



A WORLD-CLASS SOLAR PRODUCT MANUFACTURER



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SHIFTING • THE FUTURE

2021V2.1



5.5GW

Seraphim has expanded its solar module production capacity to 5.5GW

20+

Seraphim has more than 20 local offices around the world

1500+

Employs more than 1500 people worldwide

ABOUT US

Stringent quality control is the cornerstone of Seraphim's manufacturing. We have developed a thorough understanding of all of our customer's requirements, ensuring that our products can perfectly fit their requirements and applications. And these high-quality products have earned us increased loyalty from our long-term partners and newest customers.

After ten years of rapid and stable development, Seraphim has expanded its solar module production capacity to 5.5GW. Due to consistent research on large-scale production and technological processes, the company has perfected its intelligent manufacturing, quality and cost control.

From an industry follower Seraphim has become a leader in every aspect of the business. Today Seraphim has more than 20 local offices around the world, employs more than 1500 people worldwide, and is dedicated to be a leader in product innovation and service upgrades.

A brand-new day is coming, Seraphim is transforming the future of the solar industry.

A WORLD-CLASS SOLAR MODULE MANUFACTURER

Since its foundation in 2011, Seraphim has accomplished significant achievements and outpaced most of our competition in terms of production capacity and R&D innovation. Employing this strategy, Seraphim earned the Tier 1 distinction from BNEF, and the Top Performer distinction from PV Evolution Labs.

With a total capacity of 5.5GW, Seraphim serves global customers with high-quality products and professional services. By the end of 2020, 11GW Seraphim modules were installed in over 40 countries, the excellent performance of these products has been widely verified under various natural conditions.



TIER 1

Solar Module Maker
(Listed by BNEF)



11GW

Modules Installed
Worldwide by 2020



5.5GW

Module Production
Capacity



100+

Technology Patents



40+

Destination Countries



50+

Global Financial Partners



100+

Technicians



TOP PERFORMER

Listed by PVEL

Trusted By Major Financial Institutions

Seraphim has been on the BNEF Tier 1 solar module makers list for 7 consecutive years and its products have been trusted by more than 50 international banks and other financial institutions. Seraphim provides reliable core assets for PV power plants in various countries and is a leading solar company with a comprehensive financial strength.



DRIVEN BY INNOVATION DELIVER BUSINESS VALUE

Seraphim has established itself as a technology leader in the solar industry. Focusing on the unique needs and installation conditions of customers in various countries, we've launched a variety of products including customized services, project types from large-scale power stations to commercial and residential rooftops.

The company has been awarded a number of advanced solar patented technologies. Our emphasis on R&D enables us to stay at the forefront of the solar industry, assisting customers in achieving higher returns.



Up to 21.7%
Module Efficiency



Over 100 Global
R&D Engineers



Multiple In-house Laboratory
Certifications



World-Class R&D Center

As one of the world's leading manufacturers of photovoltaic products, Seraphim established an in-house R&D center in 2013. The center specializes in R&D and product testing for further development, new materials testing, client customization and periodic sample testing, etc., to provide technical support, thereby guaranteeing the product development and quality control.

The laboratory has been recognized as a CSA, TÜV Rheinland and DEKRA witness laboratory, CNAS certified in-house laboratory, CTC authorized testing laboratory, TUV SUD assessed CTF laboratory and CGC approved laboratory. This allows Seraphim to shorten the certification period and accelerate the speed of new product release under our strict reliability control procedures.



A+A+A+ Rated
H.A.L.M. Sun Simulator



ATLAS Fluorescent / UV
Instrument



VOTSCH Walk-in
Climate Simulation Chamber



SMARTER MANUFACTURING MORE GUARANTEED QUALITY

Seraphim has steadfastly worked with its partners to overcome any technical issues encountered. For the plant layout, a complete set of highly automated manufacturing architecture has been developed. In addition, Seraphim also uses statistical engineering, equipment control, and a variety of management systems to achieve lean production. While ensuring the consistency of product quality, we also strive to shorten the yield learning curve and new product mass production cycle, reduce production costs, and improve customer profitability.



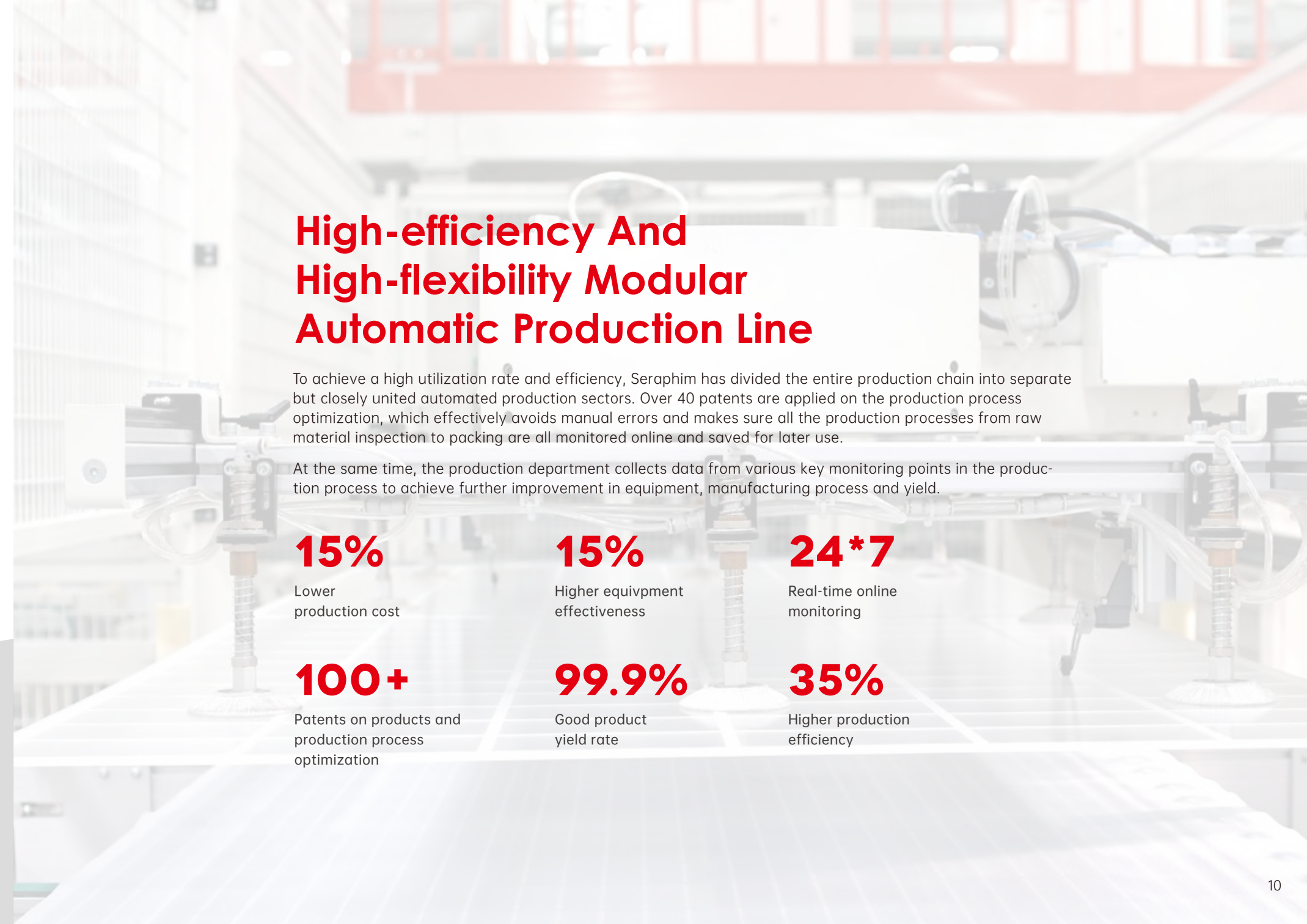
HIGHLY
AUTOMATED



REDUCE
PRODUCTION COSTS



IMPROVE
CUSTOMER PROFITABILITY



High-efficiency And High-flexibility Modular Automatic Production Line

To achieve a high utilization rate and efficiency, Seraphim has divided the entire production chain into separate but closely united automated production sectors. Over 40 patents are applied on the production process optimization, which effectively avoids manual errors and makes sure all the production processes from raw material inspection to packing are all monitored online and saved for later use.

At the same time, the production department collects data from various key monitoring points in the production process to achieve further improvement in equipment, manufacturing process and yield.

15%

Lower
production cost

15%

Higher equipment
effectiveness

24*7

Real-time online
monitoring

100+

Patents on products and
production process
optimization

99.9%

Good product
yield rate

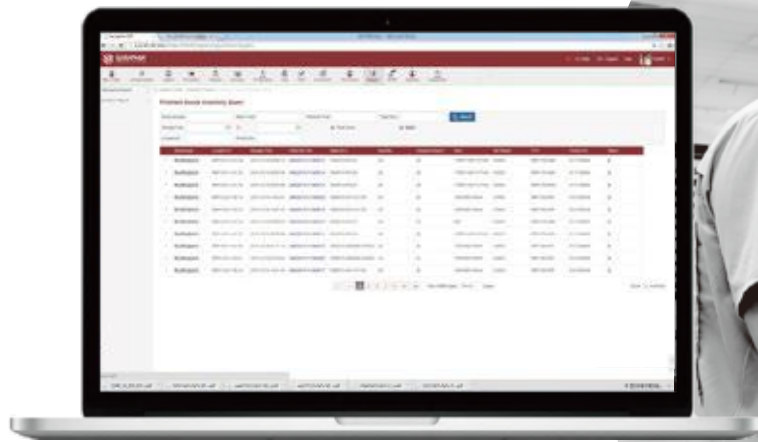
35%

Higher production
efficiency

Real-Time Monitored And Recorded

From incoming material testing to online production, OBA test and delivery status, Sera-
phim's in-house developed ERP system interconnects all data in one database to achieve
complete traceability.

The 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 is kept on our server for client's
access, and allows us to track and take responsibility for product full cycle monitoring and
production process optimization.



Improved Company Competitiveness



Continuously improve line efficiency
and process management



Reduce production costs



Improve capacity utilization and yield rate



Guarantee customer trust by utilizing
transparent and traceable production processes

Added Value For Customer



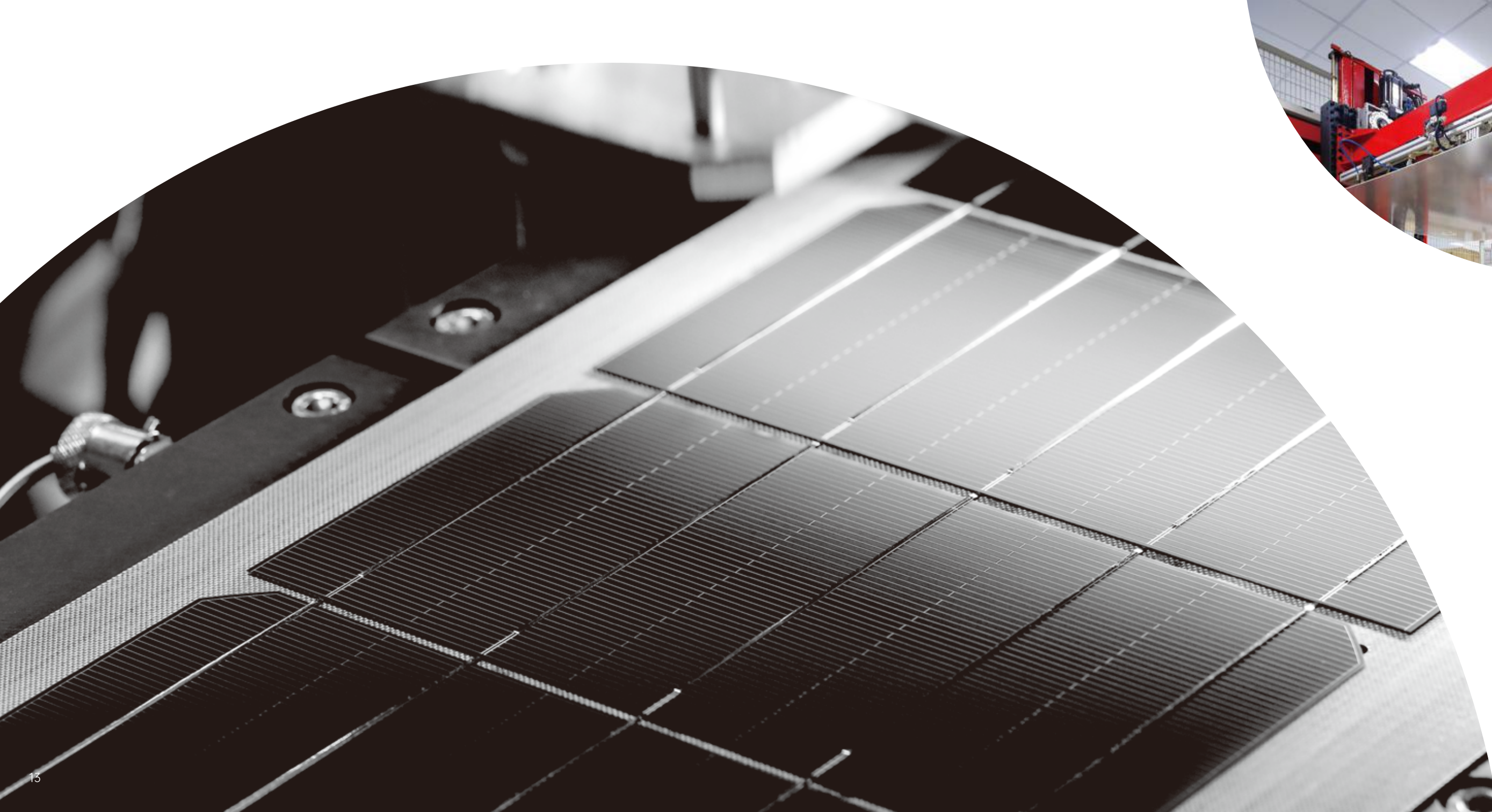
Customers can access
real-time production
data including BOM detail,
EL report,
power data, etc.



A unique bar code
enables you to track all
the information related
to your order.



Visual access to
real-time workshop
floor monitor recordings
via our ERP system.



EXCELLENT PERFORMANCE AND CONSISTENT QUALITY

Quality is Seraphim's core competitiveness. We start from the very beginning of production, strictly control every step, and are strict with ourselves and products. We are proud of our product quality and reliable performance even in the most extreme conditions.

Quality Management System

Seraphim has received certifications for Quality Management System (ISO 9001: 2015), Environment Management System (ISO 14001: 2015) and Occupational Health and Safety Management System (ISO45001: 2018) from both DNV 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 necessary requirements for an "excellent" company.




Supply Chain Control

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

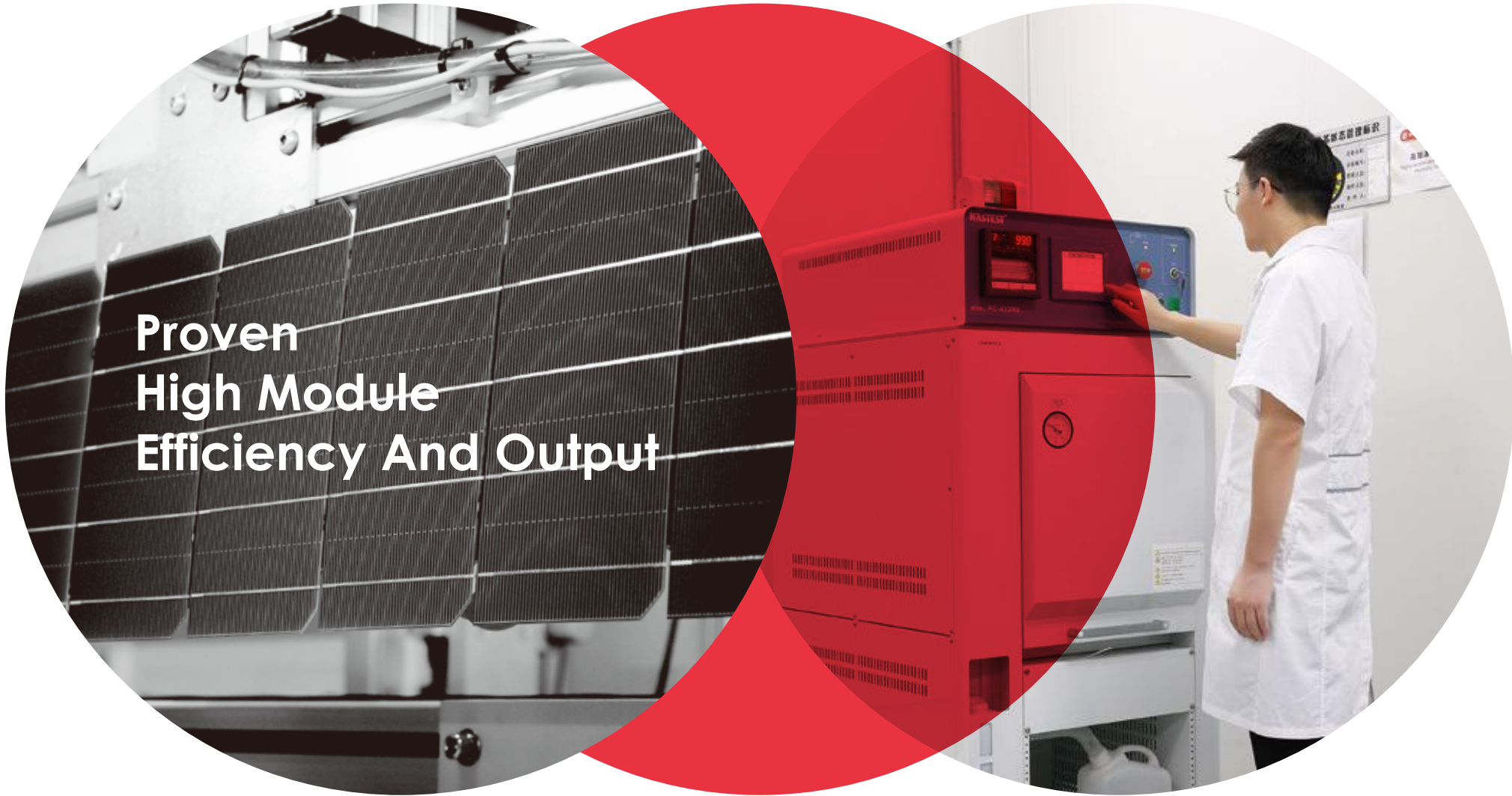
Production Control

-  300+ Quality Check Points
-  3 * EL Tests
-  In-process Quality Control

After Production Inspection

-  Open Box Audit (OBA) Test





**Proven
High Module
Efficiency And Output**

Seraphim Has Been Recognized as Top Performer in PVEL PV Module Reliability Scorecard for Third Time

Seraphim passed the strictest accelerated stress testing and characterization under PV Evolution Labs Product Qualification Program (PQP) and earned 2017, 2019, and 2020 Top Performance. The PQP is a comprehensive evaluation of environmental sensitivities and degradation mechanisms of PV module designs.

In addition, 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% of 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.

Thresher criteria

IEC criteria

Thermal Cycles

Hot Spot

Damp Heat

PID

Humidity Freeze

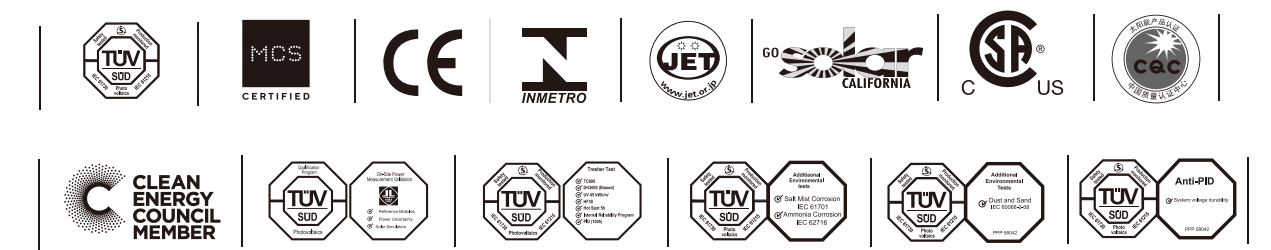
UV Resistance

Project	Condition	IEC Criteria	Thresher Criteria
Thermal Cycles	-40~80 °C	200 cycles	600 cycles
Damp Heat	85 °C 85% RH	1000 h	3000 h
PID	—	—	96 h
UV Resistance	—	15 kW/m²	45 kW/m²
Humidity Freeze	-40 °C~ 80 °C 85% RH	10 cycles	30 cycles
Hot Spot	60 kwh/m²	5 h	20 h



Professional Third-Party Certification

All of Seraphim's products have been certified by professional third-party testing bodies around the world, and the testing conditions are complex and diverse, from ordinary installation conditions to various extreme weather conditions, natural environments. We pursue the ultimate in quality and provide the best guarantee for customers' assets and profits.





DIVERSIFIED SOLAR MODULES MEET DIFFERENT NEEDS

Seraphim redefines a variety of products by integrating large silicon wafers with bifacial-cell, multi-bus-bar, high-density encapsulation and other related technologies. With years of R&D investment, Seraphim innovates and continues to deliver highly competitive products and value to the customers.

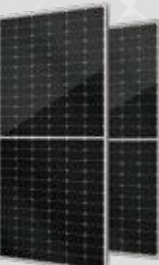


SIV SERIES



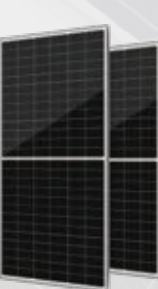
Wafer Size 182 mm
Power Range:
390-405W/525-540W

SIII SERIES



Wafer Size 166 mm
Power Range:
360-375W/435-450W

SII SERIES



Wafer Size 158 mm
Power Range:
330-345W/380-395W

SERAPHIM MX



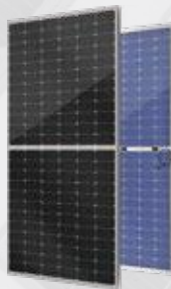
Maximize power generation
Flexible system design

SIV BIFACIAL SERIES



Using reflected light,
10-30% more energy
generation

SIII BIFACIAL SERIES



Using reflected light,
10-30% more energy
generation

SII BIFACIAL SERIES



Using reflected light,
10-30% more energy
generation

SERAPHIM SMART



Fully compatible and multifunctional
Intelligent monitoring
to optimize power output



SEAMLESS SERVICES LET YOU ENJOY THE SUNSHINE

Seraphim provides all aspects of services prior to an order being placed. Meticulous and professional technology consultation is available, fully transparent ERP, including local offices and an online instant response system. This seamless service structure delivers the benefits provided by clean energy.



24 * 7 REAL-TIME MONITORING
ERP system allows you to observe production process 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

We genuinely understand the intense conflicts between energy and the environment that modern society is facing. We are also acutely aware of the role we are playing in changing the world's energy structure to protect the environment. We believe that social development and environmental protection can coexist as long as we change the inherent way of thinking and acting. This change will eventually lead to a better future.

Through donations to the PV roof of Heni Village Primary School, and Pajiang Village Primary School in Tibet, Henglin Junior High School in Jiangsu Province, and Xiangyang No.12 Middle School in Hubei Province, moreover, the PV system of Myanmar government, Seraphim has helped people in remote areas, improved the living environment of vulnerable groups, and sought the harmonious coexistence of human and nature with practical social public welfare.

In 2018, Seraphim and "iHEARu Charity Fund" formed a long-term partnership to assist the "Cognitive Center" project for hearing-impaired children. This program aims to improve the effectiveness of the rehabilitation training center to prepare under-advantaged children for a normal public education.

"Shifting the Future" and making positive changes to the world is our unchanging mission.

- Sales Center
- Manufacturing Plant



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