

## PVPMC 同期光伏优质企业参观访问计划（初步）

### Visit Plan to PV VIP enterprises during PVPMC

12 月 11 日-12 日

December 11th~12th

时间 Time	行程安排 Arrangement	计划 Plans
Day 1 8:00-17:00	PV Companies around Suzhou	<b>Solar module:</b> Talesun; Canadiansolar; Jolywood <b>Solar Cell( PERC):</b> Aikosolar <b>Tracking bracket:</b> Arctech solar
Day 2 8:00-17:00		<b>Solar Cell ( perovskite ):</b> GCL Nano Technology <b>Solar Inverter:</b> Goodwe Aiswei-tech

Note: We will finally visit 4-5 companies from plans.

## 企业介绍

### ■ 爱旭 Aikosolar

广东爱旭科技股份有限公司成立于 2009 年 11 月，主要从事晶硅太阳能电池的研究、制造、销售。拥有业内领先的 PERC 电池制造技术和生产供应能力，是全球 PERC 电池的主要供应商之一，目前拥有广东佛山 1.6GW、浙江义乌 3.8GW 和天津 3.8GW 三大高效 PERC 电池生产基地。

公司积极引进并建立了国际化的研发团队。公司拥有省级企业技术中心、省级企业重点实验室、省级工程技术中心和数百项专利技术，不断研发新技术，推出新产品，持续为客户提供“更高效率、更低成本、更多发电量”的电池，深受全球晶硅组件企业的青睐。

Established in November 2009, Aiko Solar mainly engaged in research, manufacturing and sales of crystalline silicon solar cells. With the industry-leading PERC cell manufacturing technology and production supply capacity, Aiko Solar has become the one of the major high efficiency PERC Cell suppliers in the world. Currently, Aiko Solar has three production bases for high-efficiency PERC cells(1.6GW Foshan City, Guangdong Province & 3.8 GW Yiwu City, Zhejiang Provinceand & 3.8GW Tianjin City) .

Aiko Solar established an international R&D team. Aiko Solar has provincial-level enterprise technology center, provincial-level core enterprise laboratory, provincial engineering technology center and hundreds of patented technologies. Aiko Solar continuously develops new technology, launches new products and provide premium PV cells with “higher efficiency, higher reliability and higher power generation” . Aiko Solar’ s PV Cell is acknowledged and favored by the global PV module manufacturing companies.

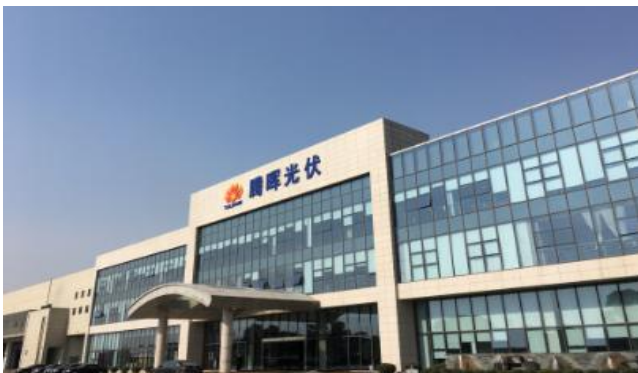


### ■ 中利腾晖 Talesun

苏州腾晖光伏技术有限公司成立于 2010 年，总投资 50 亿元人民币(注册资本 30 亿元)，目前年产能已达 4GW 光伏电池和 5GW 光伏组件，全部引进意大利、德国、日本等目前世界先进的全自动电池片、组件生产线，具有全球领先的技术装备和研发能力，至 2016 年底，累计投资建成光伏电站已达 4GW 以上，成为国内光伏电站投资建设规模领先、品质卓越的优秀企业。2016 年创新推出高效“万农生态光伏”项目。腾晖光伏已成为延伸光伏产业链发展的行业领跑者，为人类环境更美好作出了贡献。

Suzhou Talesun Solar Technologies Co.Ltd. is a wholly owned subsidiary of Jiangsu Zhongli Group (SZ: 002309). Talesun Solar was established in 2010 with a total investment of 5 billion RMB (the registered capital of 3 billion RMB). With an annual capacity of 4 GW cells and 5 GW modules, Talesun Solar has built the state-of-art, fully automated production line. Equipment comes from Italy, Germany and Japan, which enabled Talesun Solar to be the world' s leading large-scale scientific & PV manufacturing company. Talesun Solar is one of the few Chinese companies who had received the VDE Quality-Tested Certificate in PV industry, which guarantees Talesun Solar excellent product quality. Talesun Solar has also received “2015 China Photovoltaic Top Runner Award” for being an excellent PV manufacturer.

Talesun Solar takes the lead in extending PV industry chain: till end of 2017, Talesun Solar has cumulatively invested and developed more than 6 GW PV power plants. Talesun Solar has innovatively launched high-efficiency “Diversified Eco-Agricultural PV” project in 2016. Talesun Solar plays a leading role in the global photovoltaic industry chain extension and contributes to a better world environment.



## ■ 阿特斯 Canadian solar

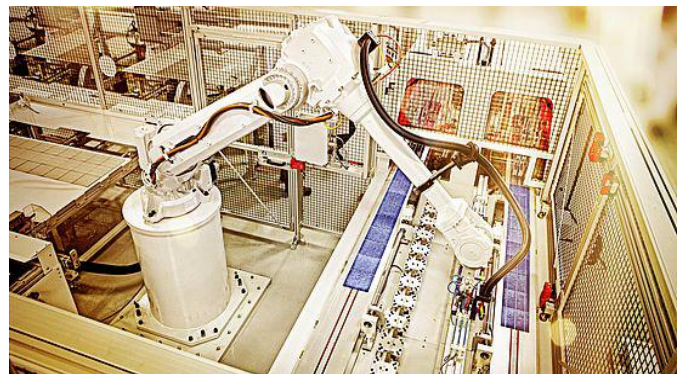
阿特斯阳光电力集团由归国太阳能专家瞿晓铤博士于 2001 年创办，2006 年在美国纳斯达克股票交易所上市(纳斯达克代码：CSIQ)，全球员工总数超 13,000 人。是专业从事硅锭、硅片、太阳能电池片、太阳能组件和太阳能应用产品的研发、生产和销售，以及太阳能电站系统的设计和安装的光伏一体化企业。

成立 18 年来，通过多元化发展战略和市场布局，阿特斯已在全球 7 个国家和地区成立了 16 家光伏硅片、电池和组件生产企业，并在 20 多个国家和地区建立了分支机构，与全球 73 家国际顶尖银行和金融机构建立了合作伙伴关系，是全球综合实力领先的太阳能公司。

作为全球领先的太阳能光伏组件制造商和太阳能整体解决方案提供商，阿特斯在世界各地拥有丰富的公用事业规模太阳能光伏电站项目储备。

2015 年，阿特斯以 16.56 亿元人民币收购了夏普的太阳能业务子公司 Recurrent Energy，跃升成为全球规模第二大的太阳能光伏电站项目开发、建设运营商和整体解决方案提供商。

Founded in 2001 in Canada, Canadian Solar (NASDAQ: CSIQ) operates as a global energy provider with successful business subsidiaries in 19 countries on 6 continents. Besides serving as a leading manufacturer of solar PV modules and provider of solar energy solutions, Canadian Solar has a geographically diversified pipeline of utility-scale power projects. With the company's acquisition of Recurrent Energy, Canadian Solar's total project pipeline is now over 13 GW, including the late-stage project pipeline to over 2.9 GW. With state-of-the-art manufacturing facilities in Canada, China and Vietnam, Canadian Solar employs over 13,000 workers worldwide. This translates into more than 36 GW of panel shipments in the past 18 years. Together with Recurrent Energy, Canadian Solar is ushering the way into a new era of clean, competitive, mainstream power.



## ■ 中来 Jolywood

苏州中来光伏新材股份有限公司，成立于 2008 年，国家级高新技术企业。2014 年成功上市（股票代码：300393），是 A 股独树一帜的以光伏背板作为主营业务的上市公司，公司目前净资产近 30 亿元，总资产近 60 亿元。公司光伏业务板块不断拓展，坚持以领先技术为核心、以奋斗型人才为驱动，以客户发展为中心，聚焦绿色新能源领域，构建了以“中来新材、中来光电、中来民生”三大业务板块。

目前研发中心拥有数名博士及优秀电池研发技术人员，已累计申请高效电池相关专利 40 余项，其中已授权 10 余项。创新的讲离子注入技术应用于 N 型太阳能电池生产中，实现了正面 21.0%、背面 19.0% 的量产高转换率。中心与国内外知名高校、科研院所保持紧密合作关系，共同致力于高效光伏技术的开发与应用。

Jolywood(Suzhou) Sunwatt Co., Ltd.(Stock Code: 300393), founded in 2008, was listed in Shenzhen Stock Exchange GEM. The company is aimed at becoming a top manufacturer and provider of integrated PV products. Powered by technology, driven by talents, and focused on solar energy, the company covers PV material, high efficiency cell and PV application. Jolywood is the largest professional manufacturer of PV backsheet in the world, with annual production capacity over 100 million meters; the company also tops the global industry with 2.1GW manufacturing capacity of n-type bifacial solar cell, leading high efficiency power generation in the world; and the company's PV application business is focused on investment, installation, and intelligent operation of high efficiency distributed PV system. The three businesses of Jolywood constituted an interdependent and complementary PV ecological system.

At present, the research and development center has a number of doctor and international top battery r&d technicians, and has applied for more than 40 patents related to efficient battery.



## ■ 中信博研究院实验室 Arctech Solar Institute Laboratory

中信博研究院实验室成立于 2016 年 6 月，是经江苏中信博新能源科技股份有限公司（Arctech Solar）研究院院长书面授权独立检测部门，主要针对太阳能光伏支架跟踪系统提供功能性、机械性能及电气性能检测。

Arctech Solar Institute Laboratory founded in June 2016 is an independent testing department authorized by the President of the Arctech Solar Institute in writing, which mainly provides functional, mechanical and electrical performance testing for the solar PV bracket tracking system.

实验室室内检测区域占地 1300 平米，户外检测区域 1000 平米，可独立完成 IEC62817、UL2703、UL3703 等标准项目检测及其他相关的产品可靠性检测。

The laboratory indoor testing area covers an area of 1,300 square meters, and the outdoor inspection area is 1000 square meters, which can independently complete project testing of IEC62817, UL2703, UL3703 and other standards and other related product reliability tests.

实验室目前拥有 9 寸回转装置寿命测试平台、通用力学测试测试平台、25 寸回转装置寿命测试平台、高分子轴承耐磨寿命测试平台等 4 个户外检测平台以及 20 个室内检测平台。

At present, the laboratory has 4 outdoor testing platforms and 20 indoor testing platforms, such

as 9-inch swing mechanism life testing platform, general mechanics testing platform, 25-inch swing mechanism life testing platform, high polymer bearing wear-resistant life testing platform, etc.



## ■ 协鑫纳米 GCL Nano Technology

协鑫集团旗下苏州协鑫纳米科技有限公司(下称“协鑫纳米”)专注于钙钛矿领域研发,并已率先完成 10MW 大面积钙钛矿组件中试产线,经莱茵 TUV 认证,在 1300 平方厘米上效率已经达到 13.48%,创下目前世界最大面积钙钛矿光伏组件和大面积钙钛矿组件效率最高数值等两项纪录。目前最高效率已经达到 16.5%,这个结果正在进行认证,预计明年可实现商业化。

作为电池产业的后起之秀,早在 6 年前,钙钛矿就被美国《科学》杂志评为“2013 年度国际十大科技进展”之一。此后短短几年间,其实验室转换率迅速由 3% 提升至 25% 以上。

Suzhou GCL Nano Technology Co., Ltd. (hereinafter referred to as "GCL nano") under GCL group focuses on the research and development of perovskite field, and has taken the lead in completing the pilot production line of 10MW large-area perovskite modules. Certified by TUV of Rhine, the efficiency has reached 13.48% in 1300 square centimeters, which has set the highest efficiency value of the world's largest perovskite photovoltaic modules and large-area perovskite modules. Wait for two records. At present, the highest efficiency has reached 16.5%. This result is under certification and is expected to be commercialized next year.

As a rising star in the battery industry, perovskite was named as one of the "top ten scientific and technological progress in 2013" by science magazine of the United States six years ago. In a few years since then, the conversion rate of the laboratory has rapidly increased from 3% to more than 25%.



## ■ 固德威 Goodwe

江苏固德威电源科技股份有限公司,是一家新能源高新技术企业,公司总部位于东方水城苏州高新区,一直专注于太阳能光伏逆变器及其监控产品的研发、生产及销售。固德威产品设计源自德国,生产基地在中国,现已研发生产 SS、NS 单相单路、DS、NDS 单相双路、DT 三相双路、ES 双向储能六大系列光伏逆变器产品,功率覆盖 1.0kW 到 50kW。

GoodWe is a leading, strategically-thinking enterprise which focuses on research and manufacturing of PV inverters and energy storage solutions. With an average monthly sales volume of 30,000 pieces in 2019 and 12 GW installed in more than 100 countries, GoodWe solar inverters have been largely used in residential rooftops, commercial systems and energy storage systems. GoodWe ranked as World Top 10 solar inverter manufacturer by Bloomberg, IHS & Wood Mackenzie. GoodWe benchmarks its success on the success achieved by its customers by identifying and integrating the most advanced components and techniques available while offering an unparalleled after-sales service.

GoodWe has set up an integrated service system for pre-sale, in-sale and after-sale and has established service centers worldwide. The company has developed a concept of workshops which aim to offer global support to all customers including project consulting, technical training, onsite support and after-sales service.

As a stable, bankable company, GoodWe has built its corporate reputation by achieving sustainable growth in every market it operates in. A prudent, step-by-step approach of strategic growth and consolidation offers longevity, profitable growth and increased market share; a business model also adopted by some of the world's leading renewable companies.



## ■ 爱士惟 AISWEI

爱士惟(原 SMA 中国),原隶属于全球知名的太阳能逆变器研发和制造企业 SMA Solar Technology AG(简称:SMA 集团),是专业从事光伏逆变器研发和制造的企业集团。总部设立在核心企业爱士惟新能源技术(江苏)有限公司(简称:爱士惟江苏)注册地江苏省苏州市高新区,注册资本 3.43 亿人民币,是从事逆变器研发和制造的高新技术企业。

2018 年 12 月,基于市场变化,SMA 集团为重整全球业务对其中国公司进行重组,由以张勇博士带领的 SMA 中国管理层对 SMA 中国所属包括艾思玛新能源技术(江苏)有限公司在内的三家中国公司的股权及业务进行整体收购,重组完成后的 SMA 中国更名为爱士惟。

AISWEI specializes in developing and manufacturing photovoltaic inverters, building on the success of the Zeversolar range of inverters from the SMA Group. Formerly known as SMA China and affiliated with the SMA Group, AISWEI was launched as an independent company in April 2019. A recent equity restructuring puts AISWEI on particularly strong financial footing within the industry.

Headquartered in Suzhou Jiangsu, near the Yangtze River Delta, AISWEI boasts research and development labs, purchasing operations, and manufacturing facilities in Suzhou, Shanghai and Yangzhong. Annual production capacity exceeds 3GW.

