

LDMY-1.35 circular high vacuum roll to roll coating

Technical indicators and parameters

No.	Item	Name	Technical indicators	Remark
1	vacuum system parameter	ultimate pressure	upper chamber $1.3 \times 10^{-1} \text{Pa}$	clean, dry, empty pressure $\leq 10 \text{min}$
			lower chamber $7 \times 10^{-3} \text{Pa}$	
		working pressure	upper chamber $6.7 \times 10^{-1} \text{Pa}$	
			lower chamber $7 \times 10^{-2} \text{Pa}$	
Vacuum secondary recovery time	From atmosphere to working			
2	coatable substrate	PET	Thickness : $4.5 \sim 6 \mu\text{m}$	
		PP	Thickness : $4.5 \sim 6 \mu\text{m}$	
3	substrate roll size	coatable width	1350mm	
		roll diameter Max	$\Phi 850 \text{mm}$	
		core diameter	6"	
		core material	Metal, plastic or high-strength paper	
4	coating requirement	evaporation	Free suspension evaporation	on one side
		evaporation area	entire substrate width	
		evaporation width	700 ~ 1350mm	
		evaporation material	$\Phi 1.5 \sim \Phi 1.8$	pure Al wire(99.95%)
		winding speed Max	720m/min	
		common coating speed	300-650m/min	
6	evaporation system	BN crucible	16 pcs	
		evaporation boat size	130×30×10mm	
		evaporation boat arrangement	staggered	
		evaporation boat power source	15KW/12V/pcs	
		wire feeding method	single wire feeding	
		wire feeding speed	0 ~ 3m/min adjustable	
7	roll to roll system	Qty of motors	4 servo motors	Siemens
		tension control range	50 ~ 500N (linear)	

		winding alignment	$\leq \pm 2\text{mm}$	
8	equipment size and weight	diameter of vacuum chamber	$\sim \Phi 2400\text{mm}$	
		equipment length	$\sim 14000\text{ mm}$ when the drive platform is turned on	
		equipment width	$\sim 12000\text{ mm}$	
		equipment height	$\sim 5000\text{ mm}$	
		equipment total weight	$\sim 36\text{T}$	

Coat able substrate: PET: 4.5 ~ 6 μm , PP: 4.5 ~ 6 μm - winding alignment $\leq \pm 2\text{mm}$ Max: 1350mm - Coat able width Max: 1350mm - roll diameter Max: $\Phi 850\text{m}$ - evaporation boat quantity: 16 pcs (BN crucible) - evaporation boat size: 130×30×10mm - evaporation boat power source: 15KW/12V/pcs - evaporation material: $\Phi 1.5$ pure Al wire (99.95%) - wire feeding speed: 0 ~ 3m/min adjustable - winding speed Max : 720m/min - coating roller freezing working temperature: 25°C ~ -20°C - tension control range: 50 ~ 500N (linear) - coating roller: $\Phi 500\text{mm}$ - unwinding&winding roller: 6"air shaft - power source: 50HZ , 380/220V - power consumption Max: $\sim 320\text{KW}$ - water consumption Max: 30T/h ($t \leq 25^\circ\text{C}$; $p \geq 0.2\text{MPa}$) - compressed air (user provided air compressor model No. W-0.8/12) $\geq 0.65\text{Mp}$ - area needed: $\sim 14000 \times 12000 \times 5000\text{mm}$

Equipment use conditions:

No.	Name	Technical parameter	Remark
1	power source	380V $\pm 8\%$	Frequency 50Hz, total power about 320kVA, average power consumption about 260Kw
		3 Phase 4 line	
2	cooling water	Flow rate: $\sim 30\text{m}^3/\text{h}$	Water quality requirements: PH7.0 ~ 8.0 Total hardness (Ca+Mg): $\leq 10\text{dh}$ Suspended solids : 15mg/l Max
		Pressure: 0.3 ~ 0.4MPa	
		Inlet water temperature: $\leq 30^\circ\text{C}$ (summer)	
3	compressed air	supply pressure: 0.6~0.8MPa	It is recommended to equip the air compressor model W-0.8/12 (nominal volume flow 0.8 m ³ , Rated exhaust pressure 1.2MPa, power 7.5 KW)
		Consumption: 1.5m ³ /h	
		Quality requirements: no water	
		Oil content: < 3ppm	
		temperature: $\leq 40^\circ\text{C}$	
Dew point: -20°C			
4	GND	Set up the independent earth wire	Ground resistance is less than 4 Ω
5	ambient temperature	25 $\pm 10^\circ\text{C}$	Operating temperature of the equipment
6	relative humidity	$\leq 80\%$	

Reference materials:

No.	Standard	Name
1	GB/T 11164-2011	《Vacuum coating plant generic specification》
2	JB/T 8945-2010	《Vacuum sputtering coating plant》
3	GB/T 13384-2008	《General specifications for packing of mechanical and electrical product》
4	JB/T 6446-2004	《Vacuum valve technical conditions》
5	JB/T 1092-91	《Type and size of rubber sealing ring for O-type vacuum》
6	GB/T 4982-2003	《Vacuum technology-Quick release couplings-Dimensions》
7	JB//T 5994-1992	《General technical requirements for assembly》
8	GB7251.3-2006	《Low voltage switch gear and control gear assemblies》
9	GB/T 32218-2015	《Vacuum technology-Test methods for leak rates of vacuum system》
10	GB/T 3164-2007	《Vacuum technology-Graphical symbols》
11	GB/T 6070-2007	《Vacuum technology-Flange dimensions》
12	QJ3123-2000	《Vacuum leaks detection method by helium mass spectrometer》
13	GB 50055-2011	《Code for design of electric distribution of general purpose utilization equipment》
14	GB 50311-2007	《Code for engineering design of generic cabling system》
15		Company standard

Main configuration table of vacuum system :

No.	Name	Item	Qty	Maker	Remark
1	upper chamber	roots pump, frequency control	1 pcs	shanghai sunshine	ZJY-4000
		roots pump	1 pcs	Shanghai,sunshine	ZJY-1800
		slide valve vacuum pump	2 pcs	starlight	HG-150
		valve	1 set		
		flexible tubes	1 set		
		Pipes, brackets, etc.	1 set		
2	lower chamber	Diffusion pump	1 pcs		K-900C
		roots pump	1 pcs	shanghai sunshine	ZJY-1200
		slide valve vacuum pump	1 pcs	starlight	HG-150
		vane vacuum pump	1 pcs	shangbeng	2X-15
		valve	1 set		
		flexible tubes	1 set		

		Pipes, brackets, etc.	1 set		
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Main configuration table of vacuum chamber:

No.	Name	Qty	Remark
1	round vacuum chamber	1 pcs	
2	vacuum gauge	4 pcs	glass regulation made of china brand
3	pneumatic inflation valve	2 pcs	
4	cryogenic capture coil and interface	1 group each	Upper and lower chambers 2m ²
5	observation window on the top of the upper chamber	2 pcs	rectangle
6	observation window on the back of the upper chamber	3 pcs	round
7	flash observation window of the lower chamber	1 set	rectangle
8	lighting	3 pcs	

Main configuration table of roll to roll system :

No.	Name	Item	Qty	Remark
1	winding roller	6" air shaft	2 pcs	
		swivel chuck	2 pcs	
		SIEMENS servo motor	1 pcs	1PH8
		Transmission seal unit	1 set	
2	unwinding roller	6" mechanical expansion shaft	1 pcs	
		swivel chuck	2 pcs	
		SIEMENS servo motor	1 pcs	1PH8
		Transmission seal unit	1 set	
3	tracking unit	guide roller	2 pcs	
		Electrically adjustable expander roller	1 pcs	
		tracking motor	1 pcs	
		Transmission seal unit	1 set	

4	coating roller	Interlayer spiral cooling roll	1 pcs	Φ500mm
		rotary seal joint	1 pcs	
		Transmission seal unit	1 set	
		SIEMENS servo motor	1 pcs	1PH8
5	secondary tension roller	Interlayer spiral cooling roll	1 pcs	Φ300
		rotary seal joint	1 pcs	
		SIEMENS servo motor	1 pcs	1PH8
		Transmission seal unit	1 set	
6	others	Electrically adjustable expander roller	1 set	two-way regulation
		unwinding electrically adjustable pre-expander roller	1 pcs	
		Upper and lower chamber partition	1 set	
		Al alloy water-cooled partition in the coating area	1 set	
		width adjustable shutter	3 set	
		support rod	3 pcs	
		guide roller	6 pcs	
		wall plate	2 pcs	
		drive platform for roll to roll system	1 pcs	
		SKF bearing	1 set	imported from Sweden
		aviation class plug	3 pcs	

Main configuration table of evaporation system :

No.	Name	Qty	Remark
1	BN crucible	16 pcs	
2	positive electrode	16 sets	
3	evaporation base plate	1 set	
4	pneumatic evaporative baffle	1 set	
5	evaporative cooling enclosure	1 set	
6	evaporation transformer	16 sets	
7	wire feeding unit	16 sets	
8	wire feeding motor	16 pcs	

9	Al wire reel	16 pcs	User-supplied
10	aviation class plug	2 pcs	
11	evaporation system header tank	1 pcs	

Main configuration table of cooling water system:

No.	Name	Qty	Maker
1	water inlet pipe	1 set	
2	return water pipe	1 set	
3	SUS ball valve	1 set	
4	flow switch	1 set	
5	water inlet outlet sign	1 set	
6	hose and others	1 set	
7	mechanical pressure switch	1 pcs	SMC

Main configuration table of electrical control part:

No.	Name	Item	Qty	Maker	Remark
1	vacuum pumping system	cabinet (with air conditioner)	1 pcs		
		digital vacuum gauge	1 set		
2	substrate winding system control cabinet	cabinet (with air conditioner)	1 pcs		
		SIEMENS electric control system	1 set	SIEMENS	
3	evaporation system control cabinet	cabinet (with air conditioner)	1 pcs		
		thyristor voltage regulator	16 set		
		wire feeding motor power box	1 pcs		
		wire feeding motor speed control board	16 pcs		
4	evaporation operation table	cabinet	1 pcs		
		touch screen	1 pcs		12"





