MAKE POWER
GENERATION MORE GREEN

CECEP SOLAR ENERGY TECHNOLOGY (ZHENJIANG) CO.,LTD

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CECEP SOLAR

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02

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CATALOG

05

COMPANY PROFILE

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CENTRAL SOE BACKGROUND PROFESSIONAL TALENTS

CECEP boasts more than 700 subsidiaries

700+ SUBSIDIARIES

27 AFFILIATES

7 LISTED COMPANIES

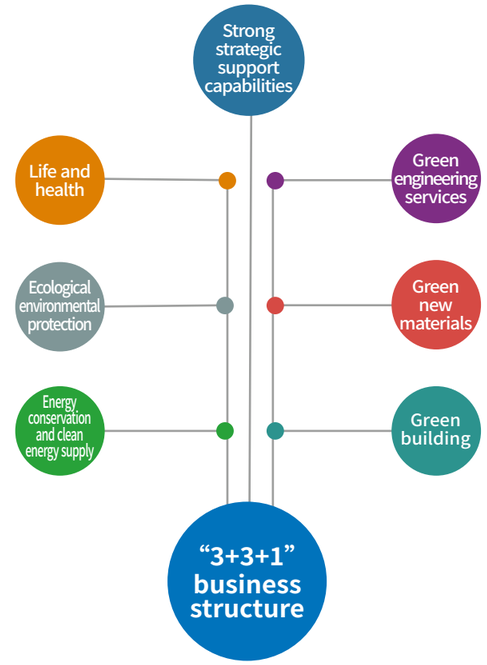
CECEP takes practical actions to actively support the "3060" target for carbon peaking and carbon neutrality, vigorously promotes the construction and development of new energy, and helps implement the "14th Five-Year Plan".

China Energy Conservation and Environmental Protection Group

The largest technology-based service industry group in the field of energy conservation and environmental protection of China

China Energy Conservation And Environmental Protection Group (CECEP) is a state-owned enterprise, which is established in 2010 by the China Energy Conservation Investment Corporation and China New Era Holdings (Group) Corporation and approved by the State Council.

As a centrally-administered state-owned enterprise specializing in energy conservation and environmental protection, CECEP boasts more than 700 subsidiaries, including 7 listed companies. Its business has expanded across China and abroad, radiating to 110 countries and regions around the world. With a “3+3+1" business structure, CECEP has emerged as a flagship enterprise in China's energy saving and environmental protection field with a large scale, a complete range of solutions, a wide coverage, and strong competitiveness.



CECEP Solar Energy Co., Ltd.

CECEP Solar Energy Co., Ltd. was founded in September 2009 and was listed in December 2015.
(Stock Abbreviation: Solar Energy, Stock Code: 000591)

The company focuses on the comprehensive application of solar energy, insists on taking photovoltaic power station and photovoltaic manufacturing as its two main businesses, and promotes the overall improvement of photovoltaic power station and photovoltaic manufacturing business with energy efficiency services and digital construction.

In terms of photovoltaic power stations, the company has accumulated rich experience in project development and operation management, and invested in and built various projects with different modes including ground, water surface, tidal flat, desert, distributed projects and photovoltaic agriculture in 20 provinces, cities and autonomous regions across China. The total installed capacity of proposed, under-construction and grid-connected photovoltaic power stations reached 6.7 GW.

In terms of photovoltaic manufacturing, the company has invested in and built a photovoltaic cell and module manufacturing base in Zhenjiang, Jiangsu. After continuous technological upgrading and cooperation mode innovation, it now has1.5GW high-efficiency photovoltaic cell capacity and 2GW high-efficiency modulecapacity, and is actively promoting the intelligent manufacturing project of high-efficiency cells and modules, striving to become the mainstream high-efficiency cell manufacturer in the industry.

POWERFUL FINANCIAL STRENGTH

ABUNDANT INDUSTRIAL EXPERIENCE

STRIVE TO BECOME

A LEADER OF CENTRAL ENTERPRISES IN THE NEW ENERGY HIGH-END EQUIPMENT MANUFACTURING INDUSTRY

CECEP Solar Technology (Zhenjiang) Co., Ltd. was established on August 26, 2010. It is a three-level subsidiary of CECEP directly under the State-owned Assets Supervision and Administration Commission of the State Council. Its main business focus on the research of crystalline silicon solar cells and modules, and development and sales of software and hardware for artificial intelligence applications.

Adhering to the corporate value of "customer as the center, value creator as the base", it will continue to explore and innovate, and be pragmatic and progressive. Through continuous technological innovation and refined management, the quality of solar cells and modules will be continuously improved and the manufacturing cost will be reduced, so that the inexhaustible and green solar energy can be introduced into thousands of households and create a better future for human development.

- 10 GW Module Capacity/Year
- 30 GW Shipment
- 2000+ Employees
- 30+ Destination Countries

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R&D TEAM
TESTING ASSURANCE

HIGH-QUALITY PRODUCTS
TECHNOLOGY GUARANTEE

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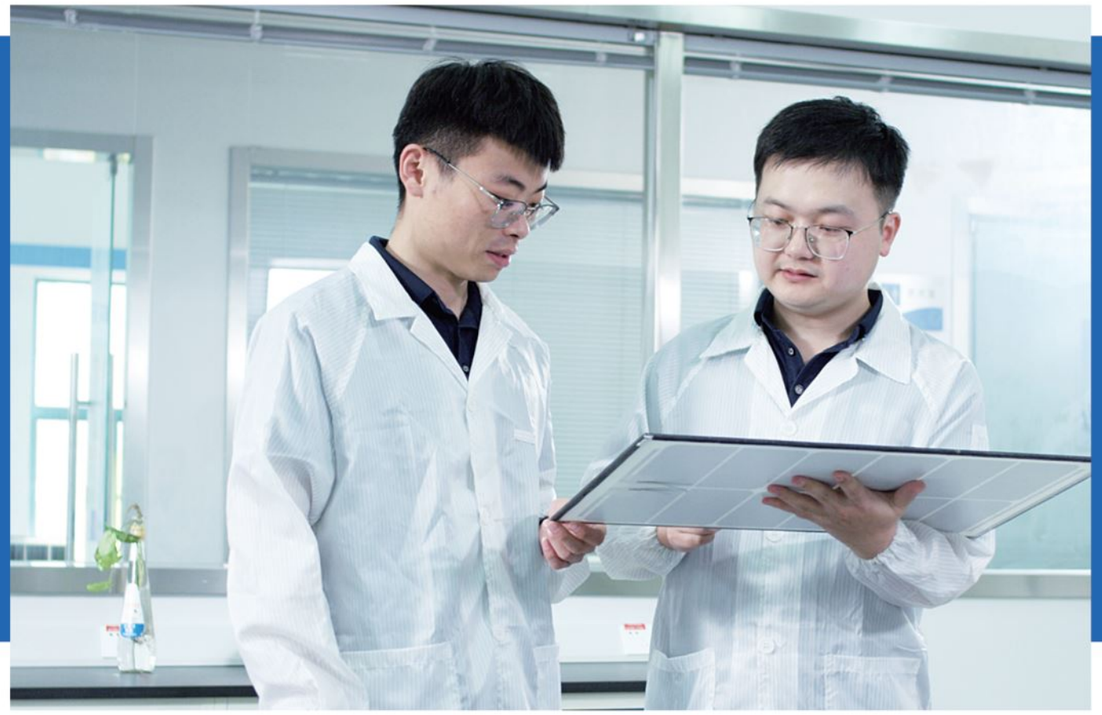


R&D TEAM &
TESTING ASSURANCE

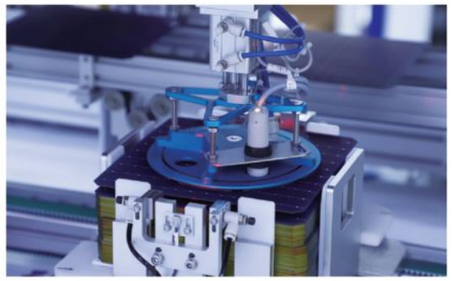
Our R&D team has 36 people, including 3 doctors, 14 masters and 19 undergraduates.
The laboratory covers an area of 2100 square meters, has passed the IEC61215 certification standard, has CNAS and TUV certification qualifications, and is equipped with 131 sets of testing and test instruments and equipment.

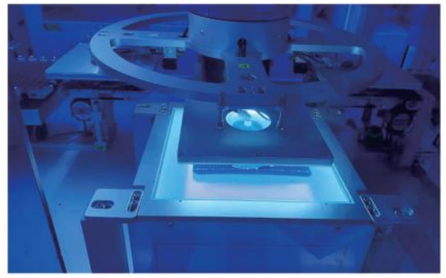
So far,
it has 32 invention patents,
183 utility model patents,
4 design patents and
2 PCT patents.

Innocation & Progress, Tackling Challenges
Multiple Technological Innovation Platforms

- Mass production of 182 and 210 large-size monocrystalline PERC cell (2021 Q4)
- Mass production of 166 large-size monocrystalline PERC cell and mass production of 166 large-size multi-busbar half-cell modules(2020 Q3)
- Successful development of monocrystalline PERC cell superimposed SE technology (2019 Q4)
- Mass production of monocrystalline PERC cell (2018 Q4)
- PVB double-glass technology and equipment upgrades (2017 Q4)
- Successful development of CECEP junction boxes (2017 Q2)
- Succcessful R&D of blace silicon products of diamond wire (2016 Q3)
- Successful development of 1500V modules (2015 Q4)
- Mass production of 182 large-size multi-busbar half-cell modules (2021 Q4)
- Mass production of multi-busbar half-cell double-glass modules (2020 Q1)
- Mass production of half-cell modules after technical transformation of module workshop (2019 Q1)
- Mass production of PVB light weight double-glass module (2018 Q1)
- Successful development of chain wet black silicon technology (2017 Q3)
- Successful R & D of monocrystalline and polycrystalline PERC products and black silicon + PERC high-efficiency polycrystalline products (2016 Q4)
- Successful development of second-generation PVB double-glass modules (2016 Q1)
- Mass production of first-generation PVB double glass modules (2011)

- Postgraduate Workstation of Jiangsu Province
- Nationally accredited CNAS laboratory
- Jiangsu Province Crystalline Silicon Solar Cell and Module Technology Engineering Center
- Zhenjiang Enterprise Technology Center
- Jiangsu Enterprise Technology Center
- Jiangsu Province(CECEP) Crystalline Silicon Solar Cell and Module Engineering Technology Research Center
- National Postdoctoral Research Station





The module manufacturing process is divided into

7 major processes
material preparation, welding, lamination, lamination, framing, cleaning test, packaging

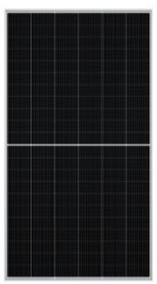
8 main materials
mells, interconnection strip, tempered glass, EVA, backsheet, junction box, aluminum frame, silica gel

Key production process technology points and control measures of PV modules:

1. Welding tension test: use the full-automatic tension tester to sample the welding tension on each side of the welding machine according to the frequency of 2 times/shift, monitor the welding quality and prevent over welding.
2. Detection of faulty welding: the welding machine is equipped with string EL detection, and AI automatic recognition is adopted, which not only reduces manual work, but also improves the detection rate of cell string faulty welding and fragments, and reduces the transmission of defective strings;
3.Pre floor EL test: the pre floor EL test is equipped with the EL detection ,front and back surface appearance of PV module inspection. The pre floor EL adopts the following methods: AI automatic identification, defective position marking, and personnel aided judgment. The rate of defective missed detection is reduced.
4.Cross linking degree test: for cross linking degree test, it can be divided into: first article test of EVA batch incoming materials, daily routine cross linking degree test on site, which can effectively monitor the level of laminating cross linking degree and ensure the reliability of PV modules laminating process;
5.Power test: calibrate the IV tester with the standard board calibrated by the TUV, and use an independent temperature regulation system in the test room to ensure the accuracy of PV module power test;
6. Final EL test: The final EL test adopts the following methods: high-definition camera photography, AI automatic identification, defective location marking, and personnel aided judgment to eliminate the downloading of defective products.

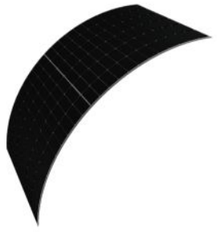
High-efficiency Cell Modules

- The component products adopt the most advanced multi-bus grid + half-cell technology in the industry
- Advanced non-destructive dicing technology, high-quality packaging technology, effectively guarantee the power generation income during the life cycle
- Product specifications cover 210/182/166 size single and double glass modules, which can realize double-sided power generation of the product
- The industry's first self-developed color PVB multi-busbar, half-cell, double-glass product, which can be applied to building photovoltaic integration



General Module-YunChang

All Black Module-QingTian



Flexible Module-FeiYan

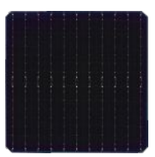
BIPV Curtain Wall Module

BIPV Color/Double-glass Module-NvWa

High-efficiency Cell

Adopt the industry's most advanced PERC battery technology route, mature mainstream battery production equipment, product conversion efficiency and quality have reached the industry's advanced level, and have the ability to produce 166, 182, and 210 large-size cells.

210 TOPCon Cell



182 TOPCon Cell

182 Monocrystalline
PERC Double-sided Cell

210 Monocrystalline
PERC Double-sided Cell

Intelligent Manufacturing Value-added Services

1

Solar Household Systems

A portable new energy product integrates solar charging and commercial power charging with digital charging and discharging circuit design, which is widely applied in power supply.

2

Laser Bird Repellent Equipment

Solve the problem of large-area bird repelling in photovoltaic power stations through laser, gas cannons, clustered intense sound, rolling ultrasound, infrasound, voice and other technologies.

3

Intelligent Transfer Vehicle PV Cleaning Robt

Intelligent maintenance equipment that has an automatic cross-line cleaning function greatly improves the power generation efficiency and management level of photovoltaic power stations, and has won many national product patens.

4

AGV Patrol Vehicle

24-hour indoor and outdoor inspection can ensure the safety of operation an maintenance and improve the quality of operation and maintenance; Environmental awareness, detection of foreign bodies and small animals can improve of equipment, and reduce the failure rate of shutdown.

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ENTERPRISE DIGITAL TRANSFORMATION

QUALIFIED SERVICE REPUTATION GUARANTEE

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ENTERPRISE DIGITAL TRANSFORMATION

Create an “energy-saving cloud ecosystem” and provide industry-level “products + services”

The enterprise has won 26 honors, such as AAA Rating of the Management System of Integration of Industrialization and Informatization, Pilot Demonstration Project of Integration Development of Manufacturing Industry and Internet, Green Factory, Industrial Internet Demonstration Factory, Five-starCloudEnterprise,Four-star Security Enterprise, Bronze Award of the 4th "Bloom Cup" 5G Application Competition, 196 authorized patents and 13 software copyrights.

As the carrier of smart technology and data application, "Solar Cloud Ecosystem" realizes digital application service and transformation output both inside and outside, and provides customers with better intelligent manufacturing and maintenance solutions integrating "hardware + software + cloud + succession+ service", making data productive and helping enterprises accelerate the transformation and upgrading of intelligent manufacturing.

CLOUD PLATFORM

Industrial Internet solutions, providing solutions for multiple application scenarios

Industrial Internet Platform

Transparent monitoring and control of the production site, construction CECEP Smart Manufacturing System, Practicing Photovoltaic Industry Industry intelligence application.

Intelligent Operation Collaboration Platform

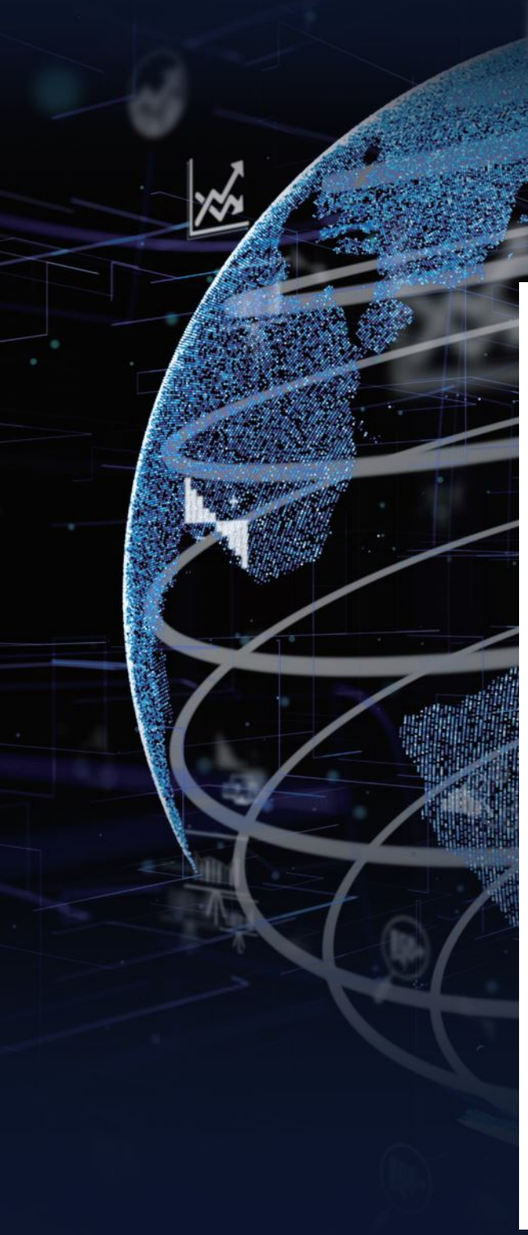
Paperless office and mobile approval, the establishment of the CECEP's office standardization system, business systematization to improve efficiency.

Energy Internet Platform

Intelligent operation and maintenance of power station and full-process service, build CECEP’ s smart operation and maintenance system to develop energy mutual Networking mode.

Big data cloud platform

Intelligent analysis and decision reminders to build operations Index system to realize the guidance of business thinking data analysis.



GLOBAL CLIENT NETWORK

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PV MODULES CERTIFICATION THIRD PARTY INSURANCE

PROJECT CASE

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PV MODULES CERTIFICATION

THIRD PARTY INSURANCE

FULL PRODUCT CERTIFICATION

- JET
- TUV SUD
- BIS
- INMETRO
- TUV
- PID TEST
- CQC GOLDEN SUN CERTIFICATE
- FIRST BATCH OF CQC "TOP RUNNER" PRODUCT CERTIFICATION
- PACKAGING TRANSPORTATION AND DYNAMIC LOAD TEST

Cumulative shipment exceeding 30 GW from 2013 to 2022

CECEP Jiangxi Lianhua 50 MW PV grid-connected power generation projec

Acme solar holdings limited
India 150mw project

Luli 40MW Rooftop Distributed Project
of China Power Investment Corporation

Hubei 580KW household distributed project

Liaoning Fuxin 45MW photovoltaic project

Sungrow Renhua Soil Rehabilitation
60MW Project

Leping 20MW Agricultural Greenhouse
PV Project

Guangxi Dongxing 150MW
photovoltaic power plant project

Anhui Tongling 110MW water surface
photovoltaic power station project

Shandong Qilu Petrochemical 10MW
photovoltaic power plant project

CECEP Huailai 20 MW PV Agro-tech
Greenhouse Power Station Project

Guangdong Zhanjiang 50MW surface
photovoltaic power station project

PROJECT CASE