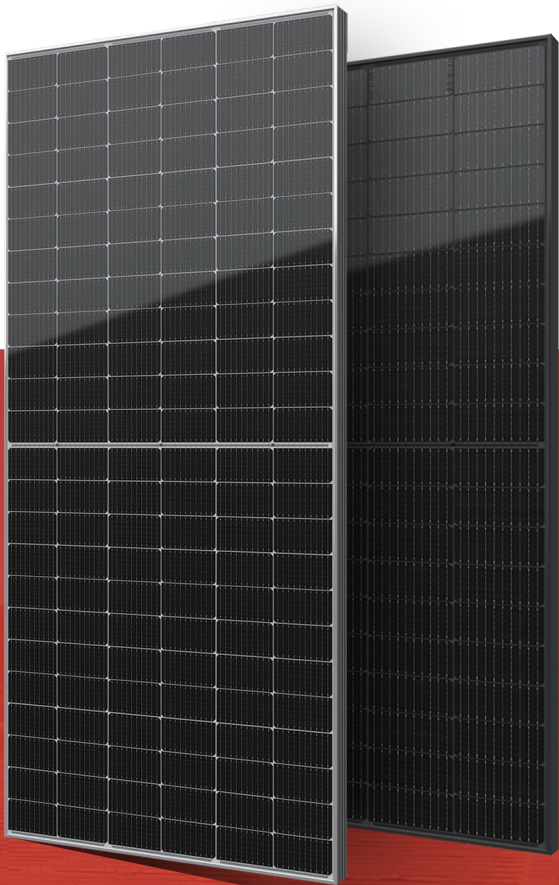




Grand Sunergy

Web : www.grandsunergy.com

Email: sales@grandsunergy.com



HJT



Grand Sunergy

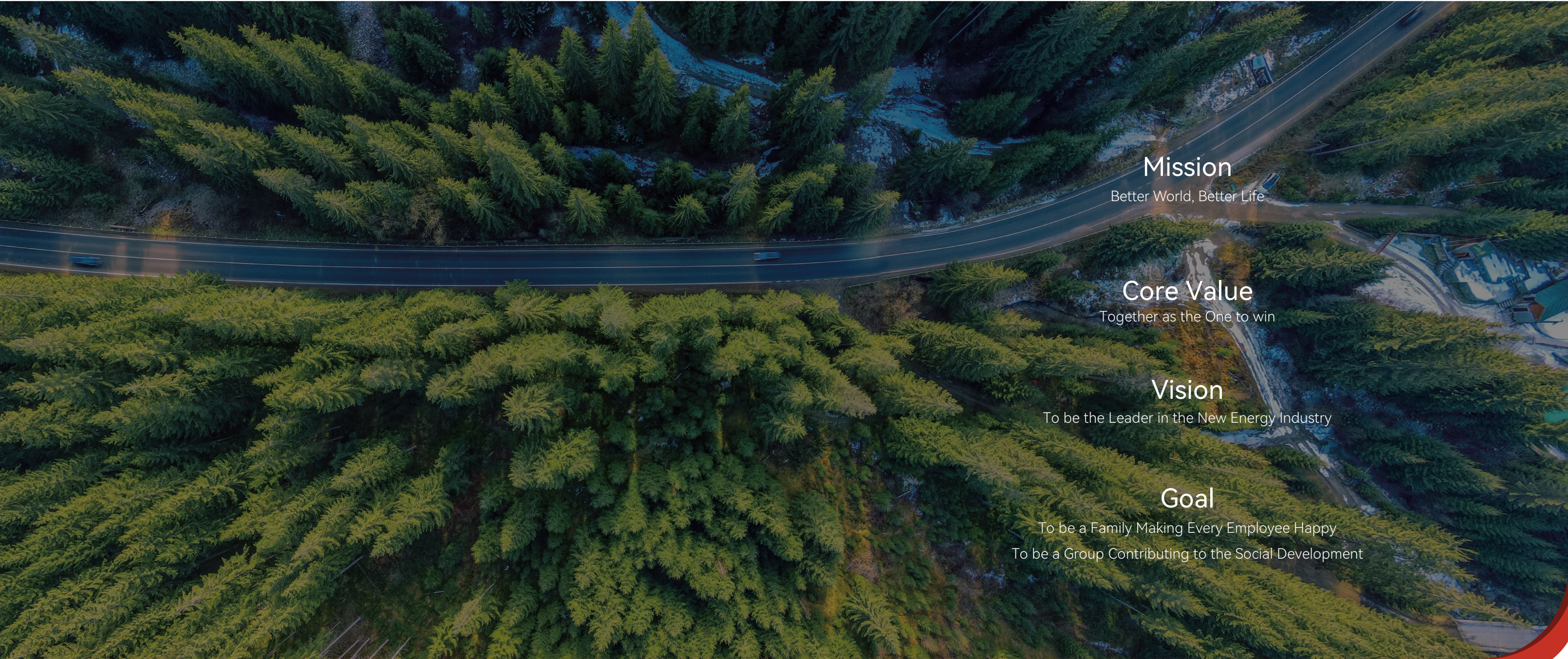
Technology Re-builds The Future



Contents

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- 3 Manufacturing
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Corporate Culture



Mission
Better World, Better Life

Core Value
Together as the One to win

Vision
To be the Leader in the New Energy Industry

Goal
To be a Family Making Every Employee Happy
To be a Group Contributing to the Social Development

About Grand Sunergy Tech

Guosheng Shian Technology Co., Ltd. (referred to as "Grand Sunergy Tech", stock code: 603778) is a enterprise focusing on ecological governance with more than 30 years' experience. Grand Sunergy Tech has established a wide range of professional services including project planning, architecture, landscape, tourism, municipal services, and ecological / environmental protection.

With adherence to the mission of "Creating a Greener Earth and Better Life", Grand Sunergy Tech entered into the renewable energy by 2022. New energy segment referred to as "Grand Sunergy" primarily concentrates on the production of high-efficiency HJT cells and modules, alongside investments and operations throughout the entire upstream and downstream industrial chain. Presently, we have established five production bases in China, including HJT cells / Modules and Wafer.



About Grand Sunergy

Grand Sunergy have formed a layout of raw silicon, crystal growth, ultra-thin N-type silicon wafer, high-efficiency HJT cells to large-size modules. The excellent R&D team and manufacturing team brings us four Photovoltaic module series of HJT modules: the Eutropic Series (182), the Expedition Series (210R), the Chasing Series (210), and the Seapower Series designed for offshore photovoltaic applications.

Additionally, Grand Sunergy extends its support to partners by providing comprehensive solutions, including project development, EPC, and O&M services.

Grand Sunergy seizes the new development opportunities of dual-carbon goals and continuously strengthens the "Product & Service Innovation" strategy, to create Grand Sunergy as the crarrier of intelligent technology and innovative service.



6GW

Capacity of HJT Module

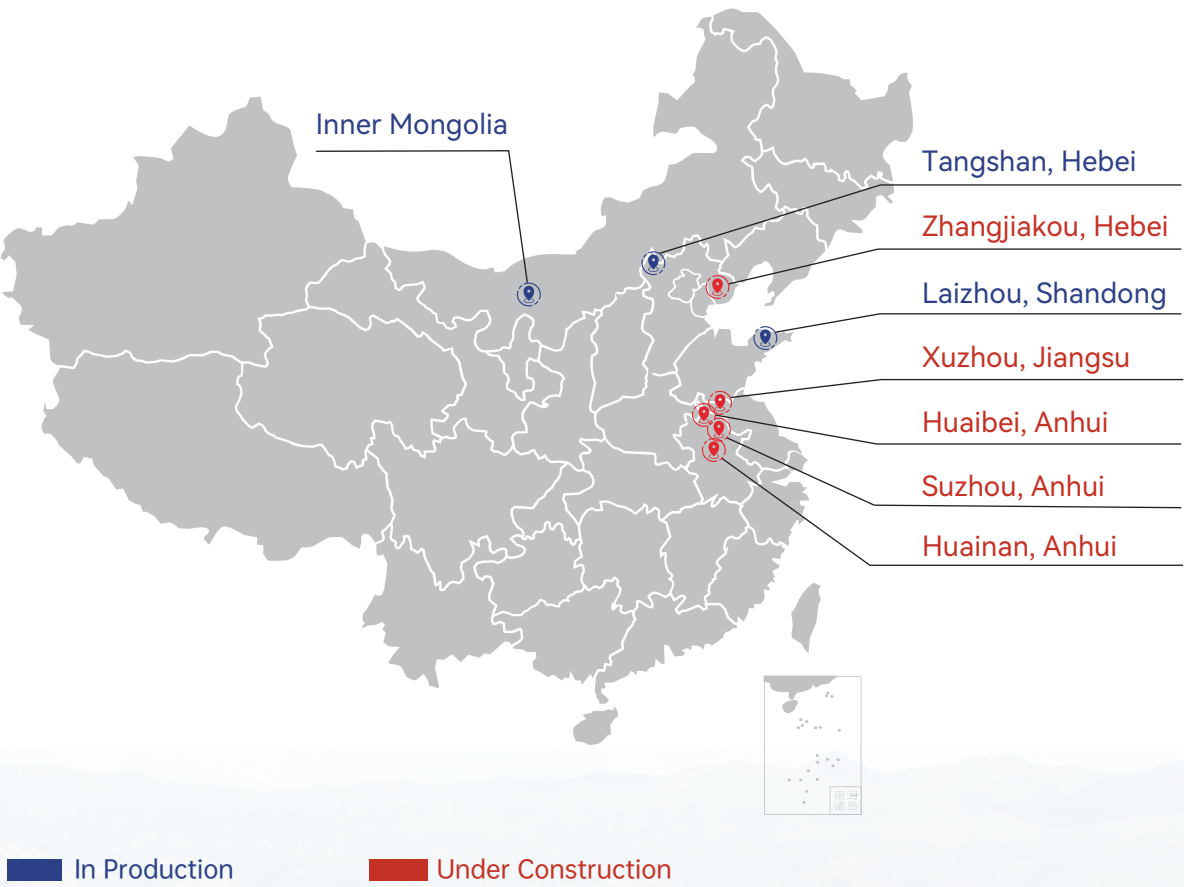


1.2GW

Capacity of HJT Cell

Production Bases

At present, the company has built five bases for wafer,cell and module, and is accelerating the construction of other production bases with Crystall pulling factory included.



Grand Sunergy

• 2023.09

The module factory of Huainan base officially commenced production operations.

• 2023.07

The cell factory of Xuzhou base officially commenced production operations.

• 2023.03

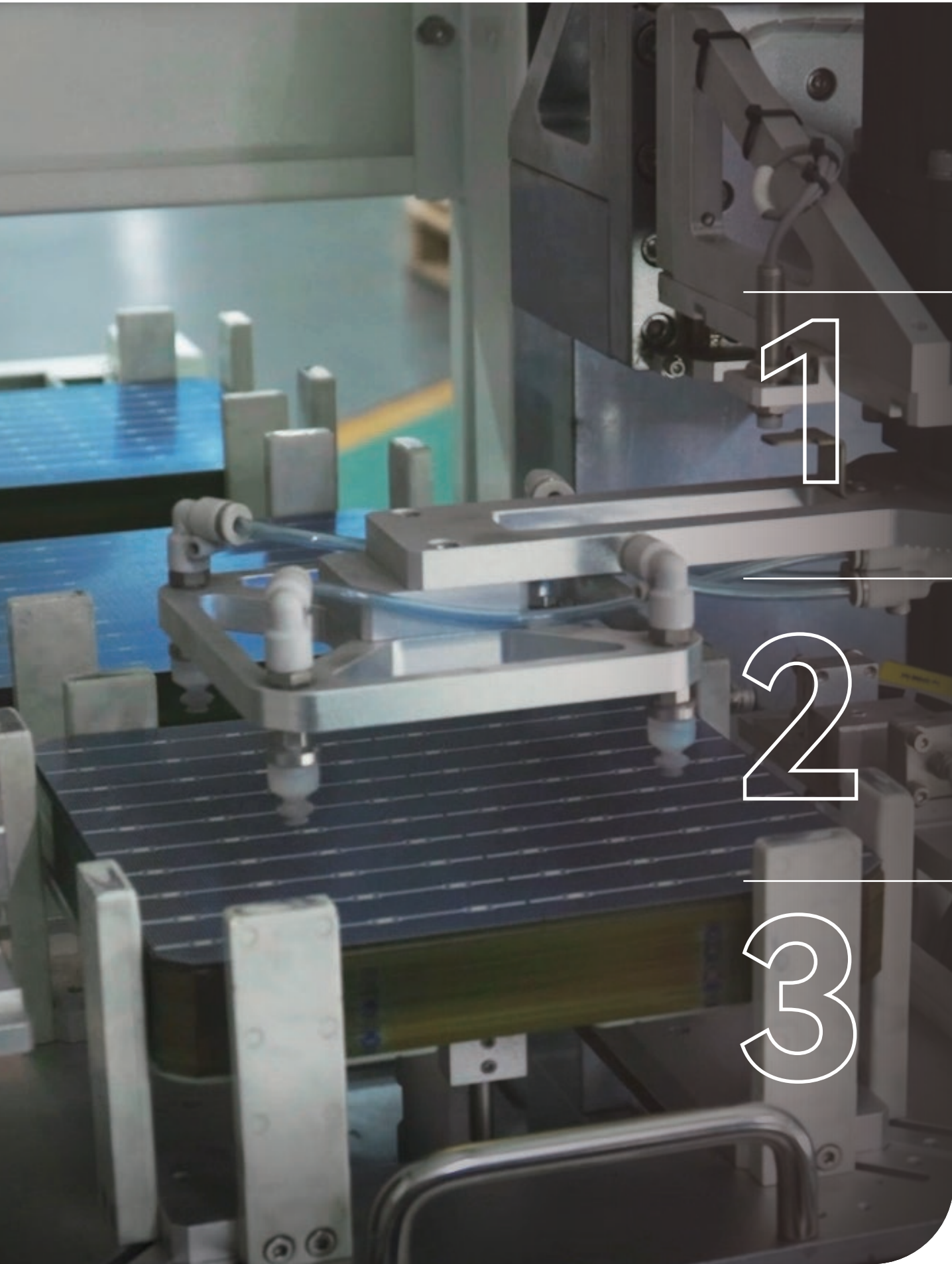
The module factory of Xuzhou base officially commenced production operations.

• 2022.07

The module factory of Huaibei base officially commenced production operations.

• 2022.01

Grand Sunergy was formally established.



Industrial Chain



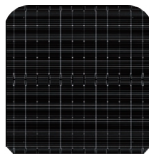
Silicon Material
*Under construction



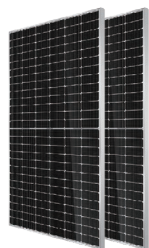
Pull stick
*Under construction



Silicon Wafer



Cell



Module



Project Development



EPC Business



Power Station O&M/ ESS



Zhang Zhongwei

**Chief Scientist and President
of the Research Institute**

PhD of Microelectronics and Solid
State Electronics of East China
Normal University



Shen Wenzhong

**Honorary President of
Research Institute**

Doctor of Shanghai Institute of Technical
Physics Chinese Academy of Sciences
Professor of Shanghai Jiao Tong University



Zhang Wenbin

**CTO and Executive President
of the Research Institute**

PhD of Shanghai Institute of Ceramics
Chinese Academy of Sciences



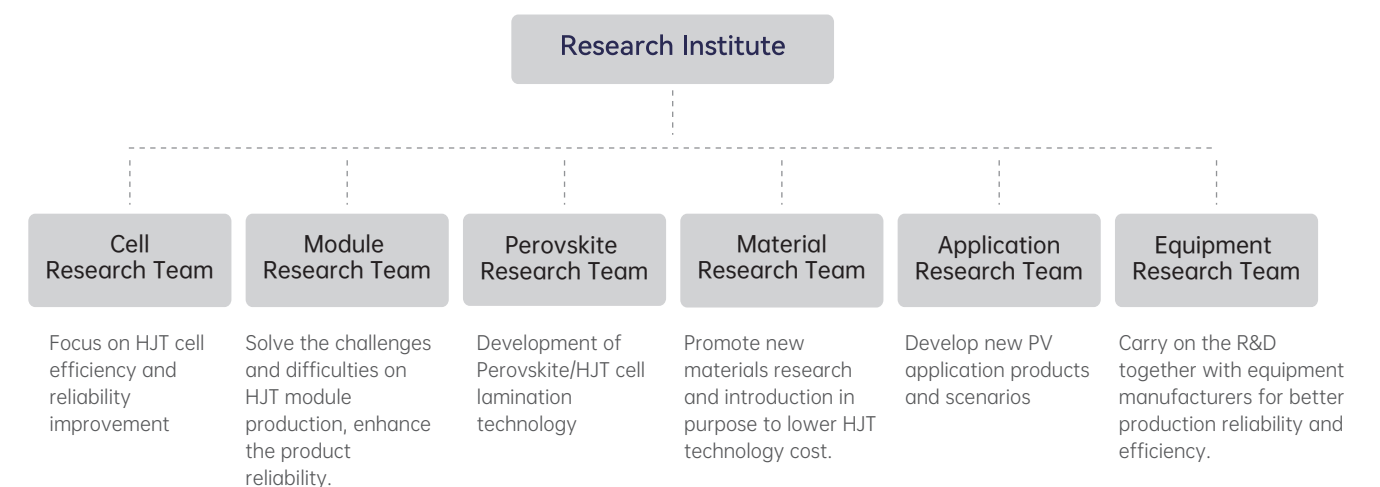
Liu Songmin

**Vice President of
Research Institute**

PhD of Nanjing University

Research Institute

Grand Sunergy established an individual Research Institute, and set up six different research directions, from new material to innovative applications. The joint research is conducting with Shanghai Jiao Tong University Solar Energy Research Institute and other leading research institutes, especially upon the perovskite crystalline silicon laminated cell technology.



HJT Product Technology Roadmap

HJT + Perovskite , Support Module Power
Achieves **800W+**



Intelligent Manufacturing Factory

The production line uses advanced automation equipment to strive for high production efficiency and stable production quality. It includes a fully automatic machine glass loading robot to improve loading efficiency and positioning accuracy; intelligent overlay welding and EL AI detection system to effectively identify lamination defects and ensure the accuracy and comprehensiveness of EL detection; intelligent double-layer three-cavity laminator, to ensure the lamination process is stable and reliable; the high-precision PCF component frame gluing system improves the accuracy of gluing; the fully automatic junction box lidding machine effectively detects the silicone curing effect and accurately seals; the component intelligent appearance AI detection system, fully automatic recognition and detection of dimensional appearance, and intelligent binning system, etc.



Patents & Certifications

Grand Sunergy PV products and facilities have passed authoritative certifications from a number of international standard certification bodies, and their high standards in product design, reliability and standardized production ensure that products and production comply with compulsory quality standards.

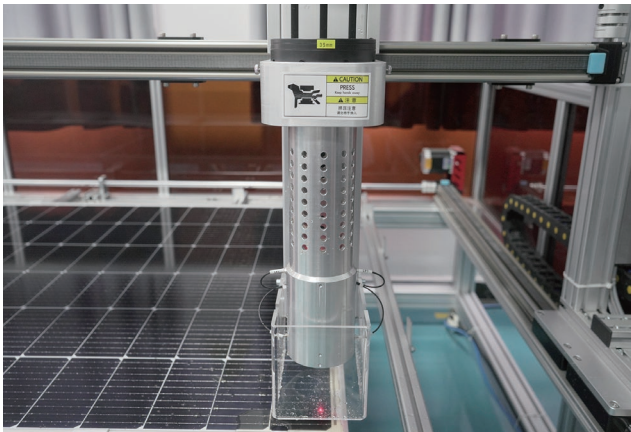
Grand Sunergy focuses on innovative research and development. The R&D team has a group of technical experts, insists on independent research and development, and has multiple patented technologies, giving Grand Sunergy PV products significant advantages in efficiency, durability and reliability.



First-class Standard Testing Laboratory

Grand Sunergy Laboratory has established a comprehensive quality management system according to ISO/IEC 17025 (CNAS), and can carry out over 40 various test items, such as Thermal cycling test, Humidity freeze cycle test, Damp Heat test, Insulation test, Mechanical loading test, PID test, etc.

The products of Grand Sunergy have obtained multiple certifications, including ISO international quality management system certification, IEC International Electrotechnical Commission certification, certification from the General Administration of Quality Supervision, Inspection and Quarantine of China, and CE certification.



Technology Advancements of HJT Modules

BIFACIALITY

Higher Bifaciality / 90%+ Bifaciality

HJT Bifaciality is about 10% higher compared to TOPCon.

The overall Bifaciality advantage results in a power generation increase of 0.5% to 1.0%.

LOW DEGRADATION

Low Degradation Rate

HJT cells degrade 1% in the first year, with annual degradation <0.375% afterward, maintaining ≥88% power by year 30.

HJT generates about 2% more power per watt compared to TOPCon.

NO PID NO LID

High Reliability

No LID caused by B-O effect, outstanding PID resistance by TCO film, to best guarantee long-period durability and yield.

TEMPERATURE COEFFICIENT

-0.24%/°C

TC: -0.24%/°C for HJT and -0.29%/°C for TOPCon, giving HJT an advantage of about 0.05%/°C.

At 30°C to 35°C, HJT can achieve up to 2.5% more power generation than TOPCon.

WEAK LIGHT PERFORMANCES

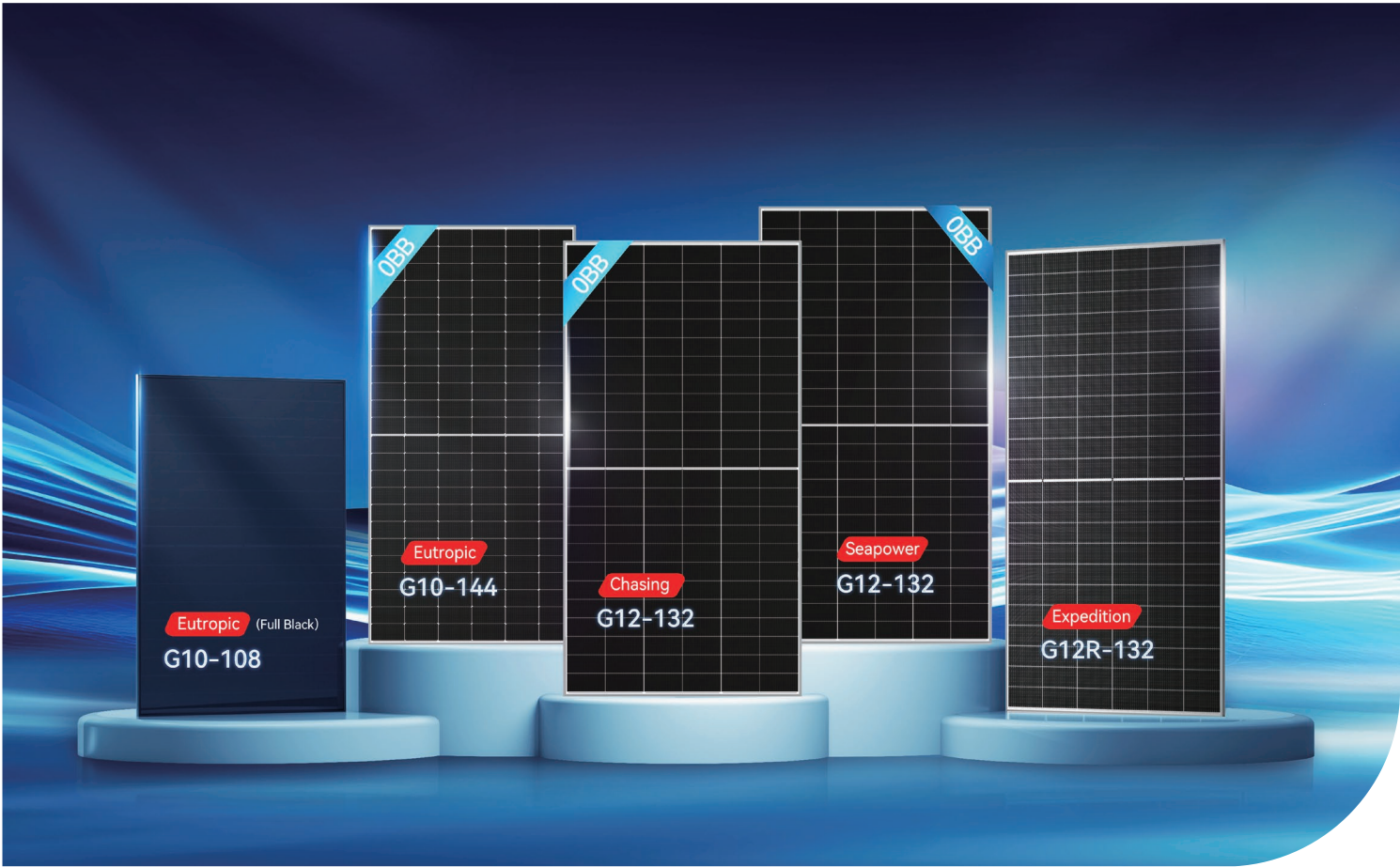
High Energy Yield

N-type substrates, with high minority carrier lifetimes, outperform conventional P-type silicon in low light, ensuring higher power output in low irradiation.

LCOE

Lower LCOE

A cutting-edge and most prominent technology to best reduce LCOE.



HJT (G12)		HJT (G12R)	
GSM	MH3/132-BHDG 710-740W	GSM	MH2/132-BHDG 620-640W
GSM	MH3/120-BHDG 640-665W	GSM	MH2/108-BHDG 500-520W
		GSM	MH2/96-BHDG 440-460W

HJT (G10)	
GSM	MH4/144-BHDG 590-610W
GSM	MH4/108-BHDG 430-450W
GSM	MH4/108-HDGB 420-440W (Full Black)

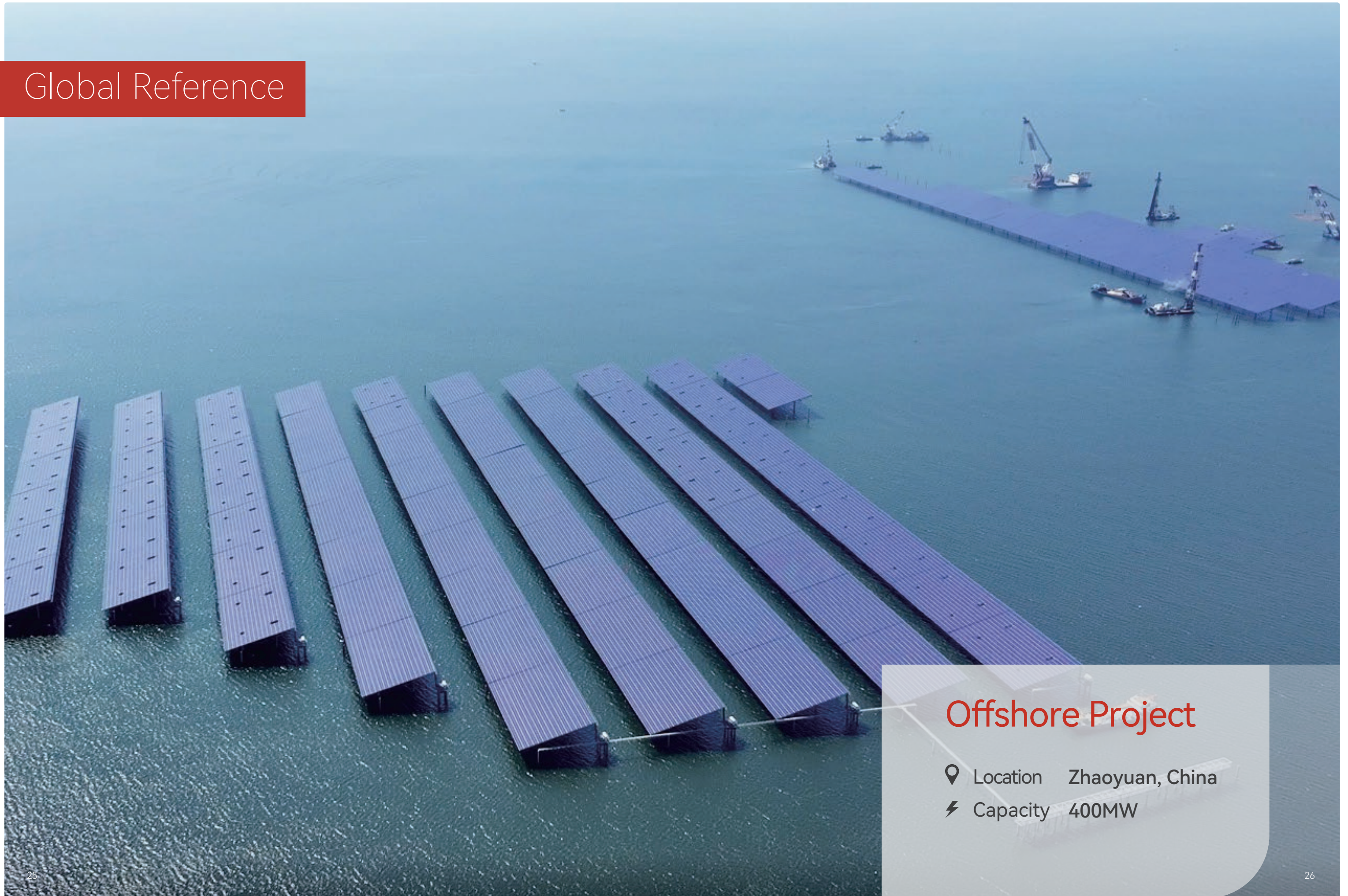
Global Reference



Salt-PV Project

📍 Location Laizhou, China
⚡ Capacity 600 MW

Global Reference



Offshore Project

📍 Location Zhaoyuan, China
⚡ Capacity 400MW

Global Reference

Utility Project

📍 Location Suzhou, China
⚡ Capacity 100 MW



Global Reference

Utility Project

📍 Location Jiayuguan, China
⚡ Capacity 146 MW



C&I Project

📍 Location Huaibei, China
⚡ Capacity 663 KW

Residential Project

📍 Location Belgium
⚡ Capacity 7.2 KW



C&I Project

📍 Location Xuzhou, China
⚡ Capacity 8.995 MW

Residential Project

📍 Location Spain
⚡ Capacity 378 KW



Residential Project

📍 Location Poland
⚡ Capacity 74KW

Utility Project

📍 Location Thailand
⚡ Capacity 703.8 KW



Global Reference



Floating Project

📍 Location Huaibei, China
⚡ Capacity 28MW



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