

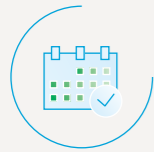
# 2021年度可持续发展报告

## SUSTAINABILITY REPORT IN 2021



# 关于本报告

## About This Report

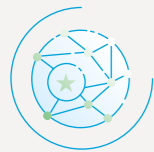


### 时间范围

#### Reporting Period

2021年1月1日-12月31日。因项目的延续性，部分内容超出上述范围。

This report covers the period from January 1, 2021, to December 31, 2021. Due to the ongoing nature of certain projects, some of the content mentioned above is subject to change.



### 涵盖范围

#### Report Boundary

本报告覆盖晶澳太阳能科技股份有限公司及下属各级子公司和生产基地，与晶澳科技 2021 年度报告披露范围一致。部分生产基地由多个公司组成。本报告中如果涉及单个公司时，会以单个公司名义体现，其他情形以生产基地名义体现。

The Report covers JA Solar Technology Co., Ltd. and its subsidiaries and manufacturing bases, which is consistent with the scope of the disclosure in JA Solar's 2021 Annual Report. For some manufacturing bases, each is consisted of several companies. If a single Company is involved in this Report, that Company's name will be used; otherwise, the name of the associated manufacturing base will be used.



### 称谓指代

#### References

报告中“晶澳太阳能科技股份有限公司”以“晶澳科技”“公司”“我们”表示。

In this Report, "JA Solar Technology Co., Ltd." is also referred to as "JA Solar", "the Company" or "we".



### 发布情况

#### Report Release

本报告为晶澳太阳能科技股份有限公司及其子公司发布的年度第五份可持续发展报告或社会责任报告，上一份报告已于 2021 年 6 月发布。

This is the fifth annual sustainability report or social responsibility report released by JA Solar Technology Co., Ltd. and its subsidiaries. The last report was published in June 2021.



### 遵循 / 参照标准

#### Preparation Basis

本报告主要参考了如下标准：

- 全球可持续发展标准委员会（GSSB）《可持续发展报告标准》（GRI Standards）核心方案
- 《中国企业社会责任报告指南基础框架（CASS-CSR4.0）》

This report mainly refers to the following standards:

- The Core option of *GRI Sustainability Reporting Standards* (GRI Standards) issued by the Global Sustainability Standard Board (GSSB)
- *China CSR Reporting Basic Framework* (CASS-CSR4.0)



### 数据说明

#### Data Source

本报告中的数据主要来源于公司实际运行的原始记录和季报、年报等公开披露的正式文件。

The majority of this report's data is derived from the Company's original operation records and publicly disclosed official documents, such as its quarterly report and annual report.



### 报告声明

#### Report Statement

我们保证本报告信息的可靠性、真实性、客观性，希望通过发布报告，加强与利益相关方的沟通与交流。

JA Solar guarantees the reliability, originality, and objectivity of this report's information and hopes its release will enhance communication with stakeholders.



### 语言版本

#### Report Versions

报告以电子版和纸质版两种形式呈现。电子版可在晶澳科技官方网站（<http://www.jasolar.com.cn>）下载获取。如需纸质版报告，请致电 86-010-63611888 或邮件 [csr@jasolar.com](mailto:csr@jasolar.com) 索取。

The Report is presented in both electronic and paper forms. The electronic version is available on the official website of JA Solar (<http://www.jasolar.com.cn>). To request the paper version, please call us at 010-63611888 or email [csr@jasolar.com](mailto:csr@jasolar.com).

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# 董事长致辞

## Message from the Chairman

可持续发展是时代主题，也是晶澳科技长期践行的重要战略。过去一年，面对复杂多变的外部环境与市场挑战，我们始终秉持“开发太阳能、造福全人类”之使命，坚持走绿色低碳高质量发展之路，在可持续发展领域不断迈出新步伐。

Sustainable development is not only the call of our day, but also a major strategy for long-term growth at JA Solar. In the past year, in response to the complex and volatile external environment and market challenges, we've stayed true to our mission of "Develop solar power to benefit the entire human race", and have made new headway in our efforts to pursue a green, low-carbon pathway for high-quality development.



**我们积极为全球提供清洁能源光伏发电产品，助力全球能源转型，助推各国早日达成“碳中和”目标。**

2021年，晶澳光伏组件出货量全球第二，连续五年排名全球前三，历年累计向135个国家和地区供应超过88GW光伏产品，相当于每年为地球减少二氧化碳排放量超过9,000万吨。我们高度重视客户需求与期望，通过科技赋能，为客户创造更大价值。目前，晶澳DeepBlue3.0高功率组件系列产品已成为全球客户首选，积极推广新一代N型高效产品，多种应用场景的“光伏+”系统解决方案帮助更多用户受益绿色能源，共享美好生活。

**我们深入贯彻可持续发展理念，努力打造绿色发展典范。**

多年来，我们坚持以创新驱动发展，积极应用行业最先进的技术和设备，全面推行数字化、智能化建设，晶澳义乌基地成为光伏智造的行业新标杆；我们切实加强资源节约和循环利用，清洁能源应用比例不断扩大，环保体系能力建设持续提升，全面向绿色低碳转型；我们重承诺、守信誉，致力于打造和谐共融的产业生态圈，与多家合作伙伴建立战略合作关系，与上游供应商一起将绿色、低碳、环保的理念和技术融入到供应链环节，共

同打造低碳供应链，与下游客户开展协同创新、竞合发展，带动更多合作伙伴践行可持续发展理念，促进行业共生、共享、共赢。

**我们始终践行企业的社会责任和担当，努力打造负责任、受信赖的企业形象。**

我们持续规范公司治理、完善内控体系建设，严格遵守各国法律法规和贸易规则，持续规范发展；我们高度重视人权保障，科学做好疫情防控，保障全球员工身体健康和生命安全，与广大员工建立了和谐劳动关系，让所有员工在晶澳大平台快乐工作、幸福生活；我们向河南洪灾捐款1,000万元，设立晶澳阳光公益慈善专项基金，继续实施惠民工程，建设光伏扶贫电站，助力乡村振兴。

“不啻微芒，造炬成阳”，适逢全球“碳中和”时代机遇，晶澳将矢志初心，向阳而行，与各利益相关方携手共进，让晶澳阳光福泽子孙后代，以绿色低碳助推全球可持续发展。

——晶澳科技董事长

**By supplying clean energy and photovoltaic (PV) products to our global clients, we facilitate the global energy transition and catalyze the achievement of carbon neutrality goals.**

In 2021, our output of PV modules ranked second globally, placing us in the world's top 3 for the fifth consecutive year. Our PV products have been sold to 135 countries and regions with a total capacity of more than 88 GW, reducing carbon dioxide emissions by over 90 million tons per year. We prioritize customers' demands and expectations, by leveraging the technologies to create greater value for our clients. Our DeepBlue3.0, a high-power module, has become a preferred choice for our international clients. Besides, as part of our commitment to sharing a better living for all, we're working to benefit more users from green energy by actively promoting the new generation n-type high-efficiency product, and PV+ integrated solutions for multiple scenarios.

**We rigorously implement sustainable development to become an industry model of green development.**

Over the years, we have fostered digital and smart transformation by driving growth through innovation and adopting industry-leading technologies and equipment, which has helped establish Yiwu Manufacturing Base as an industry model for smart PV product manufacturing. We are devoted to enhancing resource conservation and recycling and have continuously increased the use of clean energy, which has enhanced the capacity building of the environmental system and accelerated the green, low-carbon transformation. As a promise keeper, we endeavor to build a harmonious industrial ecology by establishing a strategic partnership with multiple partners. On the one hand, we work with our upstream suppliers to incorporate the green, low-carbon and eco-

friendly mindsets and technologies to establish a low-carbon supply chain; on the other hand, we motivate more downstream partners to join us on the path of sustainable development for shared growth and prosperity by encouraging coordinated innovation and cooperation-competition growth.

**We have remained commitment to our social responsibilities to maintain a responsible, trustworthy corporate image.**

To achieve sustainable development, we continue to standardize our corporate governance, enhance our internal control system, and comply with all nations' laws, regulations, and trade rules. Moreover, we place a premium on human rights and use scientific methods to prevent COVID-19 from affecting the health and safety of our employees. We have established a harmonious relationship with our employees, allowing them to work and live in contentment at JA Solar. In addition, we donated a total of CNY 10 million to Henan province to help the locals fight the floods, established the JA Solar Special Charitable Fund, and continued the "projects for the benefit of the people." During the construction of PV-based poverty alleviation power plants, we support the revitalization of rural areas.

**A small shimmer will contribute to dazzling light. JA Solar will continue collaborating with all stakeholders to pursue a prosperous future by taking advantage of the carbon neutrality initiative. We seek to benefit future generations by promoting green and low-carbon global sustainable development.**

——Jin Baofang, Chairman of JA Solar\*

# 关于我们 About Us

晶澳科技（股票代码：002459.SZ）致力于成为全球领先的光伏发电解决方案平台企业，主营业务为硅片、太阳能电池及太阳能组件的研发、生产和销售，以及太阳能光伏电站的开发、建设、运营等。

公司运营管理总部位于北京，在全球拥有 12 个生产基地，在海外设立了 13 个销售公司，销售服务网络遍布全球 135 个国家和地区，全球化布局优势明显，产品广泛应用于地面光伏电站以及工商业、住宅分布式光伏系统。2021 年，晶澳科技光伏电池组件出货量为 25.45GW，连续 5 年位居全球前三。

JA Solar (002459.SZ) aims to become a world leading PV solution platform, with its main businesses covering the R & D, production and sales of silicon wafers, solar cells and PV modules, as well as the development, construction and operation of solar photovoltaic power stations, etc.

The operation and management headquarters of the Company are located in Beijing, and the Company owns 12 manufacturing bases around the world and 13 overseas sales operations with a sales network spanning 135 countries and regions. This is a significant advantage for global expansion. Our products are widely used in ground-mounted PV power plants and distributed PV systems for industrial, commercial, and residential applications. In 2021, JA Solar's shipment volume is 25.45GW for PV modules and solar cells, ranking among the top three in the world for five consecutive years.

- ★ 《财富》中国 500 强
- ★ 全球新能源企业 500 强
- ★ 工信部“制造业单项冠军示范企业”
- ★ 工信部“工业企业知识产权运用试点企业”
- ★ 工信部“智能光伏试点示范企业”
- ★ 国家乡村振兴局“企业精准扶贫专项案例 50 佳”

- ★ Fortune China 500
- ★ Global Top 500 New Energy Enterprises
- ★ Ministry of Industry and Information Technology(MIIT) "Manufacturing Single Champion Demonstration Enterprise"
- ★ MIIT"Pilot Enterprise of Industrial Enterprise Intellectual Property Rights Utilization"
- ★ MIIT "Intelligent PV Pilot Demonstration Enterprise"
- ★ "Top 50 Special Cases of Enterprise Precise Poverty Alleviation" by National Rural Revitalization Administration





总市值 (2021年12月31日)

**1482.39** 亿元

Total market value: CNY **148.239** billion  
(December 31, 2021)



总资产

**569.67** 亿元

Total assets: CNY **56.967** billion



营业收入

**413.02** 亿元

Sales revenue: CNY **41.302** billion



归母净利润

**20.39** 亿元

Net profits attributable to the parent Company: CNY **2.039** million



电池组件出货

**25.45** 吉瓦

Shipment of cells and modules **25.45** GW



员工数量

**29,638** 名

**29,638** employees

## 生产基地 Manufacturing Bases



河北省宁晋县  
Ningjin, Hebei



河北省邢台市  
Xingtai, Hebei



河北省三河市  
Sanhe, Hebei



浙江省义乌市  
Yiwu, Zhejiang



安徽省合肥市  
Hefei, Anhui



上海市奉贤区  
Fengxian District, Shanghai



江苏省扬州市  
Yangzhou, Jiangsu



江苏省连云港市  
Lianyungang, Jiangsu



内蒙古包头市  
Baotou, Inner Mongolia



云南省曲靖市  
Qujing, Yunnan



越南北江省  
Bac Giang, Vietnam



马来西亚檳城  
Penang, Malaysia

# 可持续发展管理 Sustainability Management

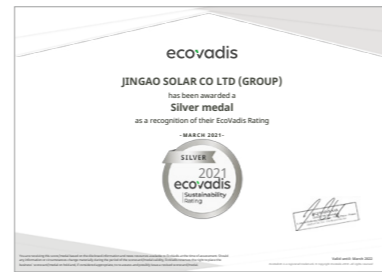
晶澳科技构建以股东会、董事会为决策机构，总部各部门和生产基地统筹推进的可持续发展管理体系。公司工会、EHS 管理委员会、审计部门、各事业平台等充分发挥与利益相关方的沟通和协调作用，回应利益相关方对公司在环境、社会及管治上的要求。公司积极加入联合国全球契约组织、中国国际商会、中国光伏行业协会、中国扶贫志愿服务促进会、中国企业反舞弊联盟、阳光诚信联盟等协会和倡议组织，加强与全球光伏产业、环保组织和可持续发展领域的相关机构的联系，共同践行社会责任。2021 年，晶澳科技有 18 家下属公司推进 ISO 14001 和 ISO 45001 管理体系；有 7 个生产基地推行 ISO 50001 管理体系。

JA Solar implemented a sustainability management system in which the board of shareholders and the board of directors serve as the decision-making body, and headquarters departments and manufacturing bases promote sustainable development. The Company's labor union, EHS management committee, audit department, business platforms, etc., play an integral role in communicating and coordinating with stakeholders to meet their demands regarding the business's environmental, social, and governance aspects. The Company has joined associations and initiative organizations, such as the United Nations Global Compact (UNGC), China Chamber of International Commerce (CCOIC), China Photovoltaic Industry Association (CPIA), China Poverty-alleviation Promotion of Volunteer Service, China Enterprise Anti-fraud Alliance, and Trust and Integrity Enterprise Alliance, to strengthen ties with the global PV industry, environmental groups, and sustainability-related institutes to fulfill its social responsibilities. By the end of 2021, JA Solar had 18 subsidiaries implementing ISO 14001 and ISO 45001 management systems and seven production sites that implemented ISO 50001 management systems.

## 案例 CASE | 荣获 2021 EcoVadis “可持续发展评级银奖” JA Solar awarded EcoVadis' Silver Sustainability Rating 2021

2021 年 3 月，晶澳科技荣获 2021 EcoVadis “可持续发展评级银奖”，体现其在可持续发展方面的评级处于新能源行业领先水平。在评估系统设定的行业中，晶澳科技是排名前 12% 的公司，其中可持续采购模块属于排名前 1% 的公司。

In March 2021, EcoVadis awarded JA Solar the Silver rating to recognize its contributions to sustainable development in the new energy industry. Among the industries evaluated by EcoVadis, JA Solar ranked in the top 1% in the sustainable purchasing category and among the top 12% overall.

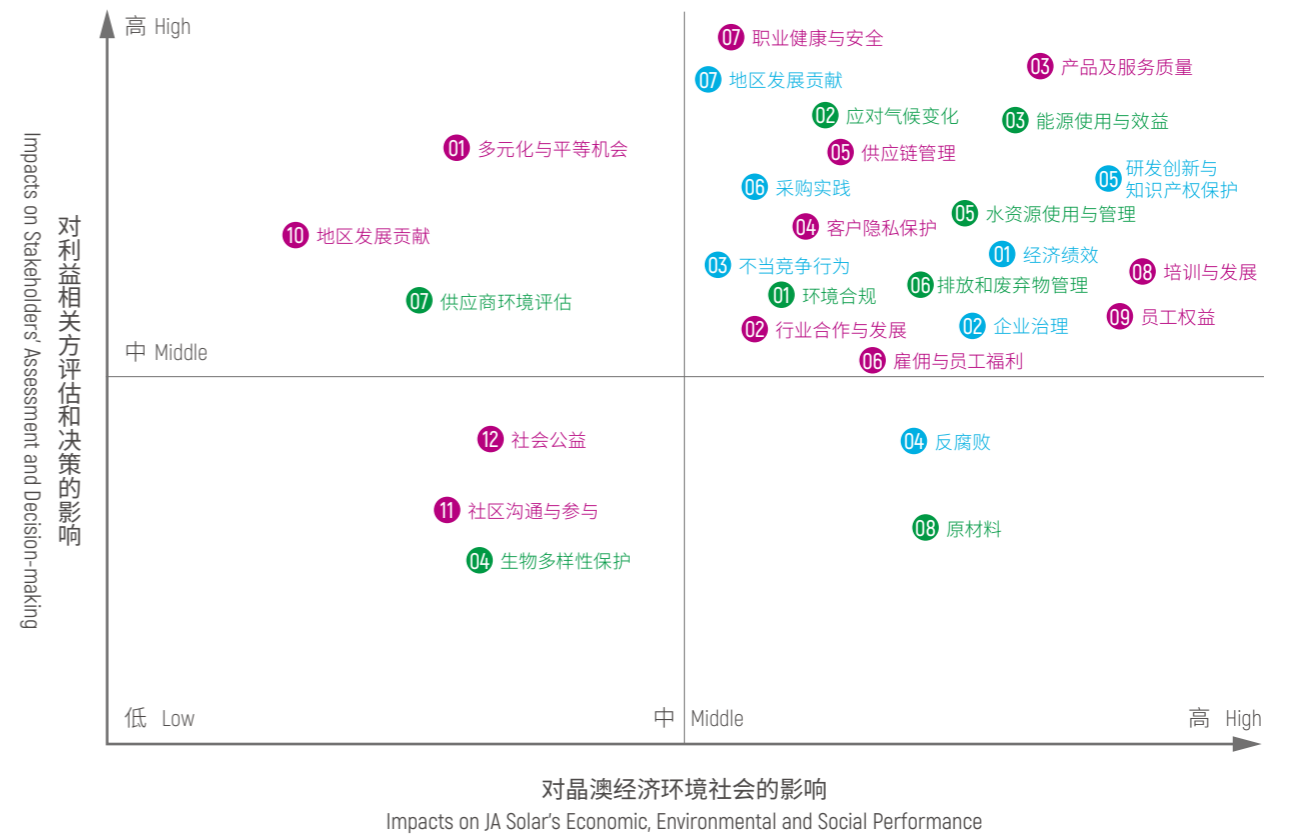


荣获 2021 EcoVadis “可持续发展评级银奖”  
JA Solar awarded EcoVadis' Silver Sustainability Rating 2021

## 实质性议题管理 Materiality Management

晶澳科技根据可持续发展背景和公司战略重点，对外部环境、自身战略及可持续发展能力进行分析评估，识别利益相关方期望和诉求，分析公司实质性议题，推进公司可持续发展工作向纵深发展。

According to the sustainability background and the Company's strategic priorities, JA Solar analyzes and assesses the external environment strategies, and sustainability ability and identifies the expectations and demands of stakeholders. We then analyze the Company's material topics to promote the in-depth development of our sustainability work.


























# 利益相关方参与

## Stakeholder Engagement

晶澳科技通过内部讨论和外部专家咨询，参照同行业企业标准，主动识别关键利益相关方的期望与诉求，积极回应利益相关方关切，将相关诉求转化为公司社会责任行动和方案，切实加强自身能力建设。

JA Solar has identified the expectations and demands of key stakeholders through internal discussion, consultation with external experts, and reference to the standards of comparable companies. In response to stakeholders' concerns, we translate pertinent demands into CSR actions and plans and enhance our capacity-building.

关键利益相关方 Key Stakeholders	相关期望 Relevant Expectations	沟通渠道 Communication Channels	回应与实践 Response and Practice	对应的 SDG 目标 Corresponding SDGs
<b>客户 / 经销商</b> Customers / dealers 	高效产品、优质服务、信息安全 High performance products, High quality service, Information security	新产品发布会、客户答谢会、行业展会、客服电话、产品交流会等 New product launch, Customer appreciation meeting, Exhibitions, Customer service, Product exchange meetings, etc	<ul style="list-style-type: none"> <li>加强自身研发创新能力</li> <li>参加国内外行业展会</li> <li>建立 24 小时响应机制，及时处理客户反馈</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen our R &amp; D innovation ability</li> <li>Participate in industry exhibitions at home and abroad</li> <li>Establish a 24-hour response mechanism, timely handle customer feedback</li> </ul>    
<b>股东和投资者</b> Shareholders and investors 	投资回报、财务稳健、信息披露 Return on investment, Financial soundness, Information disclosure	股东大会、现场接待、网上业绩说明会、电话、网络留言、传真、邮件等多种方式 Shareholders' meeting, On-site reception, Online performance briefing, Telephone, Online message, Fax, E-mail and other methods	<ul style="list-style-type: none"> <li>定期发布可持续发展报告</li> <li>通过线上和线下形式，及时、准确的让股东了解公司的可持续发展绩效</li> </ul>	<ul style="list-style-type: none"> <li>Regularly release sustainability reports</li> <li>Inform shareholders with timely and accurate information regarding our sustainability performance via online and offline forms</li> </ul>  
<b>员工</b> Employees 	职业发展、职业健康、舒适环境、无歧视 Career development, Occupational health, Comfortable environment, Non-discrimination	职工代表大会、员工交流、拓展活动、员工培训、雇主品牌、团建等 Employee congress, Employee exchange, Expansion activities, Employee training, Employer brand, Team building, etc	<ul style="list-style-type: none"> <li>建立科学人力资源制度</li> <li>定期召开职工代表大会、举办各类员工拓展及文体活动</li> <li>加强职业健康及安全管理</li> <li>制定员工职业规划</li> </ul>	<ul style="list-style-type: none"> <li>Establish a scientific human resources system</li> <li>Regularly hold employee congress, employee development and cultural &amp; sports activities</li> <li>Strengthen occupational health and safety management</li> <li>Develop employee career planning</li> </ul>    
<b>供应商</b> Suppliers 	稳定供应、长期合作、公平合作 Stable supply, Long-term cooperation, Fair cooperation	供应商交流会、供应商管理、招标采购网等 Supplier exchange meeting, Supplier management, Bidding and procurement network, etc	<ul style="list-style-type: none"> <li>完善供应商管理体系</li> <li>动态评价审核供应商</li> <li>创建合格供应商名录</li> </ul>	<ul style="list-style-type: none"> <li>Improve supplier management system</li> <li>Dynamically evaluate and review suppliers</li> <li>Create a list of qualified suppliers</li> </ul>  
<b>监管部门</b> Regulatory authorities 	产业发展、合规运营、保护环境、安全生产 Industrial development, Compliance operation, Environmental protection, Work safety	政策建议、政府会议、政府网站、企业活动等 Policy suggestions, Government meetings, Government websites Enterprise activities, etc	<ul style="list-style-type: none"> <li>坚决践行商业行为准则，优化内部合规管理</li> <li>提升自身反舞弊管理并强化公司廉洁和反腐败宣贯</li> <li>加强安全生产管理</li> <li>节能减排</li> <li>保护生态环境</li> </ul>	<ul style="list-style-type: none"> <li>Resolutely implement the code of business conduct and optimize internal compliance management</li> <li>Improve our anti-fraud management and strengthen the publicity on corporate integrity and anti-corruption</li> <li>Strengthen work safety management</li> <li>Save energy and reduce emissions</li> <li>Protect the ecological environment</li> </ul> 
<b>非政府组织</b> NGO 	环境保护、产业发展、社会责任 Environmental protection, Industrial development, Social responsibility	加入协会、加入倡议、公益捐赠等 Join associations, Join initiatives, Public welfare donations, etc	<ul style="list-style-type: none"> <li>增加绿色电力的应用</li> <li>加强环境管理体系建设</li> <li>开展公益捐赠</li> </ul>	<ul style="list-style-type: none"> <li>Increasing the application of green power</li> <li>The development of an environmental management system</li> <li>Donating to public welfare</li> </ul> 
<b>社区</b> Communities 	环境安全、改善民生、社区发展、公共关系、文化生活 Environmental safety, Improvement of people's livelihood, Community development, Public relations, Cultural life	公益活动、联谊活动、组织慰问、环保措施、组织参观 Public welfare activities, Fellowship activities, Visits for sympathy, Environmental protection measures, Organization of visits	<ul style="list-style-type: none"> <li>开展公益、志愿者、帮扶、捐赠活动</li> <li>调配资源支持社区建设</li> </ul>	<ul style="list-style-type: none"> <li>Carry out charitable activities, volunteers, provide assistance, organize donations</li> <li>Allocate resources to support community construction</li> </ul>   

# 专题 Spotlight

## 共建清洁美丽世界 Co-building a Clean and Beautiful World

“我们要推动共同发展，坚持以人民为中心的发展思想，全面落实 2030 年可持续发展议程。要根据共同但有区别的责任原则，积极应对气候变化，促进绿色低碳转型，共建清洁美丽世界。”

---2021 年 9 月 9 日

习近平在金砖国家领导人第十三次会晤上的讲话

We need to promote common development, follow a people-centered philosophy of development and fully implement the 2030 Agenda for Sustainable Development. We need to actively respond to climate change based on the principle of common but differentiated responsibilities, promote the transition to green and low-carbon development, and jointly build a clean and beautiful world.

--- September 9, 2021

Remarks by President Xi Jinping at the 13<sup>th</sup> BRICS Summit

2021 年是中国“碳中和”目标提出后开始落地的第一年，晶澳科技坚守初心，乘势奋进，持续创新光伏技术，提供高品质产品和服务，为助力“双碳”目标的实现，为建设清洁美丽的世界，努力贡献晶澳科技力量。

2021 was the first year since China's carbon neutrality goal was proposed. Following our mission, JA Solar seizes opportunities to continue innovating photovoltaic technologies to provide high-quality products and services, thereby contributing to China's 30·60 Decarbonization Goal and a clean, beautiful world.

## 善用清洁太阳能 Utilization of Clean Solar Power

晶澳科技始终坚守“开发太阳能，造福全人类”的初心，致力于成为领先的光伏发电解决方案平台企业。2021 年，晶澳科技继续践行绿色发展之路，在国内外积极推进光伏电站的开发与建设，为全球客户提供高效的清洁能源产品，用实际行动助力《巴黎协定》推进和实现“碳中和”目标，竭尽所能的为清洁美丽世界的美好愿景作贡献。

Adhering to our vision of "Develop solar power to benefit the entire human race," we aim to become a leading photovoltaic power generation solution platform. We continued to make strides in green development in 2021, actively pursuing the development and construction of domestic and international photovoltaic power plants to provide efficient, clean energy products to global customers. With concrete actions, we advance the achievement of the carbon neutrality targets in the *Paris Agreement*, making every effort to create a clean and beautiful world.

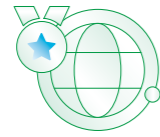
## 光伏产品及解决方案 PV Products and Solutions

晶澳科技始终坚持“技术创新引领发展、优异品质赢得客户、成本控制提升竞争力、完善服务创造价值”的理念，持续向市场推出多款高效、可靠的光伏产品。2021 年，晶澳科技 182mm 电池和组件、166mm 组件等多款产品入选工业和信息化部绿色设计产品。晶澳科技主力光伏组件产品获得法国权威机构 Certisolis 授予的碳足迹证书。

Adhering to the philosophy of "Innovation-driven growth, quality-oriented development, cost-based competitiveness, service-centered value," we offer an extensive selection of high performance, dependable PV products. Multiple JA Solar products, including "182mm cells and modules" and "166mm modules", were selected as Green Design Products by the Ministry of Industry and Information Technology in 2021. Our flagship PV modules were officially certified by CERTISOLIS (an authoritative French organization) for their low carbon footprint.

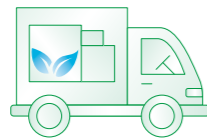


2021年，  
In 2021,



晶澳科技光伏组件出货量  
**全球第二**

JA Solar's PV module shipments ranked **second in the world** in 2021



历年累计向135个国家和地区供应超过  
**88**GW光伏产品

The company has supplied PV products to 135 countries and regions with a cumulative capacity of more than **88 GW**



相当于每年减少二氧化碳排放量超过  
**9,000**万吨

which equates to a reduction of more than **90 million** tons of CO<sub>2</sub> emissions per year



第二次荣获 RETC 的“全面表现最优”荣誉  
JA Solar has won the RETC's "Overall High Achievers" award for the second time.



连续六年蝉联“欧洲顶级光伏品牌”  
JA Solar has been awarded "Top PV Brand Europe" on modules in the last six consecutive years



第六次荣获 PVEL 的全球“最佳表现”组件制造商称号  
JA Solar won, the sixth award for "Top Performer" in the PV module issued by PVEL



**案例 CASE** | 晶澳科技 DeepBlue 3.0 系列高效组件屡获国际环保认证  
JA Solar's DeepBlue 3.0 high performance PV module obtains international environmental certification

晶澳科技坚守“合理的尺寸，合理的电参，以客户价值为核心，以度电成本为考量”的产品设计理念，持续专注于产品和技术的创新。2020 年至 2021 年两年间，陆续推出三款 DeepBlue 3.0 系列高效组件。截至 2021 年底，该类型光伏组件全球累计出货量突破 12GW，覆盖全球 86 个国家和地区。2021 年，晶澳科技凭借 DeepBlue 3.0 系列组件产品获得 UL EPD 环保产品声明标志、TÜV 莱茵“单面单晶组光伏组件发电量仿真优胜奖”、TÜV 北德“户外实证质效奖 (PERC 高效组件)”等多项荣誉认可。

We've been concentrating on product and technological innovation while adhering to the design principle that "reasonable size and weight leads to reasonable electrical parameters." From 2020 to 2021, we released three high performance PV modules under the DeepBlue 3.0 series. As of the end of 2021, the cumulative global shipments of DeepBlue 3.0 exceeded 12GW across 86 countries and regions. In 2021, our DeepBlue 3.0 series were awarded a series of certifications, including UL EPD certification, "Energy Yield Simulation AQM Award 2020 -Monofacial Mono Group" by TÜV Rheinland, and Outdoor Demonstration Quality & Effect Award [PERC Efficient Module] by TÜV NORD.



获得UL EPD环保产品声明标志  
UL EPD certification

**获得的部分奖项证书**  
Award certificates (parts)

The collage displays several certificates and logos: RETC 2021 High Achiever, EUPD Research Top Brand PV Modules Europe 2021, four CNAS Laboratory Accreditation Certificates, TÜV SUD Qualified CTF (stage 2) TÜV南德认可客户实验室, Shanghai Enterprise Technology Center (上海市企业技术中心), Fengxian Enterprise Technology Center (奉贤区企业技术中心), Intertek Recognized Laboratory, and TÜV Rheinland Precisely Right. TÜV Rheinland accredited TMP Laboratory.

案例  
CASE晶澳科技供货巴西足球俱乐部电站项目  
JA Solar's power plant project in a Brazilian football club

2021 年，晶澳科技为位于巴西东南部的米拉索尔足球俱乐部屋顶电站项目提供了 128 块 DeepBlue 3.0 光伏组件。当地以湿热的热带雨林气候为主，湿热环境要求光伏组件具备优秀的耐紫外线能力、抗 PID 能力以及耐高温及水汽侵蚀能力，晶澳科技产品的发电表现和可靠性得到客户的认可。自电站投入使用后，俱乐部预计 4 年内将收回所有投资，对探索当地经济发展和环境保护的双赢发展模式具有重要意义。

In 2021, JA Solar supplied 128 pieces of DeepBlue 3.0 modules to the Mirassol Futebol Clube rooftop PV power plants in southeast Brazil. The climate of the local tropical rainforest climate necessitates that PV modules be highly resistant to UV, PID, high temperature and moisture. Our products are known for their power generation efficiency and dependability. Once the plant has been operational for four years, it is anticipated to break even on its start-up costs. This project can serve as an important point of reference for the region to establish a mode of development that promotes both economic growth and environmental protection.

晶澳科技供货巴西足球俱乐部电站项目  
Mirassol Futebol Clube PV power plant Projects案例  
CASE晶澳科技供货乌兹别克斯坦首个光伏电站项目  
JA Solar supplies products to the first PV power plant project in Uzbekistan

2021 年 8 月，由晶澳科技供货的乌兹别克斯坦首个光伏电站并网，电站装机量 138MW，共使用 298,928 块晶澳科技双玻光伏组件。该组件耐磨损、抗腐蚀性强、透水率几乎为零，并且发电性能优异，为乌兹别克斯坦纳沃伊光伏电站的长期稳定运行提供充分保障。电站预计每年可发电 2.78 亿度，减少约 20 万吨二氧化碳排放量，为乌兹别克斯坦新开启新能源战略、发展民生和经济起到了积极的促进作用。

In August 2021, JA Solar will have completed the grid connection for the first PV power plant project in Uzbekistan. The project, with an installed capacity of 138 MW, consists of 298,928 pieces of bifacial double-glass modules highly resistant to abrasion and erosion, with excellent impermeability (nearly zero) and high power generation capacity. These ensure the long-term, stability of the Navoiy power plant in Uzbekistan. It is anticipated that the plant will generate approximately 278 million kWh of electricity annually, reducing carbon emission by 200,000 tons. The project will facilitate the implementation of a new energy strategy of Uzbekistan and promote the economic and social development of the local population.

乌兹别克斯坦纳沃伊光伏项目  
Uzbekistan Navoiy PV power plant Project

## 光伏电站开发与建设

### Development and Construction of PV Power Plants

作为绿色清洁产业的引领者，晶澳科技在推进光伏电站开发和运营等业务的过程中，全面加强生态修复与保护，构建清洁美丽的世界。2021 年，晶澳科技持有光伏电站项目超过 30 个，其中并网光伏电站规模约 460MW（其中 2021 年底出售光伏电站 110MW），年发绿电超 6 亿 kWh。另外，国内有多个在建“平价上网”光伏电站项目，项目容量约为 700MW，预计于 2022 年底前陆续并网发电，为实现全球绿色发展做出贡献。

In promoting the development and operation of photovoltaic power plants and other businesses to achieve sustainable development, JA Solar, a leader in the field of green and clean energy, has bolstered ecological restoration and protection comprehensively. JA Solar had more than 30 PV power plant projects in 2021. PV power plants connected to the state grid have a total capacity of 460 MW (110 MW of which have been sold by the end of 2021) and can generate more than 600 million kWh of green electricity. In addition, approximately 700MW of "grid parity" projects are currently under construction. It is anticipated that the grid connection will be completed by the end of 2022 and contribute to global green development.

案例  
CASE常德兴阳 80MW 渔光互补项目建成并网  
Changde Xingyang 80MW fishing-PV complementary project completes grid-connection

2021 年 12 月 31 日，常德兴阳 80MW 渔光互补光伏发电项目并网发电。该项目位于常德市鼎城区牛鼻滩镇，总占地面积约 1700 亩（鱼塘和荷塘），包括光伏场区、110 千伏升压站、35 千伏集电线路、110 千伏送出线路及 10% 配套储能等设施。项目的发电量约 8800 万 kWh/ 年，相当于年减少二氧化碳排放约 7.3 万吨<sup>1</sup>。项目采用“渔光互补”开发模式，生产清洁能源的同时，推动传统养殖模式向智能化、规模化、环保化转型，对于优化当地能源结构、推进节能减排、实现经济可持续发展具有重要意义。

The Changde Xingyang 80MW Fishing-PV Complementary Project was connected to the grid and put into service on December 31, 2021. The project is located in Niubitan, Dingcheng District, in the city of Changde. With 1700 Mu (fish ponds and lotus ponds), the project consists of a PV field, 110 kV booster station, 35 kV collector line, 110 kV transmission line, 10 percent supporting energy storage, and other facilities. The project has a total power generation capacity of approximately 88 million kWh, which will reduce carbon emissions by approximately 73,000 tons per year. A fishing-PV complementary development mode is critical for optimizing the local energy structure, promoting energy conservation and emission reduction, and achieving sustainable economic development by transforming traditional agricultural practices while producing clean photovoltaic energy.

<sup>1</sup> 依据《中国电力行业年度发展报告2021》上一年度全国火电发电量二氧化碳排放计算，如2020年 为832 g / kWh}。

<sup>1</sup> This shall be calculated based on the calculation method of carbon emissions of thermal power generation in the prior year specified in the 2021 China Power Industry Annual Development Report(e.g. in 2020: 832 g / kWh)

常德兴阳80MW渔光互补项目  
Changde Xingyang 80MW fishing-PV complementary project

## 共建合作促发展 Co-building Sound Partnership for Development

晶澳科技始终坚持“互惠互利、合作共赢”的理念，积极与上下游企业开展深入系统的合作，携手并进、共同发展。2021年，晶澳科技与国内外多家合作伙伴建立长期战略合作关系，带动更多合作伙伴践行可持续发展理念，共同为全球“碳中和”作出贡献。

### 2021 年共建合作大事记

Events of co-building and cooperation in 2021

2月24日

与成都炭素签订战略合作协议，实现深度合作。

On February 24, JA Solar signed the strategic cooperation framework agreement with Chengdu Carbon Co., Ltd., establishing a close partnership.

2月25日

与澳大利亚最大分销商 One Stop Warehouse 签订分销合作协议。

On February 25, JA Solar signed a distribution cooperation agreement with One Stop Warehouse, the largest distributor in Australia.

3月28日

晶澳科技在电建贵州工程公司 2021 年度供应商大会上获颁“2021 年度战略合作伙伴奖”。

On March 28, JA Solar received the Strategy 2021 Strategy Partner Award at the Suppliers' Meeting 2021, which was organized by the Powerchina Guizhou Engineering Co., Ltd. for its excellent performance.

7月6日

与中国电建集团海外投资有限公司签订战略合作框架协议，加强海外新能源项目合作。

On July 6, JA Solar signed the strategic cooperation framework agreement with Powerchina Resources Limited. Both parties will strengthen their cooperation in the development of overseas new energy projects.

6月24日

与国家电投集团东北公司签署战略合作框架协议，进一步深化合作。

On June 24, JA Solar signed the strategic cooperation framework agreement with SPIC Northeast Company. Both parties will work together to strengthen their partnership.

6月21日

与中国电建集团国际工程有限公司签署战略合作协议，继续推进国内外清洁能源项目的合作开发。

On June 21, JA Solar signed a strategic cooperation agreement with Powerchina International Group Limited. Both parties will collaborate to support the development of domestic and overseas clean energy projects.

7月15日

与 TÜV 北德签订了户外实证战略合作框架协议，共同推动光伏组件新标准和新产品的性能检测及质量评估方面的技术合作。

On July 15, JA Solar signed the strategic cooperation framework agreement for outdoor demonstration with TÜV NORD. Both parties will collaborate to advance technical capabilities in the areas of standardization, product performance testing, and quality assessment.

7月18日

与中信证券、中信银行、中信租赁签署战略合作协议，围绕资本市场等多方面展开深化合作。

On July 18, JA Solar signed a strategic cooperation agreement with CITIC Securities, CITIC Bank and CITIC Financial Leasing, strengthening cooperation in areas of the capital market and other aspects.

7月27日

与上海市节能减排中心签订框架合作协议，共同推进新能源开发，助力上海市能源绿色转型，服务“双碳”目标。

On July 27, JA Solar signed a strategic cooperation agreement with the Shanghai Energy Conservation and Emission Reduction Center. Both parties will collaborate to promote new energy development, assist Shanghai's green transition.

9月

晶澳科技、晶科、隆基三家企业就 182mm 系列组件产品的标准化问题达成共识，并倡导全行业采用统一标准，促进光伏产业的规范、健康发展。

In September, JA Solar, Jinko Solar and Longi Solar came to a consensus on the standardization of 182mm series modules products, and advocated for the industry-wide adoption of unified standards, to standardize, and facilitate the healthy development of the PV industry.

8月26日

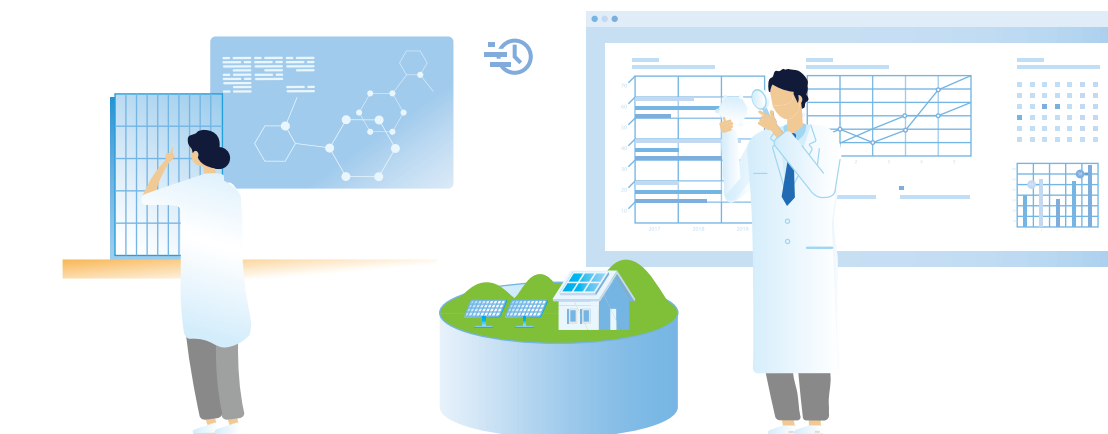
与浙江三潭科技股份有限公司签订光伏组件供货框架协议，将在整县推进项目中密切合作。

On August 26, JA Solar signed the framework agreement on the supply of PV modules with Zhejiang Santan Technological Co., Ltd.. Both parties will cooperate closely in PV project promoting though counties of Shandong, Zhejiang, Anhui, Hainan, etc.

7月30日

与福莱特玻璃集团股份有限公司签署战略合作协议，推进光伏玻璃产品供应和服务等多方面的合作。

On July 30, JA Solar signed a strategic cooperation agreement with Flat Glass Group Co., Ltd. Both parties will cooperate closely in PV glass product supply and service.



12月8日

与扬州市经开区签订整区分布式光伏电站合作协议，并与当地四家银行和两家院校签订合作协议。

On December 18, JA Solar signed a cooperation agreement for distributed PV stations with the Yangzhou Economic & Technological Development Zone Park, and signed a cooperation agreements with four local banks and two local universities.

9月29日

与北京东方雨虹防水技术股份有限公司签订战略合作签约仪式，加强在市场拓展、渠道建设等方面的资源共享。

On September 29, JA Solar signed a strategic cooperation with Oriental Yuhong Waterproof Technology. Both parties will combine their advantage in construction field and strengthen resource sharing between two parties in market expansion and channel construction.

9月28日

与北京慈善联合基金签署战略合作意向书，成为联合基金首批合作单位之一。

On September 28, JA Solar signed a letter of intent on strategic cooperation with the Beijing Charity Foundation, which signifies JA Solar becoming the first partner up with BCF.

12月13日

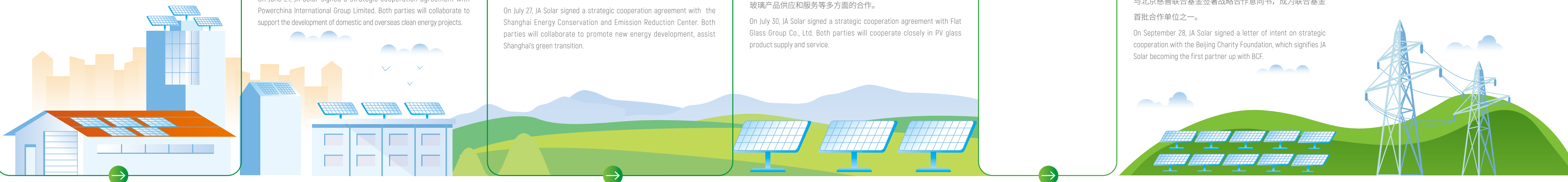
与北京能源国际控股有限公司签订战略合作签约，加强新能源开发利用领域的合作。

On December 13, JA Solar signed a strategic cooperation agreement with Beijing Energy International Holding Co., Ltd. Both parties will continue to strengthen their cooperation in new energy development and utilization.

12月22日

与兴业银行股份有限公司济南分行签署战略合作协议，加强山东地区的项目建设和资金需求等方面的合作。

On December 22, JA Solar signed a strategic cooperation agreement with the Industrial Bank Co., Ltd. Jinan Branch. Both parties will cooperate in financial aspects ect for construction and operation of JA Solar's projects in Shandong region.



# 高质量发展

## Pursuing High-quality Development

### 主要行动策略

Key action strategies

加大光伏产业的科技创新；践行商业行为准则；优化内部合规管理；提升自身反舞弊管理并强化公司廉洁和反腐败宣贯  
Increase the technological innovation of the photovoltaic industry; implement the code of business conduct; optimize internal compliance management; enhance our anti-fraud management, and bolster public awareness of corporate integrity and anti-corruption

# 100%

2021年，晶澳科技与供应商签订《诚信廉洁合作协议》覆盖率

In 2021, JA Solar signed the *Integrity Cooperation Agreement* with all suppliers

# 28

↑

晶澳科技研发中心重点开展的研发项目

28 key R & D projects developed by JA Solar R & D Center

# 1086

项

持有已授权专利

Owns 1,086 authorized patents

# 0

重大内控风险事件

No major accidents of internal control were reported

# 283

件

获准注册商标

283 registered trademarks

8 体面工作和经济增长  
DECENT WORK AND ECONOMIC GROWTH



9 产业、创新和基础设施  
INDUSTRY, INNOVATION AND INFRASTRUCTURE



12 负责任消费和生产  
RESPONSIBLE CONSUMPTION AND PRODUCTION



17 促进目标实现的伙伴关系  
PARTNERSHIPS FOR THE GOALS



## 公司管理 Company Management

晶澳科技秉持“稳健增长，持续盈利”的经营原则，以高瞻远瞩的战略为发展奠基，不断完善公司管理体系，用强大的研发创新能力与高效的生产运营，推动公司的高质量发展。

Taking "stable operation for sustained profitability" as the operating principle, JA Solar lays the foundation for development with a visionary strategy to continuously improve its management system. We intend to meet the challenges of our time and advance the Company's high-quality growth by enhancing R&D and innovation capabilities and boosting production and operation efficiencies.

## 公司战略 Corporate Strategy

晶澳科技始终秉承“开发太阳能、造福全人类”的企业使命，深入推进“一体两翼”战略，致力于成为全球领先的光伏解决方案平台企业。公司坚持“技术创新引领发展、优异品质赢得客户、成本控制提升竞争力、完善服务创造价值”的理念，以市场为导向，以人才为基石，借力资本，全球布局，创新驱动，不断巩固和提高公司核心竞争优势。

JA Solar's mission is to "Develop solar power to benefit the entire human race," promote the "One Body, Two Wings" strategy, and devote itself to becoming the world's leading PV solution platform enterprise. The Company insists on "technological innovation to lead development, excellent quality to win customers, cost control to enhance competitiveness, and perfect service to create value." With a focus on the market direction talent as the foundation, capital leveraging, a global footprint, and a commitment to innovation, we continue to consolidate and enhance our core competitive advantages.

关键影响因素 Key Impacts	主要风险 Major Risks	主要机遇 Main Opportunities
<p>国家政策、供应链变化、人才竞争力、市场拓展、客户关系等。</p> <p>Changes in industrial policies and supply chain status, talents competitiveness, market expansion, customer relations.</p>	<p>国内外对低碳发展的明确要求，各国对光伏政策的变化，包括：国内出台支持和规范光伏产业发展的政策性文件，国外削减对光伏项目的补贴；供应商价格上涨。</p> <p><b>应对措施：</b>全面拓展市场，避免单一市场带来的风险；通过扩产，提高垂直一体化比例，降本增效，推动光伏平价上网。</p>	<p>全球气候变化，能源变革，光伏行业前景较好，市场需求扩大，且国内出台利好政策大力支持光伏产业发展，中国承诺在 2030 年前达到碳达峰，2060 年前实现碳中和。</p> <p><b>应对措施：</b>扩大规模，加大技术创新，维护客户关系，提高竞争力，提升市场占有率。</p>
	<p>Domestic and foreign regulations for low-carbon development and PV-related policies: China's policies to standardize and support the development of the PV industry and cut subsidies for PV projects in foreign markets; and the rising cost of supplies.</p> <p><b>Responses:</b> Expand the business to avoid risks of one single market; expand production to improve vertical integration ratio, reduce costs &amp; improve efficiency, and facilitate grid connection at a fair price.</p>	<p>Global climate change, energy transition, promising prospect of PV industry, larger market demands, favorable domestic policies for supporting the PV industry, and China's pledge to peak carbon dioxide emissions by 2030 and achieve carbon neutrality by 2060.</p> <p><b>Responses:</b> Expand business scale, intensify technological innovation, maintain customer relations, enhance market competitiveness, and increase market shares.</p>

## 晶澳文化 Corporate Culture



## 有效治理 Effective Governance

晶澳科技不断完善公司的内部治理机制，提升治理水平，落实各项管理责任，推进治理体系和治理能力现代化发展。

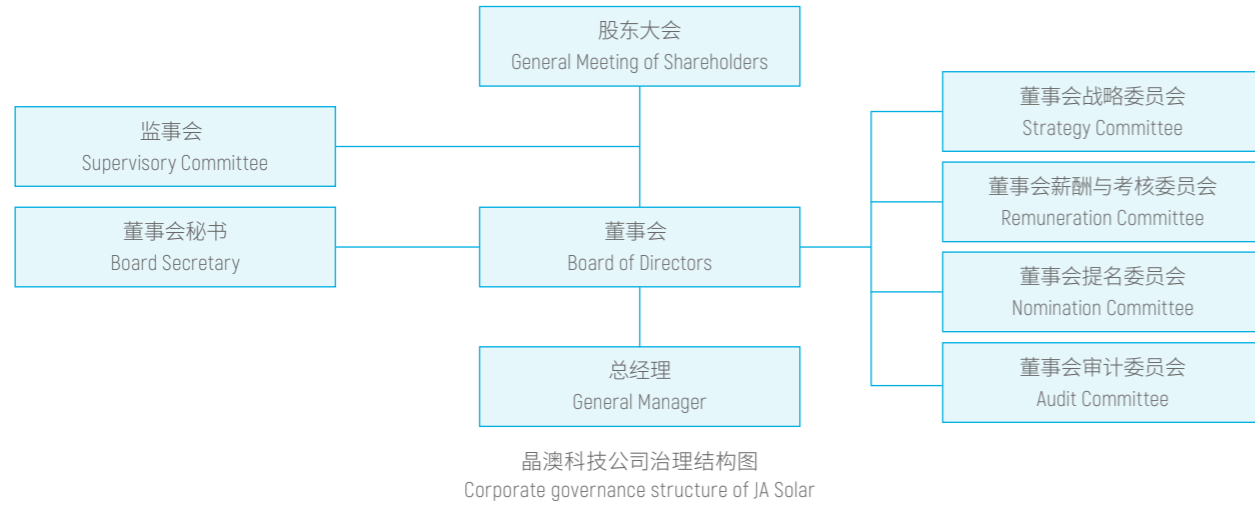
JA Solar continues to improve its internal governance system by fulfilling its management responsibilities to promote the modernization of its governance system and capacity.

## 治理架构

### Governance Structure

晶澳科技拥有科学规范、运行高效、边界清晰的管理体系，建立了以股东大会、董事会、监事会和高级管理层为主体的公司治理架构。董事会下设战略委员会、审计委员会、薪酬与考核委员会、提名委员会等决策与运营管理机制，切实保障全体股东及债权人的权益。在运营管理方面，晶澳科技设有九大管理平台。平台化的建立，使公司管理更加扁平化，更好的为组织、为员工赋能。截至 2021 年底，董事会和监事会高管总人数 14 人，其中男士 10 人，女士 4 人；30 岁以下 1 人，30-50 岁 8 人，50 岁以上 5 人；中国国籍 13 人，美国国籍 1 人。2021 年，公司共召开 3 次股东大会、10 次董事会、8 次监事会以及 12 次专门委员会会议，组织董监高关于股份管理、公司治理专题培训。

The Company has a scientific and standardized management system with efficient operations and clear boundaries, and has established a corporate governance structure composed of the General Meeting of Shareholders, the Board of Directors, the Board of Supervisors and senior management. The Board of Directors has the Strategy Committee, the Audit Committee, the Remuneration and Appraisal Committee, the Nomination Committee and other decision-making and operation management mechanisms, to effectively protect the rights and interests of all shareholders and creditors. In terms of operation management, JA Solar established nine management platforms to realize the flat management of the company, and better empower the organization and employees. By the end of 2021, the Board of Directors and Board of Supervisors consisted of fourteen executives (Male: 10, Females: 4; 30 years old or younger: 1, 30- 50 years old: 8, 50 years old or older: 5; Chinese: 13, US: 1). In 2021, the Company held three shareholder meetings, ten Board meetings, eight Board of Supervisors meetings, and twelve meetings of specialized committees, as well as one training session for directors, supervisors, and executives on corporate governance and stock management.



## 信息披露

### Information Disclosure

晶澳科技坚持诚信履行持续信息披露的义务，以维护公司、投资者及其他利益相关者的合法权益。公司设置内幕信息的管理机构，制定并发布《信息披露管理制度》《内幕信息知情人登记管理制度》《外部信息报送和使用管理制度》《重大事项内部报告制度》等制度，通过招股说明书、募集说明书、上市公告书、定期报告和临时报告等，严格按照相关法律法规的要求，及时、客观、准确、完整地进行信息披露；严格规范内幕信息管理行为，加强内幕信息保密工作，在内幕信息依法披露前，任何知情人不得公开或者泄露该信息，不得利用该信息进行内幕交易，确保公司所有股东能够以平等的机会获得公司相关信息。

JA Solar continues to disclose information in good faith to safeguard the legitimate rights and interests of the Company, investors, and other stakeholders. We have established an inside information management department and published the *Information Disclosure Management Policy, Information Insider Registration Management Policy, External Information Reporting and Use Management System and Internal Reporting System for Major Issues*. In our prospectuses, announcements, regular reports, and interim reports, we, strictly following relevant regulations, disclose timely, objective, accurate, and complete information. We regulate the management of inside information and strengthen confidentiality. Pre-disclosure leaks of inside information and insider trading are prohibited to ensure that all shareholders have equal access to the Company's information.

2021年，公司顺利完成了**4**份定期报告、**141**份临时报告的编制和披露工作

In 2021, JA Solar compiled and disclosed **4** periodic reports and **141** interim reports.



## 投资者关系管理

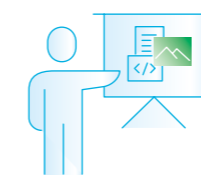
### Management of Investor Relations

晶澳科技在合规经营和可持续发展下采取积极的方式回报投资者。公司制定并发布《投资者关系管理制度》，依据相关制度要求，坚持充分披露信息原则、合规披露信息原则、投资者机会均等原则、诚实守信原则、高效低耗原则、互动沟通原则等，优化投资者关系管理。公司设置投资者关系管理部门，负责策划、安排和组织各类投资者关系管理活动，审核公司网站、内部刊物等各种非正式公告信息的披露，投资者、证券服务机构、媒体等特定对象来电来访及其他日常事务。此外，还通过公司官网对各类重要决策进行公告，并设置投资者教育和董秘联系方式等板块，使股东和投资者能更好的了解公司经营情况，提高公司的透明度和诚信度。通过现场接待、网上业绩说明会、电话、网络留言、传真、邮件等多种方式清晰直观地与投资者进行沟通，客观地向资本市场传递企业价值。

JA Solar actively rewards investors under the premise of compliance operation and sustainable development of the Company. The Company has released the *Investor Relations Management Policy*. Following the requirements of the policy, we stick to the principles of full and compliancebased information disclosure, equal opportunities for investors, honesty and integrity, high efficiency and low consumption, and communications to improve investor relations management. We have set up an investor relations department responsible for organizing various investor relations activities, reviewing the disclosure of informal information such as the Company's website and internal publications, and handling visits or calls from investors, security agencies, and media outlets and other daily matters. Important decisions will be made public on our official website, which includes sections for investor education and Board Secretary contact information, in order to keep shareholders and investors informed about our operations and improve our transparency and integrity. Besides, the Company adopts a wide range of methods to engage with investors, including in-person communication, online performance briefing, telephone communication, online comments boards, fax and e-mails, to objectively inform the capital market about the Company's value.

2021年，公司积极参加券商策略会与投资者保持交流

In 2021, JA Solar got actively involved in security dealers strategy meetings to maintain communication with investors.



组织业绩说明会**4**场  
4 performance briefings were organized.



回答投资者网上提问**111**题  
111 online questions from investors were addressed.

## 合规风控

### Compliance & Risk Control

晶澳科技将风险管理和合规管理范围覆盖到研发、采购、生产、销售、资产、人力资源、财务等经营业务活动，建立了包含事前预防宣导、事中监督把控、事后调查处罚的全过程反舞弊体系，并依据公司内控管理手册，对内控设计和运行情况进行全面评价，并对发现的控制缺陷进行分析，提出整改意见，跟进整改结果，切实将风险控制可在承受度之内。2021年，公司无重大内控风险事件。

The scope of risk management and compliance management at JA Solar has been expanded to include R&D, procurement, production, sales & marketing, assets, human resources, financial affairs, and other business activities. For this purpose, the Company has established a full-process anti-fraud system that covers prevention and publicity, supervision, control, and investigation and penalty. After conducting a thorough assessment of the design and execution of internal control procedures following the internal control manual, the Company has proposed suggestions for rectification based on flaw analysis and tracked the rectification process to reduce risks to a manageable level. In 2021, there were no major incidents of internal control at JA Solar.

## 审计监督

### Audit & Inspection

晶澳科技设置了独立于公司总部各职能部门及子公司的审计监察部门，制定并发布了《内部审计管理制度》《审计监察违规惩戒实施细则》《晶澳科技举报人保护与廉洁申报奖励管理制度》等制度，用以指导和规范公司员工、管理人员及供应商的行为。公司严格调查内外部举报线索，并对处理结果进行通告。相关部门按照审计监察部门提出的建议，对内部控制措施和业务流程进行规范和加强。

JA Solar established an audit and inspection department independent of the Company's departments and subsidiaries. The Department has formulated and released a series of management documents, including the *Internal Audit Management System*, *Detailed Rules for Punishment Regarding Violation of Audit and Inspections*, and *Management Rules for Protection of Whistleblowers and Rewards of Honest Deeds*. These documents are intended to guide and regulate the behavior of employees, management and suppliers. In addition, the Company strictly investigates internal and external reports and notifies the result. In accordance with the recommendations from the audit and inspection department, the relevant departments shall standardize and improve their internal control measures and business procedures.

## 商业道德

### Business Ethics

晶澳科技制定《商业道德政策》落实对劳工与人权、健康与安全、商业贿赂等事项的方针、政策，制定《佣金及佣金合同审批流程操作指引》进一步加强内部审核流程，反贿赂和反洗钱等控制措施，设有《员工行为规范》规范员工行为，与供应商签订《廉洁合作协议》，发送《致晶澳合作伙伴的公开信》并定期通过公开合法渠道对第三方合作伙伴进行尽职调查。针对拥有高风险事项、商业道德问题的企业，采取终止合作等措施。

JA Solar has developed a *Business Ethics Policy* to safeguard employees' human and labor rights, and also their health and safety, and to avoid commercial bribery. The Company has also developed the *Codes of Conduct for Employees* to regulate employee behaviors. In 2021, the Company formulated the *Guidance on Commission and Commission Contract Approval Procedures* to improve the internal approval process, anti-bribery, and anti-laundry regulations. Besides, JA Solar signed the *Integrity Cooperation Agreement* with its suppliers, published an *Open Letter to the Partner of JA Solar*, and conducted due diligence for third-party partners via open, legal channels. JA Solar will terminate cooperation with enterprises that pose major risks or violate business ethics.

公司重视不正当竞争行为、反垄断、反托拉斯相关法律问题，对所有并购案件做尽职调查，并根据监管要求进行申报，还设有专人监控商标、商誉，维护公司自身的权益以免被其他不正当竞争行为所侵害。2021年，公司没有因违反不正当竞争行为、反垄断、反托拉斯相关规定的法律诉讼。2022年1月，公司组织的由专业律师举行的反垄断法律培训，不仅增加了公司相关人员有关反垄断规定的知识，还提高了相关的合规意识。

JA Solar attaches great importance to the above-mentioned legal issues. Before being declared in conformity with regulatory rules, all business acquisitions will be subjected to due diligence. In 2021, no legal dispute was reported in the Company regarding acts of unfair competition or violation of anti-monopoly and ant-trust regulations. Meanwhile, The Company has designated an individual to monitor and protect the Company's trademark and commercial rights from unfair competition. In January 2022, the Company has invited professional lawyers to provide training on Competition Law, with the goal of enhancing the knowledge of the relevant staff on anti-monopoly rules and improving their sense of compliance.



2021年，公司与供应商签订《诚信廉洁合作协议》覆盖率

**100%**,

通过公开合法渠道对第三方合作伙伴的商业道德、反腐败、信息安全和隐私管理、企业法人、注册地址等信息进行尽职调查

In 2021, JA Solar signed the *Honest and Integrity Cooperation Agreement* with all its suppliers. Any third-party partners will be subject to due diligence regarding their business ethics, anti-corruption, information security, privacy management, legal person, and registered address, per the terms of the agreement.

## 公司权益保护

### Protection of the Company's Rights and Interests

晶澳科技成立以法务部为主，研发、采购、销售、生产、人力等各环节配合的知识产权管理机构，建立了包括《知识产权管理办法》、《商业秘密管理办法》等知识产权管理和保护制度，搭建了包括专利、商标、技术秘密、软件著作权在内的知识产权管理体系和维权机制，完善了从申请到后期维护的管理流程。为确保商标的有效性及维护公司权益不受侵害，公司还实时监控核心商标的动态，并积极开展打假和商标注册工作。

JA Solar has established an intellectual property management organization led by the legal affairs department and supported by the R&D, procurement, sales & marketing, production, and human resources departments. The Company has also developed a series of procedures for protecting and managing intellectual property rights, including the *Intellectual Property Rights Management Methods* and the *Business Secrets Management Methods*. In the meantime, a system for the management and protection of intellectual property rights is established, covering patent rights, trademarks, technical secrets, and software copyrights, thereby enhancing the management process from application to maintenance of intellectual property rights. To ensure the validity of trademarks and safeguard the Company's legitimate rights and interests, we have initiated real-time monitoring of the status of core trademarks. We are actively engaged in anti-counterfeiting and trademark registration.



2021年，公司新获准注册的商标  
**11**件

In 2021, JA Solar had **11** new trademarks were approved for registration.



海内外累计获准注册商标共**283**件，逐步在全球范围内推进更为广泛和扎实的商标注册和保护工作

JA Solar held a total of **283** registered trademarks in China and abroad. Now, it is expanding and strengthening its efforts to promote the registration and protection of trademarks globally.



2021年，公司共涉及  
**1**次对外维权投诉

In 2021, only **1** complaint regarding legal rights disputes was reported.

## 宣导教育

### Advocacy Education

晶澳科技是“企业反舞弊联盟”和“阳光诚信联盟”的理事单位，将廉洁文化建设嵌入到公司的日常运营中。2021年，晶澳科技参加了“制造业反舞弊技术交流研讨会”等多场交流会议，不断提升自身的反舞弊能力。

公司通过反舞弊海报、微信公众号文章等不同方式开展廉洁宣导，反舞弊政策和程序的宣传，涵盖董事会、高管、员工及业务合作伙伴，传达率均为 100%。新入职员工在培训后还需通过反舞弊及合规考试，合格后方可转正。公司还通过邮箱、电话、微信公众号、邮寄、QQ 五种渠道畅通投诉举报途径。

As a director member of both the Enterprise Anti-Fraud Alliance and the Trust and Integrity Enterprise Alliance, JA Solar is committed to integrating a culture of honesty and integrity into its daily operations. In 2021, the Company participated in several events, such as the Seminar on Anti-fraud Technologies for the Manufacturing Industry, to strengthen its resistance to business fraud.

In addition, JA Solar conducts anti-corruption advocacy campaigns via anti-fraud posters and WeChat official accounts to promote anti-fraud policies and procedures to directors, executives, employees, and business partners (100% coverage). Before becoming a full-fledged member of the Company, new hires will be required to pass an anti-fraud and compliance exam. In addition, the Company offers a variety of channels, including e-mail, telephone, WeChat official account, mail, and QQ, to facilitate tip-off and complaint collection.

## 质量管理

### Quality Management

公司的质量管理以战略规划为基础，建立了完善的大质量管理体系，持续推进质量管理提升。

JA solar's quality management has established a complete large-scale quality management system to continuously promote improvement of the company's quality management.

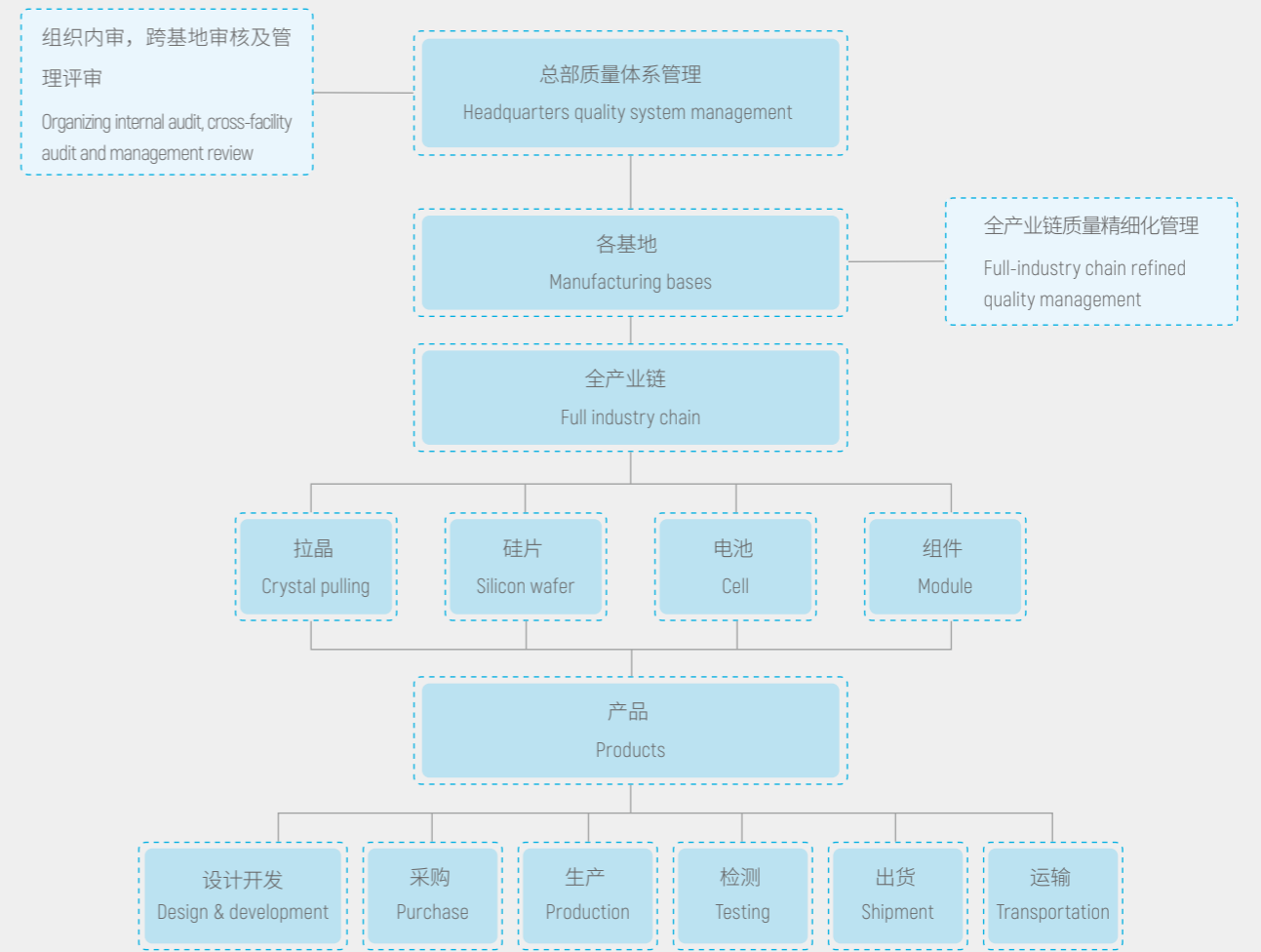
### 案例 CASE | 产品质量不断升级，获权威机构多项认可 JA Solar continuously upgrades product quality and receives awards from authorities

随着公司不断发展的需求，公司实验室及时升级检测能力，为晶澳科技行业领先提供有力支持。公司奉贤、合肥、越南、义乌等实验室归属总部实验室统一管理，实验室检测手段完善，各类检测仪器设备先进，能提供符合 IEC61215-2016、IEC61215-2021、IEC61730-2016 技术标准（等同于 GB/T 9535）要求的测试项目检测服务。

JA Solar has promptly upgraded the labs' testing capacity in response to the rising demands, supporting the Company to excel in the industry. The Company's branch labs in Fengxian, Hefei, Vietnam, and Yiwu are subject to centralized management by the lab's headquarters. Equipped with advanced testing facilities and sound testing methods, the labs can provide testing services compliant with IEC61215-2016(IEC61215-2021, ) IEC61730-2016 (equivalent to GB/T 9535).

2021 年完成大尺寸设备的升级改造并在产品认证、标板溯源、实验室测试、计量合规性等方面持续优化和完善。先后荣获 TÜV、Intertek、CGC 目击实验室等多项行业资质与荣誉。

The Company successfully optimized product certification, reference module tracing, lab testing, and measurement compliance in 2021, after having upgraded large-sized equipment. This has prompted TUV Intertek CGC witness labs to award the Company with various certificates and distinctions.



晶澳科技大质量管理体系  
JA Solar's quality management system



## 善用科技力量 Leverage of Technology

### 研发创新 R&D Innovation

晶澳科技搭建全方位太阳能技术研究平台，与国内外多家科研机构、院校建立广泛合作关系，引进及合作开发新技术，加快产业化步伐。与许多世界级光伏设备企业和材料供应商深化合作，密切跟踪国际前沿技术发展。

JA Solar established a comprehensive technical research platform for solar energy. In addition, the Company established extensive partnerships with domestic and international research institutes and colleges & universities to introduce and develop new technologies and accelerate industrialization. In addition, the Company collaborated with numerous world-class PV enterprises and suppliers to stay abreast of the most recent technological developments.

**4**个研发中心：晶硅研发中心、电池研发中心、组件研发中心及系统研发中心

4 R&D centers: Crystalline Silicon R&D Center, Cell Technologies R&D Center, Module R&D Center and System R&D Center

截至2021年底，晶澳拥有授权专利**1,086**项，其中发明专利**168**项，位居行业前列。

By the end of 2021, JA Solar held **1,086** authorized patents, **168** of which are invention patents, placing it among the industry's largest patent holders.

### 技术开发里程碑 R&D Milestones

#### 2011

- R5 电池：单晶 18.8%；多晶 17.2%
- R5 cells: mono 18.8%, poly 17.2%

#### 2012

- 抗 PID (60°C, 85%RH) 电池和组件量产
- Mass production of Anti-PID (60°C, 85%RH) cells and modules

#### 2013

- 魄秀 (PERCIUM) P 型单晶电池效率 20.3%
- Conversion efficiency of PERCIUM p-type mono cell achieves 20.3%

#### 2014

- 润秀 (RIECIUM) P 型多晶电池效率 20%
- Conversion efficiency of RIECIUM p-type poly cell achieves 20%

#### 2015

- 魄秀 (PERCIUM) P 型单晶电池量产
- 实现抗双 85 PID 产品的全线量产
- Mass production of PERCIUM p-type mono cells
- Mass production of Anti-PID (85°C, 85%RH) cells and modules

#### 2016

- 60 型单晶组件量产功率 300W
- 常规 1500V 组件量产
- Power of 60-cell mono module achieves 300W
- Mass production of regular 1500V modules

2021年，晶澳科技共新增授权专利**212**项。获得专利涉及晶硅、电池、组件以及电站维护等公司各个主营业务板块。

In 2021, JA Solar was granted **212** new patent rights. These patents covered all of the Company's major business segments, including crystalline silicon, cell, module, and PV power plant maintenance.

**209**项为自主申报获得  
209 were self-filed

**34**项为发明专利  
34 were invention patents

**32**项为国内发明专利  
32 were filed in China

**1**项为美国发明专利  
1 in the U.S.

**1**项为澳大利亚发明专利  
1 in Australia

**175**项为实用新型专利  
175 were utility patents

**172**项为国内发明专利  
172 were filed in China

**3**项为德国实用新型专利  
3 were filed in Germany

**3**项通过购买其他公司专利获得，均为发明专利  
3 invention patents were acquired from other companies

案例  
CASE全黑叠瓦组件开发项目  
R&D project of all-black shingled modules

2021 年，晶澳科技自主研发了更为高效、安全的光伏全黑叠瓦组件，并已实现量产。晶澳科技对电池和组件版型进行了多重优化设计，包括电池版型优化、导电胶印刷和固化工艺优化、端焊工艺优化以及封装材料的优化等，结合销售端需求，最终确定黑色组件功率在 355W 左右的版型。

叠瓦全黑组件与常规组件相比，功率提升 30W，外观更为美观，对电池的膜层颜色要求敏感度降低，同时由于单片电池片面积降低，并联回路增加，组件在高温工作及耐阴影遮挡性能上有明显的提升，有效满足户用系统对安全的更高要求。

In 2021, JA Solar independently developed a safer, and more efficient PV all-black shingled module which had been mass produced. JA Solar carried out multiple optimizations for the design of cell and module configuration, including optimization of cell stereotypes, conductive adhesive printing, solidification process, edge welding process and encapsulation materials. At the same time, based on the market needs, the Company finally decided to adopt the black modules with the power being around 355 W.

Compared to standard modules, all-black shingled modules have 30W more power, a more attractive appearance, and less stringent requirements for cell coating color. Due to the smaller size of each individual cell and the increased number of shunt circuits, the modules have improved high temperatures and shading performance, thereby satisfying the customers' safety requirements.

案例  
CASE18X 高密度电池组件开发项目  
R&D project of 18X high-density cells and modules

2021 年，晶澳科技通过研发创新，实现了行业内首家叠焊组件层压零隐裂技术。通过采用原创的新一代零间距技术及特有的柔性连接与缓冲处理技术，并结合优化的封装材料，做到真正意义的“零隐裂”。

新一代零间距技术的组件相对于常规间距组件效率可提高 0.4%，同时可靠性与常规间距组件保持一致水平。高能量密度组件从土地、人工、支架、运维等各个方向减少电站投资，结合发电量的优势，全面降低了度电成本，是公司“合理的尺寸，合理的电参，以客户价值为核心，以度电成本为考量”产品设计理念的最佳诠释。

Due to its efforts in R&D and innovation, JA Solar was the first in the industry to develop technology for tiling ribbon modules with no micro-cracks in 2021. This is due to the innovative gapless flexible interconnection technology of the latest generation, the exclusive flexible interconnection and buffer technology, and the optimized encapsulation materials.

The gapless flexible interconnection (GFI) technology of the newest generation increases module efficiency by 0.4% and GFI modules are just as reliable as conventional modules. Combined with our power generation advantage, modules with a high energy density can reduce land, labor, support, and maintenance costs, lowering the cost per kWh. They are persuasive examples of the Company's product design philosophy, "Reasonable size, reasonable electrical parameters, customer value as the core, and electricity cost as the consideration".

技术开发里程碑  
R&D Milestones

## 2017

- 60 型单晶组件量产功率突破 325W
- 双面双玻组件量产
- Mass production of 60-cell mono module breaks 325W
- Mass production of bifacial double-glass module

## 2018

- 倍秀 (BYCIUM) N 型单晶电池效率 22.5%
- Conversion efficiency of BYCIUM n-type mono cell achieves 22.5%

## 2019

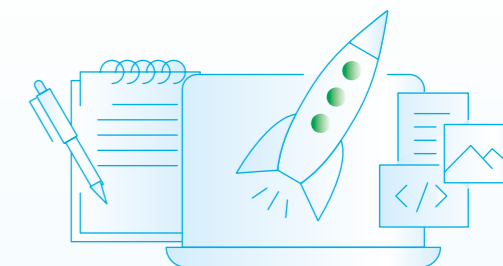
- 倍秀 (BYCIUM) N 型单晶电池效率 23.8%
- 魄秀 (PERCIUM) P 型单晶电池量产效率 22.7%
- 72 型多主栅半片组件量产功率 410W
- Conversion efficiency of Bycium n-type mono cell achieves 23.8%
- Mass production efficiency of PERCIUM p-type mono cell achieves 22.7%
- Mass production power of 72-cell MBB half-cell module achieves 410W

## 2020

- 组件首年衰减质保 ≤ 2%
- 魄秀 (PERCIUM+) P 型单晶电池量产效率 23%
- 新品 DeepBlue 3.0 功率 545W 达历史新高
- Warranty for first-year maximum module power reduction ≤ 2%
- Mass production power of PERCIUM+ p-type mono cell achieves 23%
- Power of the new product Deepblue 3.0 reaches a record high 545W

## 2021

- 魄秀 (PERCIUM+) P 型单晶电池量产效率 23.4%
- DeepBlue 4.0 (基于 BYCIUM) 中试，功率 610W
- Efficiency of mass produced PERCIUM+ p-type mono cell achieves 23.4%
- Pilot line of DeepBlue 4.0 (based on BYCIUM) with power of 610W



## 智能制造 Intelligent Manufacturing

晶澳科技持续加快数字化转型，搭建了覆盖生产制造基地和其他各商业主体的智能综合管理运营平台。通过对生产运营等业务数据的电子化信息整合，有效提高运营速率，提高业务数据申报的准确性与一致性，实现风险的可控化。

JA Solar continues to expedite digital transformation by establishing an intelligent integrated management and operation platform encompassing manufacturing bases and other commercial entities. By consolidating the digital information of the business, including production and operation, these measures have enhanced the operational efficiency and the accuracy and consistency of data declaration, thereby controlling the risks.

 <p>硅片环节 Silicon wafer</p>	<p>建立生产分析系统，全天候 24 小时对生产进行实时监测和自动预警，借助大数据实现对硅片产品质量的精细控制。</p> <p>Implement a production analysis system for continuous real-time monitoring and automatic alarming; employ big data technologies for refined quality management of silicon wafer products.</p>
 <p>电池环节 Cell</p>	<p>建立产品质量分析系统，通过汇总生产过程中的所有质量和过程数据，构建全面的质量管理体系并实现质量标准化。</p> <p>Establish a product quality analysis system; collect all product quality and process data throughout the production process to develop a comprehensive quality management system to achieve standardized product quality management.</p>
 <p>组件环节 Module</p>	<p>全部使用全自动双轨高速串焊机、双腔层压机、全自动排版机和全自动装框一体机，拥有工业级电脑智能控制多维度机械手的自动排版机等先进设备。同时，该生产线拥有较高的适应性，实现生产全过程智能联动，一键完成产品规格更换。</p> <p>The Company utilizes automatic double-track high-speed string welding machines, double cavity laminating machines, automatic framing integrated machines, automatic typesetting machines with industrial-grade computer-controlled multi-dimensional manipulators, as well as other advanced machinery. In addition, the production line is highly adaptable, as the intelligent integration of the entire production process has been achieved, and product specifications can be changed with a single click.</p>
 <p>光伏电站环节 PV power plant</p>	<p>实现大数据采集以辅助电站的日常运检工作，通过信息和设备的互联互通达到光伏电站功率预测、远程功率控制功能，通过智能机器有效提高电站运维的安全性、可靠性和经济性。</p> <p>Assist in routine inspection and maintenance of the PV power plant by collecting data using big data technologies; utilize the connectivity of information and equipment to forecast power of PV power plant and remotely control the power of the plant; employ smart equipment to enhance the safety, reliability, and economic performance of the station.</p>

## 案例 CASE | 智能信息自动化的义乌生产基地 Intelligent information automation of Yiwu Production Base

2021 年，晶澳科技在义乌建成了当时世界单体规模最大的光伏厂房，行业内规模最大、吨位最大的智能立体仓储。通过数字化技术，实现智能规划、智能生产、智能物流，最终实现基于订单的“7 天交付全流程可视”。此外，基地通过基于人工智能技术的全自动视觉检验的设备，可直接检测产品的瑕疵情况，有效提升检测效率。基地还将各个核心业务系统与钉钉打通，并对自动化设备进行数据采集，大大节省了运维时间。智能制造使晶澳科技义乌基地在设备、效率、产出、产品质量上得到巨大提升。

In 2021, JA Solar built the world's largest PV single-story factory, an intelligent 3D warehouse with the industry's largest size and tonnage capacity. Utilizing digital technologies, the Company achieved order-based, full-process visualization for 7-day delivery via intelligent planning, production, and logistics. In addition, it is equipped with more effective AI-based automatic visual inspection equipment that can detect product defects directly. Furthermore, it connects its core business system to DingTalk and collects data from automated equipment, which has resulted in significant time savings during operations. Through intelligent manufacturing, Yiwu Manufacturing Base significantly improved its equipment, efficiency, output, and product quality.



智能化的义乌基地  
Intelligent Yiwu Production Base

# 持续造福社会

Benefiting Society as Always

## 主要行动策略

Key action strategies

增加绿色电力的应用；推进环境管理体系建设；开展各种公益活动；调配资源支持社区建设。

Increase the use of renewable energy; encourage the establishment of an environmental management system; conduct various public welfare activities; allocate resources to support community development.

8,450 万元

环境投资和费用支出约

Environmental investment and expenditures were approximately CNY 84.5 million

57.34 万元

2021年，三大惠民工程合计捐献

In 2021, JA Solar donated CNY 573,360 in total to "Three Major Projects for the Benefits of the People"

"6+"

构建绿色生态发展体系

JA Solar builds "6+" green ecological development system

1,000 万元

向河南灾区捐款

JA Solar donated CNY 10 million for flood fighting in Henan

5,600 万元

光伏扶贫累计提供扶持款

JA Solar provided CNY 56 million through PV poverty alleviation



## 低碳节约 Low-Carbon Efforts

晶澳科技重视对环境的保护，切实加强能源资源的节约和循环利用，不断加快向绿色低碳生产方式转型。2021 年，公司在全球拥有 12 个生产基地，其中包括 5 个国家级绿色工厂，助力全球生态环境建设和绿电普及。

JA Solar places a high priority on environmental protection. Effectively bolstering the conservation and recycling of energy and resources to continuously expedite the green and low-carbon transition. In 2021, JA Solar owned 12 manufacturing bases across the globe, including five national green plants, which were conducive to promoting ecological construction and green electricity.

## 绿色电力 Green Electricity

### 绿电的供给情况

Supply of green electricity

2021 年，晶澳科技持有光伏电站项目超过 30 个，其中并网光伏电站规模约 460MW（其中 2021 年底出售光伏电站 110MW），年发绿电超 6 亿 kWh。另外，国内有多个在建“平价上网”光伏电站项目，项目容量约为 700MW，预计于 2022 年底前陆续并网发电，为实现全球绿色发展做出贡献。

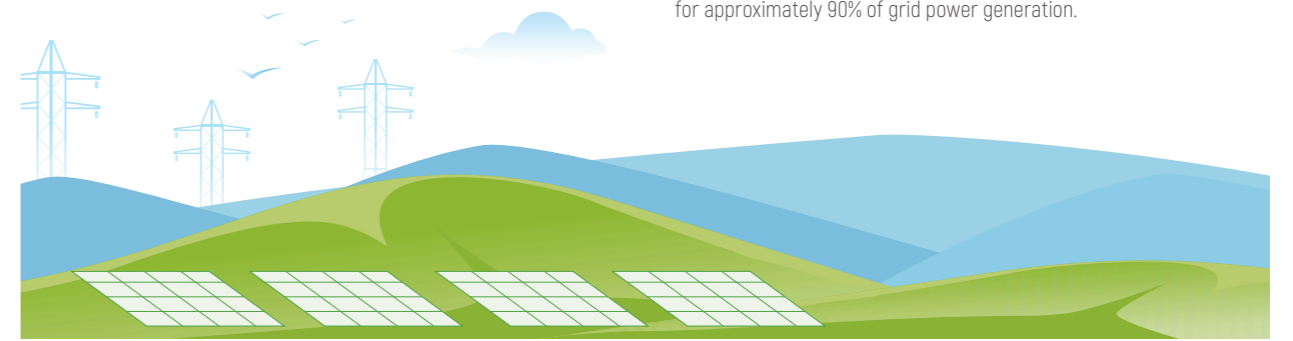
2021, JA Solar boasts more than 30 PV power plants projects, among which PV power plants connected to state grid is about 460 MW (of which 110MW has been sold out by the end of 2021), and generates over 600 million kWh green electricity. In addition, approximately 700MW of "grid parity" projects are currently under construction. The grid connection will be completed by the end of 2022 and contribute to global green development.

### 绿电的使用情况

Consumption of green electricity

晶澳科技大力倡导使用绿色能源，各基地积极利用自身闲置房顶、车棚、空地等，安装了小型集中式电站、屋顶分布式、水上悬浮式电站等多种形式的光伏电站。2021 年，位于晶澳科技生产基地的分布式电站约 28.55MW，年发绿电超过 2,500 万 kWh。这些分布式电站，为基地办公、生产、生活供应清洁的电力，减少二氧化碳排放，同时也使公司各基地减少对传统电力的依赖。另外，曲靖基地位于云南省曲靖经济技术开发区，当地水资源丰富，以水电为主的清洁能源在电网中的比例约 90%。

JA Solar strongly supports the use of renewable energy. Each base installed PV generators including a variety of photovoltaic (PV) power generators including small centralized power generators, rooftop distributed power generators, and water suspended power generators on its unused roof, carport, open space...etc. In 2021, distributed PV power plants with a capacity of 28.55MW located at JA Solar's manufacturing bases generated over 25 million kWh of green electricity. They can provide clean electricity for office, production, and residential use, enabling manufacturing facilities to reduce carbon emissions and reliance on traditional electricity. In addition, Qujing Manufacturing Base is situated in the Qujing Economic and Technological Development Zone, Yunnan Province, where, as a result of an abundance of water resources, hydropower clean energy accounts for approximately 90% of grid power generation.



### 案例 CASE

#### 晶澳科技青岛兴邦分布式项目顺利并网 JA Solar Qingdao Xingbang distributed power generation project completes grid-connection

2021 年 8 月，晶澳科技投资建设的青岛兴邦 1MW 分布式项目顺利并网发电。该项目位于青岛市黄岛区，占用青岛兴邦电器有限公司厂房屋顶面积 2 万平方米，总装机容量 1MW。项目并网后预计年生产新能源电量 110 万度，节省标准煤约 335 吨<sup>1</sup>。

In August, 2021, JA Solar invested in constructing Qingdao Xingbang 1MW Distributed Power Generation Project, which was successfully connected to the state grid and put into operation. Located in Huangdao District of Qingdao, the project utilizes roof area (up to 20,000 square meters) of Qingdao Xingbang Electronic Co., Ltd. for power generation, with an installed capacity of 1MW. Once connected to the state grid, it is anticipated that the project will generate 1.1 million kWh of renewable energy annually, which will result in a 335-ton reduction in standard coal consumption.

<sup>1</sup> 依照《中国电力行业年度发展报告2021》上一年度全国火电发电量二氧化碳排放计算，如2020年为832 g/kWh]。

<sup>1</sup> This shall be calculated based on the calculation method of carbon emissions of thermal power generation in the prior year specified in the 2021 China Power Industry Annual Development Report (e.g. in 2020: 832 g/kWh)



## 绿色工厂 Green Plant

晶澳科技积极推进能源管理体系建设，不定期地对所有场所开展环境风险辨识活动，有效控制环境风险。截至 2021 年底，公司多家基地取得能源管理体系认证和清洁生产认证，获得工信部授予的国家级“绿色工厂”、省级“绿色工厂”、上海市节水型企业、以及邢台市节水型单位等称号。

JA Solar actively promotes the implementation of an energy management system and conducts environmental risk identification activities at all sites to control environmental risks effectively. By the end of 2021, several JA Solar bases had obtained energy management system certification and clean manufacturing certification. The Ministry of Industry and Information Technology designated them "Green Plant" at the national level and "Green Plant" at the provincial level.



2021年节约用水项目共**17**个

节约用水约**176**万m<sup>3</sup>/年

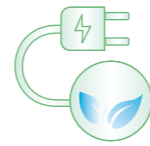
17 water-saving projects were initiated in 2021, saving approximately 1.76 million m<sup>3</sup>/year of water



废气排放改善项目**3**项

减少废气排放约**2.4**亿m<sup>3</sup>/年

3 exhaust gas emission improvement projects were implemented, reducing emissions by approximately 240 million m<sup>3</sup>/year



2021年节约用电项目**13**个

节省约**682.5**万kWh/年

13 electricity-saving projects were initialized in 2021, saving approximately 6.825 million kWh/year of electricity

### 节约用水

Water conservation



- 在生产厂区，采取可调节阀门、循环利用、纯水制取等措施
- 在生活区，倡导全员节约用水
- In the plant area, we implement measures such as the use of adjustable valves, recycling and pure water production;
- In the living area, we encourage all staff to conserve water.

### 降低能耗

Energy consumption reduction



- 实施节能技改和智能化改造，包括空调系统智能化改造、制热系统改善等
- 积极落实国家直购电政策
- We employ energy-saving technology and intelligent transformation, including intelligent transformation of air-conditioning systems and improvement of heating systems;
- We implemented the national policy of direct purchase of electricity.

### 减少排放

Emission reduction



- 优化废水处理工艺，废水排放全部达标甚至严于标准
- 配备废气净化塔、粉尘收集装置等，采取不锈钢硅烷燃烧塔处理等先进工艺
- 危险废弃物按国家规定分类收集无害化和处理
- We optimize wastewater treatment processes, so that all discharged wastewater meets or exceeds discharge standards;
- We utilize with waste gas purification towers, dust collection devices, and other advanced technologies such as stainless steel silane combustion tower treatment;
- Hazardous waste is collected separately and treated without recourse according to national regulations.

晶澳科技建设绿色工厂的具体措施  
JA Solar's measures to build a green plant

### 案例 CASE

#### 宁晋基地开展节水节电项目

Ningjin Manufacturing Base carries out water and electricity saving projects

从 2020 年 10 月开始，宁晋基地实施清洗溢流水槽废水回收创新项目，减少废水排放量及原水使用量，从而降低生产成本。2021 年，宁晋基地纯水用量明显下降，车间品质监控及效率未发现异常，节水约 46 万 m<sup>3</sup>/年。

同时，宁晋基地实施热排风余热利用项目，通过管路改造，将热排风量引入夹层，冬季可以由热排风供给空调箱，每年节约电量约 200 万 kWh，相当于减少二氧化碳排放约 1800 吨。

The Ningjin Manufacturing Base implemented an innovative wastewater recycling project for cleaning overflow sinks in October 2020. The project can reduce wastewater discharge and raw water consumption, lowering production costs. In 2021, Ningjin base's consumption of pure water significantly decreased. No anomalies were detected in the quality monitoring and efficiency of the workshop, which saved approximately 460,000m<sup>3</sup> of water per year.

Meanwhile, Ningjin base has launched the project of utilizing waste heat from hot exhaust. Through pipeline transformation, heat from exhaust was introduced into interlayer, and can be supplied to air-conditioning box in winter. This method can save approximately 2 million kWh of electricity per year, which is equivalent to a reduction of approximately 1,800 tons of CO<sub>2</sub> emissions.



## 生态保护 Ecological Conservation

晶澳科技将生态保护和生态治理措施融入到绿色工程和绿色供应链中，将绿色理念贯穿于环保公益活动中。公司先后加入联合国全球契约组织、中国绿色供应链联盟光伏专业委员会和中国企业气候行动，获得中国上市公司协会“上市公司 ESG 实践案例”、财联社·ESG“2021 中国企业 ESG 最佳环境案例奖”、并连续两年获得中国社会责任百人论坛颁发的“责任金牛奖”。

JA Solar incorporates ecological protection and management measures into its green projects and green supply chain, and green concepts into environmental protection and public welfare activities. JA Solar has joined the United Nations Global Compact (UNGC), the PV Committee of China Green Supply Chain Alliance, and China Business Climate Action (CBCA). In addition, it was awarded the “ESG Practice Case of Listed Companies” by China Association for Public Companies, the “2021 China Enterprise ESG Best Environmental Case Award” by CLS ESG, and the “Golden Bull Award” for two consecutive years by China CSR 100 Forum.



2021年环境投资和费用支出约

**8,450**万

Approximately CNY 84.5 million was spent on environmental investment and expenses in 2021

环境违规事件为

**0**

No environmental violation occurred



环境污染事故为

**0**

No environmental pollution accident occurred



环境投诉为

**0**

No environmental complaint was received



“三废”达标排放

**100%**

All “Three Wastes” were discharged per the standards



## 绿色工程 Green Project

晶澳科技从成立之初就重视生态建设和环境保护，加强配套环保设施和环保措施的落实，坚定不移走生态优先、绿色发展之路。截至 2021 年底，建成一批光伏治沙、农光互补、渔光互补、山地光伏等独具特色的光伏电站，走出了一条生态治理与产业发展互补共融的创新之路。

Since its inception, JA Solar has been committed to prioritizing environmental protection and pursuing green development. We place a premium on ecological construction and protection by improving environmental facilities and measures. Consequently, by the end of 2021, JA Solar had constructed several PV power plants with distinctive characteristics, including PV power plant project for sand control, for agriculture, for fishery and mountain-built PV power plant project. Thus, we forge an innovative path of complementary ecological management and industrial development.

### 案例 CASE

#### 晶澳科技包头农光伏发电项目（一期 10MW）的绿色建设

Green construction of JA Solar's Baotou agrivoltaic PV power plant project (Phase I 10 MW)

2021 年，晶澳科技投资建设的包头市白云鄂博矿区 50MWp 结合农业光伏发电项目（一期 10MW）建成并网。该项目工程建设过程采用多项环保措施减少对当地生态环境的影响。在光伏阵列区下方种植苜蓿进行绿化，绿化率 93.6%；生活污水经处理后用于厂区绿化；光伏组件清洗废水用于苜蓿灌溉，不外排。

该电站全部建成后，经测算 25 年年均发电量为 7800 万 kWh，每年可减少二氧化碳的排放量约为 6.5 万吨。晶澳科技包头农光伏发电项目实现了经济效益、社会效益和环境效益的统一，守护了我们清洁美丽的家园。

In 2021, JA Solar invested in a 50 MWp agrivoltaic project (Phase I, 10 MW) in Baiyun Ebo mining area of Baotou City, which was completed and connected to the grid. During the project's construction, numerous eco-friendly measures were implemented to lessen its impact on the local ecological environment. After construction, a 93.6 percent greening rate was achieved by planting alfalfa beneath the photovoltaic array area. With no external discharge, domestic sewage and wastewater from PV module cleaning were treated and used for plant greening, such as alfalfa irrigation.

When the PV power plant is fully operational, it is anticipated that the annual average power generation capacity will be 78 million kWh for 25 years, resulting in a reduction of approximately 65,000 tons of CO2 per year. Baotou Agrivoltaic PV power plant Project by JA Solar has achieved the unification of economic, social, and environmental benefits, thereby protecting our clean and beautiful home.

包头农光伏发电项目  
Baotou Agrivoltaic Power Project (Phase I 10 MW)



案例  
CASE光伏治沙, 拥抱绿洲  
Sand control with photovoltaics

内蒙古库布其光伏治沙项目应用“板上发电、板下种植、板间养殖、治沙改土、产业扶贫、工业旅游”的“光伏+”新型产业模式, 晶澳科技为项目中的 14.2 MW 光伏发电系统提供了 DeepBlue 3.0 双面双玻组件。2021 年, 该项目有效治理沙漠 1700 亩, 比 2020 年增加 700 余亩, 将沙漠植被覆盖率由 8% 提高至 77%。这种“生态治沙增汇”和“光伏治沙减排”双向碳中和的创新模式为西北区域治沙固沙、生态保护更添一份力。

Kubuqi PV Sand Control Project in Nei Mongol employs the new "PV+" industrial model of power generation, planting, farming, sand control and land reclamation, and industrial poverty alleviation and tourism. JA Solar supplied 14.2 MW PV power generation system to the project using DeepBlue 3.0 bifacial double-glass modules. In 2021, the project had effectively managed 1,700 mu of desertification land, increased more than 700 mu from 2020, and increased the desert vegetation coverage rate from 8% to 77%. This novel model of "increasing income and decreasing emissions through ecological and PV sand control" is a two-way carbon-neutral model that facilitates sand control and ecological protection in Northwest China.

晶澳的绿色供应链  
JA Solar's green supply chain绿色设计  
Green design

- 电池工艺设计采用碱抛工艺
- 在机场环境使用防炫光组件
- 采用符合氨气盐雾沙尘等恶劣环境测试标准的组件设计
- Apply alkali polishing technology to cell process design
- Use anti-glare modules in airport
- Employ modules designed to meet harsh environmental testing standards such as ammonia, salt spray, sand dust

绿色采购  
Green procurement

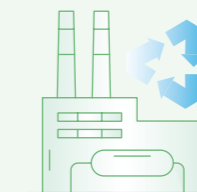
- 要求供应商进行 EHS 评鉴和风险识别
- 向供应商发布《供应商职业健康安全环境告知书》
- 要求供应商签署《社会责任承诺书》
- 要求供应商通过 ISO 9001 和 ISO 14001 认证
- 要求部分重点行业供应商须通过 OHSAS 18000 认证
- Require suppliers to conduct EHS reviews and risk identification
- Issue *Letter of Notice on Supplier Occupational Health, Safety, and Environment* to suppliers
- Require suppliers to sign a *Social Responsibility Commitment*
- Require suppliers to obtain the ISO 9001 and ISO 14001 certifications
- Require some key industry suppliers to obtain the OHSAS 18000 certification

绿色生产  
Green manufacturing

- 组件生产进行智能化改造
- 实施节能技改
- 推进直供电项目
- Module production undergoes intelligent transformation
- Implement energy-saving technology improvement
- Promote direct electricity supply project

废弃物回收  
Waste recycling

- 可回收的组件配件自行进行回收处理使用
- 有毒有害物质遵守当地的法律法规处理
- 部分组件回收委托 PV cycle 处理
- Recyclable and reuse module parts
- Handle toxic and hazardous substances in compliance with local laws and regulations
- Commission PV cycle to handle Module recycling

绿色供应链  
Green Supply Chain

晶澳科技全面推行 ISO 14001 环境管理体系建设, 并积极推进 ISO 45001 管理体系, 按照 PDCA (计划、执行、检查和处理) 的管理方法, 识别环境风险和机遇、相关方的期望与要求。晶澳科技将环保理念贯穿于各基地的研发、采购、生产、物流和产品回收等生产运营的各环节, 努力减少排放对环境的影响, 致力于打造资源节约型和环境友好型企业。

JA Solar has fully implemented the construction of the ISO 14001 Environmental Management System and promotion of ISO 45001 Management System. Under the PDCA (Plan, Do, Check, Act) management method, JA Solar has identified the risks and opportunities and the stakeholders' expectations and needs. JA Solar strives to reduce emissions and environmental impact by integrating ecological protection concepts into all aspects of production operations, including R&D, procurement, manufacturing, logistics, and product recycling at each of our manufacturing bases.

2021年, 通过PV cycle回收组件约  
**16**吨

Approximately **16** tons of modules were recycled through the PV cycle in 2021;

回收废弃的木托盘约**39.3**万个  
塑料制品超**6,900**吨

About **393,000** discarded wooden pallets, more than **6,900** tons of plastic products were recycled.



案例  
CASE

## 成为首家获得韩国亲环境认证的中国光伏企业

JA Solar became the first Chinese PV company to receive South Korean Eco-Label Certification

自 2011 年进入韩国市场以来，晶澳科技凭借优质的产品和服务，在稳定增长的当地光伏市场收获了良好的声誉和坚实的客户基础，出货量始终名列前茅。2021 年 1 月，晶澳科技 182mm 大尺寸 DeepBlue 3.0 组件率先获得行业内首张 182 组件韩国亲环境认证证书，也是韩国首个 182 项目选用的组件类型，其发电优势和可靠性能得到了市场的充分证明。

Since entering South Korean market in 2011, JA Solar's high-quality products and services have earned us an excellent reputation and a solid customer base in the rapidly expanding local PV market. Our shipments have consistently ranked among the best. JA Solar 182mm module DeepBlue 3.0 received the industry's first Korean Eco-Label Certification in January 2021. It was also the first module type chosen for 182 projects in South Korea. Our power generation advantages and dependable performance were fully acknowledged by the market.



韩国首个182双面双玻组件项目  
South Korea's First 182 bifacial double-glass module Project

案例  
CASE

## 与江苏中能举行颗粒硅技术交流会议

JA Solar and Jiangsu Zhongneng holds technical exchanges on granular silicon

2021 年，晶澳科技与江苏中能硅业科技发展有限公司（以下简称江苏中能）签订颗粒硅采购长单，双方定期组织线上、线下技术交流，加大颗粒硅技术的推广力度。3 月和 6 月，晶澳包头基地和曲靖基地分别与江苏中能举行了多次颗粒硅技术交流会议，双方就颗粒硅质量问题、COA 箱单改善为实测值、已投产颗粒硅验证料、颗粒硅目前市场使用情况等议题进行了深入交流。晶澳科技与江苏中能的深入合作将共同推动光伏行业供给端深度脱碳及成本降低，助力双碳目标早日实现。

JA Solar and Jiangsu Zhongneng Polysilicon Technology Development Co., Ltd. ("Zhongneng" for short) extended their purchase agreement for granular silicon in 2021. Both parties engaged in regular online and offline technical exchanges to enhance promotions. In March and June, JA Solar's Baotou and Qujing bases held multiple technical exchange meetings with Zhongneng to discuss granular silicon quality issues, the improvement of the COA packaging list to actual measured values, and production verification materials for granular silicon, and the current market use of granular silicon. Together, JA Solar and Zhongneng will advance deep decarbonization and cost reduction on the supply side of the PV industry, thereby accelerating China's 30-60 Decarbonization Target.



曲靖基地与中能举行颗粒硅技术交流会议  
Qujing Base and Zhongneng hold a technical exchange meeting on granular silicon

## 环保公益

### Public Welfare on Environmental Protection

2021年，晶澳科技积极与政府机构、高校等开展合作，通过支持科研项目、竞赛、社会实践等活动，助力清洁能源的科技创新。在公司内，组织了植树增绿、绿色办公、健康跑、少儿环保绘画比赛等公益环保活动。

In 2021, JA Solar actively collaborated with government agencies, universities, and other institutions to promote technological innovation in clean energy by supporting research projects, competitions, and other activities. Internally, we organized a variety of public welfare and environmental protection activities, including tree planting, green office and lifestyle, healthy running, and an environmental-themed children's drawing contest.

#### 案例 CASE

#### 助力清华大学光伏科研项目，携手推进“碳中和”

JA Solar supports Tsinghua University's PV research project to promote "carbon neutrality"

2021年12月，由清华大学、中国华电集团和晶澳科技等联合建设的“光储充备一体化”科研项目顺利完工并投入运行。晶澳科技为项目捐赠 50kW 太阳能光伏组件。

项目投入运行后，预计年发电量约 7 万度，年均减少二氧化碳排放 65 吨，节约标准煤 20 吨。项目不仅践行了绿色校园的理念，实现实验室绿色供电；同时提供了良好的低碳发展教学平台和“产学研”联合创新平台，战略意义显著。

The Integrated Light Storage and Charging Research Project, constructed jointly by Tsinghua University, China Huadian Corporation, and JA Solar, was completed and put into operation in December 2021. JA Solar donated the entirety of the 50kW solar modules.

After the project is implemented, it is anticipated to produce approximately 70 MWh of electricity, reduce 65 tons of CO2 emissions, and conserve 20 tons of standard coal annually. In addition, the project implements the concept of a green campus and a green laboratory power supply. It provides a platform for "industry-university-research" collaboration on low-carbon development education and joint innovation, which has paramount strategic importance.



晶澳科技助力清华大学光伏科研项目，携手推进“碳中和”  
JA Solar supported Tsinghua University's PV research project, joining hands to promote "Carbon Neutrality"



清华大学“光储充备一体化”科研项目光伏部分  
Tsinghua University's PV research project

#### 案例 CASE

#### 赞助中国国际太阳能十项全能竞赛

JA Solar sponsors the Solar Decathlon China (SDC)

作为行业技术革新的驱动者，晶澳科技一直致力推动产学研深度融合。2021年8月，第三届中国国际太阳能十项全能竞赛在张家口开工建设，晶澳科技向参赛的西安交通大学和东南大学的两支赛队赞助光伏组件合计约 73KW。参赛的太阳能绿色节能生态房屋设计方案以“可持续发展、智慧互联、人居健康”为目标，对于光伏的推广应用极具示范意义。

JA Solar has always been committed to advancing the integration of industry, university, and research as the primary driver of technological innovation in the solar industry. In August 2021, Zhangjiakou hosted the third Solar Decathlon China (SDC) competition. Approximately 73KW of PV modules were donated to teams from Xi'an Jiaotong University and Southeast University by JA Solar. The solar energy ecological house design in the competition focused on "sustainable development, intelligent interconnection, and healthy living," which was of immense demonstration importance for promoting and implementing PV projects.



晶澳与SolarArk 3.0赛队合影  
JA Solar with SolarArk 3.0 Team



晶澳与XJTU+赛队合影  
JA Solar with XJTU+ Team

案例  
CASE

## 举办少儿光伏科普活动

JA Solar holds science popularization activities for children

光伏科普，从娃娃抓起。2021 年，晶澳科技举办了“晶彩杯”少儿环保绘画作品大赛和首届“光绘未来”杯少儿视频作品征集大赛；首创性地设计出第一期“光伏+少儿”绘本《普普太神门》，通过简洁、生动的小故事，向孩子们讲述光伏治理地球生态、保卫地球家园的神奇“魔力”，鼓励孩子树立绿色、环保、节能的可持续发展理念，了解发展绿色能源的重要性。

It is never too early to study photovoltaic science. JA Solar hosted the "Jingcai Cup" Children Environmental Protection Painting Competition and the inaugural "Light Painting Future" Children Video Contest in 2021. In addition, JA Solar created the first "PV+Children" illustrated book, *Pupu God's Magical Gate*. Through vivid and straightforward stories, the book conveys to children the magical power of photovoltaics as "Guardians of the Earth" to manage the earth's ecology and protect the home planet. It encourages children to establish the sustainable development concept of green, environmental protection, and energy conservation and recognize the significance of developing green energy.



“晶彩杯”少儿环保绘画作品大赛部分作品展示  
Drawings from the "Jingcai Cup" Children Environmental Protection Painting Competition

## 社会公益 Public Welfare

### 防疫捐赠

#### Anti-COVID-19 Donations

晶澳科技密切关注国内外疫情动态和防控进展，尽己所能为打赢疫情防控阻击战贡献力量。自武汉爆发新冠肺炎疫情起，公司第一时间驰援疫区，并向国内各地提供疫情防控物资支援。在海外疫情不断升级时，积极从国内调运防疫物资支援海外，共同抗击疫情。

JA Solar closely monitors the progression of the pandemic and the prevention and control efforts at home and abroad. We strive to fulfill our corporate social responsibility and contribute to preventing and controlling the pandemic. Since the outbreak of Covid-19 in Wuhan, JA Solar has acted swiftly to assist the affected regions and provide essential materials for pandemic prevention and control to various regions. As the pandemic spread across the globe, we dispatched prevention supplies to support international efforts to combat the pandemic.

2020-2021年，晶澳科技境内累计捐赠疫情款项

超过 **1,100** 万元

From 2020 to 2021, JA Solar has donated over CNY 11 million domestically for combating COVID-19.

案例  
CASE

## 志愿者们投身“疫线”共抗疫情

Volunteers on the COVID-19 frontline

2021 年 8 月，为打赢扬州疫情防控阻击战，扬州基地组成了志愿者“先锋队”，到基层社区、防护点多次进行疫情防控支援工作。扬州经济技术开发区“信息采集防疫志愿者”招募信息发布不到一小时，就有上百人主动报名参加。经过筛选，最后选出二十余位首批“信息采集防疫志愿者”深入防疫一线；同时，还有六十余名“企业职工志愿者”，参与到核酸检测工作中。此外，扬州基地还第一时间向属地慈善机构捐赠 100 万元，为助力扬州市抗疫贡献力量。

JA Solar Yangzhou Manufacturing Base formed a volunteer "vanguard team" in August 2021 to support the local COVID-19 control by assisting the epidemic control work in the communities and preventive stations. Hundreds of people volunteered in less than an hour after the Yangzhou Economic and Technological Development Zone posted a notice seeking volunteers for "Information Collection and Pandemic Prevention." More than 20 volunteers among the first batch were selected to support the COVID-19 frontline. Meanwhile, more than 60 "enterprise staff volunteers engaged in supporting nucleic acid testing. In addition, the base donated CNY one million to local charities for the first time to help Yangzhou City fight the epidemic.

案例  
CASE晶澳科技越南基地积极支援越南抗击疫情  
JA Solar's Vietnam Manufacturing Base actively supports local COVID-19 fight

2021年2月4日，晶澳科技越南基地向越南北江省捐赠新冠肺炎核酸检测仪，以支援越南人民的抗击疫情工作。在7月15日正式启动的为海外中国公民接种新冠疫苗的“春苗行动”中，晶澳科技越南基地凭着出色的抗疫援助表现，被中国驻越南大使馆确定为疫苗接种点之一。晶澳科技越南基地在接到通知后迅速开展行动，精心布置功能区场地，配齐各类防护物资，并为医疗队专门配备了9名现场翻译，基地领导也主动加入志愿服务者队伍，为疫苗接种工作提供坚实保障。在晶澳科技越南基地工作人员的积极协调与辛苦付出下，接种人员有序完成疫苗的接种。

On February 4, 2021, JA Solar's Vietnam Manufacturing Base donated COVID-19 nucleic acid testers to Bắc Giang Province, Vietnam, to support the local efforts on epidemic control. In the "Spring Vaccine Action" officially launched on July 15 for Chinese citizens overseas to receive the COVID-19 vaccine, our Vietnam Manufacturing base was selected as one of the vaccination sites by the Chinese Embassy in Vietnam due to our outstanding performance in the COVID-19. After receiving the notification, our local base acted swiftly. We meticulously prepared the functional area site with protective materials and supplied the medical team with 9 interpreters. To provide a solid guarantee for the vaccination, the base leaders joined the volunteer team. Our staff's coordination contributed to the vaccination's orderly conclusion.



晶澳科技越南基地接种点现场  
People get vaccination at JA Solar's Vietnam Manufacturing Base

光伏扶贫  
PV-based Poverty Alleviation

作为中国扶贫志愿服务促进会理事单位，晶澳科技积极响应国家号召，依托产业链优势、产品技术优势、生态合作优势等，探索了一条产业扶贫、生态发展和清洁能源建设相结合的“光伏++”绿色新路。

As the member of the China Poverty-alleviation Promotion of Volunteer Service, JA Solar is proactive in responding to the national call to explore a new "PV++" green approach that combines industrial poverty alleviation, ecological development, and clean energy by leveraging its advantages in industrial chain, product technology and ecological cooperation.

## 晶澳“光伏++”精准扶贫

JA Solar "PV++" targeted poverty alleviation



## 产业扶贫

Poverty alleviation by industry



## 清洁能源建设扶贫

Poverty alleviation by clean energy construction



## 生态发展扶贫

Poverty alleviation by ecological development

截至2021年底，先后在宁夏盐池、河北康保、河北临城等地区建设了多个光伏扶贫电站，累计支付扶贫款项超过**5,600**万元

By the end of 2021, JA Solar constructed multiple PV power plants in Yanchi of Ningxia Hui Autonomous Region, Kangbao County and Linchen County of Hebei Province, with a total payment for poverty-alleviation exceeding **56** million yuan;

光伏扶贫电站项目自启动后将连续**20**年为贫困地区提供超过**2**亿元的扶贫款项，涉及贫困家庭**4,055**户，惠及贫困人口超过**1**万人

The PV power plant project will provide more than CNY **200** million annually for the next 20 years to alleviate poverty in impoverished areas, involving **4,055** low-income families and benefiting more than **10,000** people living in poverty;

截至2021年底，晶澳科技光伏扶贫项目已经实现了牧光互补、农光互补、光伏山地应用等场景，每年提供工作岗位超过**400**人次，每年发放劳务补贴**100**多万元

JA Solar's PV-based poverty alleviation projects have achieved scenarios such as animal husbandry photovoltaics, agrivoltaics, and PV mountain applications by the end of 2021, creating more than **400** jobs and issuing labor subsidies of more than CNY **1** million annually.

案例  
CASE晶澳科技入选“2020 中国企业精准扶贫专项案例 50 佳”  
JA Solar selected as one of the "2020 Top 50 Special Cases of Chinese Enterprises for Targeted Poverty Alleviation"

2021 年 1 月，国务院扶贫办发布了“中国企业精准扶贫优秀案例（2020）”，晶澳科技凭借《“光伏++”，阳光扶贫模式温暖更多人心》案例荣获《中国企业精准扶贫专项案例 50 佳（2020）》。晶澳科技成为国务院扶贫办自 2018 年评选以来唯一获得此殊荣的光伏制造企业。

The Poverty Alleviation Office of the State Council published the Excellent Cases of Chinese Businesses for Targeted Poverty Alleviation (2020) in January 2021. JA Solar's "PV++, the Solar Poverty Alleviation Model Warms More People's Hearts" case awarded the "Top 50 Special Cases of Chinese Enterprises for Targeted Poverty Alleviation (2020)." Since the Poverty Alleviation Office of the State Council initiated this selection in 2018, JA Solar is the only PV manufacturing company to receive this award.

案例  
CASE宁夏吴忠盐池农光互补电站  
Agrivoltaic power plant at Yanchi, Wuzhong, Ningxia

2015 年，晶澳科技被确定为宁夏回族自治区盐池县北塘新村、十六堡新村 5.551MW（占全部扶贫电站指标的比例超过 1/3）光伏扶贫项目的实施单位。晶澳科技利用两个村的居民院落及养殖羊棚建设光伏扶贫工程，项目于 2016 年 5 月并网发电，将连续 20 年为 854 户居民提供每年每户 3000 元的扶贫款。该项目得到当地政府、两村村委会及受益老百姓的高度评价，帮助盐池县于 2018 年 9 月份脱贫摘帽。

In 2015, JA Solar was determined as the implementation unit of the 5.551 MW (more than 1/3 of all poverty alleviation power plant quota) PV-based poverty alleviation project in Beitang New Village and Sixteen Fort New Village in Yanchi County, Ningxia Hui Autonomous Region. JA Solar built PV-based poverty alleviation projects in two villagers' courtyards and sheep farming sheds. It connected to the grid in May 2016. It can provide CNY 3,000 per household per year for 854 families to alleviate poverty for 20 consecutive years. The local government, the village committees of the two villages, and the beneficiaries spoke highly of the project. As a result, the project helped Yanchi County to get out of poverty in September 2018.

“以前我们的收入来源主要是滩羊养殖及外出打工，年收入也就两三万。自从有了光伏电站，在家门口就能干活挣钱，日子也一天天好起来了。”

"In the past, our source of income was sheep farming and working outside the home, and our annual income was only CNY 20,000 to 30,000. Since the PV power plant was built here, we can work at home and make a living, and our life is getting better day by day."

--- 姚永旺，盐池县花马池镇十六堡新村村民

--- Yao Yongwang, a villager of Sixteen Fort New Village, Huamachi Town, Yanchi County

宁夏盐池羊圈与光伏相结合  
PV power plant in the sheep sheds in Sixteen Fort Village, Yanchi County, Ningxia

社区发展  
Community Development

多年来，晶澳科技先后发起实施“百所希望小学捐建工程”“救助贫困白内障患者光明工程”和“万名贫困学子救助工程”三大惠民工程，持续投身助学活动、志愿者活动、灾害救助行动中，以实际行动致力于公益慈善事业，不断推动社区发展。

Over the years, JA Solar has initiated and implemented three major projects: including the "100 Hope Primary Schools Donation Project," the "Brightness Project for Poor Cataract Patients," and the "10,000 Needy Students Relief Project" to engage in educational support, volunteer services, and disaster relief, thereby committing ourselves to the charitable cause and promoting community development.

## 三大惠民工程

Three Major Projects for the Benefit of the People



“百所希望小学捐建工程”于 2017 年正式启动，旨在帮助贫困地区建设学校和提供教学设施

The "100 Hope Primary Schools Donation Project" was officially launched in 2017 to help build schools and provide teaching facilities in poor areas.



“救助贫困白内障患者光明工程”于 2011 年正式启动，旨在定期出资为贫困白内障患者提供医疗救助

The "Brightness Project for Poor Cataract Patients" was officially launched in 2011, aiming to provide medical assistance to poor cataract patients with regular funding.



“万名贫困学子救助工程”于 2017 年正式启动，持续以各种形式资助、鼓励成绩优秀的贫困学子，帮助他们完成学业

The "10,000 Needy Students Relief Project" was officially launched in 2017, which continues to provide financial support to needy students in various forms to help them through school learning.



2021 年，河南抗洪捐赠

1,000 万元

Donated CNY 10 million for flood control in Henan in 2021.



扬州抗疫捐赠

100 万元

Donated CNY 1 million for the COVID-19 fight in Yangzhou.



三大惠民工程累计捐赠

57.34 万元

Three major projects were funded with a total of CNY 573,400.



其中光明工程帮助人数 267 名，捐赠总金额 28.34 万元；资助贫困学生 87 人，捐赠总金额

29 万元

Including aiding 267 poor cataract patients with a donation of CNY 283,360 and sponsoring 87 needy students with a contribution of CNY 290,000.

案例  
CASE鼎力相助战洪灾  
Full support for flood control

2021 年夏季，受降雨量激增的影响，河北省邯郸市涉县木井乡多个村落遭受严重的洪涝灾害。晶澳科技涉县电站紧急投入到当地的灾害救助工作中，对灾后重建及道路修复积极提供援助。7 月下旬，河南多地遭遇历史罕见地持续强降雨天气，形成洪涝灾害，造成重大损失。晶澳科技迅速响应，通过北京市慈善协会向河南省捐赠 1000 万元，用于支持当地抗洪救灾和灾后重建工作。

Several villages in Mujing Village, She County, Handan City, and Hebei Province were severely flooded during the summer of 2021 due to a rainfall surge. Our She County Power Plant participated in the local disaster relief, particularly in the post-disaster reconstruction and road repair efforts. In late July, many places in Henan were struck by continuous heavy rainfalls rarely seen in the local history, incurring floods and heavy losses. JA Solar quickly responded by donating CNY 10 million to Henan Province through Beijing Charity Association to support the local flood control and post-disaster reconstruction.



防汛支援  
Flood control and support activities



河南抗洪救灾捐赠仪式  
Donation Ceremony for Flood Control and Disaster Relief in Henan

案例  
CASE晶澳科技与北京慈善联合基金签署战略合作意向书  
JA Solar and Beijing Philanthropy Federation sign a letter of intent for strategic cooperation

2021 年 9 月 28 日，晶澳科技与北京慈善联合基金签署战略合作意向书，成为联合基金首批合作单位之一。晶澳科技将依托联合基金，探索公益慈善新模式，进一步为乡村振兴、基层慈善体系建设、慈善助学、大病医疗救助、公益创投做出贡献。

JA Solar and Beijing Philanthropy United Fund signed a letter of intent for strategic cooperation on September 28, 2021, becoming one of the first group of Federation cooperation units. Based on this fund, JA Solar would investigate a new model of public welfare charity and contribute to rural revitalization, the development of a grassroots charity system, educational support, major medical aid, and venture capital for public welfare.

志愿者服务  
Volunteering Services

晶澳科技以分享阳光、传递爱心为出发点，组织志愿者团队开展拜访敬老院、慰问孤儿院和福利院、资助社区教育、志愿献血等多种形式的志愿爱心活动，为构建和谐有爱社会贡献力量。

JA Solar organizes volunteer teams to engage in various activities, such as visiting nursing homes and orphanages, sponsoring community education, blood donation, and contributing to the development of a harmonious and loving society.

案例  
CASE无偿献血在行动  
Volunteers donate blood for public welfare

2021 年以来，包头、扬州、宁晋等多个基地，分别以不同形式组织了无偿献血活动。包头基地联合青山区红十字会举办的无偿献血活动共计有 153 人次参加，献血量达到 59800 毫升。扬州基地组织的“无偿献血，献礼建党百年”无偿献血活动共有 127 人参与，成功献血 44700 毫升。宁晋基地为邢台市中心血站血库告急迅速发动的献血活动有近 400 人参加，献血总量将近 16 万毫升。

Since 2021, JA Solar's Baotou, Yangzhou, and Ningjin manufacturing bases have organized blood donations. One hundred and fifty-three individuals donated 59,800ml of blood at the blood drive hosted by JA Solar Baotou Manufacturing Base in collaboration with the Red Cross Society of Qingshan District. A total of 127 people participated in the "Blood Donation to Celebrate the Centenary of the CPC" activity organized by our Yangzhou Manufacturing Base, successfully donated 44,700ml of blood. Nearly 400 people participated in the blood donation launched by our Ningjin Manufacturing Base for the emergency of the blood bank of the City Blood Center in Xingtai, donating nearly 160,000ml of blood.

# 促进共同繁荣

Promoting Common Prosperity

## 主要行动策略

Key action strategies

坚持平等雇佣和多元化用工 加强交流合作 推进产学研融合

Adhere to equal and diversified employment; strengthen exchanges and cooperation; promote the industry-university-research cooperation

2.96 万人

员工总人数 (含固定和临时工)  
29,600 employees in total (including fixed and temporary workers)

57.8 万人次

员工培训总人次  
578,000 participants in staff training

13 次

职工代表大会  
13 employee Congresses

130 次

各类文体活动约  
About 130 cultural and sports activities

1,000 家

供应商约  
About 1,000 suppliers

3.3 万个

全球用户数量历年累计  
Accumulated 33,000 global users over the years



# 赋能员工成长 Employee Empowerment

晶澳科技将人才视为企业可持续发展的根本和基础，致力于维护员工基本权益，积极推动员工个人发展，着力构建和完善人才管理体系及人才培养机制，关爱员工身心健康。

By constructing and enhancing a talent management and cultivation system, JA Solar protects its employees' fundamental rights and interests. It promotes their personal development, health, and well-being, recognizing that talent is the foundation of sustainable corporate development.

## 员工权益 Employee Rights and Interests

晶澳科技奉行公开、公平、公正的用工政策，严格遵守全球范围内各工厂、办事处所在地的劳工标准及相关法律法规，为员工打造多元包容平等的工作环境。工会代表员工与公司签订《集体劳动合同》《工资协商专项集体合同》等，充分保障员工在劳动报酬、工作时间、休息休假、劳动安全卫生、保险福利和职业技能培训等方面的合法权益。2021 年，员工劳动合同签订率 100%，体检及健康档案覆盖率 100%，残疾人员工 31 人，少数民族员工 722 人，外籍员工 3,157 人。

JA Solar strives to create a diverse, inclusive, and equal workplace following local labor laws and regulations and the principle of open, fair, and just employment. On employees' behalf, the Labor Union signs the *Collective Labor Contract* and *Special Collective Contract for Wage Negotiation* with the Company. This is to protect the rights and interests of employees regarding compensation, working hours, rest and vacation, occupational safety and health, insurance benefits, and vocational training. In 2021, the labor contract signing rate, physical examination, and health record coverage were 100%. Out of all employees, 31 are disabled, 722 are members of a minority, and 3,157 are foreign-born.



上海晶澳科技第五届第一次会员（职工）代表大会  
The first session of the fifth worker representative assembly of Shanghai JA Solar

### 保护员工合法权益 Protect the legal rights of employees



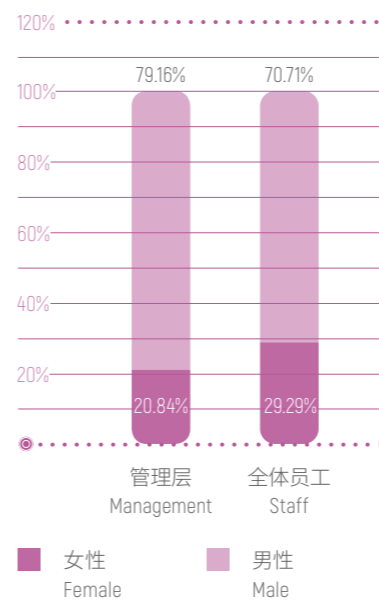
- 坚决杜绝雇佣童工，对于雇佣员工的年龄需符合当地法律法规的要求
- 抵制一切形式的强迫和强制性劳动，不允许以暴力、威胁或非法限制人身自由的手段强迫员工劳动
- 不干涉员工信仰自由
- 不因民族、种族、国籍、宗教信仰、性别、年龄、残疾、婚姻状况等产生任何歧视
- 坚持男女员工同工同酬，推进性别平等
- 尊重员工自由结社和集团谈判的权力
- No child labor employees must meet the age requirements of local laws and regulations.
- No forced labor in any form, violence, threat, or illegal restriction of personal freedom.
- No interference with employees' freedom of belief.
- No discrimination on the grounds of ethnicity, race, nationality, religious belief, gender, age, disability, marital status, etc.
- Gender equality with equal pay for equal work.
- Respect for employees' right to free association and collective bargaining.

### 民主管理 Democratic management

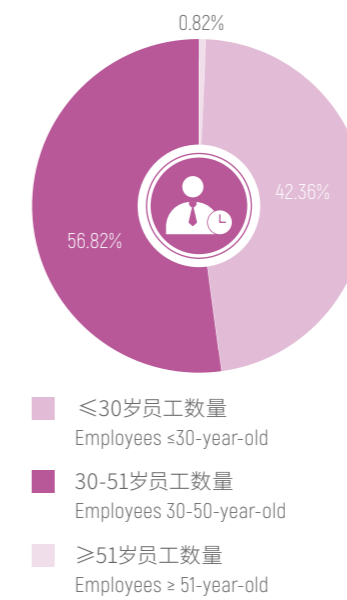


- 通过职工代表大会、员工座谈会、线上沟通平台等多种方式畅通员工沟通渠道，支持职工参与企业管理，维护职工合法权益，构建和谐劳动关系
- 建立完善的员工满意度调查程序
- 2021 年，各级工会共组织职工代表大会 13 次，收集合理化建议 8,175 个，反馈或解决建议率 98.7%，员工满意度为 91.0%，集体谈判协议所涵盖的员工人数比例 100%
- Ensure effective communication with employees, encourage their participation in enterprise management, protect their legal rights and interests, and cultivate harmonious labor relations through various means, such as worker representative assemblies, employee rap sessions, and online platforms.
- Establish an effective employee satisfaction survey procedure.
- In 2021, our labor unions had organized 13 worker representative assemblies and collected 8,175 reasonable proposals. Overall, the feedback and problem-solving rate was 98.7%, the employee satisfaction rate was 91.0%, and the group negotiation agreement was 100% covered.

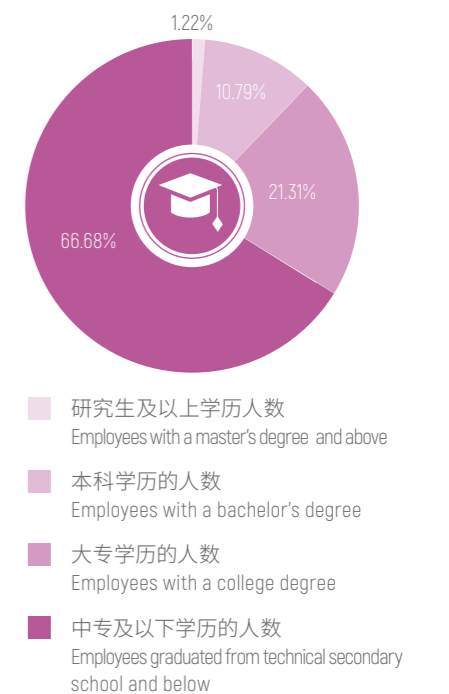
员工性别分布情况  
Employees by gender



员工年龄分布情况  
Employees by age group



员工学历分布情况  
Employees by educational background





## 员工成长 Employee Growth



晶澳科技为员工制定了公平多元的职业发展路径，聚焦人才引进、保留、培养和发展工作，完善公司内部人才发展、干部管理、人才培养三大体系，持续助力员工能力与职业价值提升。

JA Solar has designed diverse and equitable career paths for its employees, focusing on attracting, retaining, cultivating, and developing talent. We have also enhanced the Company's internal talent development, official management, and talent cultivation to enhance their abilities and career values on an ongoing basis.



包头基地生产主管现场管理技法训练培训  
Training session on field management skills for production supervisor in JA Solar Baotou Manufacturing Base



合肥基地开展班组长培训  
Training session for group leader at JA Solar Hefei Manufacturing Base



晶澳共组织校园招聘

**185** 场

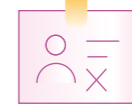
In 2021, JA Solar conducted **185** campus recruitments.



年度员工净增加数量

**4,455** 人

Resulting in the hiring of **4,455** new employees.



员工流失率为

**8.4%**

The employee turnover rate **8.4%**.



培训相关投入 **351.6** 万元

比于2020年增长 **23.5%**

JA Solar invested CNY **3.516** million in employee training, up by **23.5%** over 2020.



员工培训覆盖率为 **100%**

人均培训时长 **30.7** 小时

**100%** coverage of employee training, with **30.7** hours of training per employee on average.



通过培训后调研，培训满意度

**90.5%**

Post-training survey showed **90.5%** training satisfaction.



晶兴公司叉车岗位技能竞赛现场  
Skills competition for forklift operators 2021 at JA Solar Jingxing Regional Plant



邢台基地第一届生产班会管理竞赛  
First management skills competition for production group at JA Solar Xingtai Manufacturing Base



义乌基地技能竞赛  
Skill competition at JA Solar Yiwu Manufacturing Base

## 员工关爱 Employee Care

晶澳科技坚持以人为本，倡导“快乐工作，感恩生活”。积极开展人文关怀，营造良好的工作环境与氛围，帮助员工达到工作与生活的平衡，提升员工的认同感、满足感和归属感。

JA Solar adheres to a people-focused philosophy that promotes "enjoying work, being grateful to life." The Company aims to provide employees with a sense of belonging and satisfaction by assisting them in striking a balance between their work and personal lives.



案例  
CASE

扬州基地亲子家庭日活动  
Family day activity at JA Solar Yangzhou Manufacturing Base

2021 年 10 月 16 日，晶澳科技扬州基地迎来了公司工会举办的“亲子共运动，快乐共成长”2021 年员工亲子家庭日活动，本次共有 38 组家庭参加了本次活动。通过“消防安全”、“居家安全”等方面进行培训及答题互动。同时，结合实际以及孩子们的年龄特点，设计 6 项亲子游戏，家长与孩子一同参与游戏，增进亲子交流。通过此次亲子活动，让每一位家属对晶澳科技家人的工作有了更多的理解、支持与鼓励，同时也为晶澳科技及家人们增添了一份珍贵的记忆。

On October 16, 2021, the Labor Union of JA Solar Yangzhou Manufacturing Base hosted a family day activity in which 38 families participated. These activities included firefighting and home security-related quizzes. In the meantime, six parent-child games were designed based on the age and characteristics of the children to foster family closeness. Through these activities, family members gained a greater appreciation and support for the employ's work JA Solar and creating a memorable experience for the Company and each family.



扬州基地亲子家庭日活动  
Family day activity at JA Solar Yangzhou Manufacturing Base



宁晋松宫三八妇女节为女性职工发放福利  
Provide benefits for female employees on Women's Day at Ningjin Songong



晶澳科技北京总部组织员工第一批团建活动  
The first batch of team building activities for employees of JA Solar Beijing headquarters

健康与安全  
Health and Safety

健康与安全是企业可持续发展的重要保障。晶澳科技以 ISO 45001 体系为管理框架，建立健全相关制度，完善应急处置机制，加强职业健康培训，加强员工职业健康安全培训，不断融入到公司的各项业务中。2021 年，职业病例为 0，百万工时损失工时事故率为 0.38%，职业健康安全隐患排查场所覆盖率达 100%，安全培训约 44 万人时，培训费用约 150 万元，安全标准化建设率为 84%（生产型公司，不包括马来西亚和越南基地）。

Health and safety ensure the sustainable development of the Company. JA Solar uses the ISO 45001 system as its management framework to integrate employee health and safety into its corporate operations by establishing relevant systems, enhancing emergency response mechanisms, enhancing occupational health training, and promoting health and safety management. In 2021, no occupational disease cases were reported. The frequency rate of lost-time injuries was 0.38%, and the coverage of occupational health risk field identification was 100%. In addition, approximately CNY 1.5 million was spent on safety training for 440,000 employees, with a standardization rate of 84% in manufacturing bases, excluding Malaysia and Vietnam bases.

**EHS 信息化建设**  
EHS informatization

搭建 EHS 学习平台，方便员工学习岗位的专业安全知识

Establish an EHS learning platform to help employees study safety knowledge related to their posts.



**构建“安全领导力”管理模型**  
Build a safety leadership management model

开启“安全领导力”管理模型

Initiate a "safety leadership" management model.



**属地管理**  
Responsibility area management

增加了属地管理的安全职责，营造“我的安全我负责，他人的安全我有责”的安全文化

Incorporate responsibility areas into safety management and create a safety culture of "Safety is my responsibility."

**安全培训**  
Safety training

公司各基地组织进行多种类型及形式的安全培训，以增加员工的安全技能，包括消防设施培训、交通培训、电气安全培训等多种专题培训，以及消防演练及安全知识竞赛等。

Organize various safety training in various forms to improve their safety skills, including training on firefighting equipment, transportation safety, electrical safety, fire drills, and safety skill competitions.



晶澳科技安全改善项目启动会  
The launching ceremony of safety improvement at JA Solar

## 助力和谐共赢 Win-win Cooperation

晶澳科技倡导与上下游客户建立更加紧密、持久的合作关系，一起构建共创、共享、共赢的可持续产业链，将可持续性嵌入到整个价值链中，全面推动行业发展。

JA Solar promotes a closer and longer partnership with customers throughout the industrial supply chain. We seek to integrate sustainable development throughout the entire value chain by co-constructing and sharing a sustainable industrial chain for mutual prosperity, driving industrial development.

## 与供应商共发展 Striving for Common Development with Suppliers

晶澳科技关注并积极管理供应商对所在社群造成的社会、生态、健康和安全隐患，打造负责任的供应链，追求与伙伴共同履行社会责任，推进供应链价值共享和可持续发展。建立并完善《新供应商 / 新材料导入管理制度》《供应商日常管理规定》《原材料关键特性监控办法》《供应商考核及评分制度》等管理制度。2021 年，晶澳科技累计材料和物流供应商约 1,000 家。马来西亚本地供应商数量 202 家，越南基地本地供应商数量 89 家。荣获 2021 EcoVadis “可持续发展评级银奖”，其中“可持续采购”方面排名位居前 1%。

JA Solar is involved with and actively manages the suppliers' impacts on the health and safety of society and ecology by constructing a responsible supply chain and fulfilling social responsibilities with partners, thereby facilitating a value-sharing supply chain and advancing sustainable development. The Company has set up various management systems, including the *Management System for Adoption of New Suppliers and New Materials*, *Routine Management Rules for Suppliers*, *Monitoring Methods for Key Characteristics of Raw Materials* and *Supplier Assessment and Scoring System*. In 2021, the Company adopted approximately 1,000 logistics and raw materials suppliers. Malaysia had 202 local suppliers, while Vietnam had 89 local suppliers; The Company won the 2021 EcoVadis "Silver Award for sustainable development grade", among which "sustainable procurement" ranks in the top 1%.

## 供应商选择 Supplier selection

通过“互惠互利、共同发展”的原则与供应商建立了相对稳定的良好合作关系，确保公司生产经营持续发展。

Adhering to the principle of "mutual benefits for common development", the Company established stable, sound partnerships with suppliers to ensure sustainable production and operation.



## 供应商交流与合作

Exchanges and communications with suppliers

晶澳科技携手供应商共克时艰，通过长期战略合作和技术协作，稳定供应链。2021 年，公司与硅料、电池、玻璃、胶膜等环节 50 多个供应商签署战略合作协议或年度采购协议，共组织技术交流 30 多次，确保辅材材料的供应稳定。

JA Solar worked with suppliers to stabilize the supply chain by establishing a long-term, strategic partnership and technical cooperation. With over 50 suppliers of silicon material, solar cells, PV glasses, film, and EVA materials, we signed a strategic cooperation agreement or an annual purchase agreement in 2021. To ensure a steady supply of raw and supplementary materials, we organized more than 30 technical exchanges.



与玻璃供应商福莱特集团签订战略合作协议  
JA Solar signs strategic cooperation agreement with the FLAT Group

2021 年，供应商的供货质量信息统计如下：  
The quality of suppliers' goods in 2021 is as follows:



### 供应商行为准则及道德规范

Code of conduct and ethics for suppliers

晶澳科技制定了《晶澳科技可持续采购守则》，将环境、社会、道德、健康、人权等因素纳入到企业采购决策，要求供应链合作伙伴遵守我们的《供应商行为准则》，禁止供应商从事童工、强迫劳动、奴役或人口贩运的活动。此外，公司还要求了部分核心供应商提供他们的可持续发展报告、内部行为准则等文件，以检验这些供应商对于童工和强迫劳动的相关政策。截至 2021 年底，公司没有涉及重大童工事件风险的运营点和供应商。

JA Solar has developed *JA Solar Sustainable Procurement Rules*, incorporating environmental, social, moral, health, and human rights factors into the decision-making of corporate procurement. The partners in the supply chain must adhere to the regulation and are prohibited from engaging in child labor, forced labor, slavery, or human trafficking. In addition, JA Solar requires certain core suppliers to provide relevant documents for inspection, including a sustainability report and an internal code of conduct. By the end of 2021, none of our operations or suppliers posed a significant risk of child labor violations.

### 与经销商共繁荣

Achieving Common Prosperity with Distributor

晶澳科技拟定并实施了经销商管理体系（试行版）制度，规范经销商权利及义务，有效推进经销商的开发、培养及管理，提高经销商的品牌忠诚度，最终实现产品市场占有率的提升，以及经销商满意度与体验感的提升。同时，通过技术指导和培训等活动，促进公司与经销商协同发展、实现共赢。

JA Solar prepares and implements the distributor management system (trial) to define the rights and responsibilities of distributors, effectively promote the development, cultivation, and management of distributors, and increase their loyalty through rising customer satisfaction and experience as an increased market share. In addition, the Company provides technical guidance and training activities to promote the coordinated development and prosperity of all parties.

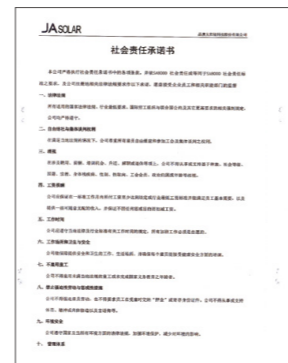
### 案例 CASE | 加强供应商社会责任管理 Strengthen supplier social responsibility management

为了推动供应商加强自身社会责任实践，晶澳科技对供应商进行 EHS 评鉴和风险识别、向供应商发布《供应商职业健康安全环境告知书》、要求供应商签署《社会责任承诺书》（内容包括人权、劳工关系、安全生产、环境保护、反腐败等议题）等。

其中，对涉及冲突矿产范围的供应商进行冲突矿产原产地调查，要求供应商提供冲突矿产声明、原产地证明、原料采购合同等材料，执行比例达到 100%。此外，晶澳科技重视提升供应链中采购人员在社会和环境安全方面的管理意识，积极对供应商的采购人员实施相关培训和宣导。

JA Solar encourages suppliers to improve their social responsibility practices by requiring them to receive EHS assessment and risk identification, issuing *Notice on Occupational Health, Safety and Environment of Suppliers* to them, and ask them to sign the *Social Responsibility Commitment Letter*, including human rights, labor relations, work safety, environmental protection, anti-corruption, and other issues.

JA Solar investigates the place of origin of the conflict minerals sourced from suppliers. The suppliers were required to prepare supporting documents, including a conflict minerals declaration, a certificate of origin, and a raw material purchase agreement, and the rate of execution reached 100 percent. In addition, JA Solar prioritizes its procurement staff's social and environmental awareness by providing training and education opportunities.



晶澳科技社会责任承诺书  
The Social Responsibility Commitment Letter of JA Solar

2021年，全球经销商合计  
**717**家  
In 2021, JA Solar secured a total of **717** global distributors.

参加国内媒体活动  
**30**余次  
Participated in more than **30** domestic media events.

协助经销商开展促销推广活动、会议营销活动  
**20**余场  
JA Solar assisted distributors with over **20** promotional activities and conference marketing activities

海外大型展会活动  
**10**余次  
Over **10** overseas large-scale exhibitions.

### 案例 CASE | 携手并进 共赢未来 —— 晶澳科技举办 2021 经销商峰会 Joining hands for a bright future- JA Solar holds 2021 Distributors Summit

2021 年 4 月 8 日，晶澳科技 2021 经销商峰会在扬州圆满举办。来自全国各地的经销商伙伴齐聚一堂。多位高层领导发表主题报告演讲，对 2020 年优秀经销商进行表彰。晶澳科技将持续践行“发展代理商、依靠代理商、让利代理商”的理念，与经销商伙伴密切合作，共赢未来，共同推动“十四五”新阶段中国分布式市场的发展，助力碳中和目标的达成。

JA Solar successfully hosted the 2021 Distributors Summit in Yangzhou on April 8, 2021, and invited distributors from across the nation. Our executives delivered keynote speeches and presented awards to outstanding distributors at the summit. Adhering to the philosophy of developing, trusting, and benefiting distributors, we have established a close partnership with distributors for mutual development, driving the development of distributed photovoltaic (PV) projects during the 14th Five-Year Plan period and contributing to the goal of carbon neutrality.

## 与客户共创价值

## Working with Customers to Create Values

晶澳科技自建立以来一直秉承“客户至上，持续满足客户需求”的服务宗旨，并建立了完善的客户服务保障体系，制定《销售合同技术质量条款评审流程》《总部客户审核流程》《总部售中服务流程》《客诉抱怨处理流程》《客户满意度调查流程》及《产品召回流程》等多项制度规范，明确售前、售中、售后的服务职责，确保客户服务标准化运行，并要求各生产基地进行持续改进。

Since its inception, following the service philosophy of "customers first and continuously satisfying customers' demands," JA Solar has set up a sound customer service support system. JA Solar also have developed a series of procedures, including the *Sale Contract Technical Quality Provision Review Process*, *Headquarters Customers Review Process*, *Headquarters In-sale Service Process*, *Customer Complaint Handling Process*, *Customer Satisfaction Survey Process* and *Product Recall Process*, defining responsibilities in sales to ensure the standard operation procedures of customer service. Besides, manufacturing bases are required to make continuous improvements in various aspects.

## 售前服务

Pre-sales service

- 针对客户订单的需求，细化相关部门职责及流程
- 销售端了解客户需求，售前合同评审人员进行评审，分析客户需求，提供满足客户需求的优质产品

2021年度非标合同流程评审量达

219个

In 2021, a total of 219 non-standard contract procedures had been reviewed

- Specify responsibilities of relevant departments based on orders.
- Sales team must understand the customers' demands; thus, pre-sales contracts need to be reviewed and analyzed to provide high-quality products.

实现订单评审

0差错

with zero errors



## 售中服务

Service during sales

- 在组件供货过程中，及时响应客户要求，安排工程师到项目现场驻场服务，提供专业的技术支持，并根据各技术文件对组件装卸、存储、周转、开箱、安装、维护等进行全面的技术交底和培训
- 为客户提供验厂审核，包含质量管理体系审核，职业健康安全管理体系，社会责任相关审核以及敏感政策法规法规类等的审核
- 对现场作业存在的安全风险进行交底，如破碎组件玻璃割伤、边框划伤、组件倾倒砸伤、压伤及电气伤害等

客户验厂审核

73次

In 2021, a total of 73 rounds of consumer inspection were conducted

审核通过率

100%

with a pass rate of 100%

- Promptly respond to customers' requests during the supply of modules; dispatch engineers for on-site service and technical supports, and conduct technical reporting and training for unloading, storage, transfer, unpacking, installation, and maintenance of the modules according to relevant technical documents.
- Provide factory audit for customers, covering quality management system, vocational health and safety management system, the performance of social responsibilities, and compliance with sensitive laws and regulations.
- Report field work with safety risks, including potential injuries due to broken modules glasses, sharp edges of frames, falling of modules, or electrical injuries

驻场服务

108次

108 rounds on-site service were provided

电站现场检测并提供检测报告

45个

45 PV power plants filed inspection were completed (providing inspection reports)

## 售后服务

After-sales activities

- 公司建立“24小时内响应机制”，在收到客户意见后，24小时内及时与客户沟通，了解实际情况，提供紧急解决方案，并将信息反馈至相关部门，组织成立调查小组查找原因，以最快的速度响应客户需求
- 坚持每年进行客户满意度调查，问卷内容涵盖产品性能与安全、产品交期、产品价格、客户服务、企业社会责任及客户新产品开发需求等多重维度

投诉解决率

100%

In 2021, 100% complaint handling was accomplished

客户服务投诉

0次

No complaints on customer service received

- The Company set up a "24-hour response mechanism" for feedback. Immediate communications and urgent solutions will be offered within 24 hours. The case will be reported to relevant departments, following a special investigation group built to find out the causes and respond to the customers in a fastest possible manner.
- JA Solar continued to conduct customers' satisfaction survey annually. The survey with multi-dimensional questionnaire includes product performance and safety, product delivery, product price, customer service, performance of social responsibilities and demands for new product.

客户满意度

96.79%

96.79% customer satisfaction

因安全与健康理由回收的产品为

0

Zero sold or shipped products were recalled for safety or health reasons.

案例  
CASE晶澳科技用“光”点亮绿色冬奥场馆  
JA Solar lights up the green winter Olympics venue

在全球碳中和的背景下，2022 年北京冬奥会在奥运百年历史上首次实现全部场馆 100% 绿电覆盖。作为绿色发展的践行者，晶澳科技也积极加入为奥运提供“光伏”绿电的行列。2021 年，晶澳科技为河北焰中沽源 200MW 牧光互补项目供货全部高效单晶组件。该项目位于河北张家口沽源县，将服务 2022 年北京冬奥会。项目年平均发电量可达 4.3 亿 kWh，相当于每年减少标准煤耗 12.9 万吨，减少二氧化碳排放 30 万吨，为 2022 年北京冬奥会、优化地方能源结构和推动当地经济发展供应绿色动能。

Under the global trend of carbon neutrality, Beijing 2022 Olympic Winter Games (Beijing 2022) achieved 100% coverage of green electricity in all venues for the first time in the Games' centenary history. JA Solar actively engaged in supplying green electricity to Beijing 2022 through PV products as a practitioner of green development. In 2021, JA Solar supplied a high-efficiency mono cell module to the Hebei Yanzhong Guyuan 200MW Farming-PV Complementary project, which was built to serve Beijing 2022, located in the Guyuan County of Zhangjiakou. The project is expected to generate 430 million kWh of power every year, saving 129,000 tons of standard coals and reducing 300,000 tons of carbon emissions. Overall, the project provided green momentum to facilitate the Beijing 2022, optimize energy structure, and promote the local economy.



河北焰中沽源200MW牧光互补项目  
Hebei Yanzhong Guyuan 200MW Farming-PV Complementary Project

项目年平均发电量可达

**4.3** 亿kWh

The project is expected to generate **430** million kWh of power every year

相当于每年减少标准煤耗

**12.9** 万吨

saving **129,000** tons of standard coals

减少二氧化碳排放

**30** 万吨

reducing **300,000** tons of carbon emissions

案例  
CASE晶澳科技供货北京使馆区首个分布式光伏项目  
JA Solar supplies products to the first distributed PV project within the embassy area in Beijing

2021 年 4 月，晶澳科技供货 160 块 DeepBlue 3.0 双面双玻组件，全部安装在北京联合国大楼屋顶。这是北京使馆区首个分布式并网光伏项目，新的光伏发电系统将带来显著的环境效益，预计 25 年内累积发电量有望达到约 300 万 kWh，将使联合国在中国的办公模式更加绿色节能，也体现了晶澳科技为支持气候行动所做出的努力。

In April 2021, JA Solar supplied and installed 160 pieces DeepBlue 3.0 bifacial double-glass module on the roof of the UN Compound. This is the first distributed PV project built within the embassy area in Beijing which significantly benefit the local environment. It is expected to accumulate around 3 million kWh of power generation in 25 years. That would make the United Nations working environment greener and more eco-friendly. Meantime, it reflects JA Solar's efforts to contribute to climate actions.



“

“我们屋顶上新安装的光伏发电运营系统将能够提供联合国大楼所需的约 80% 的电力，并有望接下来每年减少 77 吨的二氧化碳排放量。”

—— 联合国开发计划署驻华代表白雅婷

The PV power system installed on the roof of our building is capable of supplying about 80% of the electricity required by the UN building. At the same time, it is expected to reduce carbon emissions by 77 tons every year.

—— Beate Trankmann, China Representative of UNDP

”

北京联合国大楼分布式项目  
Distributed PV Project installed at the roof of the UN Compound

案例 CASE

心系客户保障供货，晶澳科技获中广核新能源赠感谢牌  
JA Solar recognized as an Excellent Supplier 2020 by CGN New Energy for steady supply

2021年3月，中广核新能源控股有限公司为晶澳科技颁发了“2020年优秀供应商”感谢牌，以感谢晶澳科技心系客户，全力保障中广核新能源河北300MW项目的供货，为项目进度的正常推进给予大力支持。

CGN New Energy Holdings Co., Ltd. (CGN New Energy) presented JA Solar with the "Excellent Supplier of 2020" award in March 2021, recognizing its commitment to facilitating the 300 MW project of CGN New Energy Hebei Branch Company. Our assistance has significantly advanced the project.



晶澳科技获中广核新能源赠感谢牌  
JA Solar was recognized as an Excellent Supplier 2020 by CGN New Energy

案例 CASE

联合发布 182mm 系列组件产品标准  
JA Solar and other companies jointly publish the product standards for 182mm series modules

自 182mm 硅片推出以来，得到业界的广泛认可。由于各厂商的产品技术路线、设计理念、安装方式等存在差异，导致相同版型的组件产品长宽尺寸以及安装孔间距各不相同，这使得各种材料规格难以标准化，行业成本无法进一步降低，对上下游协同、系统的设计安装、客户的方案选择都造成一定困扰。

为改变这一现状，2021年9月6日，晶澳等多家企业经坦诚深入沟通，就 182mm 系列组件产品的标准化问题达成共识，并倡导全行业采用统一标准，以促进光伏产业高质量可持续发展。

182mm 系列组件产品标准统一，不仅有助于减轻组件 BOM 材料厂家生产、仓储、运输等压力，还有助于减少电站系统设计和安装工作量、提高行业资源利用效率和降低生产成本。

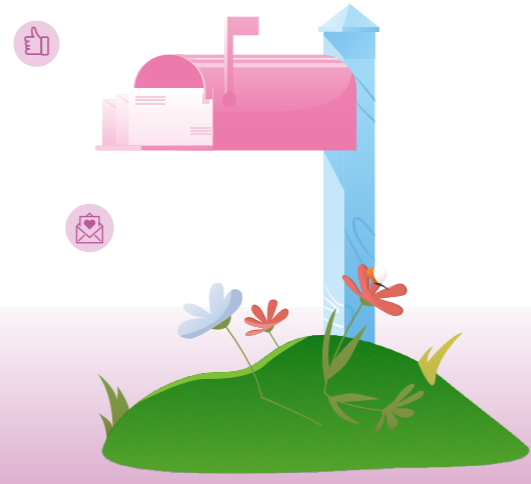
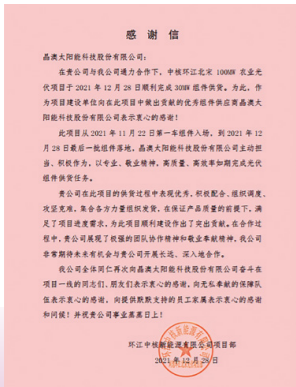


产品标准化共识  
Consensus on product standardization

Since its introduction to the market, the 182mm silicon wafer has received widespread industry acclaim. However, due to manufacturers' differences in technical route, design philosophy, and installation methods, there are variations in the measurement and clearance between installation holes in stereotypical modules. Therefore, it is difficult to standardize materials and specifications and impossible to reduce costs further. This issue hinders the coordination of upstream and downstream businesses, the design and installation of the system, and customers' selection of PV solutions.

On September 6, 2021, JA Solar conducted candid, in-depth communications with multiple manufacturers to address this issue. A consensus on adopting one standard across the industry has been reached regarding the standardization of the 182mm series module. This is an important step in promoting the high-quality, sustainable development of the PV industry.

Standardization of 182mm series modules will relieve module BOM suppliers' pressure in production, storage, and transportation. Besides, this is also conducive to reduce design and installation workload in PV power plant system, utilizing industry resources efficiently, and reducing production costs.



驻场服务感谢信  
Thank you letter for field service

与行业共成长

Thriving With The Industry

晶澳科技积极倡议并推动上下游产业协同和行业标准，为客户提供最优价值组件产品，同时，促进整个行业高效、高质量、可持续的发展。

JA Solar advocates and promotes the coordination and standardization of upstream and downstream industries by providing high-quality modules. In addition, the Company seeks to promote the industry's efficient, high-quality, and sustainable development.

54 版型组件 54-cell module

尺寸: 1722mm\*1134mm  
安装孔间距: 1400mm  
Size: 1722mm\*1134mm;  
Clearance between installation holes: 1400mm;

72 版型组件 72-cell module

尺寸: 2278mm\*1134mm  
安装孔间距: 400mm、1400mm  
Size: 2278mm\*1134mm;  
Clearance between installation holes: 400mm, 1400mm;

78 版型组件 78-cell module

尺寸: 2465mm\*1134mm  
安装孔间距: 400mm、1200mm、1500mm  
Size: 2465mm\*1134mm;  
Clearance between installation holes: 400mm, 1200mm/1500mm.



## 展望 Outlook

2022 年，光伏产业继续蓬勃发展，晶澳科技“一体两翼”战略将全面实施。新的发展时期，我们坚持“抢抓机遇、稳中求进、提质增效”指导思想，进一步明确“一体两翼”三大业务板块的发展方向，聚焦企业管理，不断提升精益化管理水平，实现企业高质量发展，为客户、股东、员工、行业和社会贡献更大价值。

**责任诠释使命担当。**在双碳目标的背景下，晶澳科技参与并见证了光伏产业的跌宕起伏，未来将继续以引领者的姿态，继续践行绿色发展之路，积极推进光伏产品制造、智慧能源板块、光伏新材板块三大板块的协同发展，为推动能源转型、实现“碳中和”贡献力量。

**光伏助力生态发展。**我们将继续致力于实现从绿色制造到绿色应用的全流程低碳绿色发展，助力低碳社会的建设。加速绿色转型，提升资源保护和可持续利用水平。坚持绿色光伏技术的推动者、绿色供应链的构建者、绿色工厂的践行者、绿色电力的供应和使用者、绿色办公和生活的倡导者和绿色理念的传播者的“6+绿色生态之路”。

**打造领先技术优势。**我们从创建之初到现在，凭借强有力的科技创新，始终保持着技术领先优势。未来，我们要继续加大科研投入，加大研发力度，建立前瞻性、应用性两级研发体系，持续巩固我们的技术核心竞争优势。我们将加快数字化转型，积极探索“光伏+数字技术”在多种场景的应用方向，也联合外部团队合作攻关，用数字化赋能产品优化提升、服务企业转型升级。

**共创共享发展成果。**我们要赋能客户实现更大价值，为股东创造长期价值，为员工创造收获价值的平台。未来，合作将是一种大趋势，我们要继续加强与同行、上下游和各方伙伴的合作，通过协同共生打造行业的良好生态圈。我们要始终为社会创造更大价值，继续加大力度做好社会公益事业，积极参与实现共同富裕，与社会共享发展成果。

2022 will witness the vigorous and sustained development of PV industry and the full implementation of JA Solar's strategy of "One Body, Two Wings". Adhering to the guideline of "seize the opportunities to boost steady progress and improve quality and efficiency through", we will further define the development direction of three key business areas under the "One Body, Two Wings" strategy and realize the high-quality development by focusing on corporate governance and keeping on optimizing the lean management, so as to contribute more to our customers, shareholders, industry and society.

**Live up to JA Solar's Mission by Assuming Our Responsibilities.** Against the backdrop of China's 30-60 Decarbonization Goal, JA Solar has experienced and witnessed the twists and turns of the PV industry. Looking ahead, we will continue to practice the green development as a pioneering leader through positively promoting the synergy of three sectors (PV manufacturing, intelligent energy and new PV materials), thus helping achieve carbon peak and carbon neutrality.

**Take an Eco-friendly Path based on the Development of PV Industry.** To promote a low-carbon society, we will work to achieve full-process low-carbon, green development by transferring from green production to green application. We will accelerate green transformation by enhancing conservation and sustainable utilization of resources. We will continue to promote green PV technologies, build green supply chains, implement green plant concepts, supply and utilize green electricity, advocate green office and green life, and promote the "6+green and eco-friendly path".

**Building leading technical edge.** Since our founding, we have maintained technical lead through vigorous innovations. In the future, we will increase research and step up R&D investment, and develop a perspective and application-oriented R&D system, to consolidate our core competitive edge. We will accelerate digital transformation, explore the application of "PV + digital technology" in various scenarios, and work with external teams to improve our products through digitalization to support the transformation of enterprises.

**Co-creating and sharing development fruits.** We will increase consumer value, produce long-term value for shareholders, and provide a platform for employees to benefit. When cooperation becomes a norm in the future, we will strengthen cooperation with peer enterprises, the upstream and downstream sectors, as well as other partners, to create a favorable industrial ecosystem. We will remain committed to creating greater value for society, increasing our efforts on social undertakings, joining the society in achieving co-prosperity and sharing the benefits of progress with the society.

## 附录 Appendix

### 晶澳加入的部分社会组织和倡议

Parts of social organizations and initiatives which JA Solar participated in

序号 No.	协会或组织名称 Name of the association or organization	所担任角色 Role
1	中国光伏行业协会 China PV Industry Association	副理事长 Vice President
2	中国机电产品进出口商会 China Chamber of Commerce for Import and Export of Mechanical and Electrical Products	副会长 Vice Chairman
3	中国国际商会 China Chamber of International Commerce	会员 Member
4	中国电力企业联合会 China Electricity Council	会员 Member
5	中国扶贫志愿服务促进会 China Poverty-alleviation Promotion of Volunteer Service	理事 Member
6	中国循环经济协会可再生能源专业委员会 Professional Committee of Renewable Energy of China Circular Economy Association	会员 Member
7	中国侨商投资企业协会 Hebei Association of Overseas Chinese Investment Enterprises	常务理事 Executive Vice President
8	绿色能源生态合作组织 China Association of Overseas Chinese Investment Enterprises	会员 Member
9	中国上市公司协会 Green Energy Ecological Cooperation Organization	理事 Member
10	中国企业反舞弊联盟 Hebei Emergency Industry Association	常务理事 Vice Chairman
11	阳光诚信联盟 China Association of Public Companies	理事 Member
12	联合国全球契约组织 Chinese Enterprise Anti-Fraud Alliance	会员 Member
13	CBCA 中国企业气候行动倡议 Trust and Integrity Enterprise Alliance	成员 Member
14	中国绿色供应链联盟 United Nations Global Compact	会员 Member
15	河北省应急产业协会 CBCA China Business Climate Action Initiative	副会长 Vice Chairman

## 2021 年荣誉 (部分) Honors in 2021 (partial)

奖项与荣誉	颁发机构
首批电池组件绿色设计产品	工业和信息化部
2020 年工业企业知识产权运用试点企业	工业和信息化部
专精特新 "小巨人" 企业 (松宫公司)	工业和信息化部
2021 年《财富》中国 500 强排行榜第 390 位	《财富》杂志
2021 "全球新能源企业 500 强" 位列榜单第 36 名	中国能源报和中国能源经济研究院
2021 "中国民营企业 500 强" 第 430 位	中华全国工商业联合会
2021 "中国制造业民营企业 500 强" 第 242 位	中华全国工商业联合会
2021 全球 "最佳表现" 组件供应商 (Top Performer) 奖	全球权威独立光伏测试机构 PVEL
2021 企业社会责任成就认可银奖	EcoVadis
"欧洲顶级光伏品牌" 奖项	EuPD Research
《2020 年光伏组件指数报告》中获 "全面表现最优" 荣誉	美国权威检测机构可再生能源试验中心
2021 年彭博新能源 (BNEF) 100% 可融资能力	BNEF
科技成就奖 APVIA	亚洲光伏产业协会
产业贡献奖 APVIA	亚洲光伏产业协会
INDIA SOLAR AWARDS	2020-21 EQ
DeepBlue 3.0 高效组件获颁韩国亲环境认证	韩国产业部
《中国企业文化》全国优秀案例	中国企业文化促进会
2021 中国企业 ESG 最佳环境案例奖	财联社
责任金牛奖——责任产品奖	中国社会责任百人论坛

Awards and honors	Issuer
First Batch of Cell and Modules of Green Design	Ministry of Industry and Information Technology
Pilot enterprise for the application of intellectual property rights of industrial enterprises in 2020	Ministry of Industry and Information Technology
Specialty, refinement, characteristic and innovation "Small Giant" enterprise	Ministry of Industry and Information Technology
390 <sup>th</sup> among Fortune China 500 in 2021	Fortune
36 <sup>th</sup> among Global Top 500 New Energy Enterprises in 2021	China Energy News and China Institute of Energy Economics Research
430 <sup>th</sup> among China's Top 500 Private Enterprises in 2021	All-China Federation of Industry and Commerce
242 <sup>nd</sup> among China Top 500 Private Manufacturers in 2021	All-China Federation of Industry and Commerce
Top Performer for PVEL's 2021 PV Module Reliability Scorecard	PVEL, a global authoritative and independent third-party photovoltaic testing organization
"EcoVadis Silver Sustainability Rating"	EcoVadis
Top Brand PV in Europe	EuPD Research
The 2020 Photovoltaic Module Index Report (by PVMI) grants the honor of "Overall High Achievers"	Renewable Energy Test Center (RETC), an authoritative testing organization in the United States
100% Bankability Rating issued by BloombergNEF (BNEF)	BNEF (BloombergNEF)
APVIA Award - Technological Achievement	APVIA -Asian Photovoltaic Industry Association
The Asian Photovoltaic Industry Association (APVIA) Awards	APVIA -Asian Photovoltaic Industry Association
INDIA SOLAR AWARDS	2020-21 EQ
JA Solar's DeepBlue 3.0 high-efficiency modules obtained Eco-Partnership certificate in Korea	South Korea's Ministry of Industry
A National Examples of Excellence issued by Chinese Corporate Culture	China Enterprise Culture Improvement Association
China Best ESG Selection 2021	CLS.CN-ESG
Responsibility Taurus Award-Responsible Products Award	China CSR 100 Forum

## 关键绩效

## Key Performance Indicators

指标	单位	2019 年	2020 年	2021 年
营业收入	亿元	211.6	258.5	413.0
归母净利润	亿元	12.52	15.07	20.39
电池组件出货量	GW	10.26	15.88	25.45
员工人数 (含固定和临时工)	人	22,162	25,183	29,638
男性员工人数	人	15,641	18,128	20,958
女性员工人数	人	6,521	7,055	8,680
外籍员工	人	3,030	2,384	3,157
少数民族员工	人	—	604	722
年度绩效考核覆盖率	%	100	100	100
≤ 30 岁员工数量	人	11,063	12,667	12,553
31-50 岁员工数量	人	10,972	12,375	16,841
≥ 51 岁员工数量	人	127	141	244
研究生及以上学历人数	人	242	313	363
本科学历的人数	人	2,118	2,684	3,197
大专学历的人数	人	3,916	5,190	6,314
中专及以下学历的人数	人	15,886	16,996	19,764
识别核心人才数	人	826	1,132	1,170
集体谈判协议所涵盖的员工总数的百分比	%	100	100	100
在海外企业的本地化雇员比例	%	64	61.93	91.0
员工满意度	%	95.13	87.04	91.0
培训费用投入	万元	497.20	284.6	351.6
培训人员覆盖率	%	100	100	100
人均培训费用	元	369.43	187.3	147.9
人均培训时数	小时	18	19	30.7
研发投入	亿元	11.2	14.5	27.2
研发投入占营业收入比例	%	5.28	5.62	6.58
客户投诉解决率	%	100	100	100
客户满意度	%	4.53 <sup>1</sup>	94.79	96.79
材料和物流供应商数量	家	811	899	970
国家级绿色工厂个数	个	3	5	5
有效专利数量	项	779	897	1086
资助贫困学生	人	15	23	87
光伏扶贫支付款项	万元	970.2	970.2	1,016.4
光明工程支出	万元	18	30	28.34
光明工程帮助人数	人	200	238	267

<sup>1</sup> 评分标准发生改变, 2019年客户满意度评分的满分为5分

Indicator	Unit	2019	2020	2021
Operating revenue	CNY 100 million	211.6	258.5	413.0
Net profit attributable to the parent company	CNY 100 million	12.52	15.07	20.39
Shipment of Battery module	GW	10.26	15.88	25.45
Number of employees (Including fixed and temporary workers)	Person	22,162	25,183	29,638
Number of male employees	Person	15,641	18,128	20,958
Number of female employees	Person	6,521	7,055	8,680
Foreign employees	Person	3,030	2,384	3,157
Ethnic minority employees	Person	—	604	722
Annual performance appraisal coverage	%	100	100	100
Number of employees aged 30 or younger	Person	11,063	12,667	12,553
Number of employees aged 31-50	Person	10,972	12,375	16,841
Number of employees aged 51 or older	Person	127	141	244
Number of employees with a Master's degree or higher	Person	242	313	363
Number of employees with a Bachelor's degree	Person	2,118	2,684	3,197
Number of employees with a college degree	Person	3,916	5,190	6,314
Number of employees who graduated from technical secondary school or lower	Person	15,886	16,996	19,764
Number of identified core talents	Person	826	1,132	1,170
Percentage of employees who sign collective bargaining agreements	%	100%	100%	100%
Percentage of local employees hired by JA Solar's subsidiaries overseas	%	64	61.93	91.0
Employee satisfaction	%	95.13	87.04	91.0
Training input	CNY Ten thousand	497.20	284.6	351.6
Training coverage	%	100	100	100
Training cost per employee	CNY	369.43	187.3	147.9
Training hours per employee	hour	18	19	30.7
R & D investment	CNY 100 million	11.2	14.5	27.2
Proportion of R & D investment in operating revenue	%	5.28	5.62	6.58
Customer complaint resolution rate	%	100	100	100
Customer satisfaction	%	4.53 <sup>1</sup>	94.79	96.79
Number of material and logistics suppliers	-	811	899	970
Number of green plants at the national level	-	3	5	5
Number of valid patents	-	779	897	1086
Number of poor students subsidized	Person	15	23	87
PV-based poverty alleviation payment	CNY Ten thousand	970.2	970.2	1,016.4
Brightness Project expenditure	CNY Ten thousand	18	30	28.34
Number of people helped by Brightness Project	Person	200	238	267

<sup>1</sup> Based on the modified assessment criteria, the full score of customer satisfaction rate in 2019 was five.

## 独立鉴证报告

### Independent Assurance Report



## ASSURANCE STATEMENT

### SGS-CSTC'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE SUSTAINABILITY REPORT OF JA SOLAR TECHNOLOGY Co., LTD. FOR 2021

#### NATURE AND SCOPE OF THE ASSURANCE/VERIFICATION

SGS-CSTC Standards Technical Services Co., Ltd. (hereinafter as "SGS") was commissioned by JA Solar Technology Co., Ltd. (hereinafter referred to as "JA Solar") to conduct an independent assurance of the Sustainability Report of JA Solar for 2021 (hereinafter referred to as "the Report"). The scope of the assurance, based on the SGS Sustainability Report Assurance methodology, included the text, and data in accompanying tables, contained in Chinese version of the Report, other disclosed data and information were not included in this assurance process. We verified the data and the information in the Report onsite which are obtained from JA Solar's Head-Office which is located in Building 8, Noble Center, East Auto Museum Road, Fengtai District, Beijing, P.R. China.

The information in the Report is the sole responsibility of its management and relevant functional departments. SGS did not involve in the preparation for 2021 Sustainability Report of JA solar.

Our responsibility is to express an opinion on the text, data, graphs and statements within the scope of verification with the intention to inform all JA solar's stakeholders.

The SGS protocols are based upon internationally recognized guidance, including the Principles contained within the GRI STANDARDS for accuracy and reliability and the guidance on levels of assurance contained within the AA1000 series of standards and guidance for Assurance Providers.

This report has been assured at a moderate level of scrutiny using our protocols for:

- evaluation of content veracity;
- evaluation of the report against the GRI STANDARDS.

The assurance comprised a combination of pre-assurance research, interviews with relevant employees; documentation and record.

Financial data drawn directly from independently audited financial accounts has not been checked back to source as part of this assurance process.

#### STATEMENT OF INDEPENDENCE AND COMPETENCE

SGS is the world's leading inspection, verification, testing and certification company. We are recognized as the global benchmark for quality and integrity with a network around the world. SGS affirm our independence from JA solar, being free from bias and conflicts of interest with the organization, its subsidiaries and stakeholders.

The verification team was assembled based on their knowledge, experience and qualifications for the assignment, and comprised of CSR lead auditor by SGS, CCAA registered ISO 9001, ISO 14001 and ISO 45001 auditor, SAAS registered SA8000 auditor.

#### VERIFICATION/ ASSURANCE OPINION

Based on the above methodology and verification, the information and data contained in the Report is accurate and reliable, providing a fair and pertinent assessment on the sustainability activities of JA solar in 2021.

The verification team believes that the Report can be used by the stakeholders of JA solar.

SGS believes that the organization has selected an appropriate compliance option in the Report.

#### GRI STANDARDS CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

In our opinion the Report is presented in accordance with the core option of GRI STANDARDS and fulfills all the required contents and reporting principles.

#### PRINCIPLES

##### Stakeholder Inclusiveness

JA solar adopted stakeholder engagement procedure, to identify and select key stakeholders, and performed stakeholder engagement activities, taken into account the reasonable expectations.

##### Sustainability Context

JA solar demonstrated its efforts in sustainable development from economic, environmental and social aspects, and demonstrated these performances in combination with the background of sustainable development.

#### Materiality

JA solar determined material topics and relevant disclosures, based on its significant impacts on economic, environment, and society and topics that raised by stakeholders.

#### Completeness

The Report shows sustainability performance of all identified material topics with their boundaries. Stakeholder can well understand JA solar's sustainability performance.

#### Balance

The Report discloses management approach and positive and part of negative performance of material topics.

#### Comparability

The Report discloses JA solar's sustainability performance indicators for 2021, together with some historical data, which enable stakeholders to visually compare and understand the performance of sustainability.

#### Accuracy

JA Solar's information in the report is accurate, enable to release more qualitative and quantitative information with indicators for stakeholders.

#### Timeliness

JA solar publishes sustainability reports on time every year, and which is very punctual overall.

#### Clarity

The Report is clear and can be understood by stakeholders who have a reasonable understanding of JA solar's sustainability effort. JA solar is taking into account the utilization and type of information, and using lots of descriptions, charts and pictures and case study while disclosure of information.

The Report uses lots of expressions such as text descriptions, data tables, graphics, and photos, combined with case analysis and narratives, to make it easy for stakeholders to understand.

#### Reliability

JA solar has set up a reporting process. The data and information can be traced and verified by internal collection, recording, compiling, analysis and disclosure to ensure the quality and materiality of information.

#### Management Approach

The report has disclosed the management approach of identified material topics.

#### General Disclosure

The general disclosure requirements of the GRI STANDARDS core option in the report can all be met.

#### Topic-Specific Disclosures

Topic-specific disclosures such as the importance of economic, environmental and social impacts on the organization and the substantive impact on stakeholder assessments and decisions can be described in accordance with GRI core option.

#### Findings and Recommendations

The good practices and the recommendations are reported in internal management report which submitted to JA solar's management for reference.

#### Limitations of Assurance

We only onsite visited the head-office of the JA Solar for the assessment and verified the Report headquarters level. No external stakeholders were interviewed.

Signed:

For and on behalf of SGS-CSTC

David XIN Director  
Knowledge  
16/F Century Yuhui Mansion, No.73, Fucheng Road, Beijing, China  
April 19, 2022

WWW.SGS.COM

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## 意见反馈

## Feedback

本报告是晶澳科技向社会公开发布的第五份年度可持续发展报告。为持续改进公司可持续发展工作，不断提高履责能力和水平，我们非常希望倾听您的意见和建议。恳请您协助完成反馈意见表中提出的相关问题，并选择以下方式反馈给我们。

联系电话：010-63611888

电子邮箱：csr@jasolar.com

联系地址：北京市丰台区汽车博物馆东路诺德中心 8 号楼

您的信息

姓名：\_\_\_\_\_

工作单位：\_\_\_\_\_

职务：\_\_\_\_\_

联络电话：\_\_\_\_\_

电子邮件 Email：\_\_\_\_\_

1、您对公司可持续发展报告的总体评价是？

好       较好       一般

2、您认为本报告是否能反映公司对经济、社会和环境的重大影响？

高       较高       一般       较低       低

3、您认为本报告所披露信息、数据、指标的清晰、准确、完整度如何？

好       较好       一般       差       不了解

4、您最满意本报告哪一方面？

\_\_\_\_\_

5、您希望进一步了解哪些信息？

\_\_\_\_\_

6、您对我们今后发布报告还有哪些建议？

\_\_\_\_\_

This is the fifth annual sustainability report that JA Solar Technology Co., Ltd. has published. We seek your feedback and suggestions to continuously enhance our sustainability efforts and CSR capabilities and practices. Please complete the feedback form and return it to us using one of the following methods:

Tel.: 010-63611888

Email: csr@jasolar.com

Addr.: Building 8, Noble Center, East Auto Museum Road, Fengtai District, Beijing, China

Your Information

Name: \_\_\_\_\_

Organization Name: \_\_\_\_\_

Title: \_\_\_\_\_

Tel: \_\_\_\_\_

Email: \_\_\_\_\_

1. What is your overall comment on our sustainability report?

Very Good       Good       Average

2. What do you think of disclosing our significant impact on the economy, society and environment in this report?

Excellent       Good       Average       Poor       Very Poor

3. What do you think of the clarity, accuracy, and completeness of the information, data and indicators disclosed in this report?

Very Good       Good       Average       Poor       No idea

4. Which aspect of this report are you most satisfied with?

\_\_\_\_\_

5. What other information would you like to learn more about?

\_\_\_\_\_

6. What other suggestions do you have for our future reports?

\_\_\_\_\_

# 开发太阳能 造福全人类

Develop solar power to benefit the entire human race

地址:北京市丰台区汽车博物馆东路诺德中心8号楼

电话:010-63611888

网址:[www.jasolar.com.cn](http://www.jasolar.com.cn)

Add: Building 8, Noble Center, East Auto Museum Road, Fengtai District, Beijing, China

Tel: 010-63611888

Web: [www.jasolar.com.cn](http://www.jasolar.com.cn)

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