



浙江鸿禧能源股份有限公司
Zhejiang Fortune Energy Co.,Ltd



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传承无限光明 创建绿色未来

Inherit bright prospect, create green future

M Cells

“GREEN ENERGY SPECIALIST”

鸿禧能源 绿色能源制造专家

浙江鸿禧能源股份有限公司的企业使命：

致力于“太阳能绿色可再生能源成为人类实现可持续和谐发展的永恒动力！”

ZHEJIANG FORTUNE ENERGY CO., LTD.(M-CELLS)

The company is dedicated to the mission of making solar green renewable energy become the eternal driving force for sustainable and harmonious development of mankind!

>> 01/02

2023年年度经营状况 2023 ANNUAL OPERATION STATUS



企业概况 COMPANY PROFILE

浙江鸿禧能源股份有限公司始建于2008年5月，注册资本1.7488亿元，公司地处长三角经济带、江浙沪连接点，素有“鱼米之乡”称号的浙江省平湖市新仓镇。是一家专业从事太阳能发电系统的设计开发、建设运维以及生产和销售高效晶硅太阳能电池片、高效太阳能组件的高新技术企业。

ZHEJIANG FORTUNE ENERGY CO., LTD. (hereinafter referred to as "M-CELLS"), was founded in MAY, 2008 with registration capital RMB 175 MILLION and based in Xincang Town, Pinghu City, an area known as the "Land of Plenty", and joint Jiangsu, Zhejiang and Shanghai. ZHEJIANG FORTUNE ENERGY CO., LTD. is a high-tech PV enterprise which specialized in the research, manufacture, sales, service of crystalline silicon solar cells, solar panels, and solar system design, development, construction, and operation.

稳定的营业收入 Stable Turnover

2023年，公司营业收入持续增长，主要来源于公司分布式电站的开发建设、运行维护、技术服务以及高效太阳能电池和高效太阳能组件的生产与销售。

In 2023, the company turnover continued to grow rapidly, the main sources of incomes are from the development and construction of distributed solar power station, operation and maintenance, technical services and high-efficiency solar cells and modules production and sales.

大事记

MILESTONE



公司质量方针 COMPANY QUALITY POLICY

公司自2008年创建以来，始终坚持“以科技创新为先导，以一流的产品、优质的服务、持续的改善来满足客户的需求”的方针，立足于先进技术，注重产品质量和服务水平，不断提升自身竞争力，公司的太阳能电池产品，性能在同行业中处于优势地位。

Since the Company founded in 2008, we adhere to the principle "Fulfill the clients' demand with continuous product of innovation, reliable quality, and excellent service". We are the leading role in the solar products area based on the advance technology, product quality, service and we continuously promote our competitiveness. The company's solar cell products and performance are also in a leading position in the industry.

资质认证 CERTIFICATION

公司注重科技创新和品牌建设，强化质量管理。于2010年分别荣获国家高新技术企业和ISO9001：2008质量管理体系认证证书并在2018年成功转版ISO9001：2015质量管理体系认证。2022年12月，通过万泰认证的环境管理体系ISO14001:2015和职业健康安全管理体系ISO45001:2018认证。

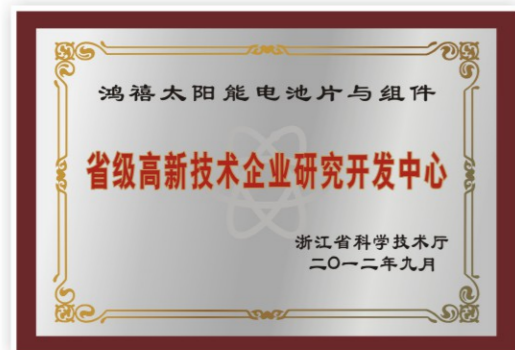
We put a high value on the technology innovation, brand construction, and strengthen quality management, which made us honored as high-tech technical innovation enterprise and got upgrade ISO9001: 2015 certificate. In December 2022, we passed the certification of environmental management system ISO14001:2015 and occupational health and safety management system ISO45001:2018.



知识产权 INTELLECTUAL PROPERTY

2023年获得知识产权管理体系再认定。截止到2023年12月31日，公司拥有有效专利83项，其中包括17项发明专利和66项实用新型专利。

In 2023, the company obtained the re-certification of intellectual property management system. As of December 31, 2023, our company had 83 valid patents, including 17 invention patents and 66 utility model patents.



研发与科技 R&D AND TECHNOLOGY

- 1.公司的技术研发团队先后于2013年、2015年被认定为平湖市和嘉兴市重点技术创新团队。
- 2.公司研发中心于2012年被认定为省级高企研发中心，于2016年被认定为浙江省级企业研究院。
- 3.公司工业设计中心于2019年被认定为省级工业设计中心。
- 4.公司于2022年被评为浙江省专精特新中小企业。

- 1.Our Company's R&D team was honored as the core scientific and technical innovation team in Pinghu City and Jiaxing City in 2013 and 2015 respectively.
- 2.Our Company was recognized as a provincial demonstration enterprise in 2012 and was recognized as a provincial high-tech R&D institution in 2016.
- 3.Our industrial design center was recognized as a provincial industrial design center in 2019.
- 4.The company was honored as the Zhejiang Province special new small and medium-sized enterprise in 2022.

核心技术 CORE TECHNOLOGY

210 单晶PERC电池:

无色差的外观;
获得更高的光吸收能力;
电池转换效率可达23.7%;

210 Mono perc solar cells:

No color differences
Break the technology and improve light absorbing ability
Cells average transfer efficiency 23.7%

210 单晶TOPCON电池:

无色差外观;
更长的少子寿命;
更低的光致衰减;

210 Mono TOPCON Battery:

No color differences
Longer electronic lifespan;
Lower photoattenuation;

通过不断的技术研发和工艺优化, 公司生产的单晶PERC电池片转换效率可达到23.7%。现阶段批量测试的210单晶TOPCON电池效率已经突破26.1%, 高效及稳定性的提升, 使得210单晶TOPCON电池全生命周期发电量更具优势。

Through continuous technology development and process optimization, the conversion efficiency of single crystal PERC cells produced by the company can reach 23.7%. At this stage, the efficiency of 210 single crystal TOPCON battery in batch test has exceeded 26.1%, and the improvement of efficiency and stability makes 210 single crystal TOPCON battery's whole life cycle power generation more advantageous.

优良设备 EXCELLENT EQUIPMENT

生产车间全自动化。
Fully automatic production line

- 1.清洗: SC
- 2.扩散: SC
- 3.SE: DR SE LASER
- 4.链式氧化: SC
- 5.刻蚀+碱抛: SC
- 6.热氧化: SC
- 7.背钝化: CT/SC
- 8.PECVD: CT/SC
- 9.激光刻槽: MAXWELL
- 10.丝网印刷: MAXWELL
- 11.电注入: SC
- 12.测试分检: HALM



>> 11/12



清洗: SC
Texture: SC



SE: DR SE LASER



刻蚀+碱抛: SC
Alkali polishing: SC



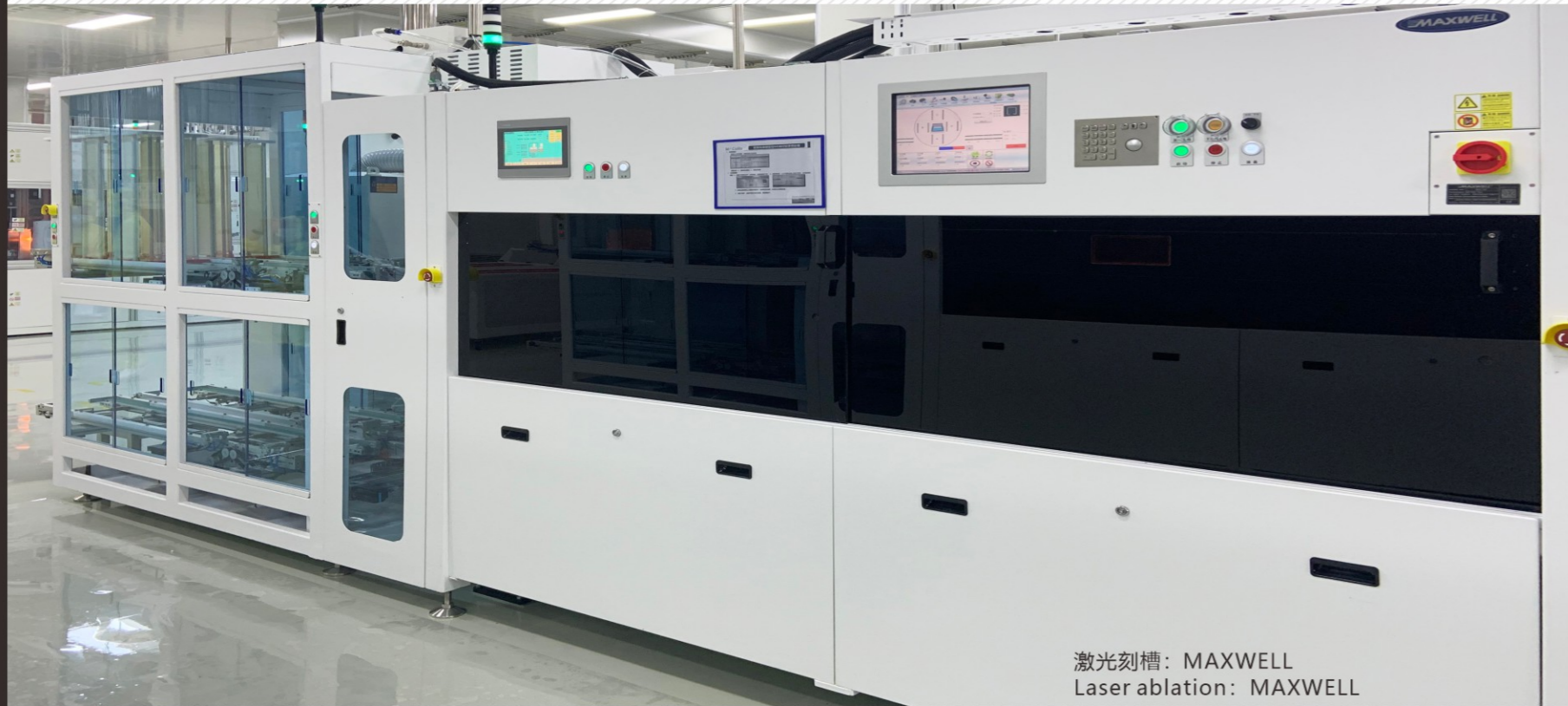
链式氧化: SC
On-line Oxidation: SC



扩散: SC
Diffusion: SC

优良设备
EXCELLENT EQUIPMENT

优良设备 | EXCELLENT EQUIPMENT



激光刻槽: MAXWELL
Laser ablation: MAXWELL



丝网印刷: MAXWELL
Printing: MAXWELL



电注入: SC
Electrical injection: SC



热氧化: SC
Thermal oxidation: SC



背钝化: CT/SC
PERC: CT/SC



PECVD: CT/SC



测试分检: HALM
Sorting: HALM

优良设备 | EXCELLENT EQUIPMENT

- 1.制绒: SC
- 2.硼扩散: SC
- 3.SE: DR
- 4.二次硼扩: SC
- 5.去BSG: SC
- 6.碱抛: SC
- 7.Poly: SC
- 8.退火: SC
- 9.去PSG: SC
- 10.RCA清洗: SC
- 11.ALD: 微导
- 12.正膜: SC
- 13.背膜: SC
- 14.丝网印刷: Maxwell
- 15.烧结: Maxwell
- 16.光注入: Maxwell
- 17.测试分选: Maxwell



制绒: SC
Texturing: SC



二次硼扩: SC
Second Boron diffusion: SC



去BSG: SC
De-BSG: SC

碱抛: SC
Alkali polishing: SC



Poly: SC



硼扩散: SC
Boron diffusion: SC



SE: DR



退火: SC
Annealing: SC

优良设备 EXCELLENT EQUIPMENT



去PSG: SC
De-PSG: SC
RCA清洗: SC
RCA cleaning: SC



ALD: 微导
ALD: microconductance



背膜: SC
Dorsal membrane: SC



正膜: SC
Positive membrane: SC



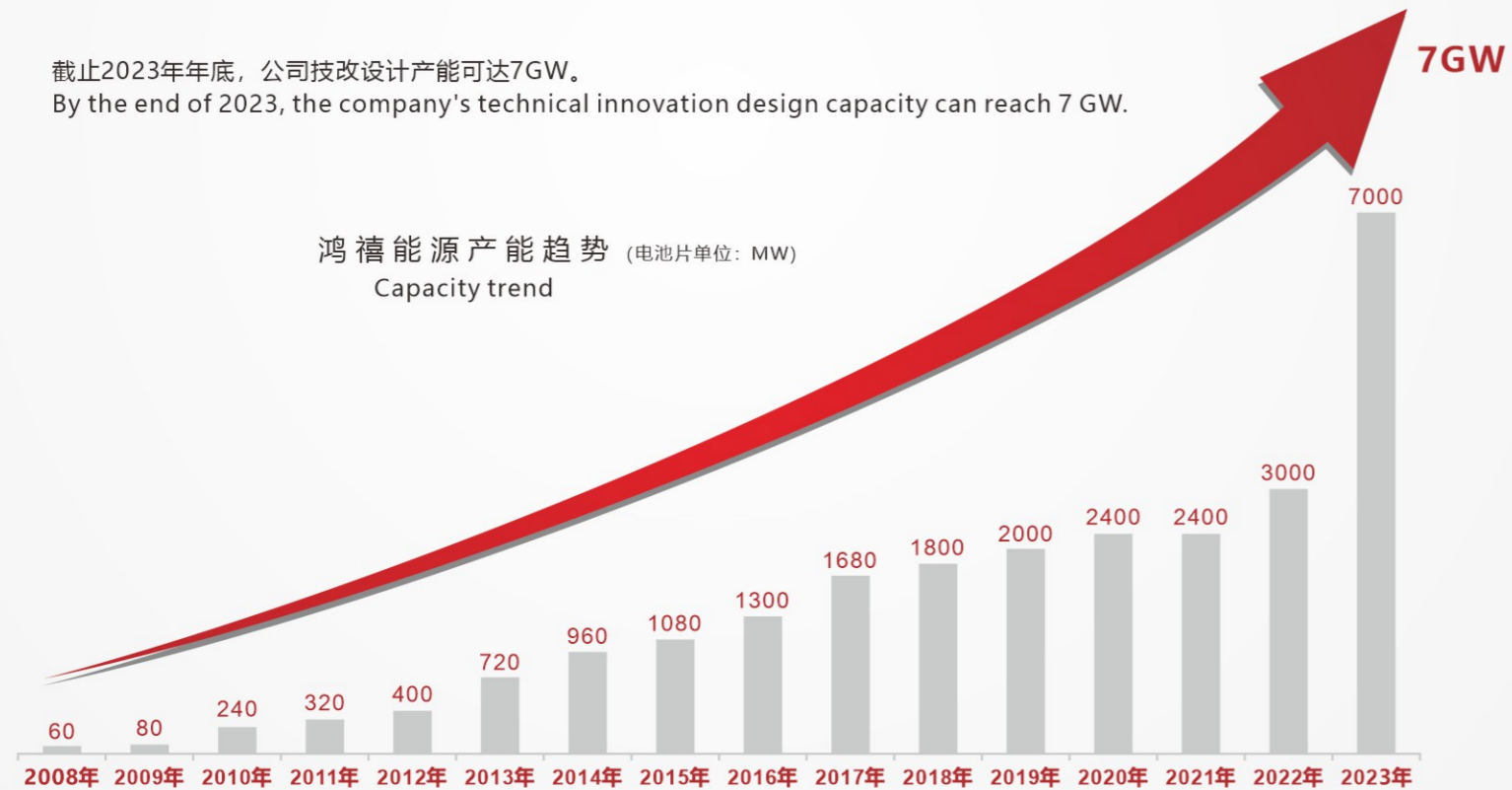
丝网印刷: Maxwell
Silk-screen printing: Maxwell
烧结: Maxwell
Sintering: Maxwell
光注入: Maxwell
Light injection: Maxwell
测试分选: Maxwell
Testing and sorting: Maxwell



产能突破 ||
CAPACITY
BREAKTHROUGH

截止2023年年底，公司技改设计产能可达7GW。
By the end of 2023, the company's technical innovation design capacity can reach 7 GW.

鸿禧能源产能趋势 (电池片单位: MW)
Capacity trend



市场分布 || MARKET DISTRIBUTION



品牌 · 服务

Trinasolar

risen 东方日升

GCL

ASTRONERGY

CanadianSolar Make The Difference

环晟光伏 HUANSHENG SOLAR

亿晶光电 KEENSTAR

SUNTECH 尚德电力

M·Cells

单晶硅太阳能电池产品规格说明书

The product specification of monocrystal solar cell

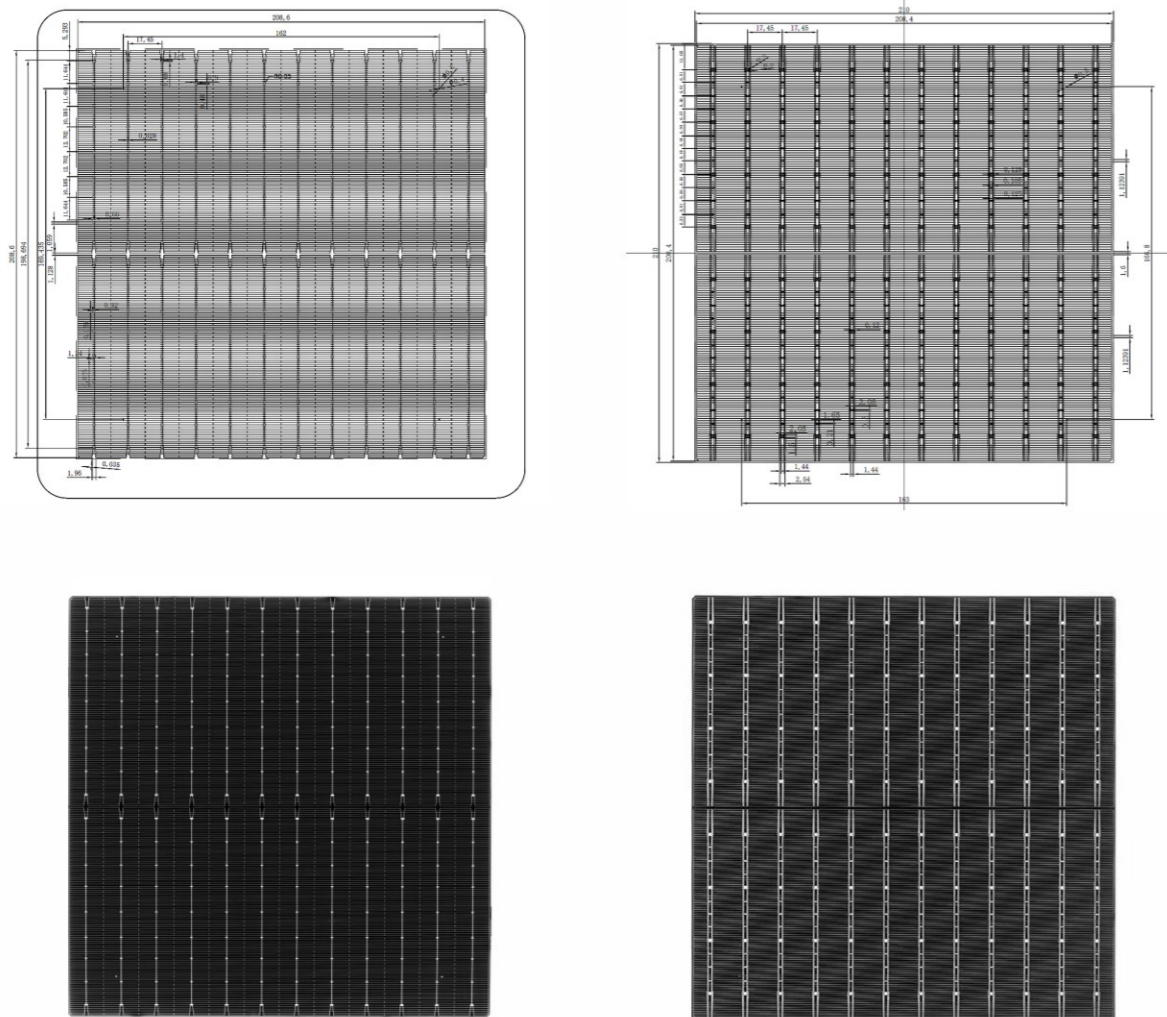
210P

图形编码 (Type Code) : MC10单晶12BB (Monocrystal Silicon) PERC

机械参数&设计 (External Dimension) :

- 1、尺寸 (Dimension) : 210.0×210.0±0.25mm 倒角 (Catercorner) : 1.0*1.0mm
- 2、正面焊点宽度(Front Solder Joint Width/Length): 1.40/0.90±0.1mm, 栅线根数(Fingers): 198线
- 3、背面电极宽度 (Rear Busbar Width) : 2.05/1.65±0.3mm
- 4、电池片厚度 (Cell Thickness) : 150±20um

产品外观 (Product appearance) :



特性 (Characteristic) :

- 1、热氧抗PID工艺 (PID-Free)
- 2、AOI外观检测 (AOI Visual Inspection)
- 3、正面主栅拉力 (Front Busbar Tension) > 1.0N/mm
- 4、背面主栅拉力 (Rear Busbar Tension) > 2.0N/mm

电池主要技术参数 (Electrical Patameters) :

- 1、开路电压温度系数 (TKVoltage) : a=-0.36%/K
- 2、短路电流温度系数 (TKCurrent) : b=+0.07%/K
- 3、最大功率温度系数TKPower: r=-0.38%/K

电池主要技术参数 (Electrical Patameters) :

Eta(%)	正面Front					
	Pmpp(W)	Umpp(V)	Impp(A)	Uoc(V)	Isc(A)	FF(%)
23.40	10.32	0.6060	17.028	0.6989	18.036	81.86%
23.30	10.27	0.6041	17.000	0.6977	18.009	81.77%
23.20	10.23	0.6025	16.979	0.6964	17.989	81.66%
23.10	10.19	0.6008	16.961	0.6955	17.964	81.53%
23.00	10.14	0.5990	16.928	0.6943	17.949	81.38%
22.90	10.10	0.5969	16.921	0.6926	17.927	81.33%
22.80	10.05	0.5951	16.888	0.6913	17.905	81.23%
22.70	10.01	0.5930	16.880	0.6898	17.886	81.13%
22.60	9.97	0.5908	16.875	0.6881	17.861	81.09%
22.50	9.92	0.5890	16.842	0.6866	17.841	80.99%
22.40	9.88	0.5868	16.837	0.6851	17.819	80.91%
22.30	9.83	0.5854	16.792	0.6839	17.782	80.86%

单晶硅太阳能电池产品规格说明书

The product specification of monocrystal solar cell

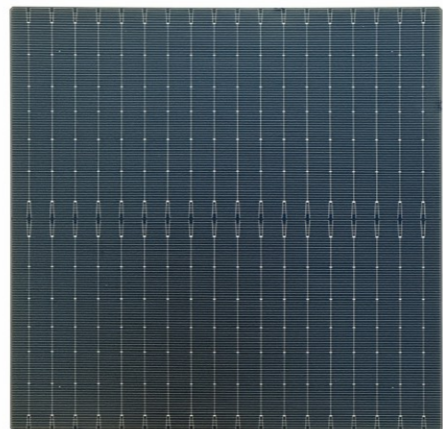
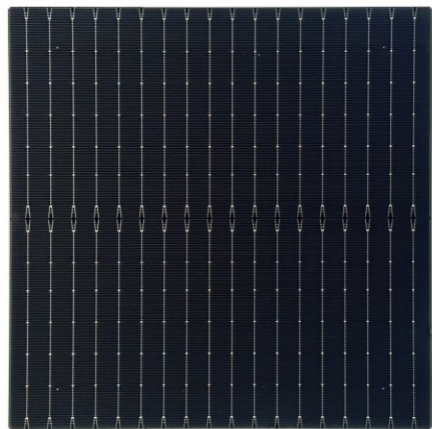
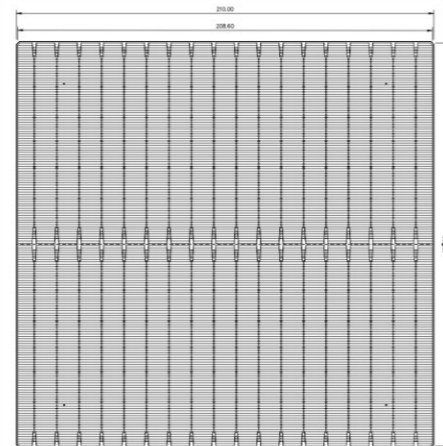
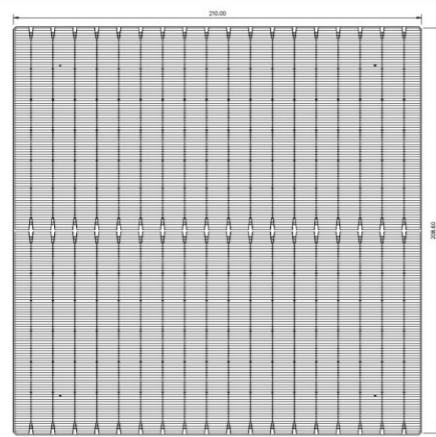
210N

图形编码 (Type Code) : M11单晶18BB (Monocrystal Silicon) TOPCON

机械参数&设计 (External Dimension) :

- 1、尺寸 (Dimension) : 210.0×210.0±0.25mm 倒角 (Catercorner) : 1.0*1.0mm
- 2、栅线根数(Fingers): 正面 (Front) 168栅 背面 (Rear) 174栅
- 3、正面焊点尺寸(Front Solder Joint Width Size): 1.20±0.25mm/0.5±0.15mm 1.0±0.25mm/0.45±0.15mm
- 4、背面焊点尺寸(Rear Solder Joint Width Size): 1.0±0.25mm/0.5±0.15mm 0.8±0.25mm/0.45±0.15mm
- 5、间距interval: 11.29±0.25mm
- 6、电池片厚度 (Cell Thickness) : 130±20um

产品外观 (Product appearance) :



特性 (Characteristic) :

- 1、热氧抗PID工艺 (PID-Free)
- 2、AOI外观检测 (AOI Visual Inspection)
- 3、正面主栅拉力 (Front Busbar Tension) ≥1.0N/mm
- 4、背面主栅拉力 (Rear Busbar Tension) ≥1.0N/mm

电池主要技术参数 (Electrical Patameters) :

- 1、开路电压温度系数 (TKVoltage) : a=-0.26%/K
- 2、短路电流温度系数 (TKCurrent) : b=+0.046%/K
- 3、最大功率温度系数TKPower: r=-0.32%/K

电池主要技术参数 (Electrical Patameters) :

Eta(%)	正面Front					
	Pmpp(W)	Ump(V)	Ipp(A)	Uoc(V)	Isc(A)	FF(%)
25.0	11.02	0.621	17.761	0.711	18.205	85.17
24.9	10.98	0.620	17.715	0.710	18.181	85.06
24.8	10.94	0.619	17.669	0.709	18.155	84.96
24.7	10.89	0.618	17.622	0.708	18.133	84.84
24.6	10.85	0.617	17.576	0.707	18.106	84.74
24.5	10.80	0.616	17.529	0.706	18.077	84.65
24.4	10.76	0.615	17.482	0.705	18.050	84.55
24.3	10.72	0.615	17.435	0.704	18.028	84.43
24.2	10.67	0.614	17.388	0.703	18.007	84.3
24.1	10.63	0.613	17.341	0.702	17.981	84.19
24.0	10.58	0.612	17.294	0.701	17.958	84.07
23.9	10.54	0.611	17.246	0.700	17.928	83.98
23.8	10.49	0.610	17.199	0.699	17.904	83.86
23.7	10.45	0.609	17.151	0.698	17.878	83.75
23.6	10.41	0.608	17.103	0.697	17.853	83.63
23.5	10.36	0.608	17.055	0.696	17.831	83.5
23.4	10.32	0.607	17.007	0.695	17.806	83.38
23.3	10.27	0.606	16.959	0.694	17.785	83.24

浙江正明电力工程有限公司介绍

ZHEJIANG ZHENGMING ELECTRIC ENGINEER CO.,LTD

浙江正明电力工程有限公司成立于2021年9月，系浙江鸿禧能源股份有限公司旗下全资子公司，注册资本5000万元。拥有电力工程施工总承包贰级、承装（修、试）五级资质，公司主营太阳能发电技术服务；人防工程设计；发电业务、输电业务、供（配）电业务；建设工程施工；分布式光伏电站开发、建设、运营、维护等业务，为客户提供一站式服务平台。

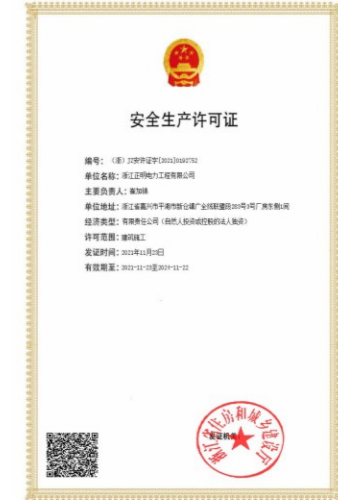
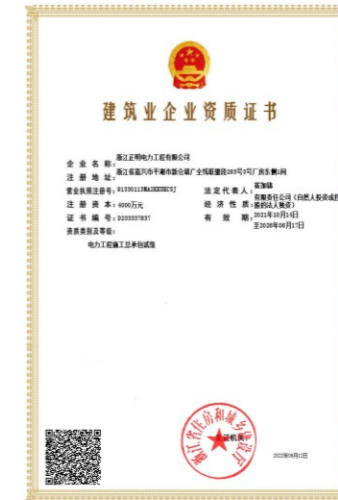
公司秉承“科技创新、求实进取、优质高效、和谐发展”的企业精神，以“以清洁能源可持续发展”为发展方向，以“市场不断开拓和新产品不断开发”为发展重点，确保公司持续健康发展。

established in Sep, 2021, was owned by mother company "ZHEJIANG FORTUNE ENERGY CO.,LTD, with registration capital 50 million RMB. It owned and got the power engineering construction general contracting class II, and Power Installation(repair, test) class V qualifications. We can offer client one station service from development, -construction, operation and maintenance.

We are keeping the faith in "Technology innovation, Stable Improvement, Superb Quality and Peaceful Growing". We will take "Sustainable development of clean renewable energy" as the development direction, and "continuous development of the market and continuous development of new products" as the development focus to ensure the sustainable and healthy development of the company.



正明电力资质 ENTERPRISE QUALIFICATION





分布式发电 DISTRIBUTED GENERATION



发电原理:

光伏发电是利用半导体界面的光生伏特效应而将光能直接转变为电能的一种技术。太阳能电池经过串联后进行封装保护可形成大面积的太阳电池组件，再配合上功率控制器等部件就形成了光伏发电装置。光伏发电系统主要由太阳能电池、蓄电池、控制器和逆变器构成。

1. 光伏电池组件
2. 开关/保护/防雷装置
3. 电缆
4. 并网逆变器
5. 电度表

Power generation principle:

Photovoltaic power generation is a technology that converts light energy directly into electric energy by using the photo generating volt effect of semiconductor interface. Solar cells are packaged and protected in series to form large-area solar cell modules, and then combined with power controllers and other components to form photovoltaic power generation devices. Photovoltaic power generation system is mainly composed of solar cells, batteries, controllers and inverter.

1. Solar module
2. Switch /protection/LPS device
3. Cable
4. On-grid inverter
5. Electrical meter



创新运维模式 INNOVATIVE OPERATION MODE

- 集中监视**
Centralized monitoring
 集控中心已实现与电站设备主要功能一致；并达到多站集中呈现
 The centralized monitoring control center has achieved the same main functions as the power plant equipment, and achieved multi-station centralized presentation at same time.
- 智能分析**
Intelligent analysis
 通过逆变器电流电压值计算出设备的健康值、健康指数，找出设备缺陷，进行消缺。
 Calculate the health value and health index of the equipment through the inverter current and voltage value, find out the equipment defects, and eliminate the defects.
- 实时告警**
Real-time alarming
 监视收到告警信号，即可告警信息实时查看分析，通知维检人员检修。
 Once the monitoring system receives warning, it will analyze accordingly and notice to the maintenance team to check and repair the problem.
- 统一调度**
Unified Dispatch
 值班人员对应多个电站，快速对应可能的设备问题，并实现调度功能。
 Staff can correspond with multiple power stations at the same time and check the potential problem of the equipment, and realize the dispatch function efficiently.

分布式光伏发电项目区域 DISTRIBUTED PV POWER GENERATION PROJECTS AREA



截止2023年11月30日，公司项目申报容量达到550MW，滚动储备容量达到180MW，已有250余家企事业单位的屋顶光伏实现并网，累计并网总量超过530MW。

As of November 30, 2023, the company's project declared capacity has reached 550MW, the rolling reserve capacity has reached 180MW, and more than 250 enterprises and institutions have realized the rooftop photovoltaic grid connection, and the cumulative total grid-connection has exceeded 530MW.

项目介绍 PROJECT INTRODUCTION

浙江鸿禧能源股份有限公司 Zhejiang Fortune Energy Co., Ltd.



项目介绍
PROJECT
INTRODUCTION



山东华勤工业园95MW平价上网分布式项目
Shandong Huaqin Industrial Park 95MW affordable Internet distributed project



鸿禧宁波地面分布式光伏电站
Ningbo Ground power station of Fortune Energy Co., Ltd.

南六企业（平湖）有限公司
NAN LIU ENTERPRISE (Pinghu) Co., Ltd.



嘉兴长三角国际石材城有限公司
Jiaxing Yangtze River Delta International Stone City Co., Ltd.



吉安集团有限公司
Gian Group Co.,Ltd.

项目介绍 PROJECT INTRODUCTION

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浙江景兴纸业股份有限公司
Zhejiang Jingxing Paper Co.,Ltd.



浙江碧豪旅游用品有限公司
Zhejiang Bihao Travel Products Co., Ltd.



海盐杭州湾港务投资开发有限公司
Haiyan Hangzhou Bay Port Investment and Development Co., Ltd.

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上海隧道工程智造海盐有限公司
Shanghai Tunnel Smart Construction Haiyan Co.,Ltd.



耐铼斯流体控制（嘉兴）有限公司
Neles Flow Control(Jiaxing)Co.,Ltd.



斯泰必鲁斯（浙江）有限公司
Stabilus(Zhejiang)Co.,Ltd.

南京爱立信通信有限公司
Nanjing Ericsson Communication Co., Ltd.

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漯河大旺食品有限公司
Luohe Dawang Food Co., Ltd.



科世科汽车部件（平湖）有限公司
KSK Automotive Component (Pinghu) Co.,Ltd.