

SC-SOLAR 晟成光电

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昆山晟成光电科技有限公司

Kunshan Shengcheng Photoelectric Technology Co., Ltd.

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PIONEER OF SOLAR  
INDUSTRY INTELLIGENT  
EQUIPMENT MANUFACTURER

光伏行业智能装备制造领导者

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## 关于晟成

昆山晟成光电科技有限公司，成立于 2021 年 6 月，是晟成光伏子公司，厂房面积约为 20000 平方米。昆山晟成应时而动，把握国家大力发展新能源之机，助力“双碳”落地，致力于为光伏行业提供玻璃基底单结钙钛矿电池制备的整体解决方案。

光伏技术发展日新月异，钙钛矿作为下一代光伏电池技术，其成本优势和商业价值愈发明显，众多企业选择进入这一赛道。昆山晟成电池技术路线储备多样性，布局超前，是业内较早完成钙钛矿设备开发且有实际产品销售的企业。晟成光电以出众自研能力，不断突破钙钛矿技术壁垒，投资大量资金建设高效钙钛矿太阳能电池实验中心，进行大面积玻璃基底反式结构钙钛矿电池以及硅基钙钛矿叠层电池的工艺研究，搭建完整大面积单结钙钛矿电池中试线、晶硅钙钛矿叠层电池实验线并配备了高性能的精密测试仪器。

长久以来，公司与华中科技大学、南开大学等众多高校课题组建立校企合作关系，以推进公司高端设备及高效电池工艺的开发。目前已研发并生产玻璃基底钙钛矿电池的清洗设备、高效硅基电池系列的清洗制绒设备，真空镀膜设备，狭缝涂布干燥结晶一体机等产品。

昆山晟成将坚持创新驱动发展，持续提高关键核心技术攻关能力，推进高端薄膜装备国产化进程，为行业带来更多先进生产力，为实现“双碳”目标贡献制造力量。

Kunshan SC Photoelectric Technology Co., Ltd, established in June 2021. Having a factory area of about 20000 m<sup>2</sup>. In response to the current situation, Kunshan SC has seized the opportunity of national development of new energy. Dedicated to providing a turnkey solution for glass-based single-junction perovskite solar cells to the photovoltaic industry.

As the next generation of photovoltaic cell technology, Perovskite has obvious cost advantages and commercial value, which has led many companies to invest in this industry. With the early deployment, Kunshan SC has become one of the early enterprises to complete the development of Perovskite production line and have actual sales. Kunshan SC invested in great effort to build a highly efficient effident Perovskite solar cell laboratory, conducting process research on inverted structure Perovskite cells and tandem cells, and build a complete large-area Perovskite cell pilot line, silicon based perovskite tandem cell experimental line and equipped with complete high-performance precision instruments.

Kunshan SC has established long-term cooperative relationships with universities such as HUST and Nankai University. Currently, Kunshan SC has produced glass cleaning equipment, high-efficiency silicon-based solar cell texturing equipment, sputtering / evaporator equipment, and slot die / VCD all-in-one machines.

Kunshan SC will persist in innovation and enhance core technologies, bringing more advanced productivity to the industry and contributing to the achievement of the "carbon peaking and carbon neutrality goals".

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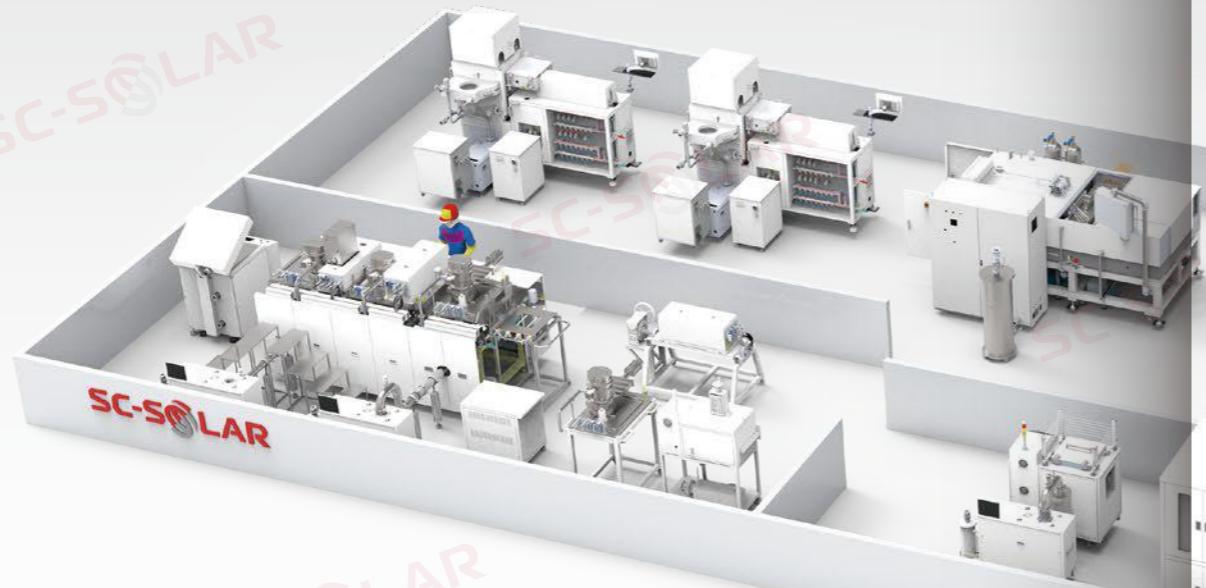
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## 清洗设备 Cleaning Equipment

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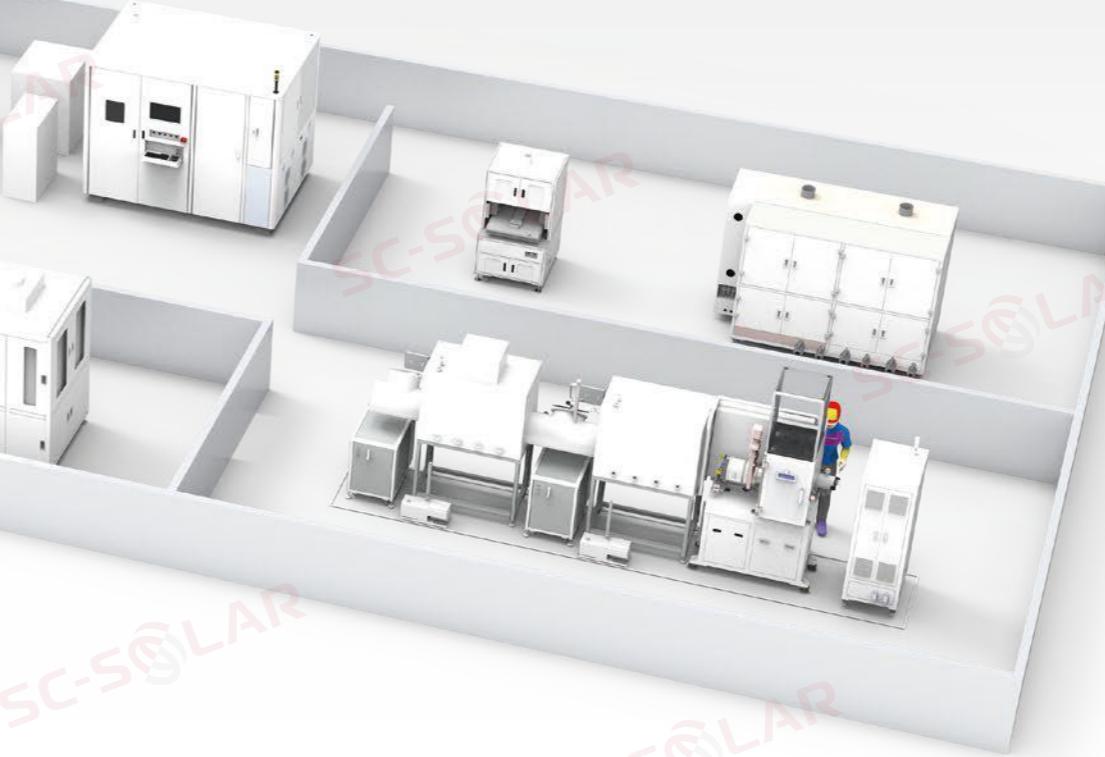


## 300mm\*300mm钙钛矿高效电池制造整体解决方案

300mm\*300mm Turnkey Solution for Perovskite Solar Cell

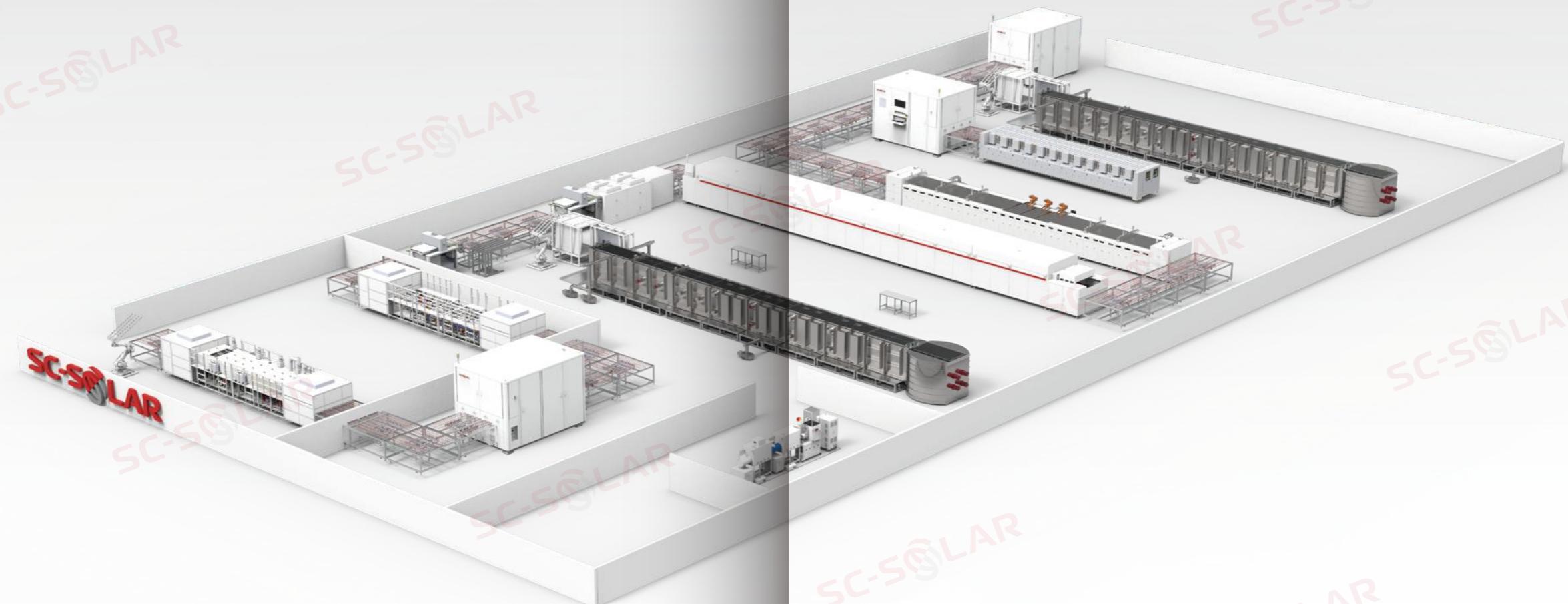
### 特点描述

- 整线工艺设备包含：槽式清洗机、等离子体处理设备、三腔PVD(NiO/ITO/Cu等)、激光划线（P1~P4）、手套箱配液区、涂布及干燥结晶设备、原子层沉积（SnO<sub>2</sub>），双腔式半自动蒸镀机、半自动层压机等；
- 产线每日工作产能：20~60pcs/天；
- 生产线适合长300mm\*300mm的钙钛矿电池生产需求，可根据钙钛矿电池规格调整。



### Features

- The whole line includes: tank cleaning machine, plasma treatment equipment, triple-chamber PVD(NiO/ITO/Cu, etc.), laser scribing (P1~P4), glovebox, all-in-one coating and drying crystallization machine, ALD (SnO<sub>2</sub>), double-chamber semi-automatic evaporation machine, semi-automatic laminator, etc.
- Capacity: 20-60pcs/day;
- The line meets the production demand for components with length of 300mm by 300mm glass substrate , and can be adjusted according to the specifications of Perovskite solar cell.



## 600mm\*1200mm钙钛矿高效电池制造整体解决方案

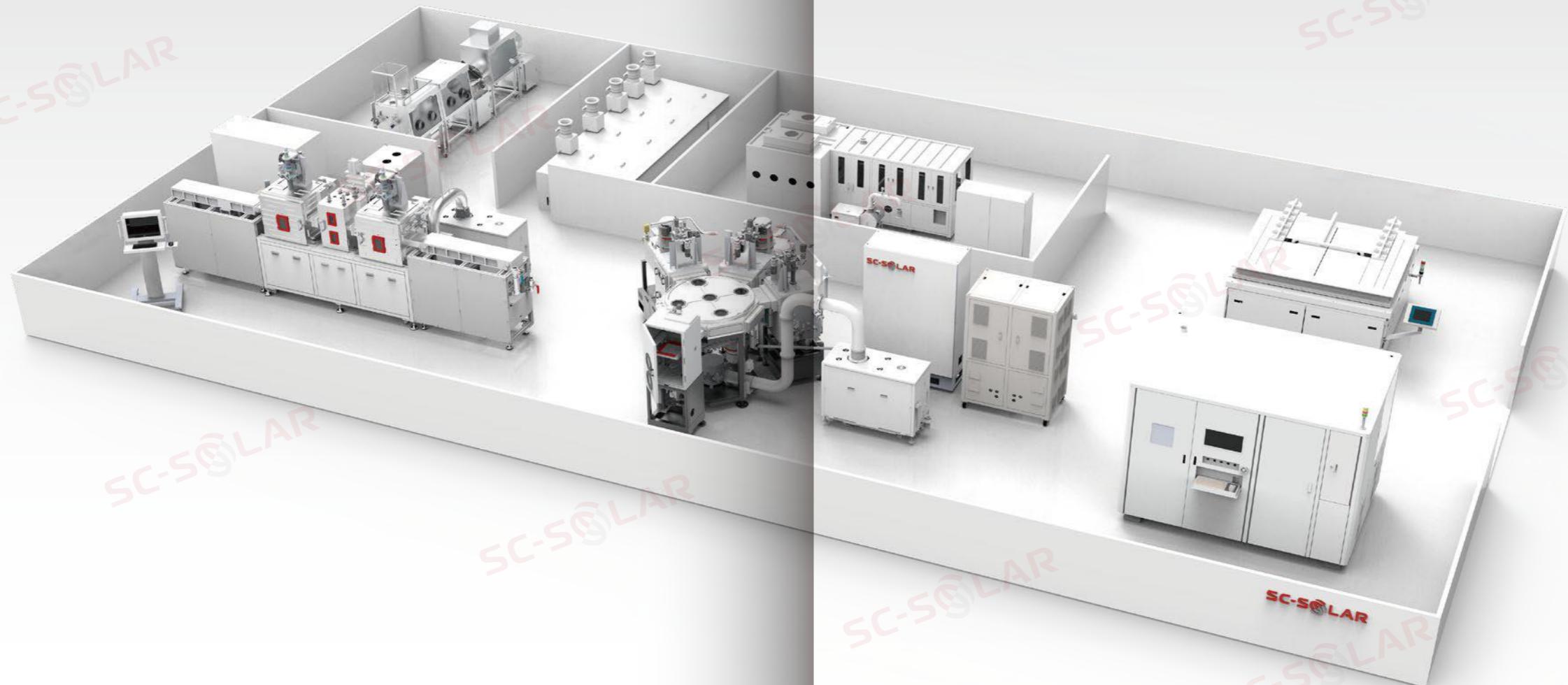
600mm\*1200mm Turnkey Solution for Perovskite Solar Cell

### 特点描述

- 整线工艺设备包含：链式清洗机、等离子体处理设备、立式PVD(NiO/ITO/Cu等)、激光划线（P1~P4）、手套箱配液区、涂布及干燥结晶设备、原子层沉积（SnO<sub>2</sub>）、线性蒸镀设备、全自动层压机等；
- 产线每日工作产能：150~450pcs/天；
- 生产线适合长600mm\*1200mm的钙钛矿电池生产需求，可根据钙钛矿电池规格调整。

### Features

- The whole line includes: chain cleaning machine, plasma treatment equipment, vertical PVD (NiO/ITO/Cu, etc.), laser scribing (P1~P4), glovebox, all-in-one coating and drying crystallization machine, ALD (SnO<sub>2</sub>), linear evaporation equipment, fully automatic laminator, etc.
- Capacity: 150-450pcs/day;
- The line meets the production demand for components with length of 600mm by 1200mm glass substrate , and can be adjusted according to the specifications of Perovskite solar cell.



## 钙钛矿/叠层电池实验线

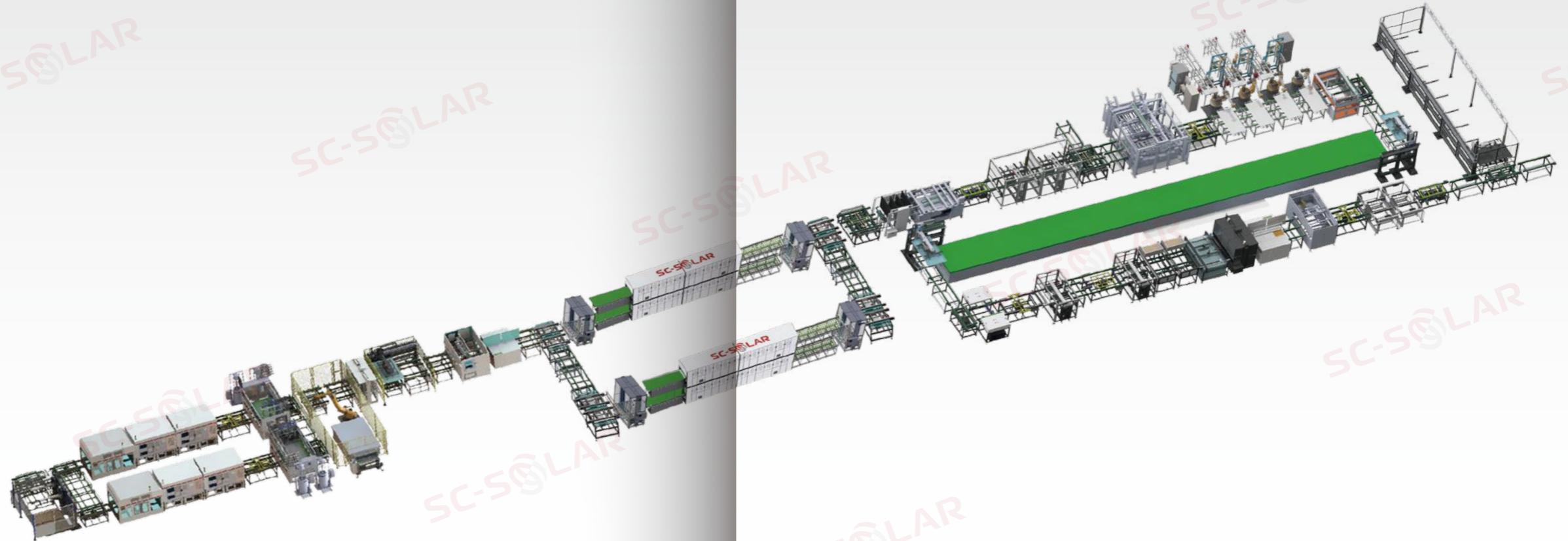
Perovskite & Tandem Solar Cell Experimental Line

### 特点描述

- 整线工艺设备包含：超声波清洗机、等离子体处理设备、三腔PVD(NiO/ITO/Cu等)、激光划线（P1~P4）、手套箱配液区、涂布干燥结晶一体机（双工站涂布机PVK/ETL）、团簇多功能蒸镀机（PVK/ETL）、半自动丝网印刷机、半自动层压机、PL/EL/IV测试机等；
- 产线每日工作产能：20~100pcs/天；
- 生产线适合长（25~210mm）×宽（25~210mm）的钙钛矿及叠层电池生产需求，可根据钙钛矿电池规格调整。

### Features

- The whole line includes: ultrasonic cleaning machine, plasma treatment machine, triple-chamber PVD (NiO/ITO/Cu, etc.), laser scribing (P1~P4), glovebox, all-in-one coating and drying crystallization machine, cluster multifunctional evaporation machine (PVK/ETL), semi-automatic screen printing machine, semi-automatic laminator, testing machine(including PL/EL/IV ), etc.
- Capacity: 20-100pcs/day;
- The line meets the production demand for components with length of 25mm-210mm by 25mm-210mm glass substrate , and can be adjusted according to the specifications of Perovskite solar cell.



## 钙钛矿组件自动封装线

Automatic Packaging Line for Perovskite Solar Module

### 特点描述

- 整线工艺设备包含：上玻璃机、超声波汇流条焊接机、贴导电胶带机、美容纸贴敷机、丁基胶涂敷机、胶膜裁切铺设机、双玻合片机、堆栈机、层压机、接线盒焊接机、固化线、自动化传输设备、测试区（包含IV、EL、绝缘耐压测试设备）、分档机等；
- 产线工作节拍： $\leq 25s/pcs$ ；
- 生产线适合长（2000~2300mm） $\times$ 宽（900~1200mm）的组件生产需求，可根据组件规格调整；
- 电池板传动速度： $\leq 500mm/s$ 。

### Features

- The entire line includes: glass loading unit and paper removal equipment, ultrasonic busbar welding machine, taping machine, butyl adhesive dispenser, EVA/POE film cutting and laying machine, 2nd glass loading & placement machine, buffer, laminator, curing system, junction box welding machine, automatic transmission equipment, testing system (including IV, EL, insulation and voltage withstand testing equipment), grading & palletizing machine, etc.
- Line rates:  $\leq 25s/pcs$ ;
- The line meets the production demand for components with length of 2000mm-2300mm and width of 900mm-1200mm, and can be adjusted according to component specifications;
- Transmission speed:  $\leq 500mm/s$ .



## 钙钛矿电池玻璃清洗机

Perovskite Cell Glass Cleaning Equipment

### 特点描述

- 带式毛刷代替传统交替排布毛刷；
- 下料段EUV或大气AP进行TCO玻璃表面改性；
- 干段磁力轮传动，湿段滴水润滑+PE斜齿轮传动；
- UPE防静电材质，高精密AK风刀切水干燥。

### Features

- Belt brush replaces the traditional alternating brush;
- EUV or AP for TCO glass surface modification;
- Dry section driven by magnet coupling gear, wet section lubricated with drip water + PE helical gear transmission;
- UPE anti-static material, High-precision air knife used to block water.

### 技术性能

Uptime ≥98%;  
洗净率 ≥98%;  
(小微粒去除率>98%，中颗粒：0ea, 大颗粒：0ea);  
接触角<15度(初始条件：接触角<60度);  
玻璃基板尺寸：2000mm(L)×1000mm(W)(短边进),  
厚度2mm~5mm;  
每小时65片(55秒/片),玻璃间距500mm,传送速度最大4m/min。

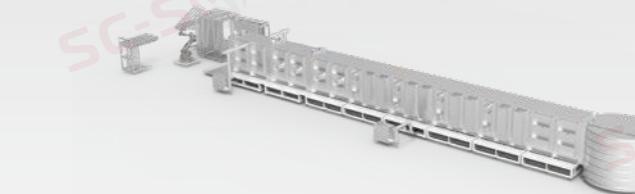
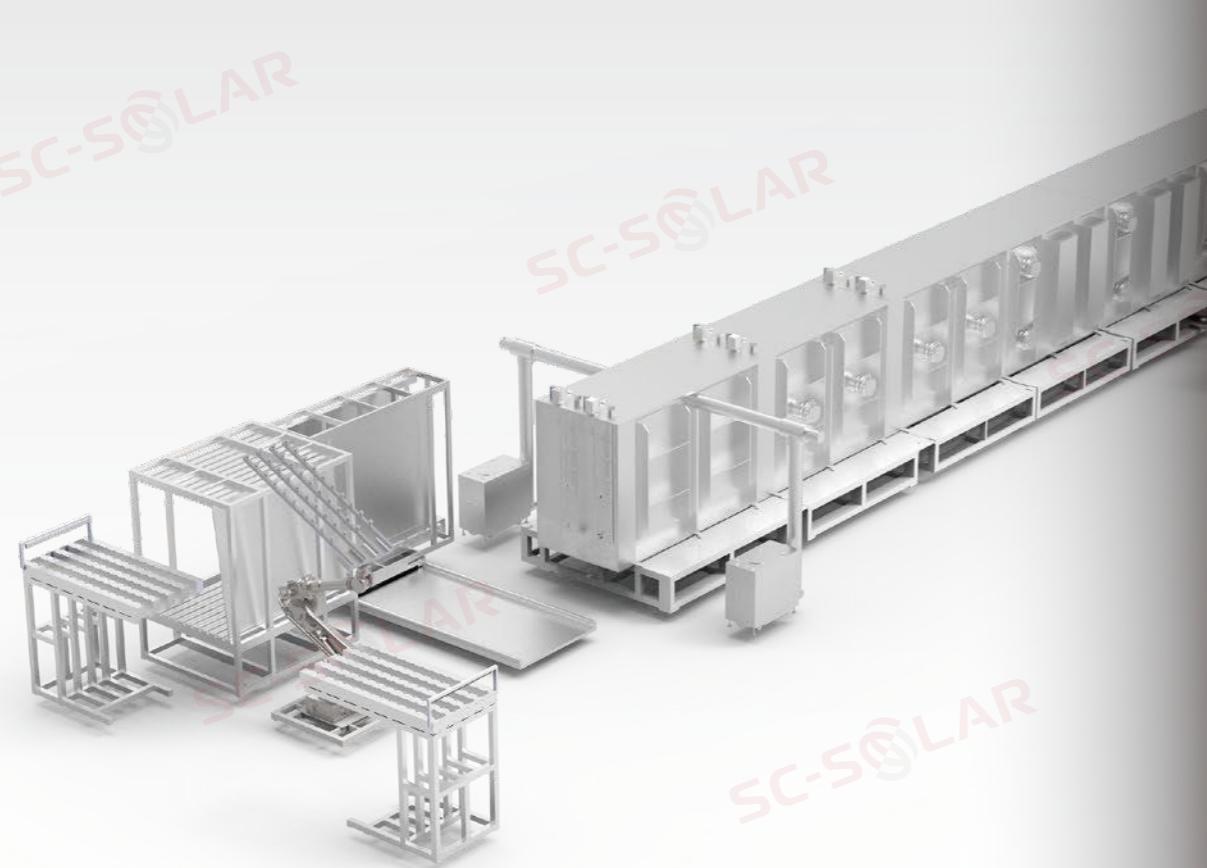
### Performance

Uptime ≥98%;  
Purification rate ≥98% (Small particulate > 98%,  
Medium particulate: 0 EA, Large particulate: 0 EA);  
Contact angle < 15 ° (Initial: contact angle < 60°);  
Glass substrate size: 2000mm(L)×1000mm(W) (Short side in),  
Thickness 2mm~5mm;  
65 pcs/hour (55 s/pc), Glass pitch 500mm, maximum transmission speed 4m/min。

### 技术参数 Parameter

项目 Item	数值 Value
设备尺寸 Layout dimension	10410mm*3100mm*2200mm (含自动化 Automation included)





## 立式旋转腔 PVD镀膜设备

Vertical PVD System with U Turn

### 特点描述

- 立式旋转腔设计，减少设备长度，减少占地面积；
- 2800mm平面阴极，大幅宽大产能设备设计；
- 智能化工艺程序管理，实时数据记录。

### Features

- Vertical sputtering with U turn, footprint reduction;
- 2800 mm in length, planar cathode;
- Intelligent program management, real-time data recording.

### 技术性能 Performance

项目 Item	数值 Value
基板大小 Substrate	1200mm*2400mm*2.2~3.2mm
节拍 Tact time	35s
工艺速度 Process speed	40mm/s
碎片率 Breakage rate	<0.1%
无效边区域 Grip area	<5mm
片间/片内均匀度 Between/Within uniformity	<5%

### 技术参数 Parameter

项目 Item	数值 Value
设备尺寸 Layout	43700mm*11480mm*5200mm (含自动化Automation included)

## 大面积多源共蒸 团簇式蒸镀机

Cluster Evaporation Machine



### 特点描述

- 团簇式布局，搭载精密对位系统，工艺灵活多变；
- 钙钛矿各种材料共蒸程序内置，方便客户直接调用；
- 旋转升降温控基板，有效控温，均匀镀膜。

### Features

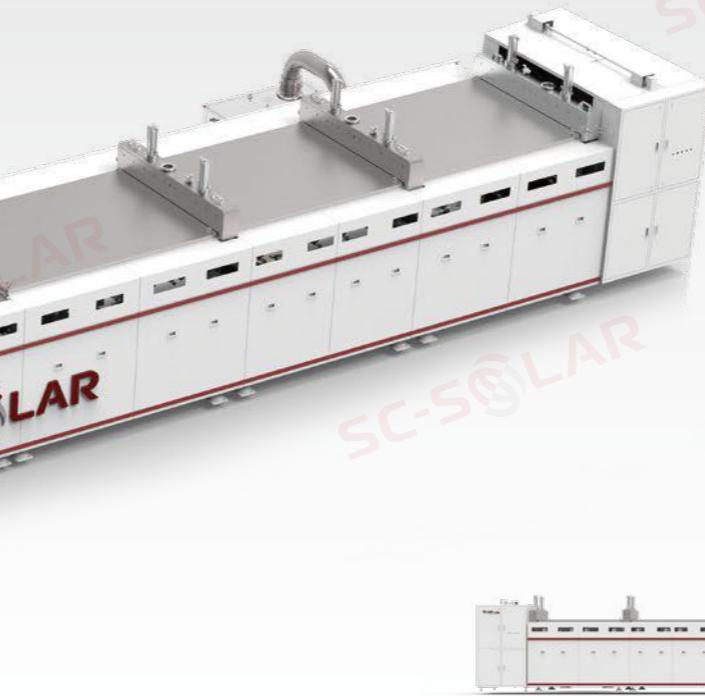
- Cluster evaporator, Precision alignment system;
- Built-in perovskite co-distillation program for various materials;
- Rotatable lifting substrate, temp-control effectively.

### 技术性能 Performance

项目 Item	数值 Value
基板大小 Substrate	300mm*300mm*3.2mm
基板温控 Temp Control	±1°C (控温精度)
坩埚大小 Crucible volume	40cc
上片数目 Substrate quantity per cassette	10pcs
保养频率 Maintenance	一周 once/week
片间/片内均匀度 Between/Within uniformity	<5%

### 技术参数 Parameter

项目 Item	数值 Value
设备尺寸 Layout	3000mm*5000mm*2700mm



## 大幅宽线性蒸镀设备

Large Width Linear Evaporation Equipment

### 特点描述

- 直线式布局，搭载精密传动系统，实现一键作业；
- 针对不同材料，可配置点源或线源，满足定制需求；
- 模块化点源/线源集成件，便于快速维护；
- 专业喷嘴模拟，镀率稳定，成膜均匀。

### Features

- Linear layout, equipped with a precision transmission system;
- Meeting customization requirements, point sources or line sources can be configured for different materials;
- Modular point source/line source integrated components;
- Professional nozzle simulation, stable plating rate, and uniform film formation.

### 技术性能 Performance

项目 Item	数值 Value
有效幅宽 Effective width	600mm
节拍 Tact time	60s
速率稳定性 Rate stability	$\leq \pm 3\%$
坩埚大小 Crucible volume	2200cc
上片数目 Substrate quantity per cassette	1pcs
保养频率 Maintenance	10天
片间/片内均匀度 Between/Within uniformity	<5%

### 技术参数 Parameter

项目 Item	数值 Value
主设备尺寸 Layout	25000mm*1200mm*2000mm



## 涂布干燥结晶一体设备

All-In-One Coating and Drying Crystallization Machine

### 特点描述

- 涂布、干燥、结晶三个工序合而为一，统一电控控制；
- 壳体内气管管控，有效控制空间内水含量；
- 时间节拍管控，抽气曲线、温度曲线实时监控。

### Features

- Combined coating, drying and crystallization, unified electronic control;
- Atmosphere control in body-mounted array to effectively control the water content;
- Cycle time control, Real-time monitoring of pumping curve and temperature curve.

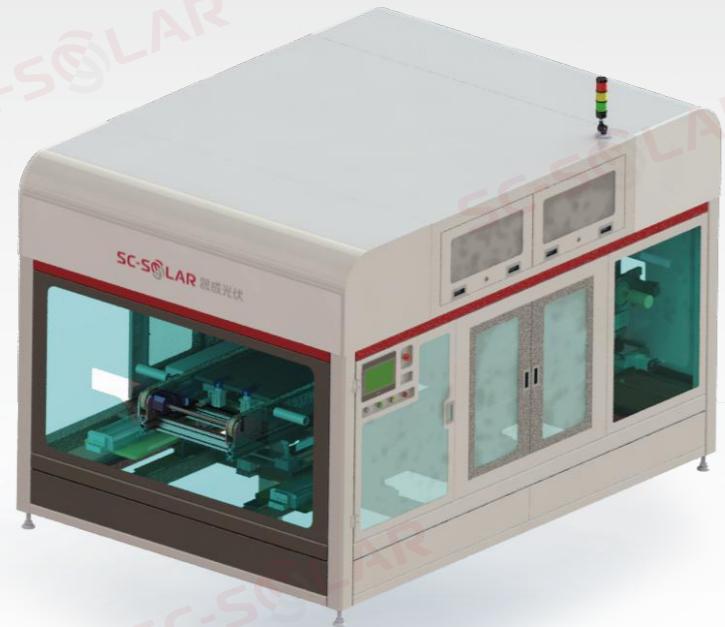
### 技术性能 Performance

项目 Item	数值 Value
基板大小 Substrate	500mm*500mm*3.2mm
基板温控 Temp Control	-5°C~5°C可调 Adjustable
抽气时间 Pumping time	10s~10Pa
碎片率 Breakage rate	0.1%
退火温度 Annealing temp	~200°C

### 技术参数 Parameter

项目 Item	数值 Value
设备尺寸 Layout	6500mm*4000mm*2100mm





## 超声波滚压焊接机

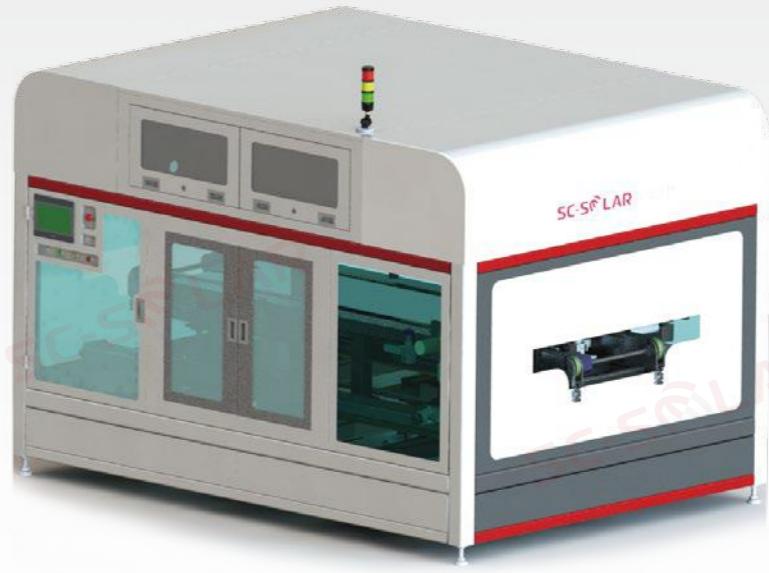
Ultrasonic Rolling Welding Machine

### 特点描述

- 双侧同步超声波滚压焊接；
- 兼容不同尺寸玻璃、版型切换伺服控制为一键式切换，归正手动调整；
- 兼容铝带/铜带焊接；
- 组件归正采用气缸结构，定位精确，换型快捷。

### Features

- Bilateral synchronous ultrasonic rolling welding;
- Compatible with different sizes of glass and version switching servo control for one click switching, with manual adjustment for rectification;
- Compatible with aluminum/copper strip welding;
- The position of components are rectified with cylinder, with precise positioning and quick replacement.



### 技术性能

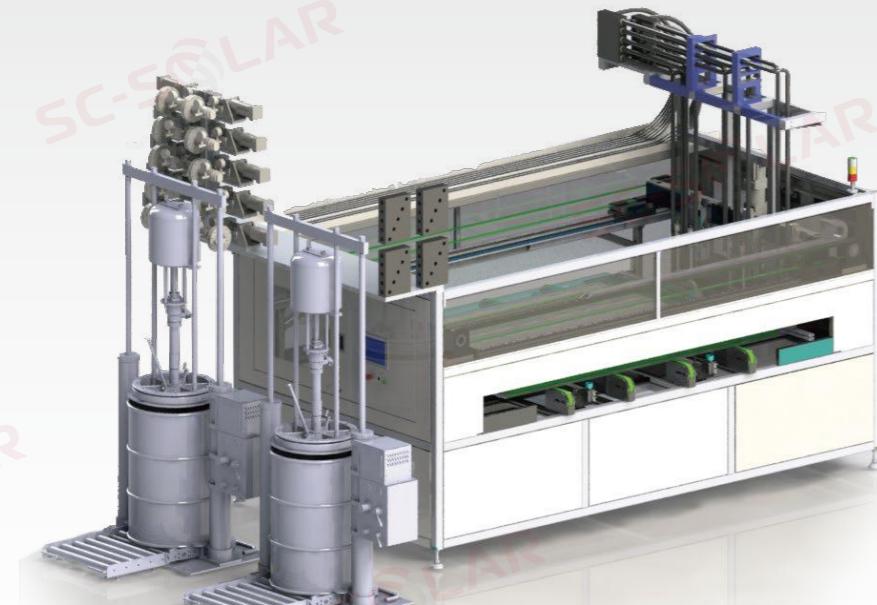
设备适合长 (2000~2300mm) ×宽 (900~1200mm) ;  
组件生产需求;  
节拍时间: 40s;  
汇流带至外边框距离: 0-20mm可调;  
汇流条焊接位置精度±0.3mm;  
换料时间≤3min。

### Performance

Meeting the production demand for components with length of 2000mm-2300mm and width of 900mm-1200mm;  
Tact time: 40s;  
Distance from the busbar to the outer border: 0-20mm adjustable;  
Welding position accuracy of busbar: ± 0.3mm;  
Refueling time ≤ 3min.

### 技术参数 Parameter

项目 Item	数值 Value
设备尺寸 Equipment size	3054mm*2200mm*2000mm (不含三色灯excluding tricolor lights)



## 丁基胶涂覆机

Butyl Adhesive Coating Machine

### 特点描述

- 打胶过程只熔解桶装胶的顶端部分从而使剩余材料保持原有固态，减少热应力影响，使胶保持原有特性；
- 组件规正采用气缸结构，定位精确，换型快捷；
- 具备先进的快速自我诊断功能，更加便于维修和更换。

### Features

- The glue process only melts the top part of the barrel glue, and the remaining material remains solid, reducing the influence of thermal stress on the original characteristics of the glue;
- The position of components are rectified with cylinder, with precise positioning and quick replacement;
- Equipped with advanced fast self diagnostic system, it is more convenient for maintenance and replacement.

### 技术性能

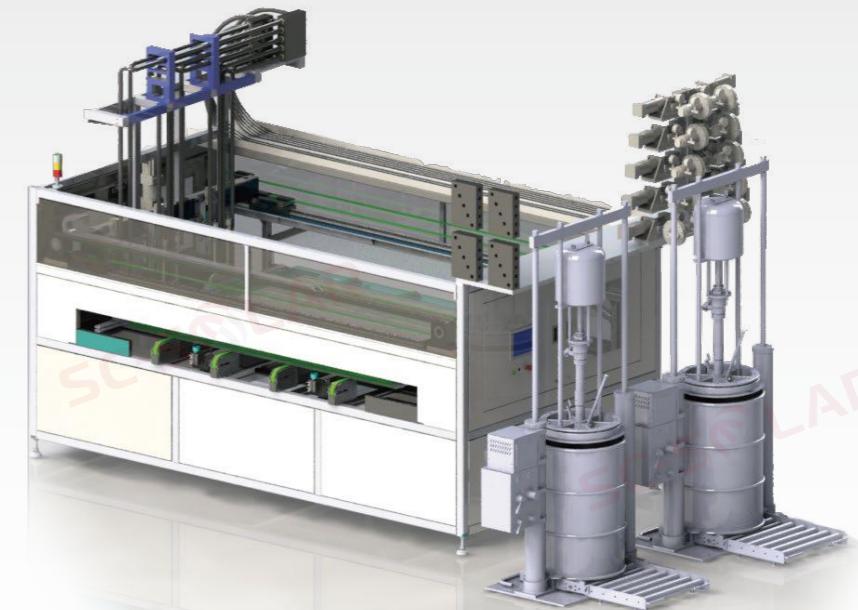
节拍: 40s;  
适用200升/55加仑桶装型热熔胶；  
涂胶系统控温范围:40-230 °C, 控温精度: ±1°C;  
基板定位精度≤±0.2mm, 丁基胶起点精度≤0.3mm,  
涂丁基胶终点精度≤0.3mm, 涂丁基胶直线度<0.5mm;  
设备适合长(2000~2300mm)×宽(900~1200mm)  
组件生产需求。

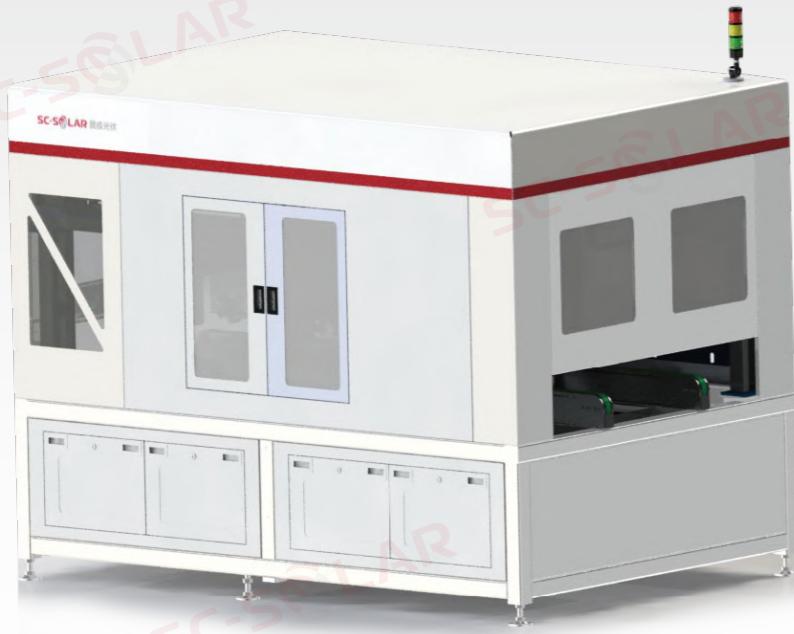
### Performance

Tact time: 40s;  
Suitable for 200L/55 gallon barrel type hot melt adhesive;  
Temperature control range of the adhesive coating system: 40-230 °C, control accuracy: ± 1 °C;  
Positioning accuracy :starting & ending point≤ 0.3mm, straightness <0.5mm;  
Meeting the production demand for components with length of 2000mm-2300mm and width of 900mm-1200mm。

### 技术参数 Parameter

项目 Item	数值 Value
设备尺寸 Equipment size	3054mm * 2200mm * 2000mm





## 汇流带贴敷机

Conductive Tape Applicator

### 特点描述

- 整体结构由玻璃归正输送单元，贴敷系统，真空系统等组成；
- 伺服电机传动带动贴贴敷机构，高速度，高精度；
- 贴敷系统采用直线带动吸盘上的胶带下压。采用滚轮滚压胶减少层压后贴胶带位置有气泡概率。

### Features

- The overall structure consists of a glass rectifying conveying unit, a bonding system , a vacuum system, etc.
- Servo motor drive drives the pasting mechanism, with high speed and precision;
- The application system uses a straight line to drive the tape on the suction cup to press down. Adopting a flexible structure and roller rolling adhesive to reduce the probability of bubbles at the adhesive tape position after lamination.

### 技术性能

节拍≤40s;  
更换胶带时间≤3min;  
胶带贴敷起点精度≤0.5mm, 终点精度≤0.5mm,  
直线度<0.8mm;  
设备适合长（2000~2300mm）×宽（900~1200mm）  
组件生产需求。

### Performance

Tact time ≤ 40s;  
Tape exchange ≤ 3min;  
Tape paste point to point accuracy ≤ 0.5mm,  
endpoint accuracy ≤ 0.5mm, line accuracy <0.8mm;  
Meeting the production demand for components with length of  
2000mm-2300mm and width of 900mm-1200mm。

### 技术参数 Parameter

项目 Item	数值 Value
设备尺寸 Equipment size	2800mm*1870mm*2142mm (不含三色灯excluding tricolor lights)



## HJT制绒清洗机-MW级

HJT Texturing Cleaning Equipment-MW Level

### 特点描述

- 进液匀流结合压力腔与多层匀流板组成快速平稳的布液系统；
- 自补偿动态平衡废气排风系统，提高废气排风高效性；
- 派单式手臂调度系统，实现生产工艺柔性化；
- 工业热水机采用纯石英红外加热方式，确保无金属离子析出；
- 酸碱区域采用自动闸门隔离，解决气体串流现象；
- 烘干区采用化学过滤主动新风系统，保证O3气体浓度<10ppb。

### Features

- Uniform flowing&Pressure chamber with Multilayer uniform plate make up a high-efficiency and stable liquid distribution system;
- Self-compensating dynamic balancing exhaust system, improving the efficiency of exhaust gas;
- Arm dispatch system, Achieve flexible production;
- Uses infrared heating system to heat water; no metal ion precipitation;
- Acid-base area is isolated by an automatic gate;
- Drying equipped with chemical filter , ensure O3 gas concentration < 10ppb.

### 技术性能

设备产能>19200片/小时(每篮232片半片)(800MW@210半片、600MW@182半片);  
碎片率<0.3‰;  
反射率<11%,单片绒面均匀性<1%,片间绒面均匀性<1%;  
制绒主体良品率≥99.8%(排除原料片问题);  
绒面需保证75%以上在目标金字塔尺寸范围内,  
如0.8-3um、2-5um、5-8um;  
设备Uptime: ≥92%;  
设备臭氧水浓度>50ppm。

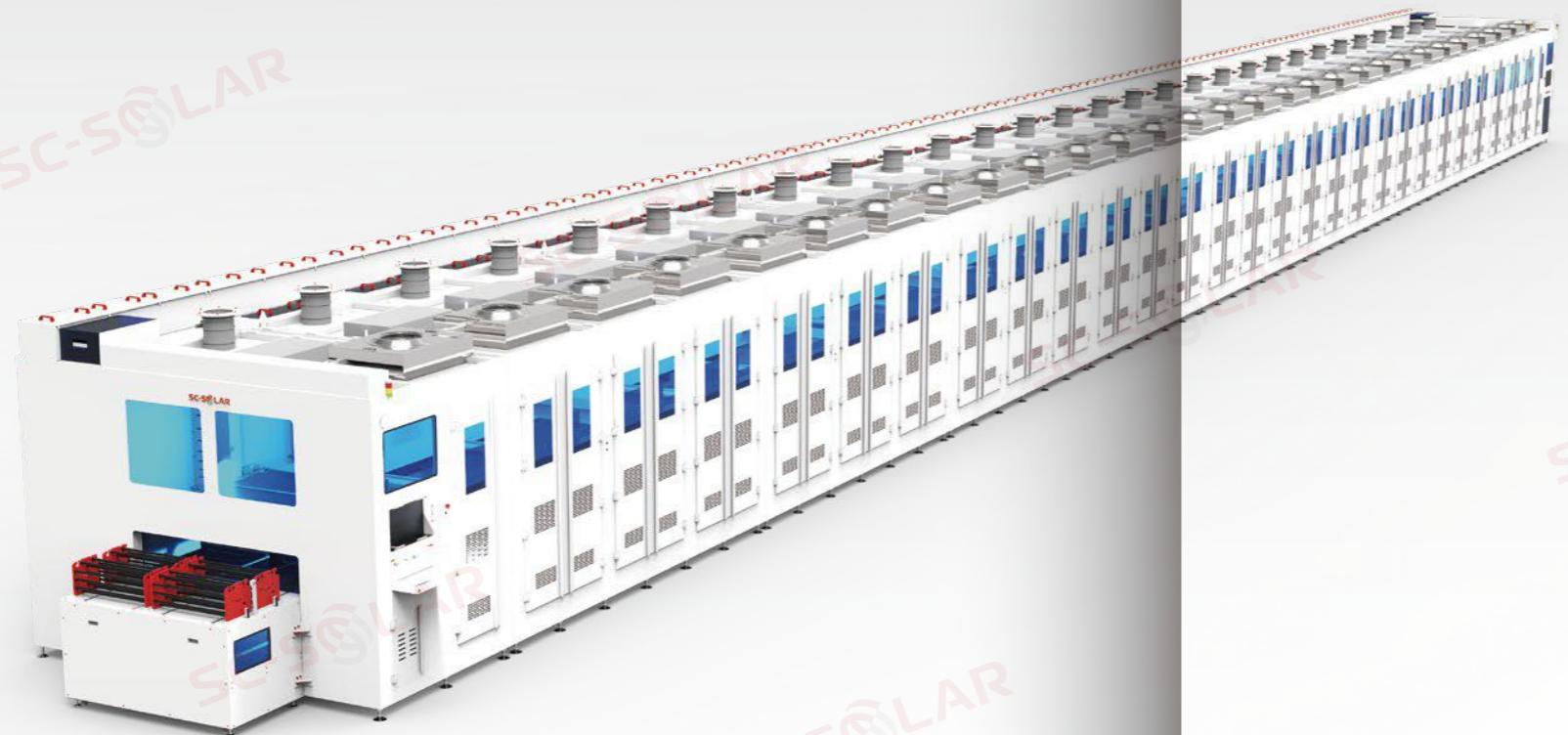
### Performance

Capacity >19200pcs/h(232pcs half cell per basket)(800MW@210B、600MW@182B)  
Breakage rate< 0.3‰;  
Reflectivity< 11%, texture uniformity<1%,  
Texture uniformity between cell<1%;  
Yield rate ≥99.8%(except the problem of raw materials);  
> 75% of the texture is within the target pyramid,  
as 0.8-3um、2-5um、5-8um;  
Uptime: ≥92%;  
Ozone concentration >50ppm.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	O3-Clean→SDE→PreCln→TEX→Post1→CP ( →Post2 ) →DHF→DRY





## HJT制绒清洗机-GW级

HJT Texturing Cleaning Equipment-GW Level

### 特点描述

- 分布式盘管结合V型匀流板组成快速平稳的布液系统；
- 稳定且优异的药液均匀性与温度场；
- 小流量鼓泡技术，均匀鼓泡保证良好的清洗效果；
- 派单式手臂调度系统，实现生产工艺柔性化；
- 内循环+主动排湿的烘干槽，高效烘干硅片的同时也可节能减排；
- 烘干区采用化学过滤主动新风系统，保证O3气体浓度<10ppb。

### Features

- Distributed coil & V type runner plate forms a high-efficiency liquid distribution system;
- Stable and excellent liquid uniformity and temperature field;
- Small flow bubbling technology, uniform bubbling to ensure an effective cleaning outcome;
- Arm dispatch system, Achieve flexible production;
- Internal circulation and active dehumidification drying chamber, efficient drying of Si wafers while saving energy and reducing emissions;
- Drying equipped with chemical filter , ensure O3 gas concentration < 10ppb.

### 技术性能

设备产能>32000片/小时(每篮232片半片)(1.2GW@210半片、1GW@182半片);  
碎片率<0.3‰;  
反射率<11%，单片绒面均匀性<1%，片间绒面均匀性<1%;  
制绒主体良品率≥99.8%(排除原料片问题);  
绒面需保证75%以上在目标金字塔尺寸范围内，  
如0.8-3um、2-5um、5-8um;  
设备Uptime: ≥92%;  
设备臭氧水浓度>50ppm。

### Performance

Capacity >32000Pcs/h(232pcs half cell per basket)(1.2GW@210B、1GW@182B);  
Breakage rate< 0.3‰;  
Reflectivity< 11%, texture uniformity<1%,  
Texture uniformity between cell<1%;  
Yield rate ≥99.8%(except the problem of raw materials);  
> 75% of the texture is within the target pyramid,  
as 0.8-3um 、2-5um 、5-8um;  
Uptime: ≥ 92%;  
Ozone concentration >50ppm.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	O3-Clean→SDE→PreCln→TEX→Post1→CP ( →Post2 ) →DHF→DRY





## HJT 硅片管式吸杂前清洗设备-MW级

HJT Wafer Tube Cleaning Equipment -MW Level

### 特点描述

- 外循环式进风与主动排风相结合的烘干系统；
- 臭氧水洗采用常压大流量混合，确保臭氧混合有效性；
- 冷/热水慢提拉工艺，更宽的工艺窗口；
- 高效过滤与初效过滤相结合，保证设备内更高的洁净度。

### Features

- Drying system, combination of external circulating intake and active exhaust;
- Atmospheric mixed ozone washing, ensure mixing effectiveness;
- Cold/hot water slow lift process, wider process window;
- Combining efficient filtration with preliminary filtration, ensure higher cleanliness inside the device.

### 技术性能

设备产能>19200片/小时(每篮232片半片)(800MW@210半片、600MW@182半片);  
碎片率<0.3‰;  
反射率>40%,单片抛光均匀性<1%,片间抛光均匀性<1%;  
台阶宽度大于15um;  
设备Uptime≥97%;  
设备臭氧水浓度>40ppm;  
设备产品良率>99.9%。

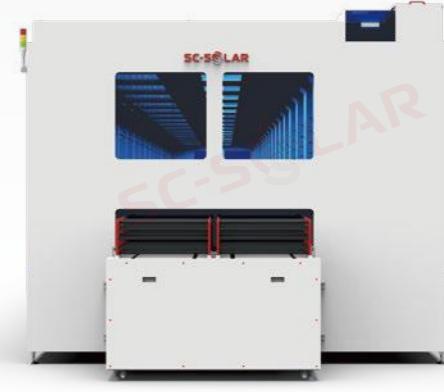
### Performance

Equipment capacity >19200Pcs/h(232pcs half cell per basket)  
(800MW@210B、600MW@182B);  
Breakage rate< 0.3‰;  
Reflectivity> 40%, texture uniformity<1%,  
Texture uniformity between cell<1%;  
Step width greater than 15um;  
Uptime: ≥97%;  
Ozone concentration > 40 ppm;  
Product yield >99.9%.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	O3-Clean→SDE→O3-Clean→DHF→DRY





## HJT 硅片管式吸杂前清洗设备-GW级

HJT Wafer Tube Cleaning Equipment-GW Level

### 特点描述

- 高效节能的烘干系统；
- 臭氧水洗采用常压大流量混合，确保臭氧混合有效性；
- 冷/热水慢提拉工艺，更宽的工艺窗口；
- 高效过滤与初效过滤相结合，保证设备内更高的洁净度。

### Features

- Efficient and energy-saving drying system;
- Atmospheric mixed ozone washing, ensure mixing effectiveness;
- Cold/hot water slow lift process, wider process window;
- Combining efficient filtration with preliminary filtration, ensure higher cleanliness inside the device.

### 技术性能

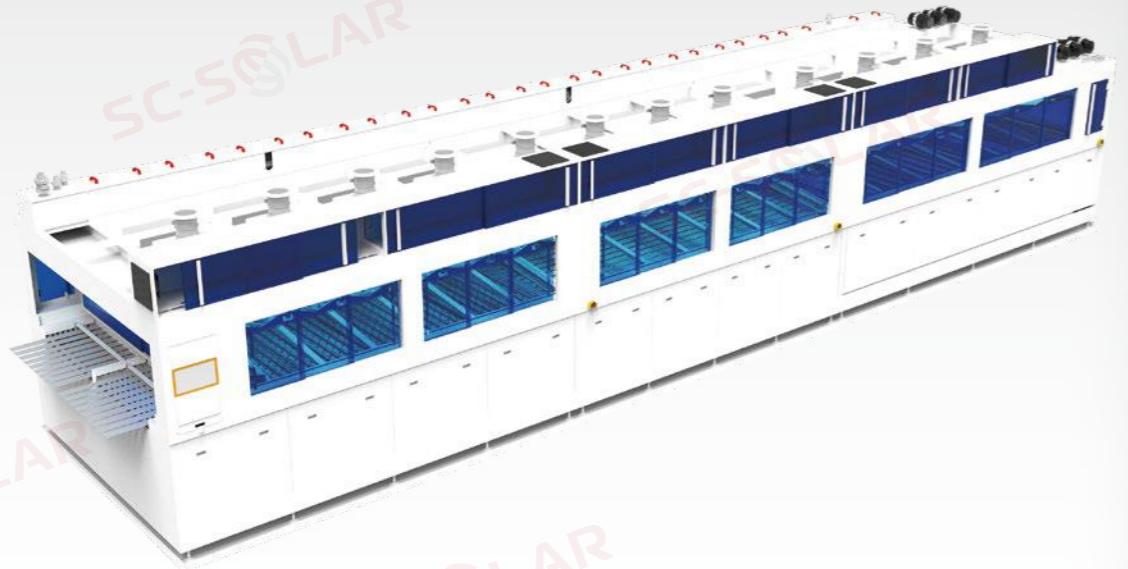
设备产能>32000片/小时(每篮232片半片)(1.2GW@210半片、1GW@182半片)；  
碎片率<0.3‰；  
反射率>40%，单片抛光均匀性<1%，片间抛光均匀性<1%；  
台阶宽度大于15um；  
设备Uptime:≥97%；  
设备臭氧水浓度> 40 ppm；  
设备产品良率>99.9%。

### Performance

Equipment capacity >32000Pcs/h(232pcs half cell per basket)  
(1.2GW@210B, 1GW@182B)  
Breakage rate< 0.3‰;  
Reflectivity> 40%, texture uniformity<1%,  
Texture uniformity between cell<1%;  
Step width greater than 15um ;  
Uptime: ≥97%;  
Ozone concentration > 40 ppm ;  
Product yield >99.9%

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	O3-Clean→SDE→O3-Clean→DHF→DRY



## HJT 硅片链式吸杂前清洗设备

HJT Wafer Chain Cleaning Equipment

### 特点描述

- 高温工艺槽采用隔热腔结构，防止塑料高温形变；
- 传输轨道由紧固安装方式代替传统焊接安装方式；
- 采用线性开口，高气流、低压力干燥切水风刀；
- A/B侧独立控制，独立工艺调试。

### Features

- Insulating chamber structure prevents deformation;
- Transfer rails installed in a fastening manner;
- Linear opening, high airflow, low pressure dry water cutter;
- Independent control and process debugging on A/B side.



### 技术性能

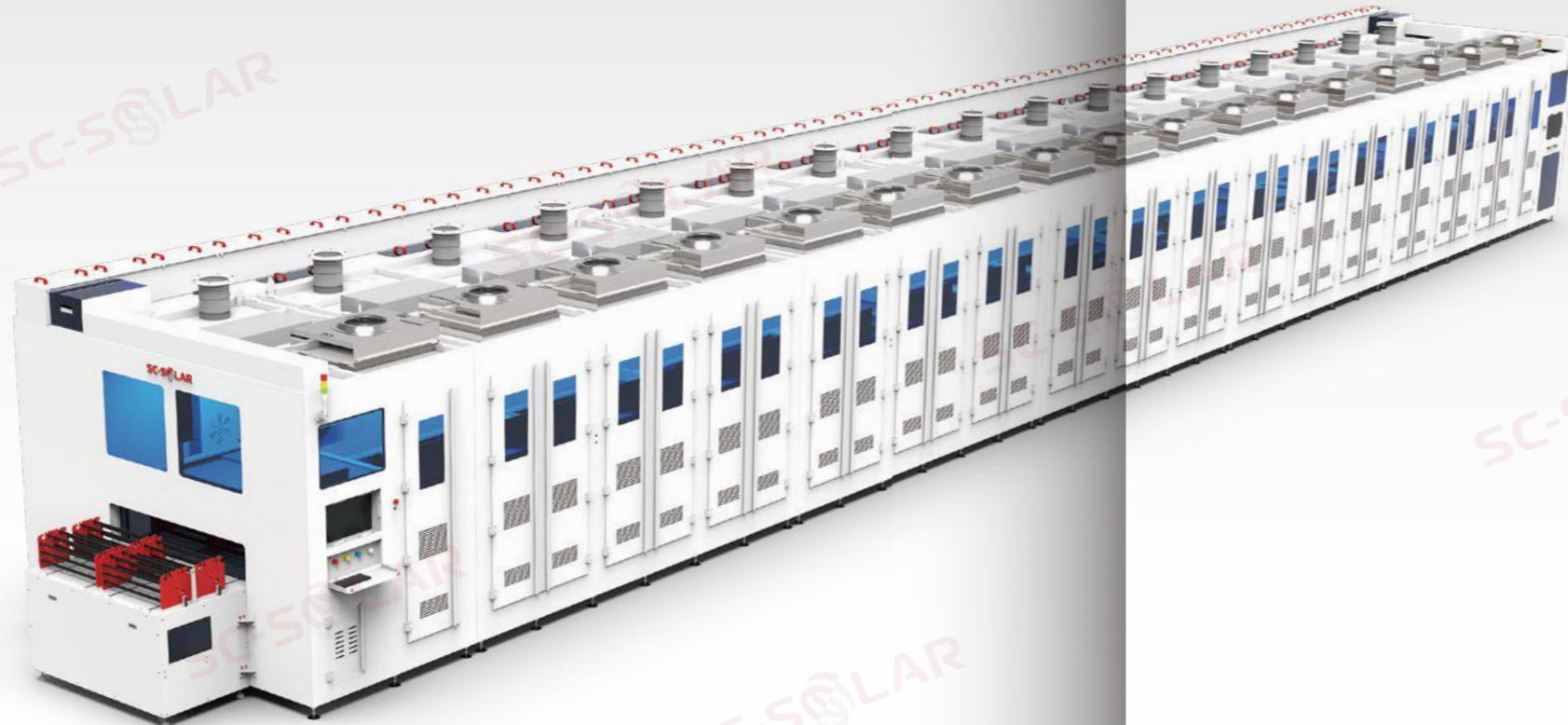
产能>14400片/小时，210×105硅片；  
硅片采用16道传输；  
传输速度3.7m/min；  
碎片率<0.3%；  
腐蚀量0.2g。

### Performance

Capacity> 14,400 pcs/h, 210×105 silicon wafers;  
16 way silicon transfer;  
Transfer speed 3.7m/min;  
Breakage rate< 0.3%;  
Corrosion amount 0.2g.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	Polish→DHF→DRY



## TOPCON电池制绒清洗设备

TOPCON Texturing Cleaning Equipment

### 特点描述

- 大产能设备，单次可处理6篮；
- 分布式盘管结合V型匀流板组成快速平稳的布液系统；
- 自补偿动态平衡废气排风系统，提高废气排风高效性；
- 派单式手臂调度系统，实现生产工艺柔性化；
- 工业热水机采用纯石英红外加热方式，确保无金属离子析出；
- 高效过滤与初效过滤相结合，很好的保证了设备内的洁净度；
- 高速稳定的机械手系统，负载≥100Kg。

### Features

- High-capacity equipment, capable of processing 6 baskets at a time;
- Distributed coil & V type runner plate forms a high-efficiency liquid distribution system;
- Self-compensating dynamic balancing exhaust system;
- Arm dispatch system, Achieve flexible production;
- Uses infrared heating system to heat water; no metal ion precipitation;
- Combining efficient filtration with preliminary filtration, ensure higher cleanliness inside the device;
- High speed and stable manipulator system, load ≥100Kg.

### 技术性能

16000片/小时（每篮116片整片，6篮/槽）；  
碎片率<0.3%（硅片厚度≥110um）；  
设备Uptime: ≥98%。

### Performance

16000 pcs/h (116 whole pieces per basket, 6 baskets/slots);  
Breakage rate< 0.3% (Wafer thickness ≥110um);  
Uptime: ≥98%.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	SDR→PreCln→TEX→Post1→DHF→DRY



## TOPCON电池去BSG清洗设备

TOPCON Cell BSG Cleaning Equipment

### 特点描述

- 高精密水膜射流泵，无极控速控流，精密控制水膜量；
- 精准带液滚轮，防止药水带液量不稳定；
- 高精密防腐电导率测试仪，自动调节酸度，保证腐蚀速率。

### Features

- High precision water-film jet pump, Stepless speed control;
- Precision liquid block roller, prevents potion instability;
- High-precision anti-corrosion conductivity tester, automatically adjusts acidity to ensure corrosion rate.



### 技术性能

产能182mm≥16000 wafer/hour, 182×182硅片 (12道),  
210mm≥12500 wafer/hour, 210×210硅片 (10道);  
传动速度: 1.0-5.5 m/min;  
操作速度: 5.0m/min;  
碎片率<0.5‰;  
正常运行时间Uptime ≥98%。

### Performance

Capacity 182mm≥16000 wafer/h, 182×182 (12 channels),  
210mm≥12500 wafer/h, 210×210 (10 channels);  
Transmission speed: 1.0-5.5 m/min;  
Operating speed: 5.0m/min;  
Breakage rate < 0.5‰;  
Uptime ≥98%.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	水膜 Water film → Acidic → Rinse → DRY



## TOPCON电池碱抛光清洗设备

### TOPCON Cell Alkaline Polishing&Cleaning Equipment

#### 特点描述

- 大产能设备，单次可处理6篮；
- 分布式盘管结合V型匀流板组成快速平稳的布液系统；
- 自补偿动态平衡废气排风系统，提高废气排风高效性；
- 单臂调度系统，实现生产工艺柔性化；
- 工业热水机采用纯石英红外加热方式，确保无金属离子析出；
- 高效过滤与初效过滤相结合，很好的保证了设备内的洁净度；
- 高速稳定的机械手系统，负载≥100Kg；
- 高分辨率防腐酸度PH计调节DIO3酸度值。

#### Features

- High-capacity equipment, capable of processing 6 baskets at a time;
- Distributed coil & V type runner plate forms a high-efficiency liquid distribution system;
- Self-compensating dynamic balancing exhaust system;
- Arm dispatch system, Achieve flexible production;
- Uses infrared heating system to heat water ; no metal ion precipitation;
- Combining efficient filtration with preliminary filtration, ensure higher cleanliness inside the device;
- High speed and stable manipulator system, load ≥100Kg;
- High-resolution anticorrosive pH meter adjusts the DIO3 acidity value.

#### 技术性能

产能: 16000片/小时 (每篮116片整片, 6篮/槽) ;  
碎片率<0.3% (硅片厚度≥110um) ;  
反射率>40%,单片抛光均匀性<1%,片间抛光均匀性<1%;  
台阶宽度大于15um;  
设备Uptime: ≥95%;  
设备产品良率>99.9%。

#### Performance

Capacity: ≥16000 pcs/h (116 whole pieces per basket, 6 baskets/slots);  
Breakage rate < 0.3% (Wafer thickness ≥110um);  
Reflectivity> 40%,texture uniformity<1%,  
Texture uniformity between cell<1%;  
Step width greater than 15um;  
Uptime: ≥95%;  
Product yield >99.9%.

#### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	PreCln→Polish→Post1(→Mirco TEX →Post1)→DHF→DRY





## TOPCON电池去PSG清洗设备

TOPCON Cell PSG Cleaning Equipment

### 特点描述

- 高精密水膜射流泵，无极控速控流，精密控制水膜量；
- 精准带液滚轮，防止药水带液量不稳定；
- 高精密防腐电导率测试仪，自动调节酸度，保证腐蚀速率。

### Features

- High precision water-film jet pump, Stepless speed control;
- Precision liquid block roller, prevents potion instability;
- High-precision anti-corrosion conductivity tester, automatically adjusts acidity to ensure corrosion rate.

### 技术性能

产能182mm≥16000 wafer/hour, 182×182硅片 (12道),  
210mm≥12500 wafer/hour, 210×210硅片 (10道);  
传动速度: 1.0-5.5 m/min;  
操作速度: 5.0m/min;  
碎片率<0.5‰;  
正常运行时间Uptime ≥98%。

### Performance

Capacity 182mm≥16000 wafer/h, 182×182 (12 channels),  
210mm≥12500 wafer/h, 210×210 (10 channels);  
Transfer speed: 1.0-5.5 m/min;  
Operating speed: 5m/min;  
Breakage rate <0.5‰;  
Uptime ≥98%.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	水膜 Water film→Acidic→Rinse→DRY



## TOPCON电池去绕镀&RCA清洗设备

TOPCON Cell De-Plating & RCA Cleaning Equipment

### 特点描述

- 大产能设备，单次可处理6篮；
- 分布式盘管结合V型匀流板组成快速平稳的布液系统；
- 派单式手臂调度系统，实现生产工艺柔性化；
- 高效过滤与初效过滤相结合，很好的保证了设备内的洁净度；
- 高速稳定的机械手系统，负载≥100Kg。

### Features

- High-capacity equipment, capable of processing 6 baskets at a time;
- Distributed coil & V type runner plate forms a high-efficiency liquid distribution system;
- Arm dispatch system, Achieve flexible production;
- Combining efficient filtration with preliminary filtration, ensure higher cleanliness inside the device;
- High speed and stable manipulator system, load ≥100Kg.

### 技术性能

产能: 16000片/小时 (每篮116片整片, 6篮/槽) ;  
碎片率<0.3% ( 硅片厚度≥110um ) ;  
设备Uptime: ≥95%;  
设备产品良率>99.9%。

### Performance

Capacity: 16000 pcs/h (116 whole pieces per basket, 6 baskets/slots);  
Breakage rate < 0.3% (Wafer thickness ≥ 110um);  
Uptime: ≥ 95%;  
Product yield > 99.9%.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	Alkline→PreCln→HF→Post1→DHF→DRY



## HJT电池制绒实验设备

HJT Cell texturing Experimental Equipment

### 特点描述

- 按需设计，支持工艺定制；
- 全自动生产，工艺配方自由设置；
- 全自动补加，一键洗槽配液；
- FFU主动进风，很好的保证了设备内的洁净度。

### Features

- On-demand design, supporting process customization;
- Fully automatic production, process formula freely setting;
- Fully automatic replenishment, One-key wash tank dispensing;
- FFU actively intakes air, effectively ensuring the cleanliness inside the equipment.

### 技术性能

碎片率<0.5‰ (硅片厚度≥110um) ;  
设备Uptime: ≥95%;  
设备产品良率>99.9%。

### Performance

Breakage rate < 0.5‰ (Wafer thickness ≥110um);  
Uptime: ≥95%;  
Product yield >99.9%.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	支持工艺定制 Supporting process customization



## TCO返工片清洗设备

TCO Rework Sheet Cleaning Equipment

### 特点描述

- 臭氧清洗工艺，臭氧浓度≥40ppm;
- 全自动生产，工艺配方自由设置；
- 全自动补加，一键洗槽配液。

### Features

- Ozone cleaning process, ozone concentration ≥40ppm;
- Fully automatic production, process formula freely setting;
- Fully automatic replenishment, One-key wash tank dispensing.

### 技术性能

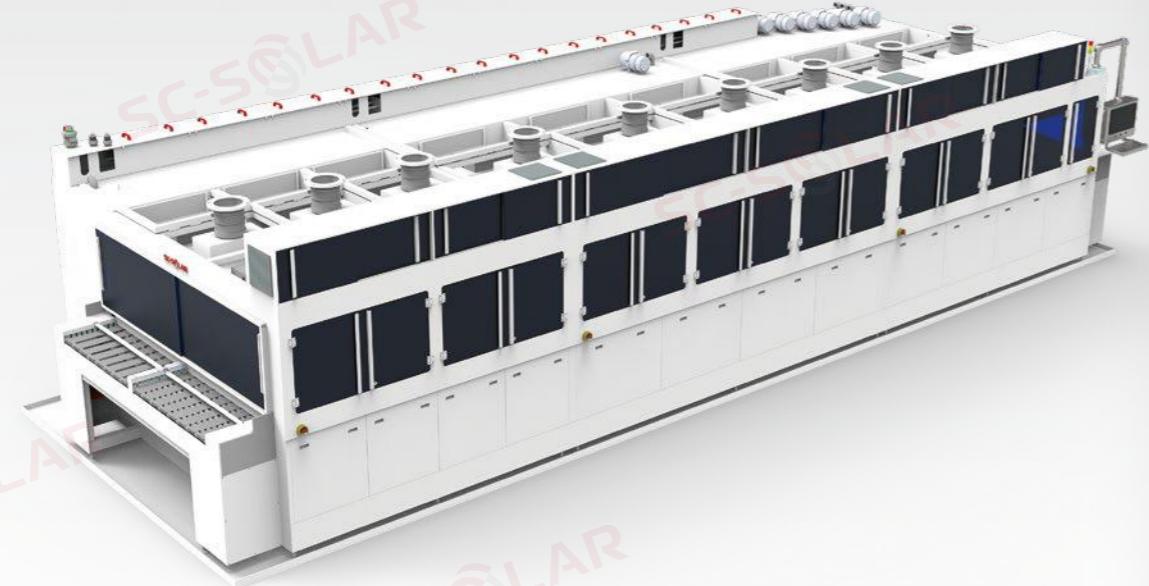
产能: ≥4000片/小时(每篮116片整片, 4篮/槽);  
碎片率<0.5%;  
设备Uptime:≥93%。

### Performance

Capacity: ≥4000 pcs/h(116 whole pieces per basket, 4 baskets/slots);  
Breakage rate < 0.5%;  
Uptime: ≥93%.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	O3-Clean→O3-Clean→DHF→DRY



## 蚀剥铜设备

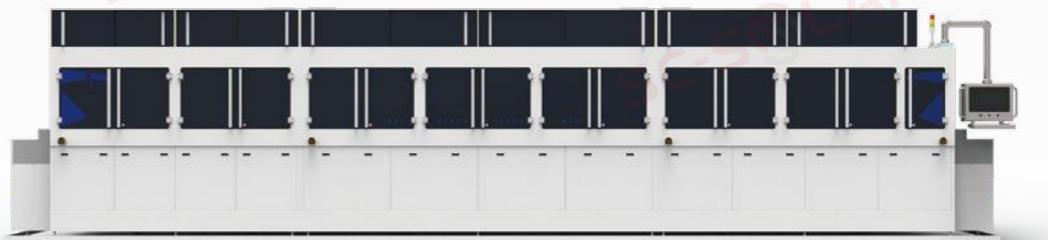
Corrosion Stripping Copper Equipment

### 特点描述

- 双下槽设计，快速切换，大大降低了换液时间；
- 精准带液滚轮，稳定的药水带液量；
- 多道水洗并联，保证清洗效果的同时提高纯水利用率。

### Features

- Dual-groove design, fast switching, significantly reducing the liquid change time;
- Accurate liquid roller, stable liquid dosage;
- Multiple parallel water washes, ensure cleaning effectiveness while improving the utilization rate of pure water.



### 技术性能

产能≥9600 wafer/hour, 182B & 210B;  
传动速度: 1.0-4.0m/min;  
操作速度: 2.5m/min;  
碎片率<0.5‰;  
正常运行时间Uptime ≥98%。

### Performance

Capacity≥9600 wafer/h, 182B & 210B;  
Transmission speed: 1.0-4.0 m/min;  
Operating speed: 2.5m/min;  
Breakage rate < 0.5‰;  
Uptime:≥98%.

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	Edge Isolation→Rinse→tin-plating→Rinse→5 stage Rinse→DRY



## 载板清洗设备

Carrier Board Cleaning Equipment

### 特点描述

- 重载机械手，负载 $\geq 800\text{kg}$ ;
- 全自动生产，工艺配方自由设置；
- 全自动补加，一键洗槽配液；
- 高效清洗，有效的节水性能。

### Features

- Heavy-duty manipulator, load  $\geq 800\text{kg}$ ;
- Fully automatic production, process formula freely setting;
- Fully automatic replenishment, One-key wash tank dispensing;
- Efficient cleaning, water conservation.

### 技术性能

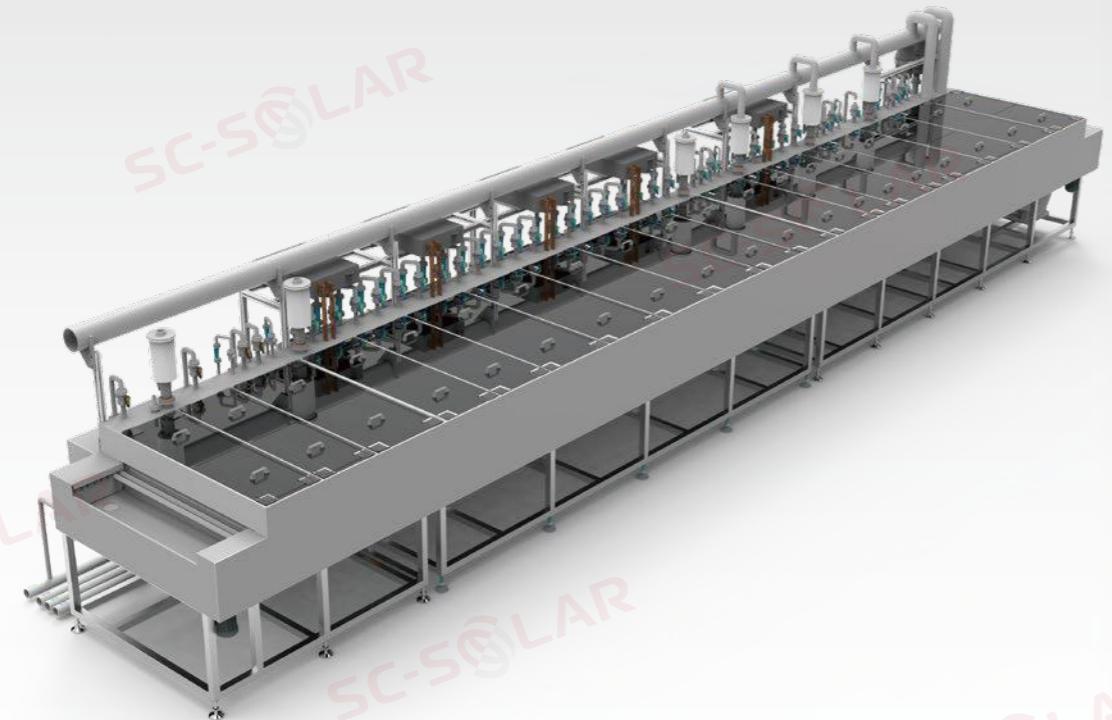
设备Uptime: $\geq 95\%$ 。

### Performance

Uptime: $\geq 95\%$ .

### 技术参数 Parameter

项目 Item	数值 Value
清洗流程 Cleaning process	Acidic $\rightarrow$ 2 stage Rinse $\rightarrow$ 3 stage Rinse $\rightarrow$ DRY



## HJT电池电镀金属化设备

HJT Cell Plating Metallization Equipment

### 特点描述

- 脉冲式连续式药液接触沉积方式；
- 超近阴阳极距离，高电流密度；
- 无工装夹具水平流片工艺方式；
- 阶梯式电流密度调控。

### Features

- Pulse type&continuous type deposition mode;
- Ultra-close cathode and anode distance, High current density;
- Fixtureless, horizontal in-line process;
- Laddering current density regulation.



### 技术性能

传输轨道: 5道;  
硅片尺寸: 210\*210mm;  
产能: ≥3600pcs/h;  
设备Uptime: ≥95%;  
设备产品良率>99.9%。

### Performance

Transfer ways: 5;  
Wafer size: 210\*210mm;  
Capacity: ≥3600pcs/h;  
Uptime: ≥95%;  
Product yield >99.9%.

### 技术参数 Parameter

项目 Item	数值 Value
设备尺寸 Layout dimension	35960mm* 2500mm*2500mm