



A WORLD-CLASS
**SOLAR
PRODUCT**
MANUFACTURER

Stringent quality control is the cornerstone of Seraphim's manufacturing. Our customers have come to expect uncompromising quality in our products. To meet this expectation of high quality, we continue to invest in state-of-the-art equipment and professional training for our employees. We are proud of the quality of our products and their reliable performance even in the most extreme conditions.

Through rapid and steady development, Seraphim has expanded its solar module production capacity to 4GW. In the meantime, Seraphim devotes itself into developing the most innovative photovoltaic technology for a greener future. Since its foundation, Seraphim has been continuously providing excellent quality, high efficiency and high ROI solar products to customers worldwide.

We have earned our reputation as an industry-leading solar product manufacturer largely due to the products' excellent performance. We understand the importance of ensuring customer satisfaction. With over 20 local offices and 2000 employees globally, Seraphim is dedicated to providing efficient support and excellent customer services in all regions.

Over the years, Seraphim has established itself as a leader in solar industry, a pioneer in technical innovation, and a perfectionist in quality assurance. Seraphim has been continuously challenging itself to develop new technologies, higher efficiency products, and provide better services. Seraphim has been certified to international performance and safety standards by independent third party laboratories. Seraphim also actively participates at a local level by coaching and providing the public with economic and green solutions.

It's a bright future indeed. What we are doing is shifting the future.

WHAT WE ARE
DOING IS
**SHIFTING
THE FUTURE.**

A WORLD-CLASS SOLAR MODULE MANUFACTURER

Since its foundation in 2011, Seraphim has accomplished significant achievements in growth and innovation. Seraphim's core belief is that innovation is the key driver behind growth. Our devotion toward innovation has allowed us to outpace most of our competitors. Seraphim is listed as Tier 1 solar module maker by BNEF. With a global capacity of 4GW, Seraphim has been serving worldwide customers with high-quality products and professional services. By the end of 2018, more than 6GW of Seraphim product has been widely applied in over 40 countries.



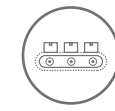
TIER 1

Solar Module Maker (Listed by BNEF)



6GW⁺

Modules Installed Worldwide by 2018



4GW

Module Production Capacity



100⁺

R&D Technicians



40⁺

Destination Countries



50⁺

Global Financial Partners



TOP 1

Module Power Output among Peer Modules Installed before/in 2011 in Photon Laboratory's Outdoor Module Tests



SMALL INNOVATION IN TECHNOLOGY, BIG BENEFITS FOR YOUR BUSINESS

With a full array of exciting solar energy technologies, Seraphim's strong innovation continues to help customers to meet their goals. From utilities to commercial and industrial to residential customers, we work with the unique needs of each customer, site and application to deliver the right products and services. Seraphim has been investing continuously in solar product development including laboratory equipment upgrades and adding to our R&D engineering staff. Our emphasis on product innovation has allowed us to remain at the forefront of solar technology. Seraphim's small steps combine together to make a big leap forward for our clients.

 Over 100 Patents

 Up to 21.1% Module Efficiency

 Over 100 Global R&D Engineers

 Certified In-house Laboratory by CSA, CNAS , TÜV SÜD and CTC

WORLD-CLASS R&D CENTER

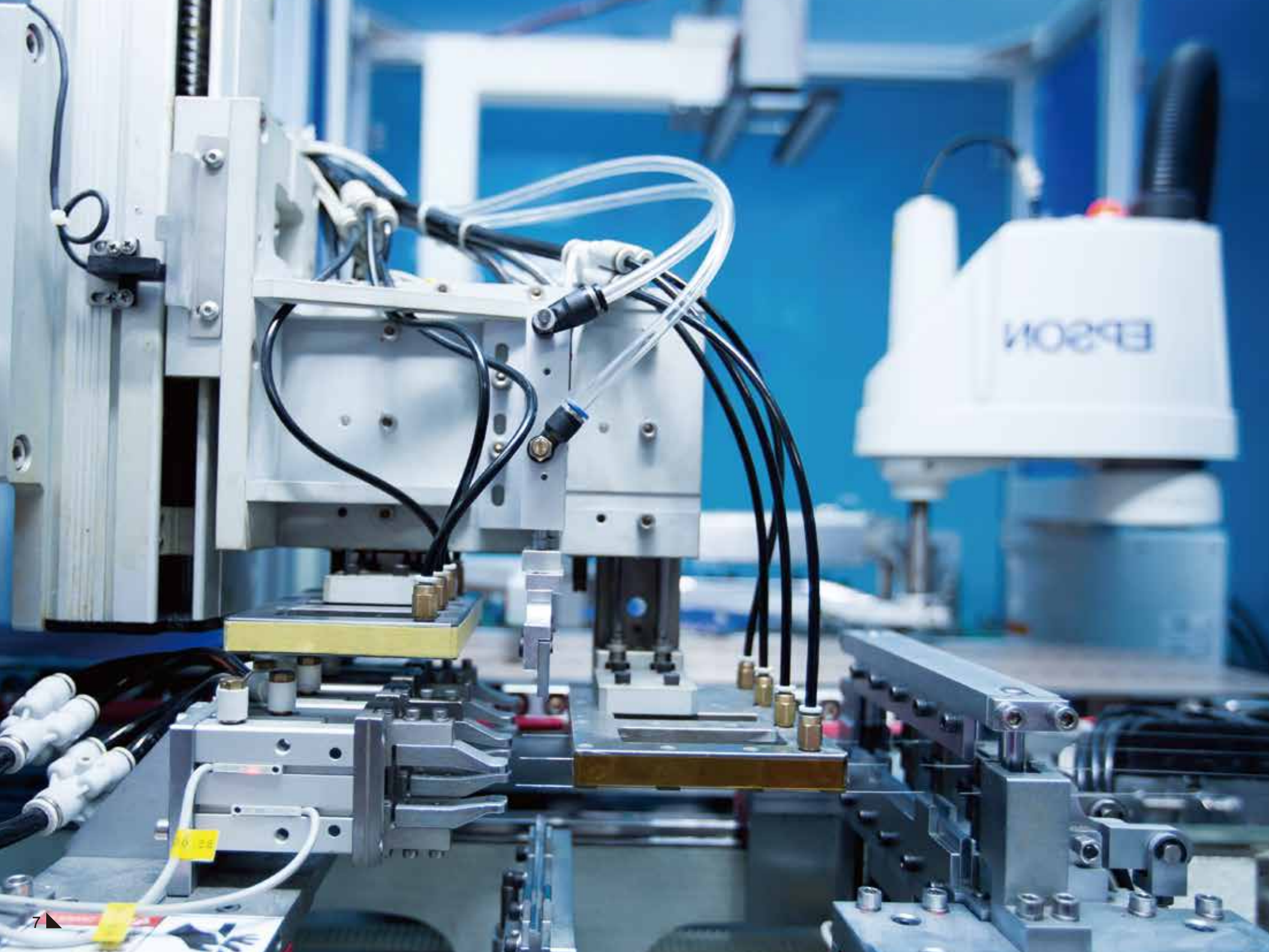
As one of the world's leading manufacturers of photovoltaic products, Seraphim focuses on solar technology innovation. In 2013, we added in-house research facilities that specialize in R&D and product testing for further development, new materials testing, client customization and periodic sample testing, etc.

Located in the scenic Chinese city of Changzhou, Seraphim's laboratory covers an area of 722 square meters. Equipped with German-made electrical performance testers, a walk-in climate simulation chamber, and over 20 other instruments for PV testing and staffed with more than 80 engineers, 20 testing specialists, and 3 experienced managers, the laboratory now has complete PV R&D and testing capability.

The laboratory has been recognized as a CSA witness laboratory, TÜV TMP laboratory, TÜV qualified CTF and CNAS certified in-house laboratory. This allows Seraphim to shorten the certification period and accelerate the speed of new product release.

- A+A+A+ Rated H.A.L.M. Sun Simulator
- VOTSCH Walk-in Climate Simulation Chamber
- ATLAS UV Test® Fluorescent / UV Instrument

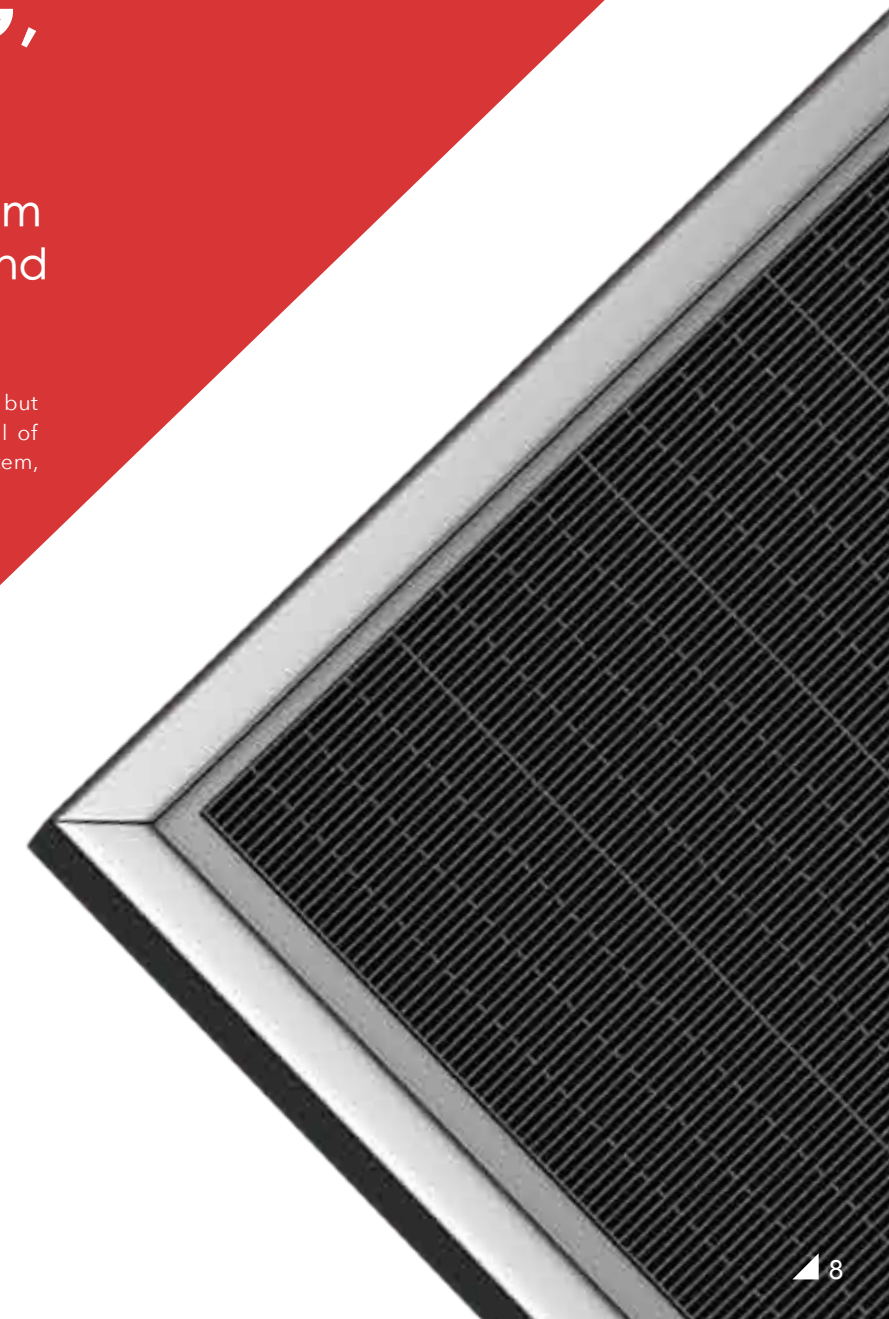




SMARTER MANUFACTURING, SMARTER CHOICE

Highly automated production lines enable Seraphim to supply modules with high quality, fast delivery and low cost.

Seraphim positions itself as a leader in the solar industry not only in leading-edge product performance, but also in manufacturing equipment, quality control, and customer service. Seraphim strives to meet all of clients' expectations by utilizing fully automated manufacturing facilities, advanced quality control system, and self-developed fully transparent quality management system.



MODULARIZED FULLY AUTOMATED PRODUCTION LINES ENABLE FAST DELIVERY AND COST SAVINGS

Seraphim's ever-improving highly automated production lines enable us to supply modules with high quality, fast delivery and low cost. To improve production reliability and efficiency, Seraphim works closely with equipment suppliers to develop customized automated production lines. As a result, we have the most automated production lines in the PV industry. Seraphim has also dedicated extensive resources to improving production efficiency and fluidity. Roughly 2 MW modules are produced annually by each Seraphim worker, which is 50% higher than our competitors.

10%

Lower production cost

10%

Equipment effectiveness

24 * 7

Real-time online monitoring

40+

Patents on production process optimization

99.8%

Good Product yield rate

35%

Higher production efficiency

REAL-TIME MONITORED AND RECORDED >>>



Seraphim employs strict manufacturing management and end-to-end quality control. With an in-house developed ERP system, we track every production step of every module component from incoming material quality control, to online production, OBA test and delivery status, etc. The ERP system implements a unique bar code for each module component. Information such as raw material suppliers, production workers, quality testing results, and production details are all accessible online through our ERP system. This data will be kept on our server for client's access. Our product monitoring system allows us to track and take responsibility for product quality. It also enables customers to log in via Internet to retrieve real-time module production data. In the long run, this enables us to track back products' records in a database, which gives us the ability to further improve product quality .

BENEFITS FOR SERAPHIM



>>> Simplify production process, improve production efficiency



>>> Enhance product quality while dramatically reduce cost



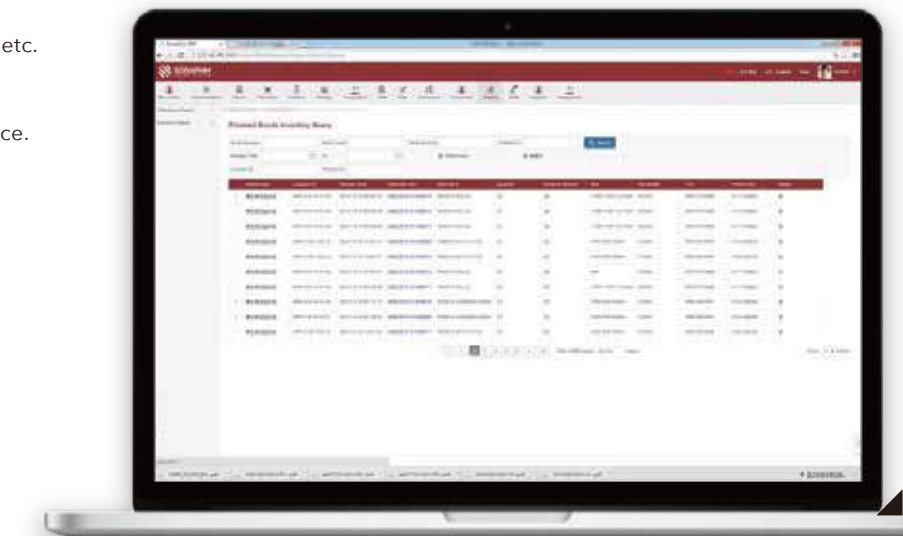
>>> Improve utilization rate of corporate resources and assets



>>> Guarantee customer trust with transparent and traceable production process

ADDED VALUE FOR CUSTOMER

- Customers can access real-time production data including BOM detail, EL report, operator, etc.
- Real-time update of the production status, delivery specifics, etc. of your order.
- A unique bar code enables you to track back all the information related to your order.
- Visual access to real-time workshop floor monitor recordings via our ERP system in your office.





“

HIGH QUALITY PRODUCTS COME FROM STRINGENT QUALITY CONTROL SYSTEM

Stringent quality control is the cornerstone of Seraphim's manufacturing. Our customers have come to expect uncompromising quality in our products. To meet this expectation of high quality, we continue to invest in state-of-the-art equipment and professional training for our employees. We are proud of our product quality and their reliable performance in the most extreme conditions.

”



QUALITY MANAGEMENT SYSTEM

Seraphim has received certifications for Quality Management System (ISO 9001:2008), Environment Management System (ISO 14001:2004) and Occupational Health and Safety Management System (OHSAS 18001:2007) from both DNV GL and GZCC.





Beyond ISO9001, Seraphim also applied for the national "GB T19580 2012 Criteria for Performance Excellence". This regulates not only product quality, but also production waste, environmental burden, management foresight, etc., which are the necessities for an "excellent" company.




MATERIAL CONTROL

-  Stringent Supplier Management
-  Automatic Material Filtration and Sorting
-  Spot Check Every Feedstock Batch
-  Proper Storage at Fixed Temperature and Humidity
-  **SQE** Supplier Quality Engineering
-  **IQA** Incoming-material Quality Assurance

PRODUCTION CONTROL

-  300+ Quality Check Points
-  3 * EL Tests
-  In-process Quality Control
-  A+A+A+ Rated H.A.L.M. Sun Simulator

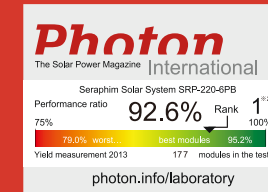
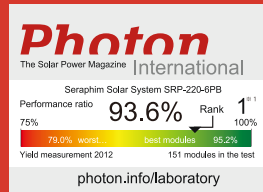
AFTER PRODUCTION

-  Open Box Audit (OBA) Test



PROVEN HIGHER MODULE EFFICIENCY AND OUTPUT

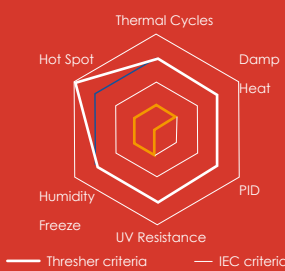
In an outdoor performance test conducted by PHOTON Laboratory, which is a globally recognized industry-leading laboratory, Seraphim's modules, installed in 2011, have consecutively maintained first place among over 150 module brands. The laboratory puts our products through the most stringent and demanding tests, among hundreds of peer products, and then test their performance under real installation and various environments. In addition, DNV GL released the latest PV Module Reliability Scorecard Report 2017 and named Seraphim Top Performers. And Seraphim's module products have received the China Quality Certification Center's ("CQC") Top Runner Program level-one energy efficiency certification.



THREE TIMES MORE THAN INDUSTRY STANDARDS IEC61215 AND IEC61730

Thresher test (300% the IEC standards) includes a series of tests for thermal cycling, damp heat, PID, UV, humidity freeze and hot spot. It is designed to test whether or not modules can maintain their power output during adverse conditions throughout their lifetime.

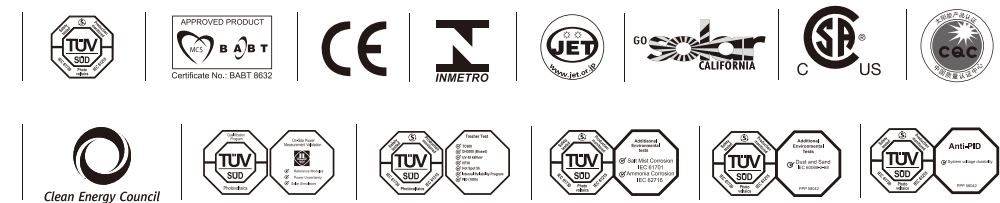
Project	Condition	IEC Criteria	Thresher Criteria
Thermal Cycles	-40~80 C	200 cycles	600 cycles
Damp Heat	85 C 85%RH	1000h	3000h
PID	—	—	96h
UV Resistance	—	15 kW/m ²	45 kW/m ²
Humidity Freeze	-40 C ~ 80 C 85%RH	10 cycles	30 cycles
Hot Spot	60kwh/m ²	5h	20h



RELIABLE AND HIGH EFFICIENT MODULES GUARANTEE PROFITS

Seraphim specializes in module production. All of our products have been certified by professional third party testing bodies. But that's not enough. We apply stricter standards to make sure they remain functional even under the most extreme conditions.

PRODUCT CERTIFICATES





DIVERSIFIED SOLAR MODULES MEET DIFFERENT NEEDS

Seraphim produces a wide variety of PV modules ideally suited for all types of installations: residential, commercial, industrial, and utility. Seraphim offers a rich module portfolio to meet the diversified needs of customers, including Eclipse™, the world's first certified high efficiency module using shingled technology, DUAL GLASS, Blade™, EzBox™, configured with three junction boxes, and Dual-Glass series applicable to specialized roof projects etc.

ECLIPSE™



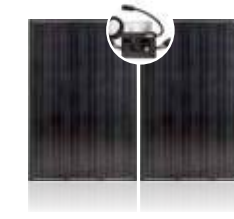
- Up to 21.1 % module efficiency
- 28% more power output
- More than 15% BOS cost saving
- 16% greater fill factor for limited space
- Dramatically reduced hot spot effect
- Enhanced reliability and durability
- Aesthetically pleasing

BLADE™



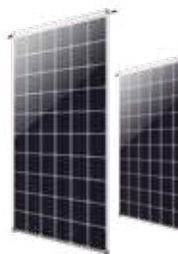
- Less mismatch loss
- Less internal power loss
- Higher yield due to better shade tolerance
- Reduced BOS and installation cost
- Reduced hot-spot effect

SMART SOLUTIONS



- Up to 25% more output than DC array
- Smart installation with super integrated design
- Enhance system reliability
- Improves safety, eliminates high voltage DC on the roof

BIFACIAL DUAL GLASS



- High Efficiency Bifacial Module
- 10-25% additional Power Generation Gain
- Reduces Micro-cracks, Snail Trail, UV Aging
- Anti-PID, Superior Stability and Durability
- Outstanding power output capability at low irradiance
- Ideal Choice for high-reflective area

ECLIPSE MINI



- Ribbon-free, smaller currents, lower internal resistance
- Higher efficiency, higher output
- Beautiful aesthetic design, perfect visual enjoyment
- Significantly reduced hot-spot effect
- Flexible design

STANDARD SERIES



- Optimized power output
- 100% 3 times EL testing
- Top ranked in Photon's Outdoor Test
- Superior stability and durability
- 1500V modules available

SEAMLESS SERVICES LET YOU ENJOY THE SUNSHINE

Seraphim provides full range of services even before an order is placed. You can enjoy caring and professional instant response technology consultation, fully transparent ERP, as well as local offices and online instant response system. This seamless service chain will allow you to worry less and enjoy the sunshine.



24 * 7 Real-time Monitoring

You are able to observe production process via our ERP system online



48-hour Response

Timely response warranty calls



Local Offices

Global network insures rapid on-site support



Technology Support

Professional technical team helps maximize the benefits of your projects



Financing Service

Professional bankability support and assistance



Tailor-made Evaluations and Recommendations

Experienced sales and technical staff provide professional consultation



Marketing Support

Co-marketing to enhance your brand awareness



Customized Service

Customized service to meet your unique needs



PV Policy Consultation

Experienced team of analysts provides up-to-date analysis and forecast

SHIFTING THE FUTURE

Our approach to corporate citizenship is driven by understanding the role we play in solving the world's energy problems. We believe we can build a sustainable business by helping protect and nurture valuable resources on which we all depend. We share our dream with our customers and employees. "Shifting the Future" is our dream.

At Seraphim, we not only care about energy problems, but also the future of all mankind. By providing clean and affordable solar energy, we are helping maintain the best environment for future generations. As the old saying goes, "We do not inherit the Earth from our ancestors, we borrow it from our children".

In 2013, Seraphim donated 8kW off-grid solar PV systems to two Tibetan primary schools. Located in a remote area of the Tibet Plateau, the two village primary schools not only lack transportation infrastructure, but are also inaccessible to the national grid. These off-grid systems help meeting the basic electricity needs of the two schools. Since then, Seraphim teamed up with the Tibet Care Associations to continuously offer our help. And in 2018, Seraphim and "iHEARu Charity Fund" reached a long-term partnership which primarily targets the "Cognitive Center" project for hearing-impaired children.



China

Jiangsu Seraphim Solar System Co.,Ltd.

Add: No.10, Tongshun RD, Henglin Town, Wujin District, 213000, Changzhou, China

Tel: +86-519-6878-8166

Fax: +86-519-8878-6181

Email: info@seraphim-energy.com



China

Shanghai Sales Center

Add: Room 1105/1110, No.1388 Shanxi North Road, Putuo District, Shanghai, China 200060

Tel: +86-21-5230-0833

Email: info@seraphim-energy.com



China

Nanjing Sales & Marketing Center

Add: Room 2801, Bldg A2, 19 Dengfu Alley, Xuanwu District, Nanjing, China

Tel: +86-25-8536-0181

Email: info@seraphim-energy.com



Japan

Japan Seraphim Solar Co.,Ltd.

Add: 10F 1-15-13 Shiba, Minatoku, Tokyoo 105-0014 Japan

Tel: +86-03-6459-4020

Fax: +86-03-6722-0056

Email: info@seraphim-energy.com



South Africa

South Africa Manufacturing Plant

Add: Factory BW1, Zone 1A- East London IDZ, Ikhala Road, Sunnyridge 5201, Eastern Cape, South Africa

Tel: +27(87)-373-0810

Email: info@seraphim-energy.com