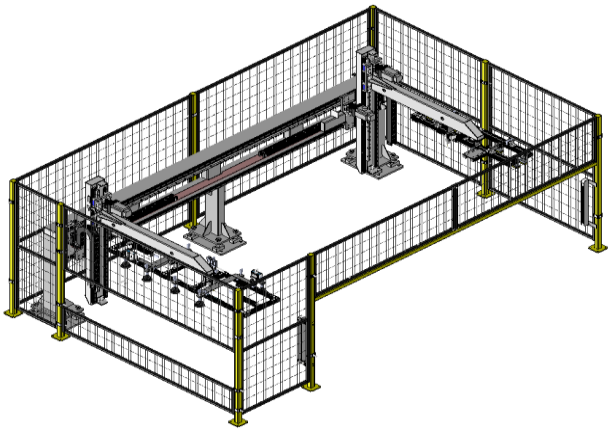
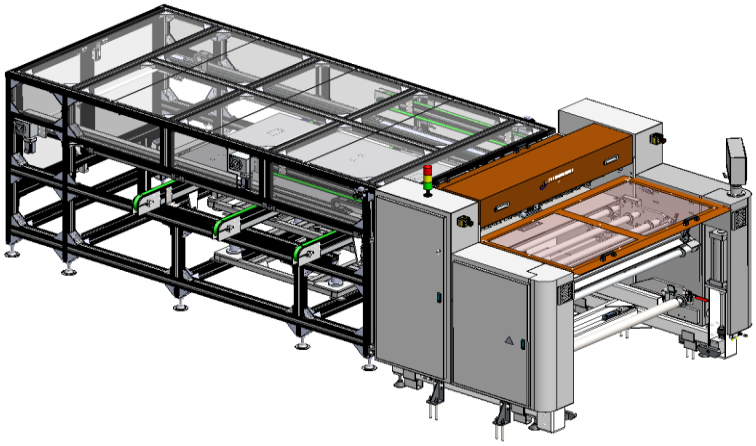
Specs of functional equipment

1、 Glass loader



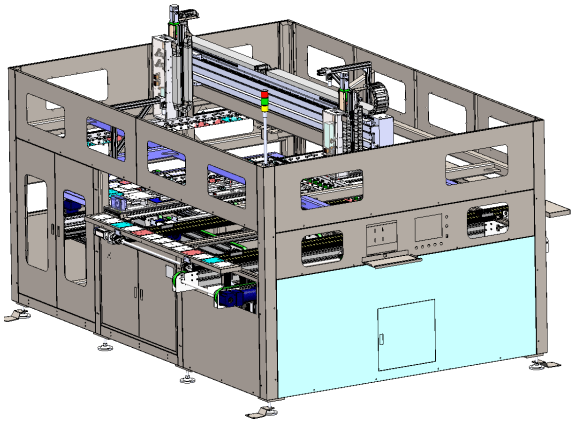
	item	Requirement
Specs	Power supply	AC380V, 3-phase 5-wire, 50Hz
	Air pressure	0.6～0.8Mpa
	Working condition	≤85%RH
	Noise level:	≤80db
	Designed cycle time	24S
	Power	7KW
	Air consumption	172L/min
	Capacity of gantry loader	40kg
Functions	Glass will be picked up by the suction cups from the pallet and placed onto the conveyor.	
	Two blocks for glass pallet, one block for paper interleaf.	
	Pick up the paper interleaf and place it into the collection area.	
	Automatic alarm for empty pallet (visual and audio).	
	Light curtain at feeding port.	
	Dedusting system (on the conveyor) can keep dust away from coming back onto the glass surface	
	Suction cups are of flat-design. Outer diameter≥100mm.	

2、EVA cutting and placing machine



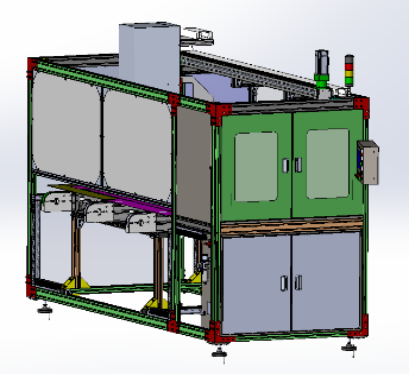
Specs	**item**	**Requirement**
	Power supply	AC380V, 3-phase 5-wire, 50Hz
	Air pressure	0.6～0.7Mpa
	Working condition	≤85%RH
	Noise level:	≤80db
	Designed cycle time	24S
	Power	5KW
	Air consumption	54L/min
Functions	Cutting accuracy: ±2mm. Max. length: 2100mm.	
	Placing accuracy of EVA: within±2mm	
	Repeating accuracy of cutting: within ±2mm	
	Diagonal deviation of EVA after cutting: ±2mm.	
	EVA will be flat after being placed on the glass without folding or wrinkle	
	Electrostatic ion prevention (using X eliminator)	
	Cutting thickness: 0.4mm~ 0.5 mm	
	Max. diameter of EVA: 700mm. Width of roll: 800㎜-1100㎜.	
	One spare EVA shaft as back up	
	Smooth cutting without adhesion	
	One rolling cutter will be provided as spare	

3、High-speed auto-layup machine HS-ALM-2842H02-PH01



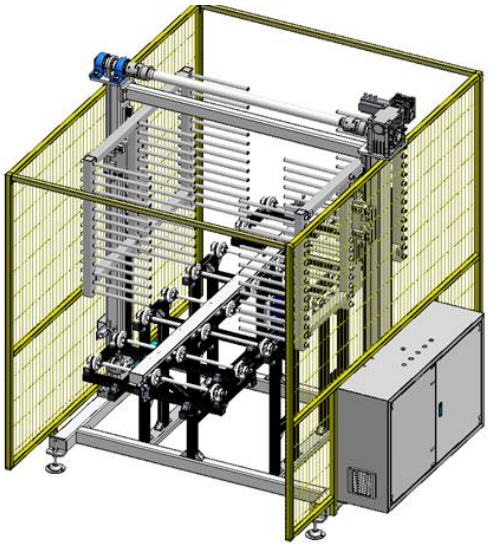
	item	Requirement
Specs	Power supply	AC 380V ±5%，3 相 5 线制 50Hz AC380V±5%, 3P+1N+1PM, 50Hz
	Air pressure	0.6～0.8Mpa
	Working condition	≤75%RH
	Noise level:	≤80db
	Designed cycle time	Conventional panel 60c/72c: 6 strings≤36s (excluding conveying time) Half-cell panel: 12 strings≤60s (excluding conveying time)
	Power	17KW
	Air consumption	600L/min
Functions	Deviation between strings: ±0.3mm (excluding deviation of cell strings)	
	Deviation of the distance from string to long edge and short edge: ±0.5mm	
	Changeover between different module types is easy and fast.	
	Breakage during layup process: ≤0.03%	
	HMI: Chinese, touch panel	
	Specs of module: L（1650-2000)mm× W(990-1000)mm	

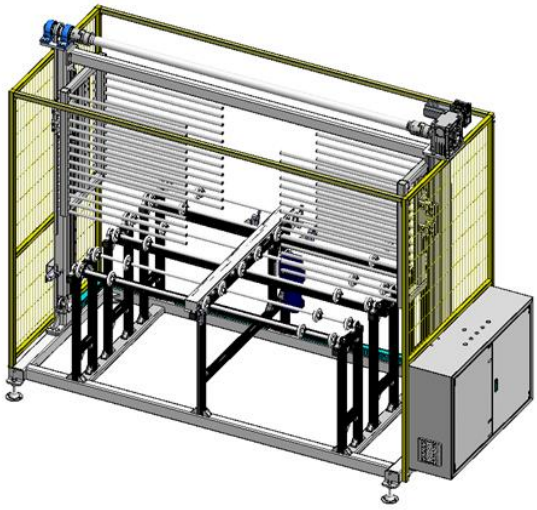
4、Template auto-placement



	item	Requirement
Specs	Power supply	AC380V±5%, 3P+1N+1PM, 50Hz
	Air pressure	0.5～0.8Mpa
	Working condition	≤75%RH
	Noise level:	≤80db
	Designed cycle time	Conventional panel (6 strings/panel): 18s/panel Half-cell panel (12 strings/panel):20s/panel
	Power	2KW
	Air consumption	150L/min
	Glass size:	L(1650-2000)mm×W(990-1000)mm×T(5-10)mm
	Size of template	60-135mm 60-135mm (if 3 templates placed at the same time, size needs to be confirmed)
	Dimension:	About 3252mmX 1500mmX 2260mm (L×W×H)
Functions	Conveying orientation: long edge leading.	

5、Gantry buffer





	item	Requirement
Specs	Power supply	AC 220V, single phase
	Working condition	≤85%RH
	Noise level:	≤80db
	Designed cycle time	24S
	Power	1KW
Functions	Driven by servo motor via chain, guided by linear guiding rail, the unit gains the advantages such as accurate positioning, smooth operation etc.	
	The unit is protected by fence for safety.	
	Detecting switch will be arranged for loading and unloading to prevent panel breakage caused by interference between the panel and the fence when the panel is lifted.	
	Fully automatic without operator intervention.	
	Rollers are used for transmission. The storage rack is cladded by heat shrink pipe, which is suitable for coated glass.	
	15 levels for non-framed module, with internal distance 32mm between adjacent levels.	
	12 levels for non-framed module, with internal distance 47mm between adjacent levels.	

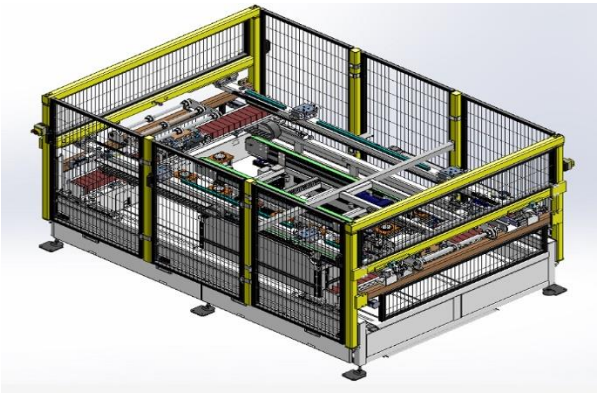
	9 levels for framed module, with internal distance 73mm between adjacent levels.

6- EL&FAOI-MIS-2

	item	Requirement
Specs	Power supply	AC220V±5%，10A、50Hz
	Working condition	20～30℃
	Power	1.5KW at peak. Rated power is 1.0KW.
	Designed cycle time：	24S
	Air supply	Pressure: 0.5～0.8MPa, clean compressed air, flow 1.6L/min, Φ10mm for connection
Functions	EL: pixel 2.3M*12. Theoretical pixel on the module: 27.6 M. Resolution: 0.4mm/pixel; AOI: 4 industrial cameras. Pixel: 10 M*12. Theoretical pixel on the module: 120M. Resolution: 0.15mm/pixel; Gap accuracy of cells: pre-lam: ±0.5 mm (depending on material of EVA and glass); Post-lam: ±0.5 mm(depending on material of EVA and glass); Gap accuracy of strings: pre-lam: ±0.5 mm (depending on material of EVA and glass);	

	Post-lam: ±0.3 mm(depending on material of EVA and glass); Min. detection ability of linear white foreign material and crack: 0.5mm*30mm (depending on material of EVA and glass); Min. detection ability of blocky white foreign material: 1.5mm*1.5mm (depending on material of EVA and glass); Min. detection ability of crack: depth: 1.5mm, width:1mm; Detection for ribbon misalignment: ≥1mm (depending on material of EVA and glass); Distance between cell and the frame (post-lam): Accuracy: ±0.5 mm (depending on material of EVA and glass);
	Time needed for single exposure+capturing: ≤2s; (linear scanning for 3 times)
	Items detected by EL: cracks, black spot, mixed cells of different efficiency, processing defect, insufficient soldering etc.; Items detected by AOI: internal foreign materials, cell gap, corner defect, breakage, scratch, ribbon misalignment etc.

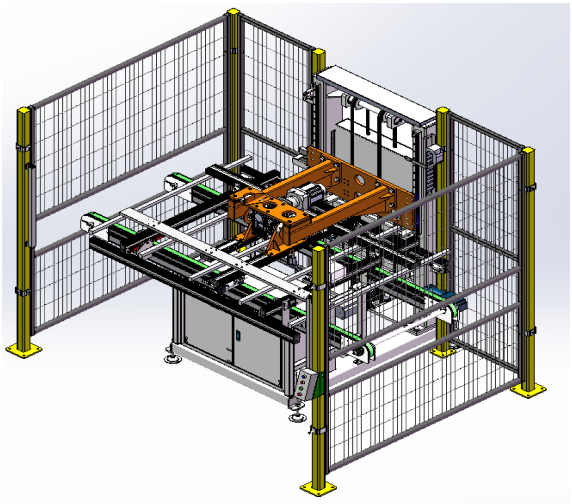
7、 Auto-trimming machine



	item	Requirement
Specs	Power supply	AC 380V, 3-phase 5-wire, 50Hz
	Pressure	0.6-0.8mpa
	Working condition	≤85%RH
	Noise level	≤80db
	Designed cycle time：	24S
	Power	3KW
	Air consumption	456L/min
	Module size (L*W):	(1650-2000)*(990-1000mm)
	Module weight:	40kg
Functions	This machine is driven by servo motor and guided by linear rail, with advantages such as accurate positioning, smooth operation etc.	

The whole machine is isolated by fence for safety purpose.
Fully automation without personnel intervention
Four edges are cut at the same time with high efficiency and stability.
Chips preventing device to prevent chips.
Circular cutting blade is used for cleaning cutting.
Quick change structure.
Smooth surface after cutting, residual ＜0.5mm, without damage to the glass.

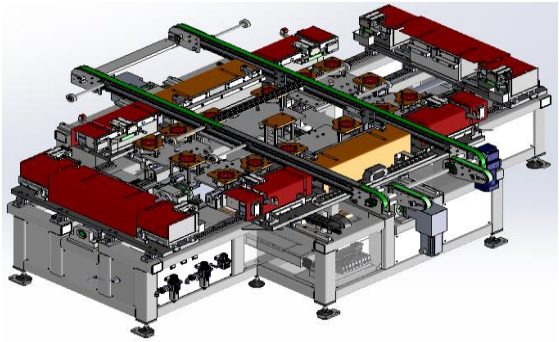
8、90°flipper



	item	Requirement
Specs	Power supply	AC 380V, 3-phase 5-wire, 50Hz
	Pressure	0.6-0.8mpa
	Working condition	≤85%RH
	Noise level	≤80db
	Designed cycle time：	37S 37S
	Power	3KW
	Air consumption	18L/min
Functions	Smooth and accurate transmission.	
	Accurate alignment before flipping.	
	Module will be picked up by clamping the edge, without blocking the cells.	

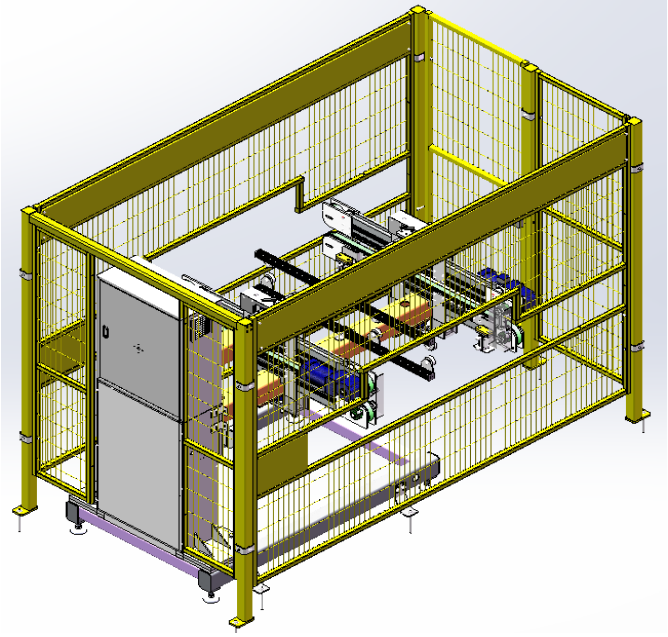
	Elevation mechanism is realized by chain structure driven by motor in a stable and reliable condition.
	Mechanical limit structure will function after flipping into final position.
	Reasonable design and good appearance.
	LED lamp is equipped at the back with 1000 lumen light source, lighting at the backside of module for visual inspection.

9、Auto-framing machine



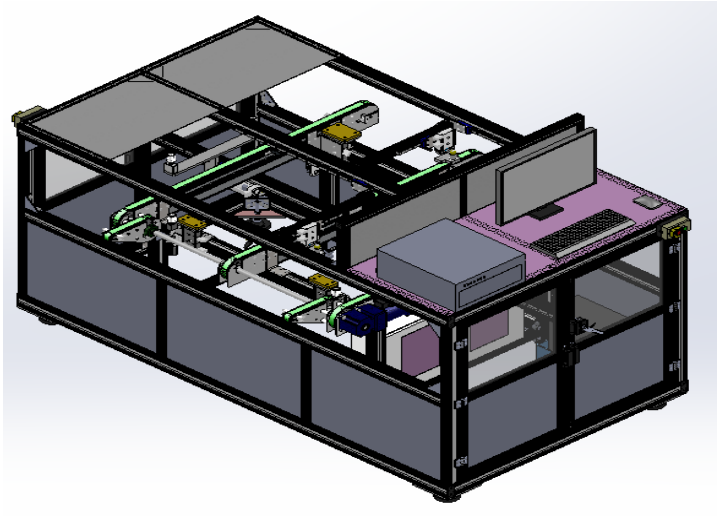
	item	Requirement
Specs	Power supply	AC 380V, 3-phase 5-wire, 50Hz
	Pressure	0.6-0.8mpa
	Working condition	≤85%RH
	Noise level	≤80db
	Designed cycle time：	37S
	Power	9KW
	Air consumption	156L/min
Functions	Module leveling mechanism are realized by 14 groups of suction cups.	
	PU materials are used for suction cups, leaving no marks on the surface of modules.	
	The 14 groups of suction cups are integrated in whole and adjusted by crank handle.	
	Frame alignment function can align the frames.	
	Quick, easy and reliable adjustment.	
	Crimping force at short edge can reach 2t.	
	Accuracy: for long/short edge: ±1mm; Diagonal: ≤1.5mm; deviation between front end, middle and rear end, despite materials defects: ±1.5mm	

10、180° flipper



	item	Requirement
Specs	Power supply	AC 380V, 3-phase 5-wire, 50Hz
	Pressure	0.6-0.8mpa
	Working condition	≤85%RH
	Noise level	≤80db
	Designed cycle time：	37S
	Power	1.5KW
	Air consumption	5L/min
Functions	The structure is of steel welded frame with high strength and reliability during flipping.	
	Positioning and fixing before flipping.	
	Motor with big torque is used for flipping, controlled by VFD, which makes the flipping smooth, accurate etc.	
	The whole machine is isolated by fence for safety purpose.	

11、 CV for Hipot tester



	Item	Requirement
Specs	Power supply	AC 220V
	Pressure	0.6-0.8mpa
	Working condition	≤85%RH
	Noise level	≤80db
	Designed cycle time	37S
	Power	0.5 KW (excluding tester)
	Air consumption	16L/min
Functions	Smooth operation and accurate positioning.	
	With alignment.	
	Module will be lifted by insulating plate before testing to ensure the safety.	
	Auto wire connection for testing.	
	Probe is adjustable (axis X and axis Y).	

Laminators

1- Laminator 1 LM-SA-215 x 320-S
3 modules Long edged leading

2- Laminator 2 NLM-230 x 450
4 modules Long Edge leading

3- Laminator 3 ALM-240 x 460
4 modules long edge leading

4- Laminator 4 JCCY2355ST
5 modules long edge leading

5- Laminator 5 JCCY 2456DT
5x2 modules long edge leading

Description for Laminator 4 JCCY2355ST

I Model

1. Model：JCCY2355-ST
2. Effective lamination area：2300 * 5500 * 2 mm

II Parameter

1 Power supply: AC 380V 3-phase 5-wire;
2 CDA: 0.7 – 0.8 MPA; flow > = 1,000L/min;

3 Vacuum degree: 100 – 40 Pa;

4 Power: overall 185KW; standard 110KW;

5Temperature: uniformity ± 1.5 ℃; Temperature accuracy ± 1℃; temperature range: 30 – 180℃

6Evacuation time: 5 – 8 min (adjustable for various processes)

7Body (Loading stage, process-1 stage, process-2 stage, unloading stage); Weight: 36 T

III Structure

Structure: Loading stage; Process-1 stage; Process-2 stage; Unloading stage; Roots pump group*1; 2X-70 sliding-vane pump*1; heating station*2;

1. Loading Stage

A. Transmission will be realized by gear motor and VFD drive. A stable transmission is realized by rubber belt. And an accurate positioning is realized by encoder and opto-electric sensor;

B. Feeding distance can be set. Transmission speed: 4 ~ 13.5 m / min continuous and adjustable;

C. Opto-electric sensors are set at both front and end of the loading stage to ensure a smooth handshaking with production line and availability for module position detection.

2. Process Stage (2 stages)工艺段（两段）

A. Heating plate is made of 60 mm double-face milled hollow plate sheet. The flatness is 250 um / sqm. Heating medium is SD340 conduction oil. Temperature uniformity is ± 1.5℃.

B. Heating station is made by Fxheat Inc. with *Certificate for Special Equipment Manufacturing* ensuring the safety of the heating system.

C. Solenoid interlock is used on top lid mechanism. When lid is opened in position, it will be locked automatically. Teflon sheet is fixed by clamps to shorten the time for changeover.

D. Transmission mechanism uses chain driven by gear motor controlled by encoder and frequency converter. Redundant approximate switch is used for positioning.

3. Unloading stage (5-stack buffer)

A. Roller of stainless steel, driven by Teflon loop are used for transmission. The Teflon loop is non-sticky, with low friction and heat resistant which is specially suitable for coated glass and can decrease the marks made during transmission.

B. 20 cooling fans are set under the rollers to cool down the modules quickly and uniformly, which will reduce bad affect to following process.

C. Transmission is driven by gear motor and VFD drive, with a continuous and adjustable speed from 4 ~ 13.5 m / min, which ensures a smooth handshaking with production line. Unloading stage is designed with photoelectric sensors at the end to protect and locates laminates.