

mks  
Technology for Productivity



VARIAN



# 各式電源

All Kinds Power

## RF POWER



## DC POWER



## 膜厚監控器 THIN FILM



# 鍍膜材料

Field Application



品名	化學符號	純度	熔點	密度	透明波段	折射率	規格	外觀
氧化鈦氧化 鈮混合物	TiO <sub>2</sub> +Nb <sub>2</sub> O <sub>5</sub> (7:3)	99.99%				n≈1.9	Φ10mm	白色
氧化鈦氧化 鉭混合物	TiO <sub>2</sub> + Ta <sub>2</sub> O <sub>5</sub> (1:1)	99.99%				n≈2.25~2.3	Φ10mm	白色 或灰色
氧化銅	CuO	99.99%	1326°C	6.3g/cm <sup>3</sup>		n≈2.6	Φ10mm	棕黑色
氧化鉻	Cr <sub>2</sub> O <sub>3</sub>	99.99%	2435°C	5.2g/cm <sup>3</sup>		n≈2.4	Φ10mm	綠色
氧化銻氧化 錫混合物	In <sub>2</sub> O <sub>3</sub> +SnO <sub>2</sub> (9:1或95:5)		1565°C	7.1g/cm <sup>3</sup>	0.34~9μ	n≈2	Φ10mm	淺黃色
氧化鋅	ZnO	99.99%	1975°C	5.6g/cm <sup>3</sup>	0.4~16μ	n≈2	Φ10mm	白色
氧化鋅氧化 鋁混合物	ZnO+A1 <sub>2</sub> O <sub>3</sub>							
氧化銻	Sb <sub>2</sub> O <sub>3</sub>	99.99%	656°C	5.2g/cm <sup>3</sup>	0.3μ~	n≈1.8~1.9	Φ10mm	灰色
氧化鋁氧化 鈦混合物	A1 <sub>2</sub> O <sub>3</sub> +TiO <sub>2</sub> (9:1)	99.99%				n≈1.7	Φ10mm	白色
氧化鋁氧化 鎂混合物	A1 <sub>2</sub> O <sub>3</sub> +MgO (1:1)	99.99%				n≈1.65~1.7	Φ10mm	白色
氧化鋯氧化 鈮混合物	ZrO <sub>2</sub> +Y <sub>2</sub> O <sub>3</sub> (4:1)	99.99%				n≈1.9	Φ10mm	白色
氧化鋯氧化 鈦混合理學物	ZrO <sub>2</sub> + TiO <sub>2</sub> (1:1)	99.99%				n≈2.05~2.15	Φ10mm	白色 或灰色
氧化鋯氧化 鉭混合物	ZrO <sub>2</sub> + TaO <sub>5</sub> (7:3)	99.99%				n≈2.1	Φ10mm	白色
氧化鋯氧化 鋁混合物	ZrO <sub>2</sub> +A1 <sub>2</sub> O <sub>5</sub> (4:6)	99.99%				n≈1.7	Φ10mm	白色
氧化錫 (Pt、Pd) 功能膜料	SnO <sub>2</sub> +Pt (0.5~1%) SnO <sub>2</sub> +Pd (0.5~1%)		1127°C					
氧化錫氧化 銻混合物	SnO <sub>2</sub> + In <sub>2</sub> O <sub>5</sub> 5%		1127°C	6.9g/cm <sup>3</sup>	0.3~9μ	n≈2	Φ10mm	灰黃色
氧化鎂	MgO	99.99%	2800°C	3.58g/cm <sup>3</sup>	0.23~9μ	n≈1.7	Φ10mm	白色
氧化鎳	NiO	99.99%	1990°C	7.45g/cm <sup>3</sup>	0.52μ~	n≈2~2.1	Φ10mm	綠色
氧化鏷	Pr <sub>6</sub> O <sub>11</sub>	99.99%	2125°C	6.68g/cm <sup>3</sup>	0.4μ~	n≈1.8~1.9	顆粒	深黃色
氧化鐵	Fe <sub>2</sub> O <sub>3</sub>	99.99%	1565°C	5.24g/cm <sup>3</sup>		n≈2.75~2.9	Φ10mm	紅棕色
鈦酸鋇	BaTiO <sub>3</sub>	99.99%	1620°C					
鈦酸鋇	SrTiO <sub>3</sub>							
鈦酸鏷	PrTiO <sub>3</sub>	99.99%	2200~ 2300°C		0.3~9μ	n≈2.1	1~5mm 顆粒	灰色



品名	化學符號	純度	熔點	密度	透明波段	折射率	規格	外觀
一氧化鈦	TiO	99.99%	1750°C	4.93g/cm <sup>3</sup>	0.4~12μ	n≈2.2~2.3	Φ10mm 或顆粒	黃色
二太酸錯	Pr(TiO <sub>3</sub> ) <sub>2</sub>	99.99%	2200~ 2300°C		0.3~9μ	n≈2.2	1~5mm 顆粒	深灰色
二氧化二鈹	CeO <sub>2</sub>	99.9% 99.99%	2600°C	7.3g/cm <sup>3</sup>	0.46~11μ	n≈2.2	Φ10mm	淺棕色
二氧化矽	SiO <sub>2</sub>	99.99%	1610°C	2.2g/cm <sup>3</sup>	0.2~9μ (30~100μ)	n≈1.45	Φ10mm	白色
二氧化鈦	TiO <sub>2</sub>	99.99%	1800°C	4.29g/cm <sup>3</sup>	0.36~9μ	n≈2.3	Φ30、10 mm 或顆粒	白色 或灰色
二氧化鈣	HfO <sub>2</sub>	99.99%	2812°C	9.7g/cm <sup>3</sup>	0.2~9μ	n≈2	Φ10mm 或顆粒	白色
二氧化鋯	ZrO <sub>2</sub>	99.9% 99.99%	2700°C	5.5g/cm <sup>3</sup>	0.25~9μ	n≈1.95~2.05	Φ30、10mm 或顆粒	白色 或灰色
三氟化鈮	YF <sub>3</sub>	99.99%	1357°C	4.01g/cm <sup>3</sup>	0.2~14μ	n≈1.5	顆粒	白色
三氟化鈹	DyF <sub>3</sub>	99.99%	1360°C		0.22~12μ	n≈1.56	顆粒	白色或 淺黃色
三氟化鐮	YbF <sub>3</sub>	99.99%	1157°C	8.17g/cm <sup>3</sup>	0.22~12μ	n≈1.52	顆粒	白色
三氟化鏷	LaF <sub>3</sub>	99.99%	1490°C	6g/cm <sup>3</sup>	0.22~14μ	n≈1.59	顆粒	白色
三氧化二鈮	Nb <sub>2</sub> O <sub>3</sub>	99.99%	2272°C	7.2g/cm <sup>3</sup>	0.4~2μ	n≈1.8	Φ10mm	淺紫色
三氧化二鈮	Y <sub>2</sub> O <sub>3</sub>	99.99%	2680°C	4.8g/cm <sup>3</sup>	0.23~9μ	n≈1.8~1.9	Φ10mm	白色
三氧化二鈹	Gd <sub>2</sub> O <sub>3</sub>	99.99%	2310°C	7.4g/cm <sup>3</sup>	0.22~9μ	n≈1.7~1.8	Φ10mm	白色
三氧化二鈹	Sm <sub>2</sub> O <sub>3</sub>	99.99%	2350°C	7.4g/cm <sup>3</sup>	0.23μ	n≈1.8	Φ10mm	灰色
三氧化二鈦	Ti <sub>2</sub> O <sub>3</sub>	99.99%	1880°C	4.53g/cm <sup>3</sup>	0.4~12μ	n≈2.2~2.3	Φ10mm 或顆粒	紫色
三氧化二鈹	Bi <sub>2</sub> O <sub>3</sub>	99.99%	820°C	8.9g/cm <sup>3</sup>	0.4μ~	n≈2.5	Φ10mm	黃色
三氧化二鋁	Al <sub>2</sub> O <sub>3</sub>	99.99%	2045°C	4g/cm <sup>3</sup>	0.17~9μ	n≈1.6~1.65	Φ10mm	白色
三氧化鎢	WO <sub>3</sub>	99.99%	1473°C	7.1g/cm <sup>3</sup>	0.3~10μ	n≈1.65~1.7	Φ10mm	黃色或 淺藍色
三鈦酸錯	LaTiO <sub>3</sub>	99.99%	2200~ 2300°C		0.3~9μ	n≈1.9	1~5mm 顆粒	深灰色
五氧化二鈮	Nb <sub>2</sub> O <sub>5</sub>	99.99%	1530°C	4.47g/cm <sup>3</sup>	0.35~9μ	n≈2.3	Φ10mm 或顆粒	白色
五氧化二鈹	Ta <sub>2</sub> O <sub>5</sub>	99.99%	1800°C	8.7g/cm <sup>3</sup>	0.35~9μ	n≈2.3	Φ10mm 或顆粒	白色 或灰色
五氧化三鈦	Ti <sub>3</sub> O <sub>5</sub>	99.99%	1750°C	4.57g/cm <sup>3</sup>	0.4~12μ	n≈2.2~2.4	Φ10mm 或顆粒	紫色
氧化鈮	V <sub>2</sub> O <sub>5</sub>	99.99%	690°C	3.36g/cm <sup>3</sup>	0.56~7μ	n≈2.3	顆粒	淺黃色

# 幫浦油

Pump Oil

SF-70 & SF-100

半合成系、機械泵浦用油

項目	特性	測試方式	SF-70	SF-100
比重	@ 15/4°C	ASTM D-1298	0.84	0.86
粘度	@ 40°C cst	ASTM D-445	70	90
粘度	@ 100°C cst	ASTM D-445	10	11.2
粘度值		ASTM D-2270	118	105
閃火點	- c.o.c.	ASTM D-92	268	272
流動點	- c.o.c.	ASTM D-97	-28	-20
總酸價	mgkOH/g	ASTM D-664	0.01	0.01
銅片腐蝕		ASTM D-130	淺黃色	淺黃色
水含量	% ppm(STD<5ppm)	ASTM D-1744	-----	-----
終極壓力	@ 25°C Torr		$1 \times 10^{-4}$	$1 \times 10^{-4}$

項目 品名	比重 15/4°C	引火點 °C	粘度Cst 40°C	流動點 °C	色 ASTM	離水度	熱安定度 170°C×24h	蒸氣壓50°C Pa(Torr)	特點	用途
石油系										
MR-200A	0.55	252	71	.12.5	L0.5	40.40.0 (5以下)	合格	$1.3 \times 10^{-3}$ 以下 ( $1 \times 10^{-5}$ )	耐熱 耐酸化	水分離性特強 油墨80°C ~ 100°C
MR-250A	0.882	276	105	.12.5	L1.5	40.40.0 (5以下)	合格	$1.3 \times 10^{-3}$ 以下 ( $1 \times 10^{-5}$ )		水分離性特強
合成系										
SO-M	0.896	254	63.7	.20以下	L0.5	40.40.0 (5以下)	合格	$4 \times 10^{-4}$ 以下 ( $3 \times 10^{-6}$ )	耐熱 耐酸化 耐瓦斯 耐強氧化 氣體	耐酸氧化氣體特質



Fomblin 氟素油



Fomblin 真空膏



High vacuum grease 真空膏

X \ Y	Pa(n/m <sup>2</sup> )	Bar	Torr (mmHg)	kgf/cm <sup>2</sup>	mmH <sub>2</sub> O	inHg	P.S.I (lb/in <sup>2</sup> )	atm
1Pa	1	10x10 <sup>-5</sup>	7.501x10 <sup>-3</sup>	1.02x10 <sup>-5</sup>	0.1021	2.953x10 <sup>-4</sup>	1.45x10 <sup>-4</sup>	9.869x10 <sup>-6</sup>
1Bar	1x10 <sup>5</sup>	1	750.1	1.02	1.02x10 <sup>4</sup>	29.53	14.5	0.9869
1Torr	133.3	1.333x10 <sup>-3</sup>	1	1.359x10 <sup>-3</sup>	13.61	0.03937	0.01934	1.316x10 <sup>-3</sup>
1Kgf/cm <sup>2</sup>	9.807x10 <sup>4</sup>	0.9807	735.5	1	1.001x10 <sup>4</sup>	28.96	14.22	0.9678
1mmH <sub>2</sub> O	9.807	9.807x10 <sup>-6</sup>	0.07348	9.96x10 <sup>-6</sup>	1	2.89x10 <sup>-4</sup>	1.42x10 <sup>-3</sup>	9.68x10 <sup>-4</sup>
1inHg	3.386x10 <sup>3</sup>	0.03386	25.4	0.03453	345.6	1	0.4912	0.03342
1P.S.I	6.895x10 <sup>3</sup>	0.06895	51.71	0.07031	703.7	2.035	1	0.06805
1atm	1.013x10 <sup>5</sup>	1.013	760	1.033	1.034x10 <sup>4</sup>	29.92	14.7	1

族→ 週期	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	I A 1 H 氫																	VIIA 2 He 氦
2	3 Li 鋰	4 Be 鈹											5 B 硼	6 C 碳	7 N 氮	8 O 氧	9 F 氟	10 Ne 氖
3	11 Na 鈉	12 Mg 鎂											13 Al 鋁	14 Si 矽	15 P 磷	16 S 硫	17 Cl 氯	18 Ar 氬
4	19 K 鉀	20 Ca 鈣	21 Sc 釷	22 Ti 鈦	23 V 釩	24 Cr 鉻	25 Mn 錳	26 Fe 鐵	27 Co 鈷	28 Ni 鎳	29 Cu 銅	30 Zn 鋅	31 Ga 鎵	32 Ge 鍮	33 As 砷	34 Se 硒	35 Br 溴	36 Kr 氪
5	37 Rb 鉀	38 Sr 銻	39 Y 釷	40 Zr 鋯	41 Nb 鈮	42 Mo 鉬	43 Tc 錳	44 Ru 鈷	45 Rh 銲	46 Pd 鈀	47 Ag 銀	48 Cd 鎘	49 In 銦	50 Sn 錫	51 Sb 銻	52 Te 碲	53 I 碘	54 Xe 氙
6	55 Cs 銫	56 Ba 鋇	57 La 釷	72 Hf 鈦	73 Ta 鉭	74 W 鎢	75 Re 錳	76 Os 銱	77 Ir 銲	78 Pt 鉑	79 Au 金	80 Hg 汞	81 Tl 鉍	82 Pb 鉛	83 Bi 鉍	84 Po 鉷	85 At 砒	86 Rn 氡
7	87 Fr 銣	88 Ra 鐳	89 Ac 釷	104 Rf 釷	105 Db 錒	106 Sg 錒	107 Bh 錒	108 Hs 錒	109 Mt 錒	110 Ds 錒	111 Rg 錒	112 Cn 錒	113 Uut 錒	114 Uuq 錒	115 Uup 錒	116 Uuh 錒	117 Uus 錒	118 Uuo 錒

鑼系元素 57-71

鈷系元素 89-103

58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce 鈰	Pr 鐳	Nd 釷	Pm 鉅	Sm 釷	Eu 鎔	Gd 釷	Tb 釷	Dy 釷	Ho 釷	Er 釷	Tm 釷	Yb 釷	Lu 釷
90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th 釷	Pa 鎳	U 鈾	Np 釷	Pu 釷	Am 錒	Cm 錒	Bk 釷	Cf 釷	Es 釷	Fm 釷	Mb 釷	No 釷	Lr 釷

鹼金 鹼土 鑼系 鈷系 過渡 主族 類金 非金 鹵素 稀有

# 二手販賣

Used



DC 電源  
DC Power



高真空幫浦  
High-Vacuum Pump



RF 電源  
RF Power



真空閥門  
Vacuum Valves



反應式離子蝕刻系統  
R. I. E System



渦輪幫浦  
Turbo Molecular Pumps



冷卻機  
Spindle Cooler



油式真空幫浦  
Oil Rotary Pump



幫浦渦捲  
Scroll Pump



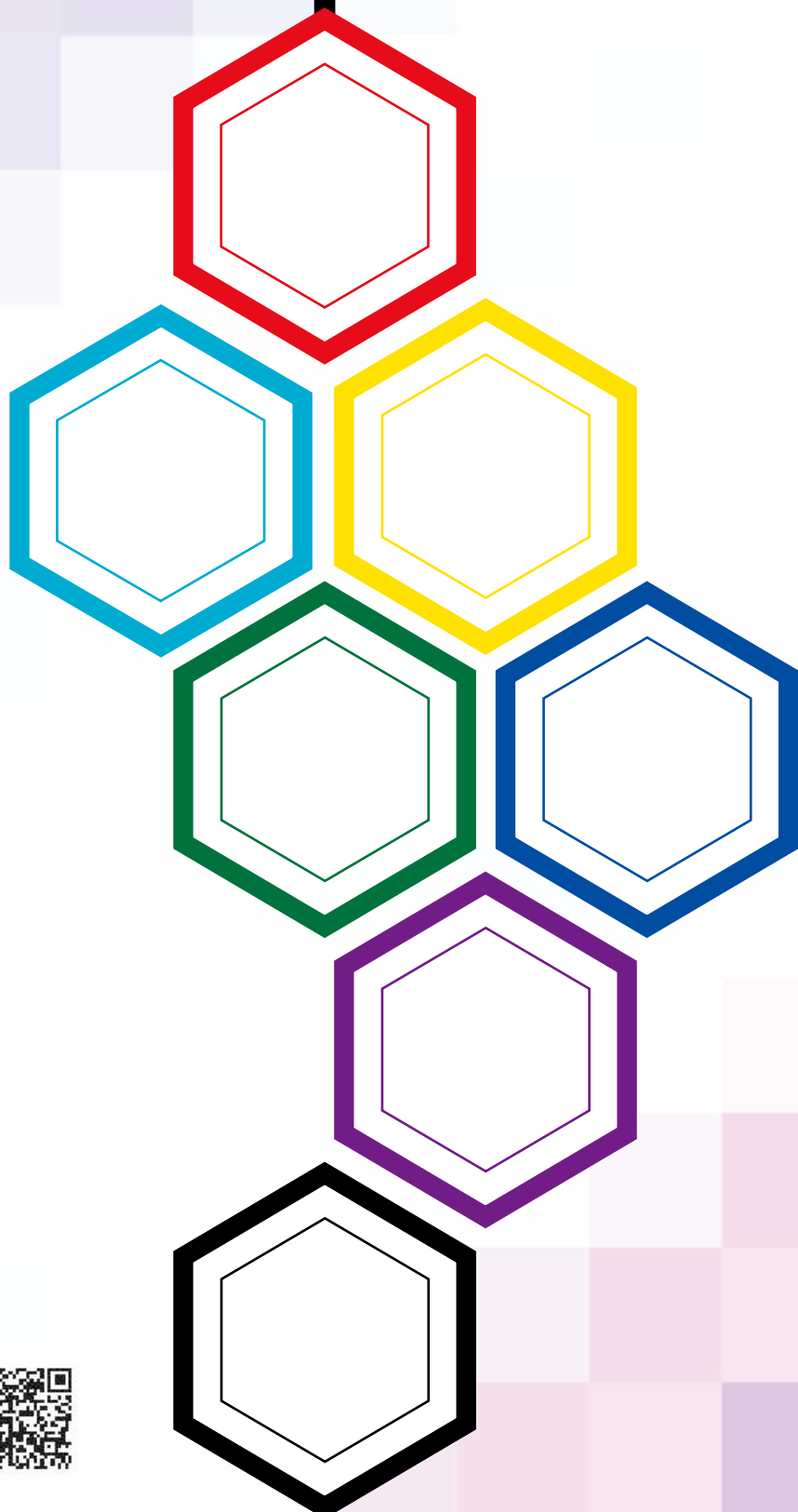
氣體產品  
Gas Products



乾式真空幫浦  
Dry Pump



熱阻式蒸鍍機  
DLED/OLED Thermal Evaporation system



**Ishi**  
VACUUM

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