

50~ 70 MW Solar panel production line

Suitable for big size of solar panels

*Compatibility 9BB ~ 20BB 1/2 cut cell
12 hours / day
70% Plus Automation*

Turnkey solution



Company introduction

REOO technology company is a leading manufacturer of solar panel machines in China.

Founded in 2005, it specializes in the design and production of solar panel production equipment and specializes in manufacturing and selling solar panels.

Our equipment is exported to the United States, Britain, Germany, France, Poland, Bosnia and Herzegovina and other European and American countries, Mexico, Argentina, Chile, Jamaica and other American countries, India, Thailand, Malaysia, Bangladesh and other southeast Asian countries, South Africa, Algeria and other African countries.

Our company's advantages: Tailored for customers of all kinds of equipment; Rich experience in overseas installation, commissioning and training; Rich experience in overseas equipment after-sales service.



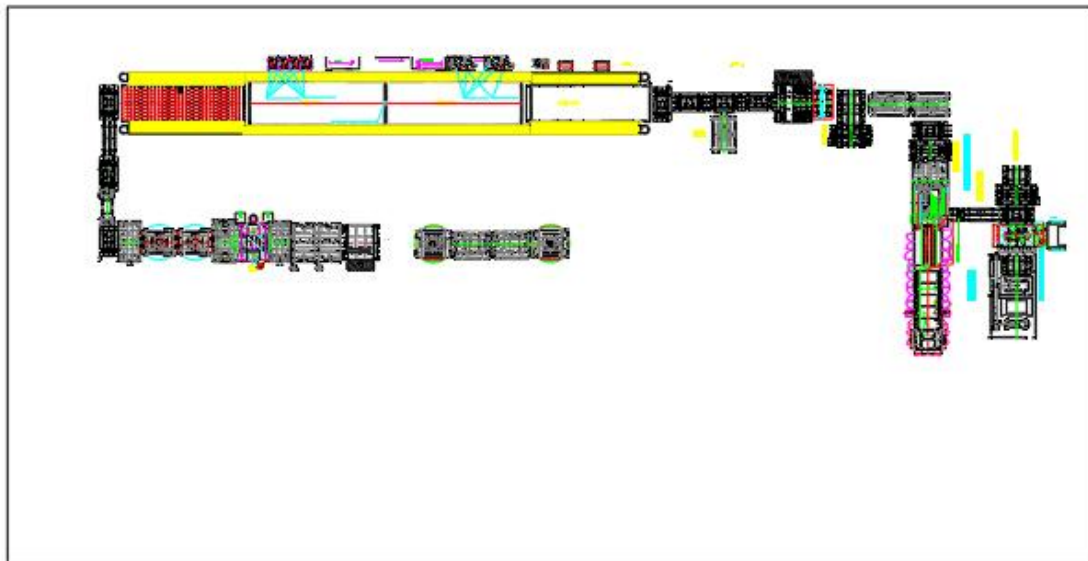
Production introduce

It is a complete solar panel production line. Production capacity is 50MW per year, Single working shift (10 Hours per day), turnkey solution.

It can manufacture the solar panel 350W ~ 550W, by 9BB, 10BB or 12BB Poly, Mono, PERC, TOPCon, HJT and BC solar cell.

1, Lay out design

Can customized according ready building .



50MW solar pane production line design 2024 2 20

2, Conditions that must be present in a production building

Area of building	\cong 3000 sqm
Higher of building	\cong 4.2 m
Power consume	The average maximum \cong 200KW
Water	Do not need
Air supply	400L/ min
Air condition	25 °C expect laminating
Worker people	More than 25 persons
Working time per day	24 h / day
	It can run 24 hours per day
Working person	25 persons

Process flow

No	Process flow	Machine	Qty	Auto	Labor
1	Cut solar cell	Laser cutting machine	1	A	1

2	Tabbing and string cell	Tabbing and sting machine	2	A	
3	Cut EVA film	EVA backsheet cutting machine	1	A	2
4	Cut Back sheet				
5	Cut bus bar	Bus bar cutting machine	1	A	
6	Load glass to conveyor	Glass loading machine	1	A	
7	Lay EVA & backsheet	Laying up machine	1	Manu	2
8	Bussing			A	
9	Stick fixing tape			Manu	
10	EL & VI tester	EL & VI tester	2	Semi	
11	Laminating	Laminating machine	1	A	
12	Trimming	Trimming machine	1	Semi	
13	Inspection	Inspection machine	1	Manu	
14	Gluing and framing	Gluing and framing machine	1	Semi	2
15	Fix junction box	JB gluing machine	1	Manu	2
16	Soldering Junction box			Manu	
17	Injection JB gel	Gel Injection machine	1	Manu	2
18	Unload to solid	Unloading machine	1	A	
19	Grind edges	Grinding machine	1	Manu	
20	IV tester	Solar module tester	1	Semi	2
21	HiPot & resistance test	HiPot & resistance test	1	Semi	
22	EL & VI test	EL & VI tester	1	Semi	
23	Unloading and packing		1	Manu	2

Total work people : 18 persons .

Note :

1, Warranty period :

12 months after finished installation and trial production.

2, After service :

Seller will supply long-term service including hardware and software.

Specification of machines

1, Laser cutting machine



High speed, 1600 / h

Automatic split solar cell into half and other size .

Be used for cutting solar cell 158 x 158, M6 (166 X 166), M10 (182 X 182). M12 (210 X 210).

Loading : Whole cell box , 100pcs.

Unloading: Whole cell box.

Splitting : Automatic .

Not pollute on solar cell.

Power of laser: 30W. Variable.

Laser wave length: 1064nm

Dicing speed : Maximum: 600mm/s

Deepness: 1/2 - 1/3 cell.

Precision : +/- 0.05mm

Frequency : 20 - 80KHZ variable.

Air pressure: 0.6 - 0.8 Mpa. 400L/min

Power: 220V/50Hz, 2 KW

Measurement: 1250 x 1100 x 1380mm

Net Weight: 300Kg.

2, Tabbing and string machine



Model: H2025C

H2024D is a single track automatic tabbing and string for solar cell.

It is double string rails .

Up to speed 3000 cells/hour.

High flexibility for 5BB/6BB/9BB/12BB solar cells . can be updated to 20BB.

Can string the cell type of PERC, TOPCon, HJT and can be updated for BC cell .

The base solution is 3 type of cell of 210x 105mm, 182 x 91mm, 166x 166mm and others .

Works with different kind of cells including cut cells with width >30mm

The number of cells for string is settable from touch screen

Cell spacing is adjustable

Quick and simple operation & ribbon change

Low cost of spare parts and consumables

Soldering capacity	Max 3 seconds /pcs, Max1800 pcs /hour
Cell's dimension	30~166*210mm
Cell busbar	5BB/6BB/9BB/12BB, Can be updated to 20 BB .
Ribbon sizes	Flate ribbon, Width: 0.35~2.0mm , Thickness: 0.10~0.23mm . Ribbon size should be confirmed before order .
Breakage	≤0.2%, On the basis of Grade A cells with good cutting, no cracks and damage
Cell basket capacity	3 x 200 PCS,3 Cell baskets to load up to a maximum 200pcs each, total 600pcs auto switch
Operation control	PLC touch screen
Soldering technology	IR light
Soldering light life	≥1000Hr
Soldering temperature	Normal 250~400°C (Adjustable)
Input power	3 phase/50~60Hz/380V/30A, Power cable > 6mm ²
Peak power	14 KW
Average power	7 KW
Compressed air	≥ 0.5 Mpa clean & dry air

Compressed air consumption	Approx 200L/min
Max.length of the string	2050mm, Suitable for 12pcs 6 inch cells per string with 2mm cell spacing
Operator interface	English
Warranty	12 Months

Machine size: 5040 x 1500 x 2000mm.

Operating space: 7000X 3000 mm .

3, EVA / BACKSHEET cutting machine



Used to cut EVA and Back sheet into designed size for solar module manufacturing..

Automatic feeding, unwinding, deviation correction, fixed length, punching, cutting, counting, static elimination, etc.;

Wide adaptability, suitable for material cutting of small components, standard 60/72 pieces, 144 half pieces, and double glass components;

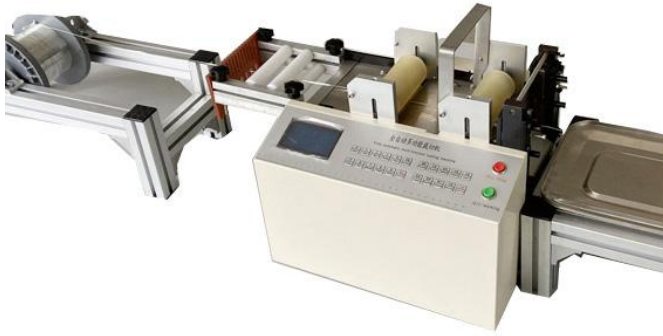
Maximum size : 2500 x 1400

Servo fixed length cutting, fast speed and high precision; Integrated drilling tool, quick replacement;

Power : 220V (AC) / 2KW

Equipment weight 1700KG.

4, Bus bar cutting machine



RO - CJJ01

Video :www.youtube.com/watch?v=5ZN_ZZEfLYs

Full automatic. High speed.

Digital display.

Automatic alarm.

Cut length accuracy.

Speed and high efficiency.

The material of welding strip: Tinned copper alloy;

Straightening: 98%;

Cutting accuracy: $L + _ 0.2 + 0.002 L$

Cutting Length :1-9999 .9 mm

Maximum welding strip size: 8 * 0.2mm;

Processing speed (colleague processing section 1-5): 350/minutes;

Power: 220V 50Hz

Power: Max 250W, minimum 20W;

Volume: 395 * 265 * 355mm

Weight: 26kg.

5, Glass loading



machine

RO-SL05

Loading PV glass by Pneumatic chuck.

Shifting suction cup will absorb the glass from the pallet and put it on the conveying line

The equipment is equipped with double photoelectric switch confirmation, which can avoid the protection of glass collision caused by wrong action

Put the paper between the glass into the isolation box

Automatic warning of material shortage (sound and light)

The feeding area has a protection grating or safety door

With ionic fan for dust blowing glass

Can meet different specifications of glass use

With paper separation recycling function

Meet the 150P (3.2mm) one drag glass size, and 2 torches directly seamless switch.

Working power supply	AC 380V 3 phase 5 wire system 50Hz
Work pressure	0.6 ~ 0.7 Mpa
Power	5 KW
Manipulator load	40Kg

6, Laying up machine



Use whole servo closed loop control

Adopt vacuum check technology

Servo lateral locating, digital locating. Set location distance just on the upper computer, be capable of setting every lateral locating distance separately, high efficient in servo location.

Spinning part adopts electronic control and cooperates with robot joint reducer(back interval less than 1arc.min).Be capable of setting spinning degree randomly(set by upper computer) and setting each string's spinning angle separately.

Glass location device is hand wheel type and intensifying type. The time to change glass is short and no need to use other tools like wrench.

6 opening system and reserving about 30 percent hardware interfaces, which is convenient to the interface control of equipment and auxiliary devices.

ITEM	Specification
Working voltage	AC380V,3 Phase 5 Lines,50Hz
Rated power	7KW
Working air pressure	0.5-0.8Mpa
Average Air Consumption	≧ 600L/min
Driving mode	Servo driving
Positional accuracy of cell strings	±0.3mm
Tact	60s
Interval of cell strings	1~10mm(adjustable)
QTY of cell strings	4~12strings(adjustable)
Switching time	≧ 15min
Breakage rate	≧ 0.3%
Cell main grid line number	2-5grids,switching time ≧ 30min

Applicable Module Size	L(1600-2300mm)*W(800*1200mm)
Material of transmission belt and sucker	PU
Overall Dimensions	2470mm*4180mm*2800mm(L*W*H)
Total weight	About 2500kg
Control system	Screen(MCGS),Chinese/English mode,supporting remote maintenance,and connection to local production-management software.
Operating mode	Manual/Automatic
Equipment Function:Cell strings laying up machine,working with Stringer by 1 VS 1,or 1 VS 2. Cell strings are in parallel with the long side of the modules after conveyed in the Automatic Layup Machine,and adjusted mechanically and by CCD.	

7, Bussing machine



The main function of this equipment is to separate the cell string from the glass, lift the cell string to a certain height with a lifting mechanism, and then suspend and solder the bus bars at the head, middle, and tail of the mid-outlet type module. It has the function of supplying rolled bus bars and bending U and L-shaped leads upward.

Equipment parameters

Dimensions	Parameters	Output (technical requirements)
	Cycle time	≤18S
	Utilization rate	≥99%
	Overall yield	≥99%(according to modules quantity. The layout accuracy of modules flowing into the bus bar soldering machine must be within ±0.5mm)
	Breakage rate	<0.02%(according to cells quantity)

	Maximum compatible module size	1650*900-2500*1500mm
	Compatible solar cell size (mm)	Compatible with 156-210mm
	Number of compatible grid lines	Compatible with 5-20 grid
	Module specification	156-210 cells: 6 strings*10 half cell*2, 6 strings*11 half cell*2, 6 strings*12 half cell*2, 6 strings*13 half cell*2, cell spacing-0.5-4mm, string spacing 1-6mm. Specify a cell size and grid wire specification before leaving the factory. Can be upgraded for a fee to be compatible with 210 solar cells 5 strings*10 1/3 cell*2, 6 strings*10 1/3 cell*2, 5 strings*15 1/3 cell*2, 6 strings*15 1/3 cell *2
	Cell specification	Standard: 182/10BB main grid line spacing 17.3mm (One cell specification is standard, and other cells are optional.) Compatible cell specifications can be upgraded for a fee:156mm-210mm/5BB-20BB (It can be upgraded to other different cell types for a fee in the future. If the main grid line of the same size cell is changed, only the backing plate needs to be replaced. For other 156mm-158mm, 18Xmm, and 210mm cells, the soldering head, backing plate, etc. need to be replaced, and other hardware needs to be adjusted.
Feeding mechanism	Belt quantity	4 Pcs
	Feeding way	Long edge feeding of modules
	Maximum deviation allowed for module inflow	Glass center deviation < 30mm
	Module transfer method	Frequency conversion motor + belt
Positioning mechanism	Correct deviation	9 camera vision, positioning accuracy < 0.2mm
	Positioning mechanism	Electric cylinder/servo module
	Number of anchor points	≥ 5 points
	Positioning mode	Mechanical positioning
	Feeding method	Roll loading, automatic cutting and bending
	Roll size	Axis hole: 20-25mm, outer diameter < 210mm
	Roll load bearing	≤ 13KG
	Compatible bus bar width	Factory accessories 4mm、5mm、6mm、8mm
	Compatible bus bar thickness	0.18mm-0.4mm
	Cutting accuracy	≤ 0.5mm
Belt making	Lead manufacturing method	Bend vertically upward
	Lead angle and deviation	90° deviation 2~3°
	Transportation method	Servo motor + vacuum adsorption
	Positioning mode	Mechanical positioning + vacuum adsorption
	Positioning accuracy	Less than 0.5mm
	Distance from bus bar to cell	2-10mm adjustable

	Bus Bar super ribbon length	≤2mm (length error)
Soldering mechanism	Soldering head life	≥1 year
	Soldering head replacement time	≤60min
	Operation mode	servo motor
	Cooling method	air cooling
	Soldering method	Electromagnetic induction soldering
	Soldering head quantity	12
	Soldering head control method	Current control/time control
	Soldering heating time	≤2s
	Soldering temperature control accuracy	±5℃
	Soldering tension	Ribbon welding tension ≥5N/mm (Bus bars and ribbons)
Soldering effect	Soldering appearance	Full of molten tin
	Soldering contact area	≥80%
	Solder scar size	≥(4*4)mm ²
Communication and control systems	Control system	PC+PLC (reserve 5% of I/O points)
	Electronic control Inovance or Schneider	
	Communication Interface	Meet MES docking needs
Equipment parameters	Power supply	Three phase five wire, 380V/220V, 50/60Hz
	Power	Peak 40KW, average about 20KW
	Air source	0.6-0.8MPa pressure, 2000L/min flow
	Machine dimensions	5220mmX2570mmX2450mm
	Alarm system	Three color lights + buzzer

8, EL & VI tester

EL-2600A



Electroluminescent inspection for detect solar panel before laminating and after laminating.
To check solar panel of secluded split, cracked cell, rosin joint, wire break and other defects.

Can testing module: 2600mm x 1400mm

Maximum current: 10A, Maximum voltage: 60V

Include: Cabinet (Include infrared camera) + Computer + Software

4 cameras, take 12 pictures for one solar module , the pixel get 20 million.

Time of exposure: 0.1 S-25.5 S Adjustable

Power: 220V 10A or customize.

Working environment temperature : 10 - 30 °C

Humidity: 20 - 70%

Main function of characteristics:

By using images can find: material other defects. the sides of the pneumatic feeding short, art and craft contamination

Testing fast and convenience was longtime 1s - 25s (adjustable)

It is testing on line.

Power consume : 2 KW

9, Laminating machine

Model : RO-Q2455



USE : As the equipment of manufacturing solar module limited to laminate glass, EVA (Ethylene Vinyl Acetate Sheet), solar cell and back sheet

Dimension : 30000mmx 3000mmx1380mm

Laminating area: 5500mm x 2400mm.

Laminating height: 25mm

Double chamber, First chamber for EVA film melting, Second chamber for EVA solidify .

Total power consumption: 120 KW (AC380V, 60 Hz, or according to customer's need)

Air source: 0.6 - 1.0 MPa. 200L/ min .

Operating mode: Manual / Automatic.

Control system : PLC (Siemens). HIM system: Touch screen (Siemens)

Heating mode: Oil Heating (SD320 heat conducting oil, capacity: 170 L, flow pressure:0.3 Mpa.),

include: main heating and adjustable heating.

Temperature control: PID intelligent temperature control system.

Temperature uniformity in working area: $\leq \pm 1.5$ °C

Temperature control accuracy: $\leq \pm 1$ °C.

Temperature control range: 30°C - 180 °C

Pumping rate: 2*70 L/s .Laminating time: 2 - 4 min (excluding solidification time)

Heating rate: 135°C at room temperature with 50 to 60 minutes

Vacuum rate: 70 L / S, the limit vacuum 98 Pa, Vacuum time: 60 seconds

Silicone membrane size: 6200mm * 2800mm, 5 mm thickness. The laminating times more than 3000 times.

Quick replace silicon membrane design.

Lid opening: Straight from the hydraulic, the biggest opening height: 200 mm

Total weight: 17,000Kg.

Production capacity:

Conventional 605 Wp (2172*1303mm) solar module, 4 pcs in a cycle time.

Production Capacity:

605 WP*4 pcs/ Cycle * 6 Cycles/h* 24hours* 300days=104 MWp / year.

Warranty period: 12 months. (Exclusive easily damaged parts) . Our company supply service for lifetime.

10, Trimming machine



Work beat: 20 seconds

Suitable size : Length: 1650-2500 - mm ; width : 990-1400 - mm

The maximum weight: 50Kg

Power supply AC 380V 3-phase 5-wire 380V 50HZ/60HZ

Rated power: 3KW

Working pressure 0.6-0.8 Mpa

The gas consumption of 500 L / min.

The maximum weight of a single device is 1500kg .

11.Gluing and framing machine



Technical Specification

1, Solar Panel Minimum size 1650X990X50 (35) mm;

- 2, Solar Panel maximum size 2500X1400X50 (35) mm
- 3, Compatible with a maximum weight:50kg
- 4, Rated power: framing machine 13kw, machine hand 5kw
- 5, Working power: AC 380V 3-phase 5-wire system 380V 50HZ/60HZ
- 6, Air consumption: Framing machine 800L/min Manipulator 20L/min
- 7, The maximum weight of a single device: Framing machine 4000kg Manipulator 2000kg
- 8, Working noise ≤ 72 db
- 9, Source of compressed air cylinders volume: air Source: 0.6 ~ 0.8 Mpa;
- 10, PLC program.
- 11, Auto loading .
- 12, The heavy screw mechanism makes the frame error very small.

Features of the machine

Strong point , the width dimension can be adjust.

Distinctive allocation is locked up. The multiple spot assists pressure the head handle simple, convenient.

12, Gel Injection tools

The tools can meet the requirements of single unit, split junction box, and full coverage of glue filling range

13, Solar module tester



The main technical indicators

Applied for measurement solar panel with sun simulator.

Lamp Spectrum: In line with IEC 60904-9 spectral Irradiance distribution requirement (AM1.5);

Light intensity: 1200 mW / cm² ;

Spectral matching (400-1100) nm wavelength range: 6.2% . Grade A

Irradiance non-uniformity: 2%; Grade A

Irradiance instability : 2%; Grade A

Test result consistency: 1% ; Grade A

Test error of electrical properties: 1%; Grade A

Single flash time: 30-100 ms;

Effective Test range: 2600x1400mm, 5 – 650W or depend on customer needs .

Measuring voltage: 1V ~ 200V (Resolution 1mV);

Measuring current:100mA ~ 20A (Resolution 1mA);

Environment temperature: 15°C~35°C(Resolution 0.1°C)

Test Parameters: 1sc, Voc, Pmax, Vm, Im, FF, EFF, Temp, Rs, Rsh7. Power Supply : 220V ± 10% 5A;

Irradiance automatically compensating;

Temperature automatically compensating; measurement parameter displays in tabulation and graphic way;

Voice counts off and prompts; Counting prompt of flash times;

Gross weight: 350kg.

14, Hipot & resistance test



The tester is an equipment for measuring withstand voltage, and it intuitively actually quickly and reliably tests a variety of electrical safety performance indicators, such as breakdown voltage, leakage current etc. of equipments under test and it also tests performance of components and the whole machine as AC high voltage source. ET2670A withstand voltage tester is designed according to the International and national safety standard such as IEC, ISO, BS, VL, JIS, and its withstand voltage AC is 0~5kV, leakage current AC is 0.1~20mA. The tester is widely used in measuring safety withstand and leakage current tests for different electrical apparatus, insulation materials, high-low voltage switchgear, low

voltage bus, electric machine and components. At the same time, the tester is an integral withstand voltage test equipment for research laboratories and the department of technical supervision. Test voltage, leakage current test and time are all-digital displayed. And rupturing current can be randomly and continuously set up depending on different safety standards and customers' requirements that enriches its function. And the leakage current display actual value of testing leakage current and compare how well of withstand voltage between the same products of different bathes or products from different companies.

2. Technical specifications

2.1 Voltage measuring range: AC≥6000V

2.2 Leakage measuring range: AC: (0.1~2/20)mA grade2±5%

2.3 Leakage current alarm reset range: AC: (0.1~2/20)mA grade2±5% (Continuously setting)

2.4 Time test range: (1~99)s, ±5% Continuously setting, manual test ∞

2.5 Transformer Capacity: 500VA

2.6 Output waveform: 50Hz, Sine wave

2.7 Working condition: environment temperature 0~40℃

2.8 Relative humidity ≤75%

2.9 Atmospheric pressure: 101.25kPa

2.10 Charge: AC:240V (50±2.5)Hz

3. Notice before use

3.1 User must understand operation manual

3.2 The tester must use three cord power wires, and center ground wires need to connect well.

3.3 When the tester connects to device under test, make sure the tester in reset mode and the output test current adjusted to "0".

3.4 Once test and owe resistance lights are damaged, they must be changed immediately in case misjudgment.

15, Buffer



Used to storage solar panel

Technical Specification

1, Solar Panel Minimum size 1550X990X50 (35) mm;

- 2, Solar Panel maximum size 2500X1400X50 (35) mm
- 3, Source of compressed air cylinders volume: air Source: 0.6 ~ 0.8 Mpa;
- 4, Compatible frame maximum weight: 50Kg
- 5, Working power :AC 380V 3-phase 5-wire system 50HZ/60HZ
- 6, Rated power: 2kw
- 7, The maximum weight of a single device : 2800kg
- 8, Working noise \leq 75db

Features of the machine

Fully automatic control of the equipment, no human intervention is required during operation
Component feeding/discharging are protected by detection switch to prevent the hidden danger of debris caused by shield interference when the component is lifted
Equipment operation surface is simple, convenient and reliable
Can store 20/15 modules
The surface of the storage rod is covered with rubber, which is suitable for coated glass
With pass-through function and emergency stop function

Guarantee and after -sale service

One year guarantee for whole machine except of consumable..
24 hours technical support online .
Calling or door-to-door service
Friendly English software, user manual and detailed Video/CD.

16, Conveyor



Used to transfer solar panel, Stick Fixing tape and assembly Junction box ,

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- 3, Source of compressed air cylinders volume: air Source: 0.6 ~ 0.8 Mpa;
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Packing and shipping

2X 40ft Flat rack --- Laminator

1 x 40 ft Flat rack ---- Bussing machine and Laying up machine

1 x20ft Flat rack --- Tabbng and String machine

2 x 40ft container --- Other machines .



We customized design and manufacture solar panel machines according customer needs. Such as building, work people and other condition.