

Contact

JAPAN : **ULVAC, Inc.**

www.ulvac.co.jp/en

2500 Hagisono, Chigasaki, Kanagawa 253-8543, Japan

TEL: +81-467-89-2033 FAX: +81-467-89-2250

CHINA : ULVAC (Shanghai) Trading Co., Ltd.

www.ulvac-shanghai.com

No.1000, Qixin Road, Minhang, Shanghai 201199, China

+86-21-6217-6618

TAIWAN : ULVAC TAIWAN INC.

www.ulvac.com.tw

8F., No.5, Keji Rd., Hsinchu Science Park,
Hsinchu City 30078, Taiwan +R.O.C-

+886-3-579-5688

VIETNAM :

ULVAC SINGAPORE PTD Vietnam Representative Office

+63-46-437-7700

MALAYSIA : ULVAC MALAYSIA SDN. BHD.

No.8 Jalan Gitar 33/3, Elite Industrial Estate Off Jalan, Bukit,
Kemuning 40350, Shah Alam, Selangor Darul Ehsan, Malaysia

+60-3-5121-4700

SOUTH KOREA : ULVAC KOREA, Ltd.

www.ulvackorea.co.kr

5, Hansan-gil, Cheongbuk-Myeon, Pyeongtaek-si,
Gyeonggi-Do, Korea 17792

+82-31-683-2922

SINGAPORE : ULVAC SINGAPORE PTE. LTD.

www.ulvac.com.sg

11 Tampines Street 92, Tampines Biz-Hub,
#02-08, Singapore 528872

+65-6542-2700

INDONESIA :

ULVAC SINGAPORE PTD Indonesia Representative Office

+62-21-8990-5070

INDIA : ULVAC, Inc. India Branch

301, Tara Tycoon 12-13-97,
Tarnaka Secunderabad - 500 017, India

+91-40-27007006

USA : ULVAC Technologies, Inc.

www.ulvac.com

401 Griffin Brook Drive Methuen, MA 01844, U.S.A.

+1-978-686-7550

GERMANY : ULVAC GmbH

www.ulvac.eu

Klausnerring 4, 85551 Kirchheim b. München, Germany

+49-89-960909-0

PHILIPPINES :

ULVAC SINGAPORE PTE. LTD. Philippines Branch Office

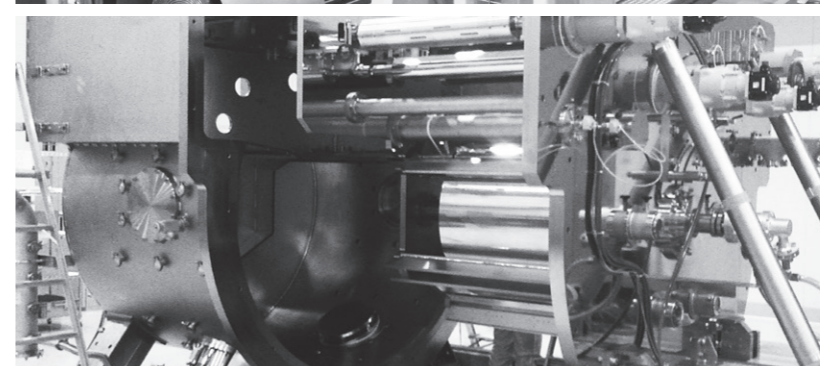
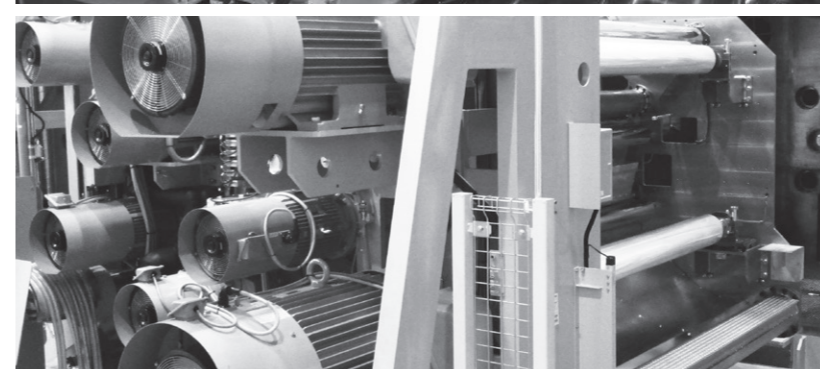
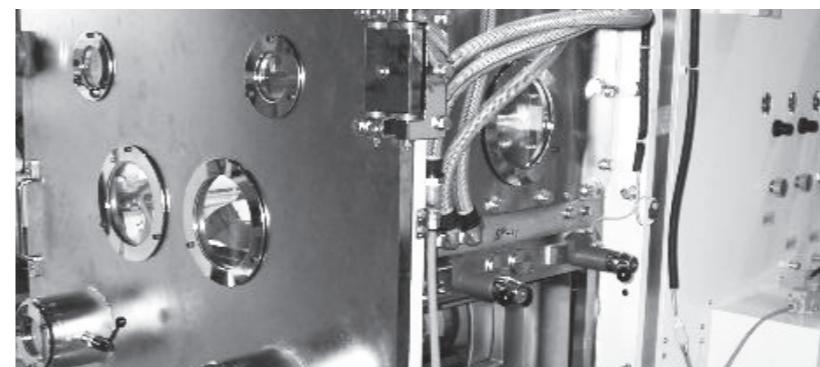
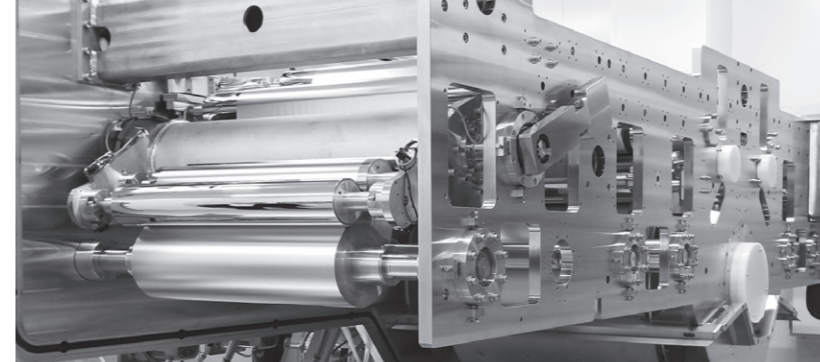
+63-46-437-7700

THAILAND : ULVAC (THAILAND) LTD.

www.ulvac.co.th

110/6 Moo 13 Soi 25/2 Kingkaew Road, Tambol Rachathewa
Amphur Bangplee, Samutprakarn 10540 Thailand

+66-2-7388883



**ROLL TO ROLL
EQUIPMENT
APPLICATION**

ULVAC

Roll to Roll Equipment Application

Flexible Film is a foundational industry supports other advanced industries and our lives.

ULVAC develops Roll to Roll Vacuum Technology which is essential for the manufacturing of highly functional Flexible Film.

These Roll to Roll vacuum systems serve various industries such as energy device, electronics device, life science.

we provide high performance

Roll to Roll vacuum coating systems specialized for high-volume mass production.



Roll to Roll

Equipment Application

Product Line-UP



Application		Touch Panel (TCO)	Touch Panel (Metal Mesh)	Optical Film (IM, AR)	Flexible Sensor	Metal Wiring, Contact	FCCL, COF	EMI Shield	Polarizer, Wire Grid
Material	Li								
	ITO	●		●					
	NbOx	●		●					
	SiOx	●		●					●
	AlOx								
	CuNi/NiCr		●		●	●	●		
	Cu	●	●		●	●	●	●	
	Ni				●	●			
	Cr								
	Ag		●		●	●		●	
	Au					●			
	Al								●
	Zn								
	ZnS								
	In/Sn								
	ZrOx								
	H.M.M/Ox,Ny							●	
System	Sputter	●	●	●	●	●	●	●	●
	IH-Evap. EWA							●	●
	RH-Evap.EWE								
	EB-Evap.EWJ							●	
	RH-Evap.EWK								
	Degas TWH	●	●	●		●			

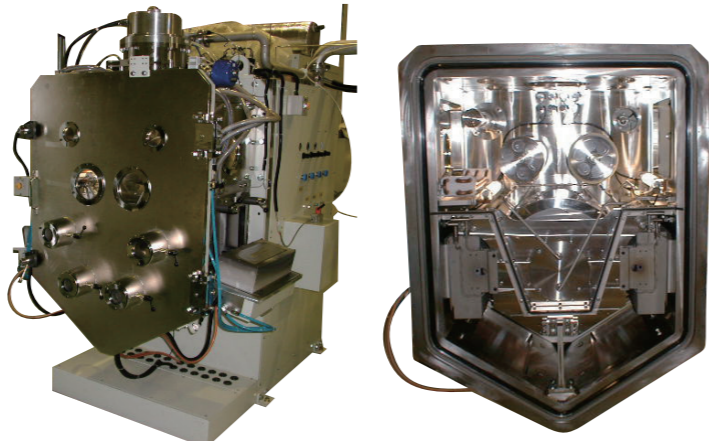
Battery	Film Capacitor	Window Film	Reflector, Traffic signs	Metal Barrier, Decoration	Transparent Barrier	Transfer, Stamping	Hologram, Security	Application	
●								Li	Material
		●						ITO	
								NbOx	
					●		●	SiOx	
					●			AlOx	
								CuNi/NiCr	
●								Cu	
●								Ni	
						●		Cr	
			●	●				Ag	
								Au	
●	●	●	●	●		●		Al	
	●							Zn	
								ZnS	
		●				●		In/Sn	
							●	ZrOx	
		●			●			H.M.M/Ox,Ny	
		●			●			Sputter	System
		●	●	●	●	●		IH-Evap. EWA	
	●							RH-Evap.EWE	
●					●		●	EB-Evap.EWJ	
●								RH-Evap.EWK	
●								Degas TWH	

SPW -025 is simple and compact type sputtering roll coater for fundamental development . It is ideal for short time operating.

Features

- It can easy operation by simple roller formation and simple vacuum system.
- It has high maintenancavity with large front door and cathode maintenance hatch.
- Sputtering cathode can be selected from DC single, AC Dual.

SPW-025



SPW -060 is medium size and high performance type sputtering roll coater for touch panel, optical film, electric device. It is ideal for multi layer deposition.

Features

- Low gas contamination with differential pumping : Between Cathode to Cathode <1%
- Selectable two types of platform : Batch type, Load-lock type
- **Batch Type** : Stable film transfer by single roller base : Optimal film pass line for various pre-process
- **Load lock Type** : High productivity with load-lock chamber : High maintenance performance with double side dolly system

SPW-060 Load-lock type

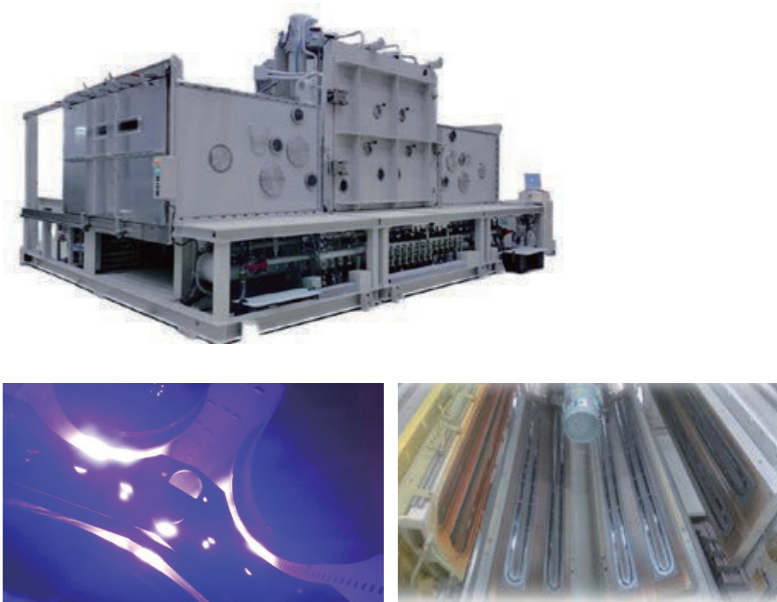


SPW -165Cn is wide width and high throughput type sputtering roll coater for touch panel, optical film, window film and so on.

Features

- It has double side maintenance dolly for cathode and for inner shield .
- It has process extension by additional chambers and various options
- Low gas contamination with differential pumping : Between Cathode to Cathode <1%
- Process extensibility with module chamber concept and various option

SPW-165C1



	SPW-025	SPW-060	SPW-165Cn
Web Width	Max 250mm	Max 600mm	Max 1600mm
Web Material	PET,PEN,PI,PC,COP,TAC and others		
Web Thickness	PET : 50~200 μm	PET : 25~200 μm	
Web Diameter	Φ290mm	Φ550mm	Φ900mm
Winding Speed	0.2~5.0m/min	0.5~10m/min	0.5~10m/min
Cathode type	Planer	Planer/Rotary	Planer/Rotary
Cathode	DC Single:4sets AC Dual: 2sets	DC Dual : 4sets AC Dual : 4sets	DC Dual : 4 x n sets AC Dual : 4 x n sets
Sputtering Target Material	ITO,Nb2O5,SiO2,Cu and Metal		
Main Roller Temperature	-5~80℃	-20~80℃ Option : -10~180℃	
Pre-process (Option)	BMB(DC), Heater	BMB(DC,RF), Ion Gun, Heater	
Layout	9mW × 9.8mL × 2.6mH	(Load lock type) 15mW × 10mL × 3.9mH	(C1Type) 19mW × 17mL × 4.3mH

* This specification may be changed without notice.

RH Evaporation Roll coater / EWE-Series · EWD-Series

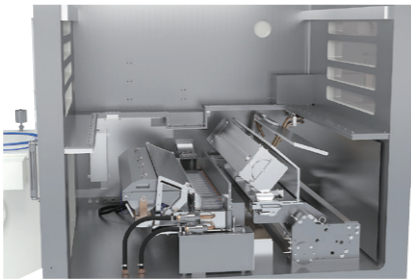
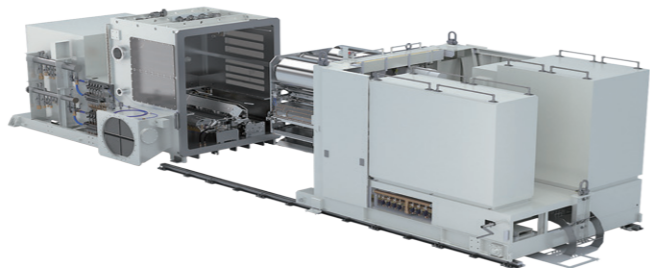
* Special use for film capacitor

EWE series is RH heating type evaporation roll coater for high-end Film capacitor. It is ideal for high speed and high accuracy pattern deposition.

Features

- Ultra thin OPP web handling with high speed deposition.
: OPP 2.0μm - Depo speed 600m/min
- High speed patterning for self-security function
: Pattern accuracy < 0.2 ± 0.05mm
: Depo speed 750m/min
- High definition and high speed patterning technique by AL/Zn multi source and flexographic unit
- Web thermal damage-less Thin web handling by EB+DC Bias process
: Thin web closely contact to main roller and heat exchange rate improves

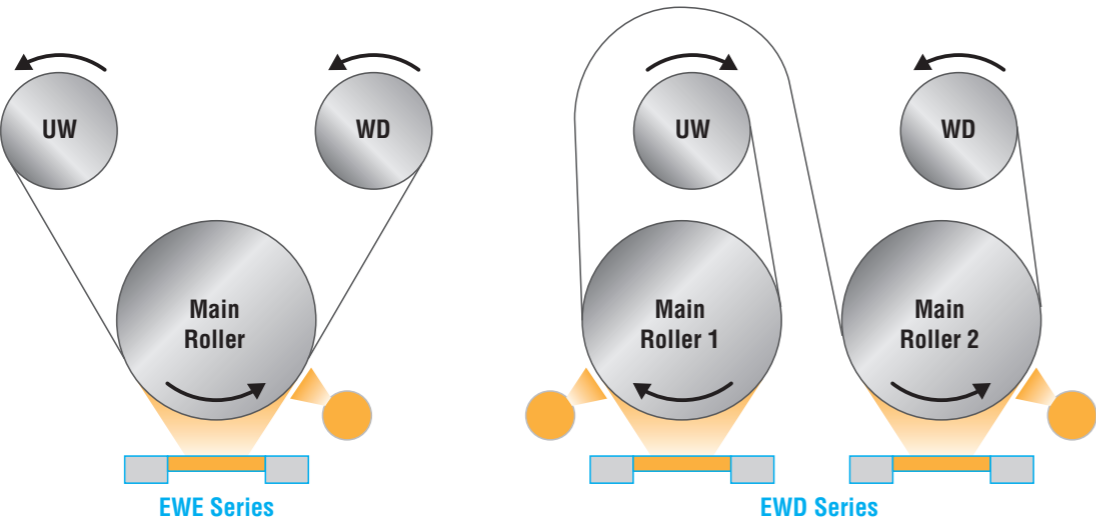
EWE-110



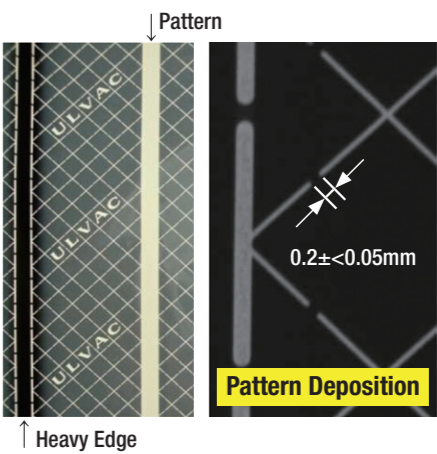
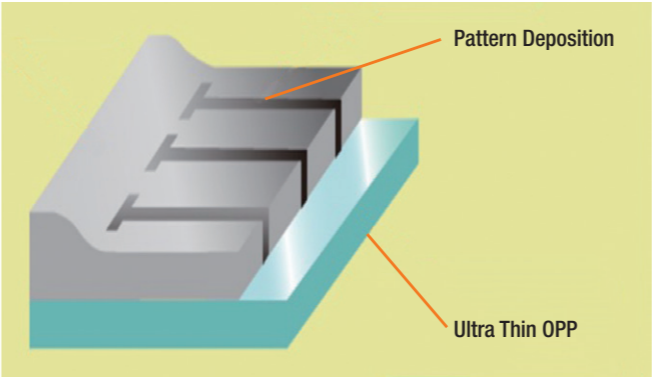
EWD series is RH heating type “Double Side” evaporation roll coater for high-end Film capacitor.

Features

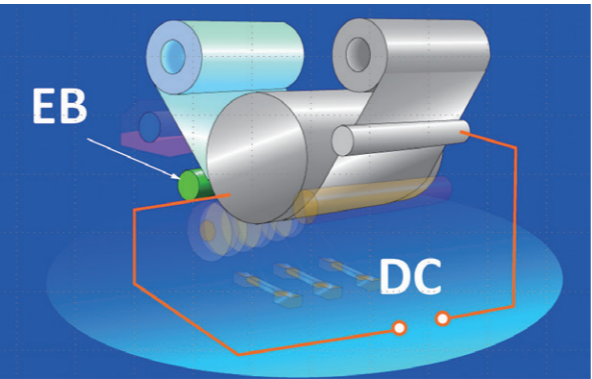
- EWD can double-sided deposition.
- Common specifications are same as EWE series



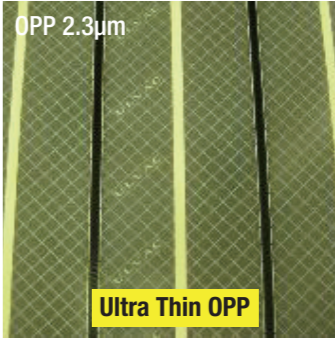
■ Patterning Technology



■ Ultra Thin OPP Technology (EB+DC Method)



[Result of EB+DC Method]



[Result of Conventional Method]



	EWE-060	EWE-080	EWE-110
Web Width	Max.670mm	Max.820mm	Max.1050mm
Web Material	OPP 2.0 ~ 6.0μm	OPP 2.0 ~ 6.0μm	OPP 2.0 ~ 6.0μm
Web Diameter	Φ650	Φ650	Φ620
Winding Speed	100 ~ 1200m/min	100 ~ 1200m/min	100 ~ 1000m/min
Driving Motor	8 motor system		
AL Evap.Boat Qty	11	13	15
Deposition Winding Speed	750m/min (OPP 2.3μ ~ Al 10Ω/□~)	750m/min (OPP 2.3μ ~ Al 10Ω/□~)	750m/min (OPP 2.3μ ~ Al 10Ω/□~)
Resistance	Al : 1.0 ~ 60Ω/□ * Reference examples		
Deposition Length	55,000m (OPP 2.0μ~)		
Pattern accuracy	< 0.2 ± 0.05mm (Depo speed 750m/min, OPP 2.3μ~)		
Main Roller Temperature	-20 ~ 20℃		
Layout	8.5mW × 14mL × 4.2mH + 2.5mD (Pit)	8.5mW × 15mL × 4.2mH + 2.5mD (Pit)	8.5mW × 15.5mL × 4.2mH + 2.5mD (Pit)

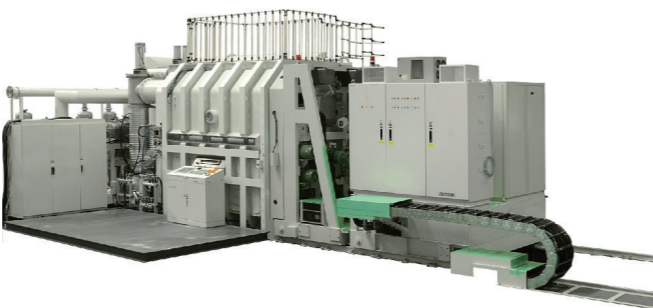
* This specification may be changed without notice.

EWA series is IH heating type evaporation roll coater for life-science films.
It is ideal for high speed deposition and wide web handling.

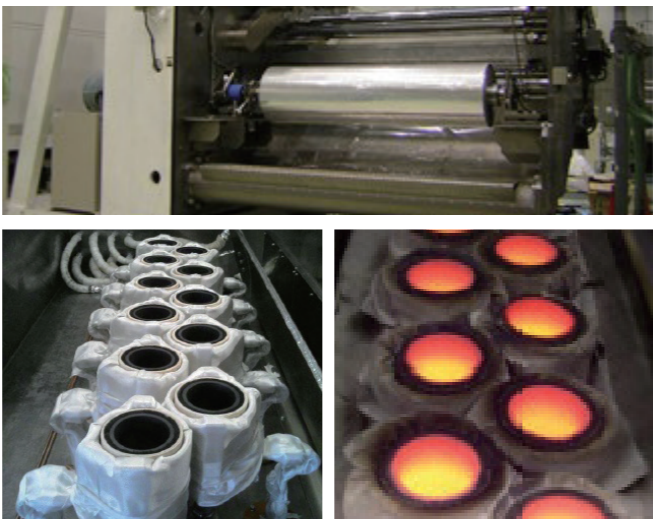
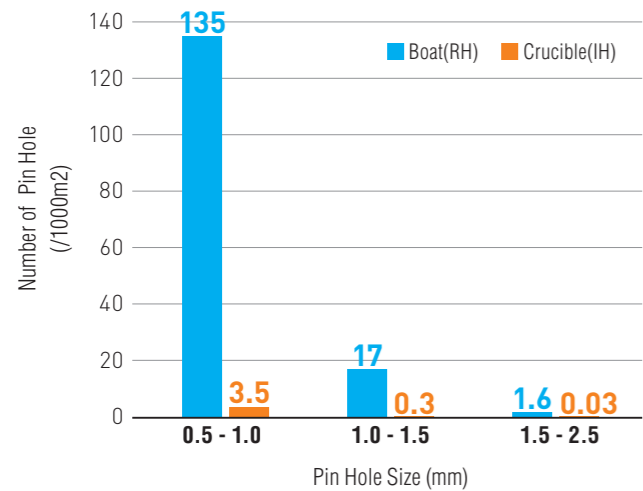
Features

- Web width : Up to 3300mm
- Low pin-hole deposition with IH Heating
- 6 motor system for high stability web winding under high speed deposition
- Oxide deposition for transparent barrier film (AlOx, SiOx)
- It can deposit various materials for multi purpose (Al, Cu, Ag, Cr, Sn, In , ZnS, SiOx, (AlOx,)
- Adopt to low O.D. value

EWA-165



Pin-hole comparison IH vs RH



	EWA-165	EWA-210	EWA-250
Web Width	Max.1650mm	Max.2150mm	Max.2500mm
Web Material	PET : 9 - 50 μm CPP : 20 - 30 μm		
Web Diameter	Φ1150mm		
Winding Speed range	100 ~ 600 m/min		
Evaporation Material	Al, Cu, Ag, Cr, Sn, In , ZnS, SiOx, (AlOx)		
Crucible Qty.	11	14	16
O.D.(Al)	0.3 ~ 3.0		
Driving Motor	6 motor system		
Deposition Winding Speed	450m/min (Al O.D. 2.2)		
Deposition Length	36,000m (Al O.D.2.2)		
Main Roller Temp.	-20 ~ 30℃		
Thickness Monitor	Transmittance Monitor (ULVAC FADM) Option : EDDY current monitor		
Thickness Monitor Prove Qty.	11pts	14pts	16pts
Layout	9.2mW × 16mL × 4.2mH + 2.6mD(Pit)	9.5mW × 17mL × 4.2mH + 3.5mD(Pit)	10mW × 21.5mL × 4.2mH + 3.5mD(Pit)

* This specification may be changed without notice.

EWJ series is EB heating type evaporation roll coater for multi purpose.
It is ideal for ultra high rate deposition, and high-melting-point metal and Sublimation material deposition (Cu, Ni, Ti, AlOx, SiOx, MgO, etc...)

Features

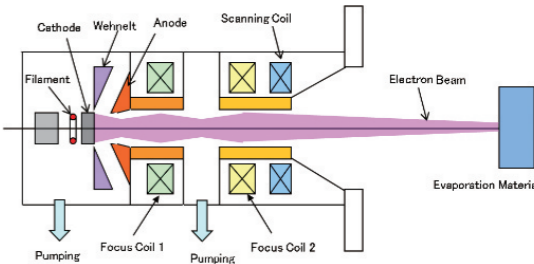
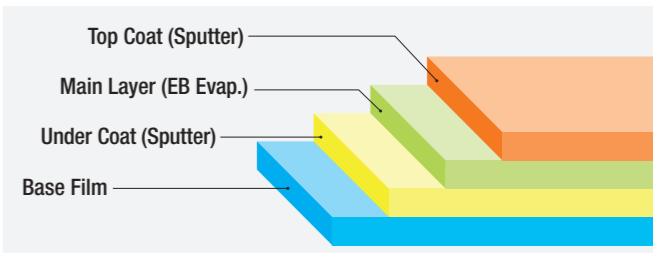
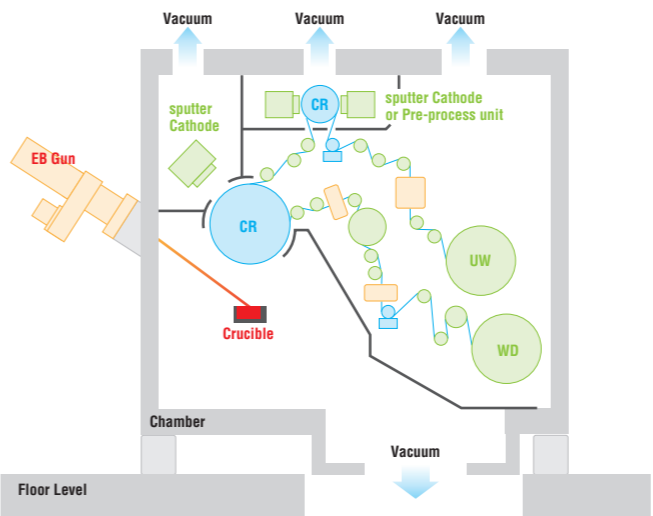
- Web width : Up to 2100mm
- High Rate deposition : Cu 12μm · m/min (Max Value)
- High power EB gun : 100kW
- Thick Layer deposition with thin under/top coating with sputtering cathode (EWJ-060, -165)



EWJ-060



Internal drawing EWJ-060



Model	EWJ-025	EWJ-060	EWJ-165	EWJ-210
Web Width	Max.250mm	Max.600mm	Max.1450mm	Max.2120mm
Web Material	PET 9~50μm			
Web Diameter	Φ500mm	Φ500mm	Φ650mm	Φ1200mm
Evaporation Material	Cu, Al, Ag, Ni, Ti, AlOx, SiOx, MgO, other high melting point metals and sublimation materials			
Material Heating	100kW EB Gun 1pc		100kW EB Gun 2pcs	300kW EB Gun 2pcs
Thickness Monitor	Transmittance Monitor, Option : Eddy Current Monitor			
Main Pump	Depo Zone : Oil Diffusion Pump			
Pre-process Option	BMB(DC,MF,RF), Ion Gun			
Sputtering Option	—	DC Cathode	DC Cathode	—
Main Roller Temperature	-20 ~ 20℃			
Layout	8mW × 8mL × 3mH	9.5mW × 15mL × 4.3mH +2.5mD(Pit)	11.5mW × 7mL × 4mH + 3mD(Pit)	20mW × 22mL × 4.1mH + 3.5mD(Pit)

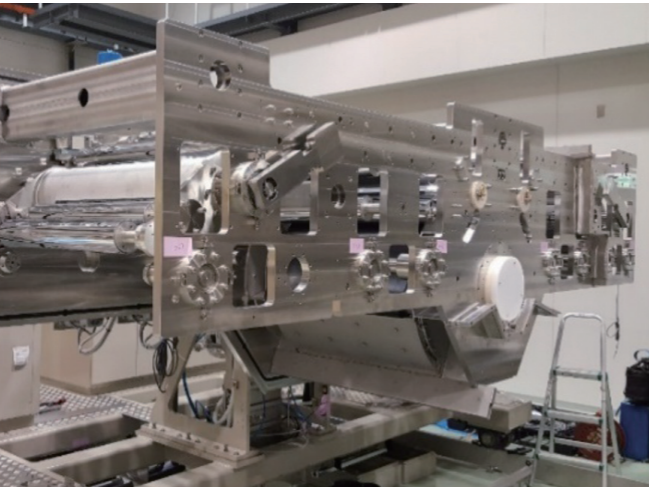
* This specification may be changed without notice.

EWK series is special RH heating type evaporation roll coater for LiB/LiC. It is ideal for high speed Li Metal deposition.

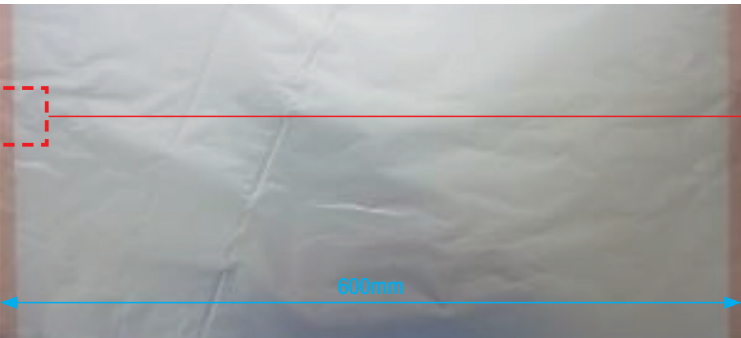
Features

- Web Width : Up to 600mm
- Evaporation Source : Resistance Heating type
- Sharp film edge control : < 0.5mm
- High rate Li deposition : 20μm · m/min
- Li surface protection with passivation treatment

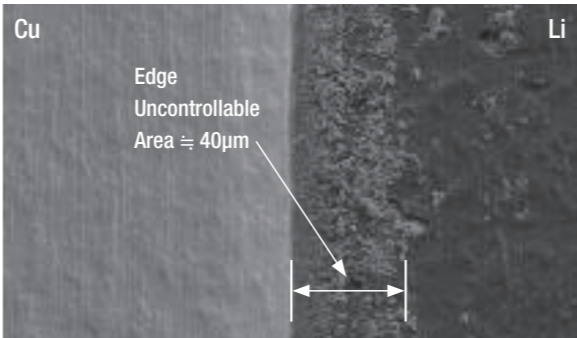
EWK-060



Sharp Edge Control Technology



<SEM x500>



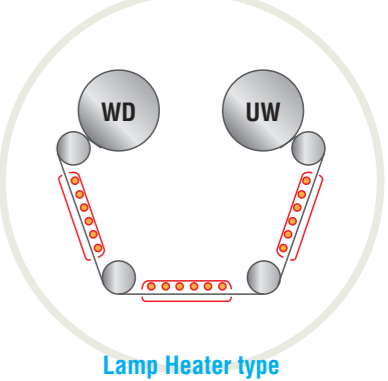
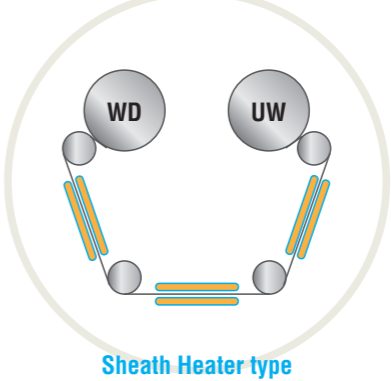
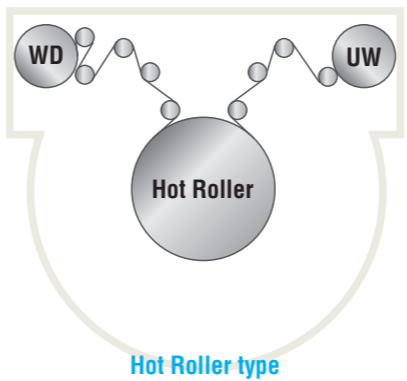
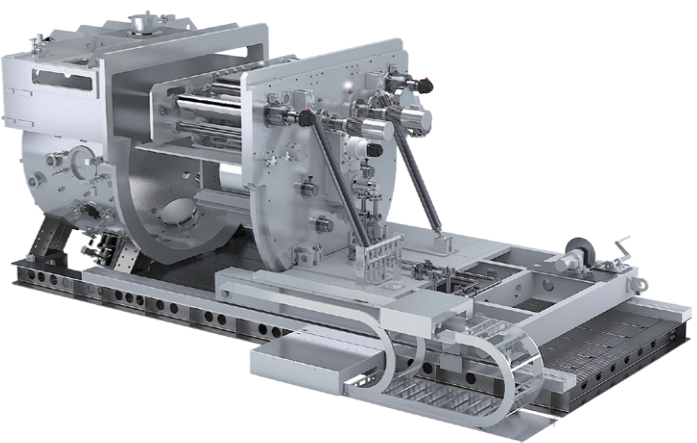
	EWK-030	EWK-060
Web Width	Max 300mm	Max 600mm
Web Material	Cu, PET and others	
Web Thickness	Cu : 6~ 10 μm	
Web Diameter	Φ300mm	Φ600mm
Winding Speed	0.1~5m/min	0.1~10m/min
Evaporation Material	Li	
Main Roller Temperature	-25~80℃	
Option	Inter Leaf	
Layout	8.5 mW × 10 mL × 3.5mH	8.5 mW × 14.5 mL × 3.5mH
Dry Room Area Requirement	4 mW × 5 mL × 3.5mH	8.3 mW × 8.3 mL × 3.5mH

TWH series is roll to roll type vacuum degassing system. It is ideal for degassing of high moisture films such as PI, TAC, etc.

Features

- Web Width : Up to 2100mm
- Heating Source : IR Plate Heater, Ramp Heater, Hot Roller
- Clean and effective degassing under vacuum condition and web transfer condition
- Selectable various heating method for purpose

TWH-060



	TWH-060	TWH-165
Web Width	Max 600mm	Max 1600mm
Web Material	PET,PEN,PI,PC,COP,TAC and others	
Web Thickness	PET : 25~200 μm	
Web Diameter	Φ550mm	Φ900mm
Winding Speed	0.5~10m/min	
Degassing Source	Hot Roller Sheath Heater, Lamp Heater	
Main Roller Temperature	R.T.~150℃	
Layout	10mW × 10mL × 3.9mH	10mW × 12mL × 3.9mH