



Jiangsu Seraphim Solar System Co., Ltd.

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2022

Environmental, Social and Governance (ESG) Report
**JIANGSU SERAPHIM
SOLAR SYSTEM CO., LTD.**

SHIFTING · THE FUTURE

ABOUT THIS REPORT

Report time period

This report is an annual report, covering the period from January 1, 2022 to December 31, 2022. Based on the continuity and comparison of the report, some information content has been appropriately extended forward and backward in terms of disclosure time.

Reporting organization scope

Jiangsu Seraphim Solar System Co., Ltd.(Jiangsai) and two other factories (Ansai Factory, Jinzhai Factory), the detailed address list of Jiangsai and other factories is as follows:

COMPANY NAME	ADDRESS
Jiangsu Seraphim Solar System Co., Ltd.	No. 10, Tongshun Rd, Henglin town,Wujin District, Changzhou, China.
Anhui Seraphim Energy CO., Ltd.	Jingqi Road, Tonghang Avenue, Yingshang Economic Development Zone, Fuyang City, Anhui Province, P. R. China
Jinzhai Seraphim Energy Technology Co., Ltd.	East of the Intersection of Shichuan Road and Jinjiazhai Road, Jinzhai Economic Development Zone (Modern Industrial Park) , Lu'an, Anhui, China.

Report title description

In order to facilitate presentation and reading, Jiangsu Seraphim Solar System Co., Ltd. is also represented by "Seraphim", "we",and "the company" in this report.

Report data description

The financial data in the report come from the company's annual report, which has been independently audited by jiangsu Suya Jincheng Certified Public Accountants. Other data comes from the company's official documents and relevant statistics. The monetary amounts involved in the report are measured in RMB, except for special instructions. Seraphim is responsible for the authenticity, accuracy and completeness of the report content.

Report preparation basis

- GRI Sustainability Reporting Standards(2016) by Global Sustainability Standards Board
- Guidance on Social Responsibility Reporting(GB/T 36001-2015) by Standardization Administration of China
- Guidelines for Environmental Information Disclosure by Listed Companies by Shanghai Stock Exchange
- Guidance on Social Responsibility(2010), etc. by International Organization for Standardization
- Guidance on CSR Report Preparation of China(CASS-CSR 40) by Chinese Academy of Social Sciences
- 2030 Sustainable Development Goals (SDGs) by United Nations

External verification and signature

Report has been independently verified and signed by third party Hangzhou WIT ASSESSMENT.

Report release

This report is published in an online electronic version in Chinese format. The electronic version can be viewed and downloaded from the company's website. Web: <https://www.seraphim-energy.cn>, Please contact us if you require a hard copy.

Contact

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SPEECH OF PRESIDENT

Dear readers,

Hello everyone! On behalf of Jiangsu Seraphim Solar System Co., Ltd., I would like to extend my sincerest greetings and best wishes to everyone! First of all, I would like to sincerely thank every employee of the company for their work and dedication in the past year. It is with your joint efforts that we can achieve today's results. I hope that all Seraphim colleagues will always have a positive and innocent heart, walk firmly every step of the way, live up to the past and live up to the future, and move forward to a more exciting future.

Looking back on 2022, although the global political economy is not calm, the photovoltaic industry has bucked the trend and achieved an excess growth of 50%. In this unstable year, Seraphim does not strive for speed, but for stability, because we believe that a stable fulcrum can leverage more weight. We adhere to the path of technological innovation, optimize and expand product functions to meet diversified market demands; we adhere to the original criterium of high-quality, repeatedly delve into technological processes and large-scale production, and steadily expand production capacity; we continue to use professional expertise to empower our strength, and compete with many industry leaders. Joining forces to develop together by leaps and bounds. In the storm, Seraphim steadily adheres to the idea of taking one step at a time. Of course, such achievements are inseparable from our employees, who have illuminated themselves and the future of China's photovoltaic industry with their diligence and hard work. With expectations for the future in mind, we are growing vigorously in pursuit of the sunshine, and using clean energy to promote the development of human society.

I have full confidence in the future. Those who do will always succeed, and those who do will always arrive. The photovoltaic track is a road leading to the light. Although there are bumps in the road, the ideal light will guide us in the right direction. The future beckons ahead, exuding the radiance of hope. I hope that all Seraphim colleagues will always have a positive and upbeat heart, walk every step of the way resolutely, live up to the spring glory, live up to the future, and move towards a more wonderful future with great determination.

We deeply understand the fierce contradiction between energy and environment that modern society faces, and we clearly see the role we can play in changing the world's energy structure and protecting the ecological environment. We believe that social development and environmental protection can coexist, as long as we change our inherent thinking and behavior, and this "change" will eventually create a better "future".

We share our achievements with our customers and continue technological innovation, so that customers around the world can enjoy the perfect experience brought by photovoltaic products of excellent quality, efficient and environmentally friendly. We also share the mission of "SHIFTING·THE FUTURE" with our customers, and work with our customers to advocate the concept of low carbon emissions and green development to society.

As the well-known proverb goes, "We did not inherit the world from our ancestors, we borrowed it from our children. This year is the first time Jiangsu Seraphim Solar System Co., Ltd. has released an ESG report. Taking this as a starting point, The company will deeply implement the ESG management concept and continue to improve the sustainable development management system; we will actively respond to the sustainable development initiatives of stakeholders, adhere to the business philosophy of "green, low-carbon sustainable development", and actively respond to climate change and reduce greenhouse gases emissions, vigorously promote the upgrading of ESG management level, and help the company develop high-quality and sustainable development. Finally, I would like to thank every employee again for their hard work and efforts, as well as leaders at all levels, stakeholders, and partners for their support and care.

Let us work together to create a more brilliant and sustainable future! I wish you all the best, a happy family, and smooth work!

President: Li Gang



REVIEW OF 2022

Economic performance

Total asset

27.45 Hundred million yuan

Tax amount

837 Ten thousand yuan

Investment in science and technology R&D

8552 Ten thousand yuan

Number of patent applications

112 item

Lower production cost

15%

Operating income

20.27 Hundred million yuan

global production capacity

12 GW

Number of R&D staff

125 person

customer satisfaction

98.5%

Production Efficiency Improvement

35%

Total number of active employees

1151 person

Investment in staff training

58 Ten thousand Yuan

Social insurance Coverage

100%

Coverage of medical examinations

100%

Inputs to production safety

400 Ten thousand Yuan

Percentage of emale managers

15.07%

Labor contract signing rate

100%

Number of security training sessions

36

Total public service contributions

89 Ten thousand Yuan

Total environmental inputs

158

Total carbon emissions (Scope 1 + Scope2)

7715.688 t (Jiangsai)

Carbon Emission Intensity of Ten Thousand Yuan of Production Value of Ten Thousand Industries

0.97tCO₂e/ Ten thousand Yuan (Jiangsai)

recovery rate

99.97%









Product Carbon Footprint

10712.85 tCO₂

ABOUT US

Jiangsu Seraphim Solar System Co., Ltd. is a global solar photovoltaic products core supplier which was founded in 2011 and located in Changzhou, Jiangsu Province. For many years, Seraphim has been a leader in the industry in several aspects including scientific and technological innovation, quality management and breakthroughs in the core technology. With twelve-year of deep ploughing and independent innovation, Seraphim has formed two business segments: high-quality cells and high-efficiency photovoltaic modules with multiple choices, and has set up advanced manufacturing bases in Changzhou, Jiangsu Province and Yingshang & Jinzhai in Anhui Province, etc. Seraphim is capable of providing service for designing, developing, manufacturing, installing and operation maintenance of solar cells and photovoltaic modules. We also provide customised services. Our products and services are widely used in multiple application scenarios such as large-scale ground-based projects, industrial and commercial rooftop projects, and residential rooftop projects.

Since its foundation in 2011, Seraphim has accomplished significant achievements and been continuously pushing the boundaries of our industry in terms of production R&D and technology innovation. Employing this strategy, Seraphim earned the Tier 1 distinction from BNEF for 9 consecutive years, and the Top Performer distinction from PVEL for 5 times. With a total capacity of 12GW in 2023, Seraphim serves global customers with high-quality products and professional services. By the end of 2022, more than 20GW of Seraphim modules were installed in over 100 countries, the excellent performance of these products has been widely verified under various natural conditions.

 1200+ Global Employees	 12GW Global Module Production Capacity	 100+ Destination Countries 20GW+ Shipmen	 80+ Global Financial Partners
 120+ R&D Technicians	 100+ Technical Patents	 Tier 1 Listed by BNEF for 9 Consecutive Years	 Top Performer Listed by PVEL for 5 Times

With excellent product quality, advanced technical solutions and a complete quality assurance system, as of the end of 2022, it has exceeded 20GW. Seraphim modules have been widely used in more than 100 countries and regions around the world, including the United States, Germany, Japan, Vietnam, Australia, the Netherlands, and Brazil. The excellent performance of the products has also been widely verified under various natural conditions.

SERAPHIM THREE MAJOR DOMESTIC PRODUCTION BASES



Since its establishment in 2011, Seraphim has grown rapidly, providing efficient and reliable core assets for photovoltaic power stations in various countries, and has gradually become a solar module manufacturer with leading comprehensive strength. Since 2015, Seraphim has been listed on Bloomberg New Energy Finance's first-tier photovoltaic supplier list for nine consecutive years and has gained the trust of more than 80 international banks and other financial institutions. This not only represents the continuous improvement of Seraphim's brand credibility and market competition. The steady growth in power is also one of the most powerful recognitions of Seraphim's steady operation, continuous innovation, and vigorous development, which helps to enhance investors' information about the brand.



DEVELOPMENT MILESTONES

2011
2012 Year

2011

- Jiangsu Seraphim Solar System Co., Ltd. founded in China
- Received ISO9001/ISO14001/OHSAS18001 certificates
- Received IEC 61701 certificate
- Received MCS, CEC, CSA Certificates

2012

- Passed JPEC certification
- Establish strategic partnership with Fujifilm backplane
- Release of DuraFlex™ modules with mechanical loads up to 8000Pa

2013
2014 Year

2013

- First PV manufacturer to pass TÜV SÜD Thresher Test
- Seraphim Solar Co. Ltd founded in Japan
- Released Polaris™ and Solaris™ AC module
- Released Duraflex™ module

2014

- Seraphim cell plant set up
- Global capacity reached 750MW
- Self-developed ERP system deployed
- Global shipments exceeded 1GW
- Released EZ-box™ module

2015
2016 Year

2015

- Tier 1 Module Maker listed by BNEF
- Received JIS Q8901 and NMETRO certificates
- Accredited as Jiangsu Batch I Smart Manufacturing Plant
- Passed Three DNV Systematic Tests

2016

- Released Eclipse™ module
- Laboratory passed TÜV SÜD /CSA certification
- Hebei Zhulu Plant set up
- Global capacity reached 2.1GW

2017
2018 Year

2017

- Released Blade™ Module
- Received CNAS laboratory certification
- Received CTC authorized testing laboratory certification
- Jiangsu Shuyang Plant set up
- Global capacity reached 3GW
- Accredited as Top Performer by DNV

2018

- South Africa manufacturing plant set up
- Global capacity reached 4GW
- Released Mini Eclipse module
- Released P type PERC bifacial module
- Received the TÜV SÜD CTF Laboratory Certificate

2019
2020 Year

2019

- Seraphim Shanxi Lu' An Plant set up
- Global capacity reached 5GW
- Released Blade Bifacial module
- Released Planet PV energy storage system
- Awarded as 2019 Top Performer by PVEL/DNV

2020

- Released S3/S4 series high efficiency module
- Released S2 shingled high efficiency module
- Seraphim Yingshang Plant set up
- Awarded as 2020 Top Performer by PVEL/DNV

2021
2022 Year

2021

- Seraphim Anhui Jinzhai Plant set up
- Won the China Gold Brand Academy Awards
- Recognized as 2021 Top Performer by PVEL
- Accredited as Qualified Laboratory by TÜV SÜD
- Received the IEC 2021 Certificate by TÜV SÜD
- Accredited as the TMP Labby TÜV Rheinland

2022

- Released S5 series module
- Released S3, S4 Lightweight Dual-glass Series
- Recognized as 2022 Top Performer by PVEL
- Received the 2022 EcoVadis Silver Award for Corporate Social Responsibility Achievement
- Global capacity reached 7.5GW
- Global shipment exceeded 20GW

BUSINESS DISTRIBUTION

Global Manufacturing & Sales

Seraphim's headquarter is in Changzhou, China. Our global manufacturing, sales and distribution network drive the commercial performance of the company in 20 countries into sustainable growth. We are uniquely positioned to deliver premium products, services and customer experience.



MAJOR AWARDS AND HONORS

General

- ※9 consecutive years Listed as a first-tier solar module supplier by Bloomberg New Energy Finance
- ※Named "Top PV Module Supplier" by PVEL five times in a row
- ※2022 China's high-quality household/industrial and commercial PV Module brand of the year
- ※Anhui Province Smart Factory and Digital Workshop
- ※PVBL Global photovoltaic brand TOP 100
- ※Top 10 influential PV Module brands
- ※2022 Influential brand of rooftop photovoltaic modules of the year
- ※2022 Degree PVBL Global Top 100 Photovoltaic Module Brands
- ※2022 Best Photovoltaic Brand Communication Award
- ※2022 Changzhou City "Development Contribution Award"
- ※2022 "Bronze Award for Large Taxpayers"
- ※2022 The most influential PV module company in the "Photovoltaic Cup"
- ※2022 Annual Best Photovoltaic Brand Communication Award
- ※Veco Cup · Ofweek2021 Ultra-Efficient Photovoltaic Module Award
- ※China's high-quality household photovoltaic module brand in 2020
- ※Top 500 Global New Energy Companies in 2020
- ※Top 50 New Energy Technology Innovation Enterprises in 2020
- ※The most influential photovoltaic module company in 2020
- ※"China Good Photovoltaics" Top Ten Suppliers of Distributed Photovoltaic Modules in 2020
- ※2019 Photovoltaic Brand Ranking Excellence Supplier Award
- ※China Brand Golden Letter Award
- ※Jiangsu Province informatization and Industrialization Integration Management System Standard Implementation Pilot Enterprise
- ※Selected into the "List of Internationally Famous Brands Focused on Cultivating and Developing in Jiangsu Province in 2020-2022"
- ※National Quality Integrity Benchmark Enterprise
- ※National quality leader in the photovoltaic industry
- ※National Top 100 Quality Inspection Integrity Benchmark Enterprise



Sustainable Development

- ※Member of the United Nations Global Compact
- ※2022 EcoVadis Sustainability Silver Medal Certification
- ※2022 "Xinhua Credit Jinlan Cup" ESG Excellent Cases
- ※Anhui Province Green Factory
- ※Jiangsu Province Green Factory
- ※Love Decibel "Charity Partner" Honorary Certificate
- ※Good Charity Member of Hebei Photovoltaic New Energy Chamber of Commerce
- ※Vice President Unit of Jinzhai County Charity Association
- ※Member of PV CYCLE

Technological Innovation

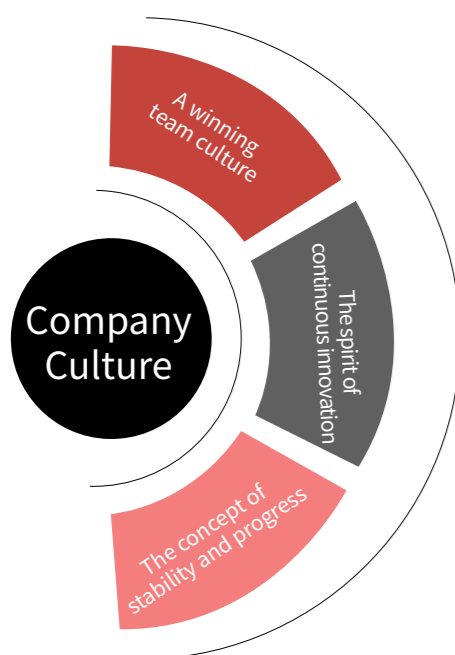
- ※"Jiangsu Province Enterprise Technology Center" certification
- ※"Jiangsu Provincial Engineering Technology Research Center" certification
- ※3 series half-cut modules won the "Megawatt Emerald Award" in the 2020 SNEC Top Ten Highlights Selection
- ※The S4 series half-cut modules won the "Gigawatt Gold Award" in the 2021 SNEC Top Ten Highlights Selection
- ※China Good Photovoltaic "Cell/Module Technology Breakthrough Award"
- ※Hebei Photovoltaic New Energy Chamber of Commerce "Excellent Member"
- ※Solar cell modules were awarded Changzhou High-tech Products
- ※The 10th Global New Energy Technology Innovation Enterprise TOP 50

CORPORATE STRATEGY

Strategic thinking	SHIFTING · THE FUTURE
Mission	Give the customers satisfaction, give the employeesatisfaction, give the shareholdersatisfaction, give the social satisfaction.
Vision	Build a world-class, professional and integrated solar energy solution provider.
Value	Harmonious, progressive, realistic and innovative.

Corporate Culture

Seraphim was established in Changzhou, Jiangsu, China, with a sales network all over The world. Its branches in more than 25 countries have greatly improved the localization of our products and services, improving service quality and customer experience. With forward-looking product research and development, excellent product quality, and professional and efficient services, the Seraphim brand has good brand awareness and reputation in key Markets around the world.



The company gives full play to the cohesion of the team, strengthens communication and cooperation, enhances the team's ability to assist, complements its strengths and weaknesses, builds a high-performance team, and creates a good team atmosphere.

As a demonstration enterprise of scientific and technological innovation, the company continuously strengthens its innovation efforts, realizes breakthroughs in various dimensions in the field of science and technology, creates a good atmosphere for innovation, focuses on talent cultivation, and maintains a sustainable and excellent core competitiveness.

In the face of dynamic conditions and trends in the development environment, we should always grasp the word "stable", focus on the main business, the pursuit of innovation, cultivate internal drive, and always lead the work with the scientific concept of development.

SUSTAINABLE DEVELOPMENT MANAGEMENT

Seraphim is committed to becoming an enterprise that pays attention to social responsibility and sustainable development, adhering to the "community with a shared future for mankind" as its core and promoting the integration of sustainable development concepts into the company's decision-making, operations and management processes. We focus on the field of green new energy, use technological innovation to create efficient, low-carbon, and sustainable product models, continue to improve the energy pattern, improve the quality of human life, create a green, healthy, low-carbon and environmentally friendly environment, and create green economic benefits for society.

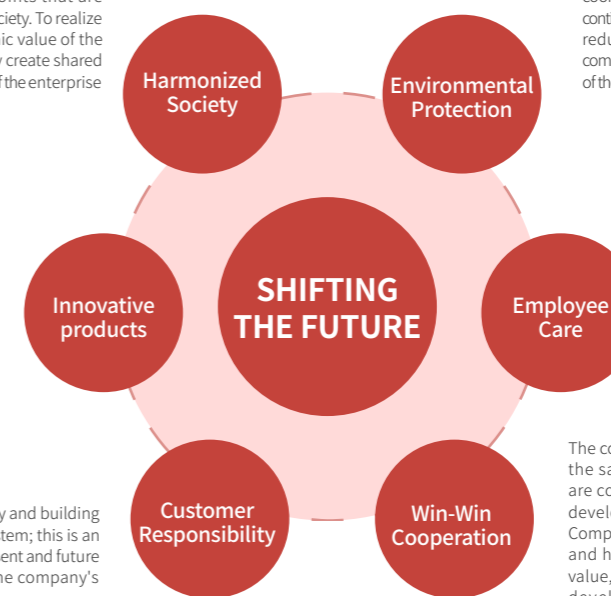
Sustainability Mission: Transforming the future, contributing to global sustainable development, and contributing to a better life.
Sustainability Vision: Actively undertaking social responsibility and pursuing win-win situation with all stakeholders.

Seraphim Sustainability Model

Whether it is solar cells, solar modules or various types of photovoltaic projects, the company chooses starting points that are favorable to the harmonious development of society. To realize the positive interaction between the economic value of the enterprise and the social value, and ultimately create shared value and promote the sustainable development of the enterprise and the society.

The company has always adhered to the goal of scientific planning and coordinated development of environmental protection, and has continued to strictly implement the policy of energy saving and emission reduction, realizing energy saving, emission reduction and comprehensive utilization, and positively affecting the improvement of the ecological environment of the surrounding and the society.

Driven by innovation and manufactured with great care, Seraphim continuously launches high-quality products that are needed and recognized by customers, which have been honored and praised in many engineering projects; contributing to the society, exerting positive effects and influence, and promoting the joint sustainable development of the enterprise and the society.



The company is people-oriented, adhering to the "family culture", respecting and protecting the legitimate rights and interests of employees. We respect and protect the legal rights and interests of the employees, pay attention to their safety and health; respect for labor, pay attention to the development of employees, focus on human talent, and advocate innovation.

Treating customers and consumers with integrity and building a perfect and high-quality customer service system; this is an important judgment standard for Seraphim's present and future business development, and is the basis for the company's further sustainable development efforts.

The company has been growing steadily and rapidly, and at the same time, it has been honest and trustworthy. We are committed to improving the quality and efficiency of development and maximizing the long-term value of the Company, realizing win-win cooperation with stakeholders and harmonious development, and maximize long-term value, and achieve win-win cooperation and harmonious development with stakeholders, and realize win-win cooperation and harmonious development with the stakeholders.

ORGANIZATIONAL SYSTEM FOR SUSTAINABLE DEVELOPMENT

In order to improve the company's environmental, social and governance (ESG) management level, we further improved the ESG management structure and established a board-level sustainable development committee, with two directors as members, mainly responsible for formulating the company's sustainable development goals and development plans, supervise the operation of the company's various business sectors for the sustainable development system, and provide timely suggestions and feedback plans on improving the company's sustainable development performance. At the same time, it has set up a sustainable development office and a carbon emission working group to comprehensively improve sustainable development management level.

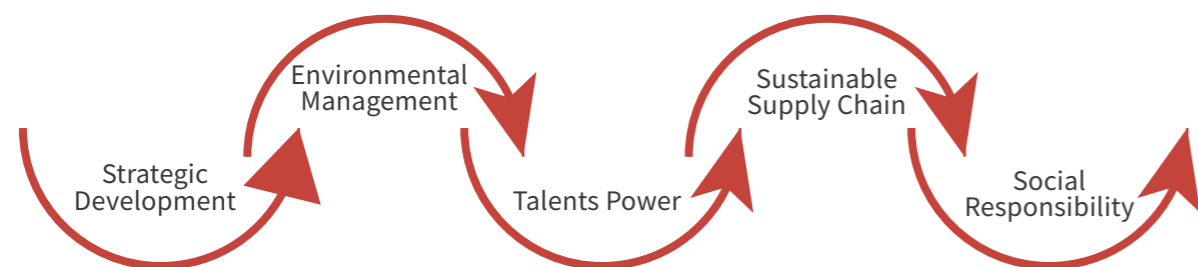
Sustainability Office: Led by the Office of the President, the heads of all departments participate in the cooperation, formulate the annual sustainable development goals, promote the work of all departments and branches and the construction of the system, and regularly report the progress of work to the committee.

Carbon Emission Working Group: Mainly responsible for the company's carbon emission testing and management, the formulation of carbon management related systems and development plans, the establishment of carbon emission management systems, and the promotion of the company's carbon emission research and development.

Sustainable development roadmap

Established the company's "Emission Peak and Carbon Neutrality" goals to properly manage the environmental impact during project production, implementation, and operation so that controls and reduces its carbon footprint.

Standardizing raw material suppliers and other partners, making multi-party efforts to help the sustainable development of whole society.



Adhere to scientific and technological innovation to promote sustainable development, keeping "integral elevating and key breakthrough" towards "linking the land and the sea" and to grasp the marine power, "The Belt and Road" initiative, new infrastructure, and other important strategic opportunities etc.

The competition of modern companies is essentially a competition for talent, and sticking to strong companies is the key to business development. Pay attention to the training and introduction of talent, builds an international perspective, and plays a role in the central team.

Business development and social development are inseparable, the company actively assume social responsibility at the same time as being responsible corporate citizens towards contributing to society and returning to society.

STAKEHOLDER PARTICIPATION

Seraphim's main stakeholders include shareholders, investors, governments, customers, employees, suppliers, non-governmental organizations, behavioral organizations, professional institutions, media and communities, etc. Stakeholders are an indispensable part of Seraphim's sustainable development management. We can communicate through emails, telephone questionnaires, symposiums, dedicated visits, etc. to understand their views, demands and expectations, so that we can better understand them. Properly identify risks and opportunities for sustainable development and set scientific and reasonable goals.



Anhui Governor Wang Qingxian and his entourage visited Jinzhai



Liu Yujie, Deputy Secretary of Fuyang Municipal Party



Huoshan County Party and Government Delegation Visit



Establishment of strategic cooperation with Xinjiang



contract with Hubei Power Construction



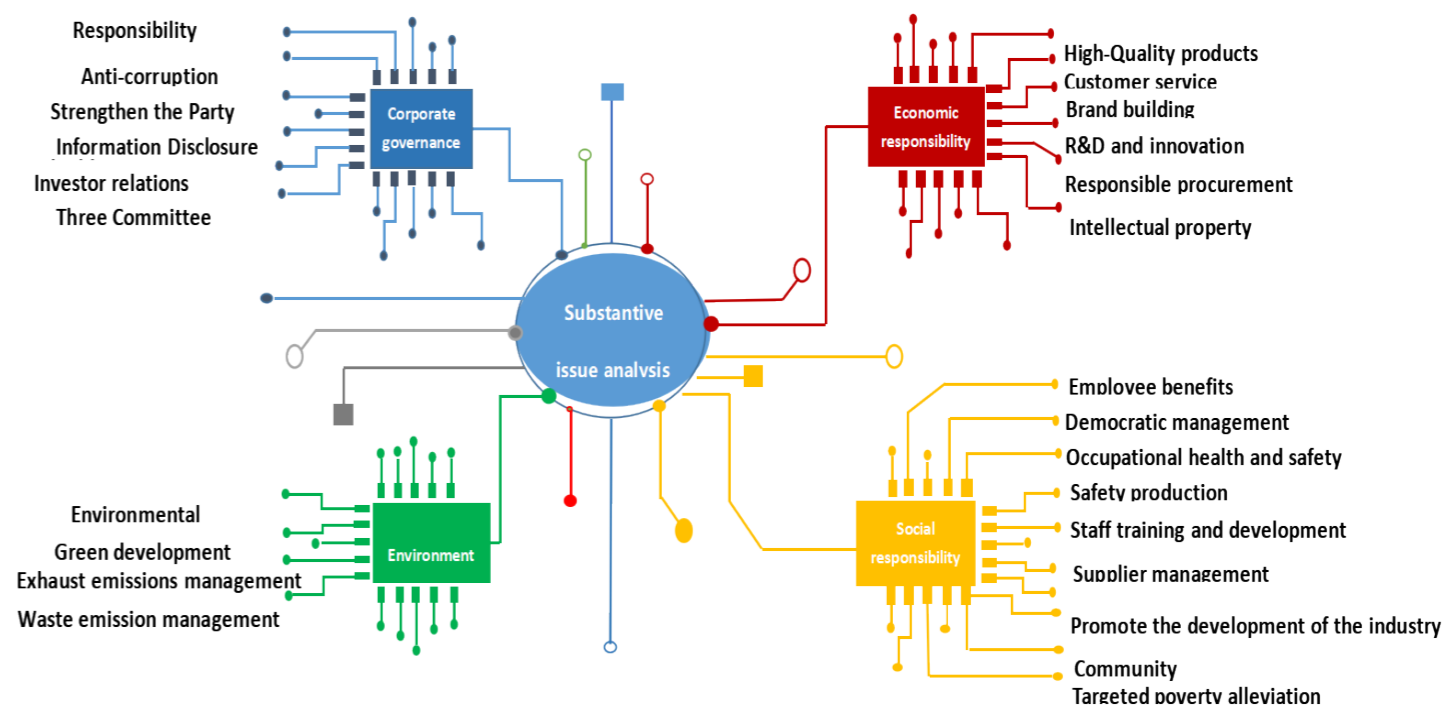
Solar Tech Expo 2021 in Munich, Germany

STAKEHOLDER PARTICIPATION

SUBSTANTIVE ISSUES FOR SUSTAINABLE DEVELOPMENT



Stakeholder	Primary concernor expectation	Response or communication methods
Shareholders & investors	Financial condition, business outlook, future development plans, corporate governance, corporate internal controls, risk bias, management selection and hiring;	<ul style="list-style-type: none"> •Information Disclosure •Investor Communication Platform •Investor conferences •Enhanced Debt Risk Management •Investor hotline/mailbox
Government	Comply with local laws and regulations, promote local economic growth, generate positive social benefits, pay taxes in accordance with the law, and promote local employment;	<ul style="list-style-type: none"> •Regular visits •Policy communication
Customer	Integrity of Performance, Product Functionality and Performance, Promotion of Local Employment, Product Safety, Customer Information Security, Product Stability, Product Environmental Characteristics, Product Competitiveness, Quality and Reliable Customer Service;	<ul style="list-style-type: none"> •Strengthen product quality control •Protect customer privacy •Improve customer complaint handling process •Customer satisfaction survey •Customer meetings •Interaction through company website, social media
Employee	Remuneration, working environment, provision of development platform, protection of legal rights and interests, employee welfare, training system, corporate reputation, internal communication channels;	<ul style="list-style-type: none"> •Employee Interview •Employee Questionnaire •Democratic life meeting •Employee Mailbox/Hotline •General Manager Open Day
Supplier	Procurement system, supplier management system, fair trade, timely payment, maintaining good partnership;	<ul style="list-style-type: none"> •Supplier review •Regular visits •Supplier conferences •Supplier training •Honesty and good communication
NGOs/ Industry specialist agencies	Information Disclosure, Contribution to Society, Economy and Environment, Contribution to Industry Development;	<ul style="list-style-type: none"> •Organize tours, meetups •Industry Forum •Standard seminars •Participate in academic/ research activities
Media	Business and product status, business performance indicators, future development direction, corporate social responsibility;	<ul style="list-style-type: none"> •Press Release •Interview invitation •Media in Seraphim •Through the company's official website and social media platforms
Community	Promote community development, maintain the community environment, promote community employment and support public welfare;	<ul style="list-style-type: none"> •Community Activities •Citizen Hotline •Organize community projects •Regular visits and communication

We adhere to the materiality reporting principle of ESG information disclosure, identify sustainable development issues of concern to stakeholders through regular communication and exchange, and screen and analyze the materiality issues of the Company's sustainable development in 2022 in terms of the dimensions of "materiality to the Company" and "materiality to stakeholders" by taking into account the domestic and international development environment and the Company's own development strategy, and referring to the content framework of the domestic and international guidelines on social responsibility standards, and disclose materiality issues of the Company's sustainable development in its sustainability report based on the results of the issue assessment, so as to continuously enhance the materiality of the Company's disclosure of the information of its sustainable development report.



SERAPHIM AND THE UN SDGS

Seraphim supports the United Nations 2030 Agenda for Sustainable Development and contributes to the realization of the UN Sustainable Development Goals (UN SDGS) through its own actions.

response target	Operation Seraphim	Reporting chapters
	Seraphim is enthusiastic about public welfare and gives back to the society by carrying out public welfare undertakings such as caring for the aging population and helping children in need, and actively organizes volunteers to carry out service activities to help the development of the region and assume social responsibility.	
	Seraphim is enthusiastic about public welfare and gives back to the society by carrying out public welfare undertakings such as caring for the aging population and helping children in need, and actively organizes volunteers to carry out service activities to help the development of the region and assume social responsibility.	
	Seraphim has always taken the development and growth of its employees as one of its core tasks. Seraphim has set up a training center to create a three-tier training system for technical skills and management skills required from basic level employees to management cadres, and established the Internal Lecturer Management Measures to select excellent lecturers from within Seraphim. by 2022, the proportion of employees who have received regular performance and career development appraisals will reach 100%.	
	Seraphim has established a perfect human resources system and management system, and firmly opposes all forms of workplace discrimination, harassment, coercion, threats and violence. During the reporting period, the number of female employees at Seraphim accounted for 47%, and the number of female members of management accounted for 15.07%.	
	Seraphim has established a comprehensive environmental management system to implement comprehensive control of pollutants and waste generated in the course of production and operation. Wastewater and exhaust gas are treated and discharged to meet the standards, and waste generated is collected and disposed of in accordance with the requirements of laws and regulations. All of the company's production bases have obtained ISO 14001 certification, and there will be no major environmental pollution accidents in 2022.	

response target	Operation Seraphim	Reporting chapters
	Seraphim has always focused on providing reliable and sustainable green power the global community with economical, and we paid more attention to continuous innovation in wire and cable technology and products, and continuously reduce costs and enhance the popularity of green energy.	
	Seraphim opposes all forms of illegal employment, insists on the distribution of labor according to work, equal pay for equal work, and provides employees with competitive compensation and benefits.	
	Seraphim relies on technological advantages to lead the development of the industry, keep up with the world's subsea cable technology development direction and focus on the cost of wind power reduces, we take intelligent manufacturing as the main direction of attack with digital transformation and development of manufacturing industry, promoting clean and green manufacturing to meet global power demand.	
	Seraphim is committed to building a sustainable industry chain and has conducted CSR assessments of all its main material suppliers in 2022. Seraphim, together with a number of upstream and downstream PV industry chain enterprises and equipment manufacturers, has established the "China Launch Hundreds of GW of Desert Renewable Energy Program" to reduce the waste of the PV ecosystem.	
	Seraphim aims to provide low-carbon new energy solutions for the world. While leading the development of the industry, Seraphim continues to pay attention to the greenhouse gas emissions of its own operations and carries out greenhouse gas inventories, and plans to gradually expand the scope of coverage.	
	Compliance management is the basis of the healthy development of Seraphim . The company continues to improve the internal control management system and risk management mechanism, to strengthen company' s information disclosure and investor interaction, setting up integrity guidelines and the anti-corruption operating behavior has been standardized, to ensure the company's transparent and healthy working environment.	



CORPORATE GOVERNANCE

Corporate support for the United Nations Sustainable Development Goals (SDGs)

16 PEACE, JUSTICE AND STRONG INSTITUTIONS



Goal 16: Create peaceful and inclusive societies for sustainable development, with access to justice for all and effective, accountable and inclusive institutions at all levels

Compliance is the cornerstone of Seraphim's healthy development. The company continues to improve the internal control management system and risk management mechanism, strengthen information disclosure and investor interaction, set up a code of integrity, standardize anti-corruption work behavior, and ensure a transparent and healthy working environment for the company.


Good corporate governance is the cornerstone of sustainable development. Over the years, we have always implemented the core values of innovation, pragmatism, integrity and harmony, adhered to the integrity of management, strictly followed the laws and regulations on corporate governance, combined with the actual situation of the company, and continuously improved the corporate governance structure and standardized the operation of the company.

CORPORATE GOVERNANCE

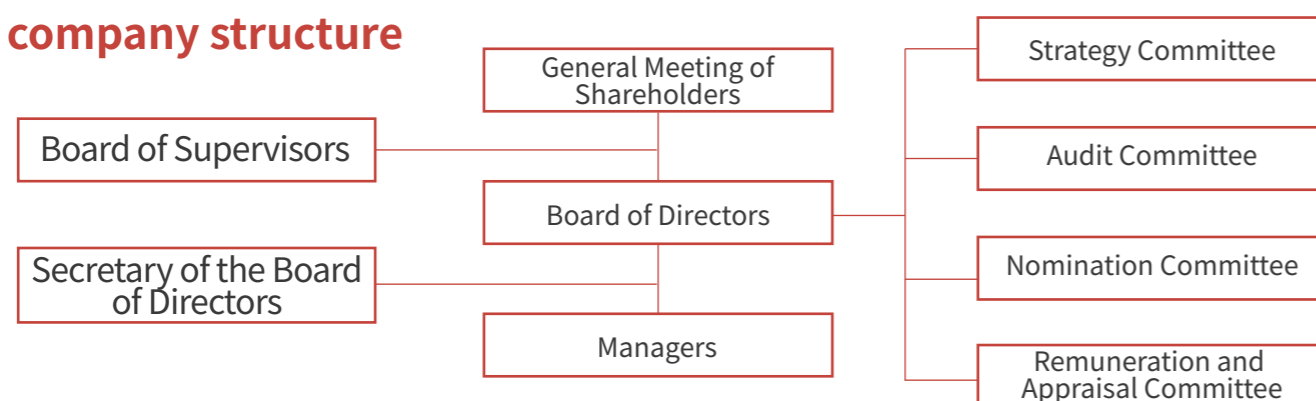
The company strictly abides by the "Company Law of the P.R.C" and other relevant laws and regulations, and has successively formulated and improved policies including "Corporate Social Responsibility Procedure Documents", "Office Space Safety Precautions" and " Office equipment maintenance system, waste management system, labor protection supplies management regulations, energy resource management system, environmental policy and environmental objectives, sustainable procurement policy, etc. require standardized operations, and Based on the actual situation of the company, we will continuously optimize the results of corporate governance, establish and improve various rules and systems for corporate governance and internal control, and ensure the standardized and healthy development of the company.

The company has established a corporate governance structure with clear powers and responsibilities, with the shareholders' meeting as the highest authority, the chairman as the decision-maker, the board of directors as the supervisory agency, and the management as the executive agency. The company strictly follows the Rules and the Systems to ensure the interests of investors/shareholders, coordinate the relationship between various internal interest groups, improve the company's own ability to resist risks and provide institutional guarantees to promote the company's steady and sustainable development.

According to the Articles , the company has 4 directors, 2 supervisors, one of whom is an employee representative supervisor, and 9 senior managers, including 1 president, 2 vice presidents, 1 board secretary, financial officer 1 director and 1 chief engineer. The board of directors enjoys the highest power of the company while other boards responsible for its specifci affairs. The board of directors has four special committees: strategy, audit, nomination, remuneration and assessment.

 In 2022, **20** boards and committee meetings has been held.
8 Boards, **2** shareholders, **3** supervisors, **7** committee meetings

company structure



COMPLIANCE MANAGEMENT

"Compliance Management" is one of Seraphim's important strategies. The company always attaches great importance to honesty, trustworthiness and compliance management, adheres to correct values and business ethics standards and always abides by relevant rules and regulations. The comprehensive improvement of the compliance systems and continuous innovation have promoted the overall improvement of the company's compliance management level and laid a solid foundation for the company's sustainable development.

Risk Management

Facing the increasingly complex international situation, we have always regarded construction of risk management system as an important part of our sustainable development. Follow "concept of steady and long-term development", effectively implement major risk supervision, focus on sound operation and management, insist on making progress while maintaining stability, standardize risk prevention, control mechanisms, establish risk identification and evaluation control procedure, and strengthen quality, safety, and environment We have introduced and improved the QHSE management system to prevent and control major risks in other aspects, and continuously strengthened the closed-loop management of safety production to provide a solid guarantee to achieve high-quality sustainable development and the occupational health development of employees.

Seraphim risk management flow chart

- Comprehensiveness
- Independence
- Checks and balances
- The matching of rights and responsibilities
- Continuity
- Risk disclosure
- Timely and effective
- Risk

- Risk identification: covering all aspects of risk
- Risk assessment: measuring the level of risk ;
- Risk reporting monitoring: a comprehensive analysis of risk characteristics and prioritization of management and responses;
- Risk control: risk under avoid, accept, resolve, control;



Comprehensive Risk Management and Full participation

- There are two special committees under the Board, namely Risk Control Committee and Compliance Audit Committee: Confirm the risk management strategy
- There are special committee under the Managers, namely Risk Control Committee : Confirm the risk indicators;
- Risk management function: Assessment, Monitoring and Reporting
- Each department and each ront-line position: self-control and mutual control

Risk Points

- Strategic risk •Financial risk
- Market risk •Operational risks
- Legal risks •Environmental risks
- Occupational health and safety risks
- Quality risks

COMBAT CORRUPTION AND BUILD A CLEAN GOVERNMENT

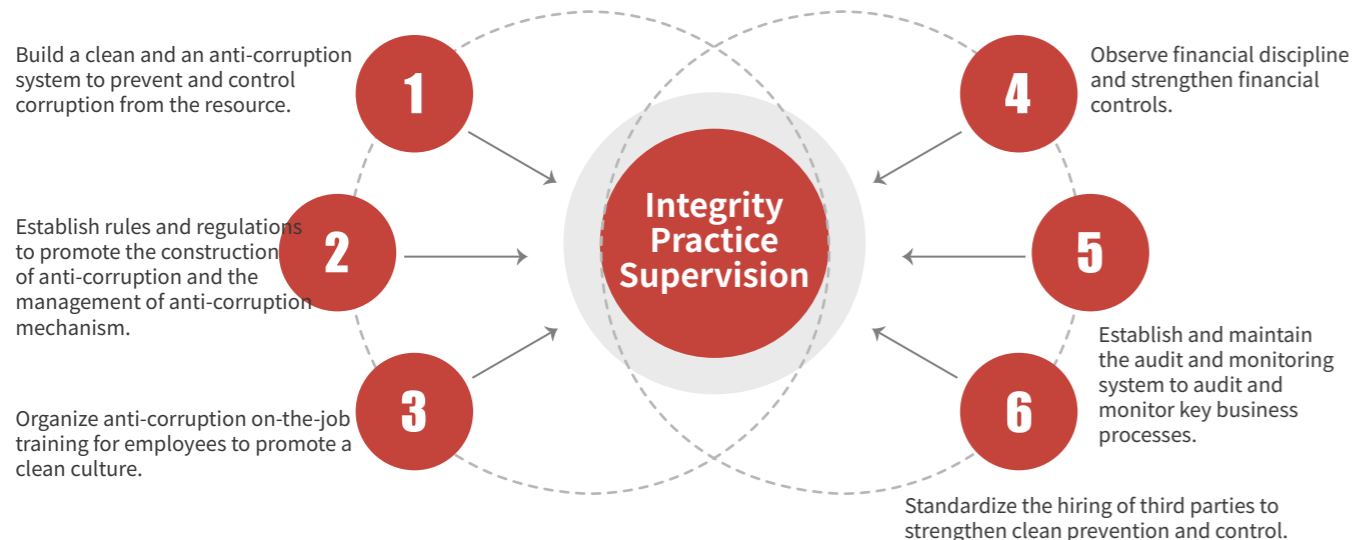
Seraphim has always adhered to the core values of governing enterprises according to law and innovation, seeking truth, striving and harmony, and strictly prevented illegal situations such as bribery, extortion, fraud and money laundering by improving the control system and improving the organizational system guarantee and other effective methods. In order to effectively prevent corruption and continuously strengthen the supervision and management of the company and its staff in their clean work, a series of norms and systems have been formulated, such as the Clean Self-discipline Book of Management Cadres of Seraphim Energy Group and the Employee Manual. It has clarified the requirements for clean employment, including compliance with social ethics, business ethics, professional ethics and codes of conduct, fair competition, compliance, honesty and trustworthiness or seeking illegitimate benefits, and strives to create a cultural atmosphere of anti-corruption and integrity. In order to effectively prevent integrity and moral risks, all staff signed the "Integrity and self-discipline Commitment", established a self-correction and self-inspection system, and accepted supervision, and regularly participated in anti-corruption and integrity training, in order to systematically improve the awareness of integrity practitioners. During the 13th Five-Year Plan period, the proportion of anti-corruption training was 100%. At the same time, in order to further strengthen the business ethics of enterprises, a moral behavior testing system is established to control the company's moral behavior.



Seraphim anti-corruption management system

Reporting Contacts

Complaint email
hr@seraphim-energy.com
Complaint Hotline
86-519-68788166
WeChat official account



Corporate ethical behavior monitoring system

Surveillance object	Monitoring process	superintendent office	measuring method	measurement index
Senior leader	governance structure	board of directors	Meeting, inspection	33% of directors
	Diligent and honest administration	Corporate supervision department (Management Center)	Complaints and reports	There were zero violations of discipline and law
Middle-level cadres and Functional department	The fairness of management behavior	Corporate supervision department (Management Center)	Internal audit, Performance monitoring	No violations in major business activities
		The company's partner	customer satisfaction evaluation	Customer satisfaction is over 95%
		company union	Monitoring and reporting	The performance rate of labor contract is 100%
	Standardization of production and business activities	company staff	customer satisfaction evaluation	Employee satisfaction 85%
		tax department	Tax inspection And evaluate	legally rates paying
		bank	Bank credit evaluation	Credit rating AAA
		Relevant competent department	financial examination	The report is 100% objective and true
partner	Contract fulfillment	The contract exchange rate is 100%		
company staff	daily performance	human resource department	Disciplinary treatment	Put an end to uncivilized behavior

Right and interest of investor

Seraphim is committed to protecting investors and improving the quality of information disclosure, strictly fulfilling the obligation of information disclosure, and timely, accurate and complete disclosure of the company's management information; We know that we can protect the basic rights and interests of investors with standardized operation and compliance, safeguard the interests of investors with excellent performance, constantly optimize management, and realize value sharing with investors.

Information disclosure

In accordance with the provisions of the "Information Disclosure Management System", the secretary of the Board of Directors is designated to be responsible for information disclosure, reception of investor visits and consultation. In strict accordance with relevant laws and regulations and the provisions of the Articles of Association, the Company shall disclose relevant information truthfully, accurately, timely and completely, actively do a good job in the registration of insider information, do a good job in the internal report of the company's major information, and do a good job in the confidentiality before information disclosure, so as to ensure that all shareholders have equal opportunities to obtain information.

As of December 31, 2022, the company disclosed a total of 40 documents such as periodic reports and interim announcements on the official website and designated French media.

INVESTOR COMMUNICATION

In strict accordance with the relevant provisions of the Investor Relations Management System and the Working Rules of the Secretary of the Board of Directors, the company has established regular and effective communication channels for domestic and foreign investors, including the internal OA system, investor consultation line, regular email exchanges, online performance briefings, on-site exchange activities and the company's website to warmly receive investor visits and consultations; And upgrade the company's official website, the use of new media, wechat public number in a timely manner to update the company's dynamics, build a comprehensive and timely and effective communication platform, in order to enhance investors' understanding and recognition of the company, protect the legitimate rights and interests of investors.

By the end of December 2022, there have been 57 on-site surveys, 10 conference calls, 15 strategy meetings, and more than 100 investor hotline calls. Performance presentation meeting twice. The company responds to investor questions in a timely manner through investor relations interactive platforms, emails and hotlines, with a response rate of 100%.



Information Safety

After the mailbox system is upgraded, hackers steal the mailbox incident 0 CASE

The company is committed to protecting the personal information of customers, employees and confidential information of the company, and has formulated a series of information security management systems in accordance with relevant laws and regulations such as the Cybersecurity Law, the Data Security Law, the Personal Information Protection Law, the Civil Code, and other relevant laws and regulations, which strictly stipulate the overall operational requirements of data security protection from the implementation level. To ensure the confidentiality, integrity and availability of information, and effectively prevent information security compliance risks.

The company has set up a data security management team composed of the corresponding leaders of each business department, information center, risk control center and human resources center, which is responsible for overall management and coordination of data security management related work.

The company also formulated the "Group Information Security Emergency Response System" and "Information Security Incident Management Procedures" to specifically deal with the company's possible information security accidents. The relevant system makes requirements and explanations on the discovery, reporting, mitigation, disposal, experience summary and other links of information security incidents to ensure that the company's actions are based on evidence. The Company also signs confidentiality agreements and service level agreements with suppliers, in which the responsibilities of both parties in terms of information security and related rewards and punishments are clearly specified. In terms of information security culture construction, in 2022, the company has organized four trainings for employees in key jobs, including "information security framework analysis training", "information security emergency response system training", "enterprise information security training" and "information security awareness training".

In addition, in 2022, the company upgraded the mailbox system as a whole, adding a multi-factor authentication system to effectively prevent hacking activities such as mailbox theft and content tampering. After the mailbox system upgrade! There were 0 incidents of hackers stealing email addresses.

key performance

2022 An information security event occurred. 0 CASE

By the end of the reporting period, there were incidents of information security complaints from customers' employees or suppliers 0 CASE

2 RESEARCH AND DEVELOPMENT INNOVATION



Corporate support for the United Nations Sustainable Development Goals (SDGs)

Goal 9: Build disaster-resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation

Seraphim relying on technological advantages to lead the development of the industry, keep up with the development direction of the world's new energy technology, reduce production and manufacturing costs, take intelligent manufacturing as the main direction, carry out the digital transformation and development of the manufacturing industry, and promote clean and green manufacturing to meet global demand.

8552 ten thousand yuan
Total R&D investment in 2022

As a leading high-tech enterprise in the industry, with science and technology as the guide, innovation as the driving force, deep cultivation of various fields of business, focus on high-end new energy technology research, vigorously advocate independent innovation, and focus on big data, intelligent manufacturing and other technologies, comprehensively improve technological innovation and product development capabilities, create conditions for efficient green energy production and use. Lead the creation of enterprise value with scientific and technological achievements.

SCIENTIFIC AND TECHNOLOGICAL INNOVATION

Seraphim has always been adhering to the principle of "grasping the main business and grasping the independent innovation", putting scientific and technological innovation in an important strategic position of enterprise development, relying on the industry leading advantages of scientific and technological innovation, quality management, core technology breakthrough, etc., to build an innovative development system with oriental characteristics, and constantly improve the innovation management mode. We will improve the quality and efficiency of scientific and technological innovation management.

Scientific and technological innovation system

- has formulated the Measures for the Management of Photovoltaic Science and Technology Projects and other related systems
- established the innovation management system based on application research and development system, dynamic management system and competitive intelligence system

Industry-university-research cooperation mechanism

- Jointly build an industry-university-research collaborative innovation platform with well-known research institutes and enterprises at home and abroad to realize multi-disciplinary, cross-disciplinary and cross-regional innovation advantages, give play to the collaborative advantages of rational allocation of innovation resources, form sustainable innovation capabilities, break through bottlenecks in key technologies, and promote the effective transformation of innovation achievements.

Seraphim features Innovation management system

Science and technology project management

- The dynamic and organic integration of the company's research and development, sales and other work is conducive to the pertinence, timeliness and scientific research and development
- Promote the dissemination of technical knowledge and foster an atmosphere for scientific and technological innovation through activities such as in-service postgraduates, special lectures, study trips, field visits, and forums

Inspire employee enthusiasm

- Provide an innovation platform through the establishment of "Technological Innovation Award", "Technological Innovation Award", "Rationalization Proposal Award" and knowledge competition award, etc., to stimulate the innovation potential of employees
- We will improve the incentive mechanism for scientific and technological innovation

As a provincial high-tech enterprise, provincial private science and technology enterprise, the most innovative module enterprise, the 10th Global new energy technology Innovation Enterprise TOP 50, relying on the provincial enterprise technology center, CSA certified witness photovoltaic laboratory, provincial high efficiency laminated photovoltaic module engineering technology research center, Changzhou Engineering Research Center and other innovation platforms, Continue to study the professional field of high-end solar modules. As an important part of scientific and technological innovation, the three R & D centers set up in the world provide strong support for the company in photovoltaic technology, products, services and innovation cooperation, which is an important driver to improve the company's creativity, enhance brand value, enhance the industry's comprehensive competitiveness, and is also the foundation of the company's sustainable development. At the same time, it has established a normal coordination and innovation mechanism to form the mutual deployment and improvement of the "industrial chain" and "innovation chain", and jointly build a collaborative innovation platform for production, university and research with well-known scientific research institutes, universities and leading enterprises at home and abroad.

	2020	2021	2022
R&D investment (ten thousand yuan)	3709	7419	8552
R&D investment as a percentage of revenue (%)	2.1	3.3	4.2
Number of R&D personnel (people)	70	85	125

1 individual

Provincial enterprise technology center

3 individual

Provincial science and technology platform

8+ place

Chinese and foreign experts with international influence

7

A global authority certified photovoltaic laboratory

5

Trade association membership

2

Strategic cooperation between universities and research institutes

In June 2021, the Company held a conference on science and technology innovation and application to discuss the Company's latest innovation practices and future technology trends in the renewable energy industry, and to recognize exemplary tasks and outstanding teams in the field of innovation.



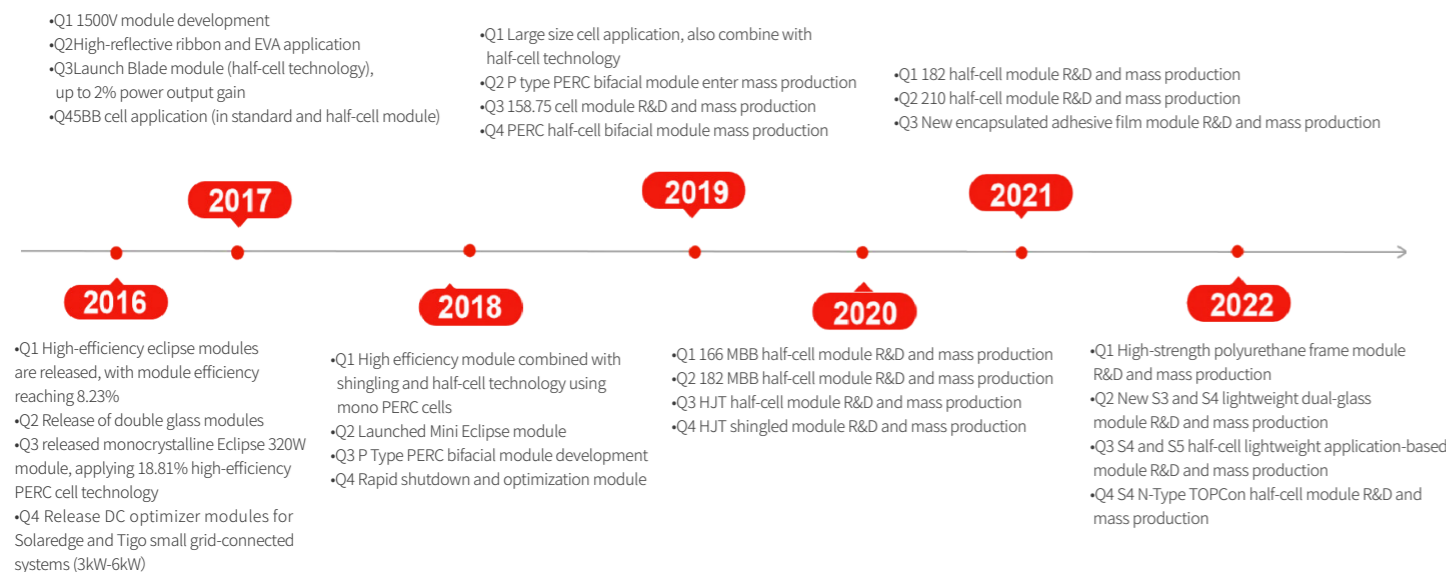
Technology exchange between STI team and technical experts

PRODUCT INNOVATION

Relying on the opportunities of green and clean energy, new energy development, green and low-carbon development, and with the leading technological advantages and strong scientific research capabilities in the PV industry, Seraphim builds the industry's top high-end manufacturing level through key scientific and technological research projects, independent innovation, joint research and development, technology introduction and other related work, and continuously improves the conversion efficiency of the modules, saves energy, reduces the cost of kWh and enhances the safety and environmental friendliness of the solar modules.

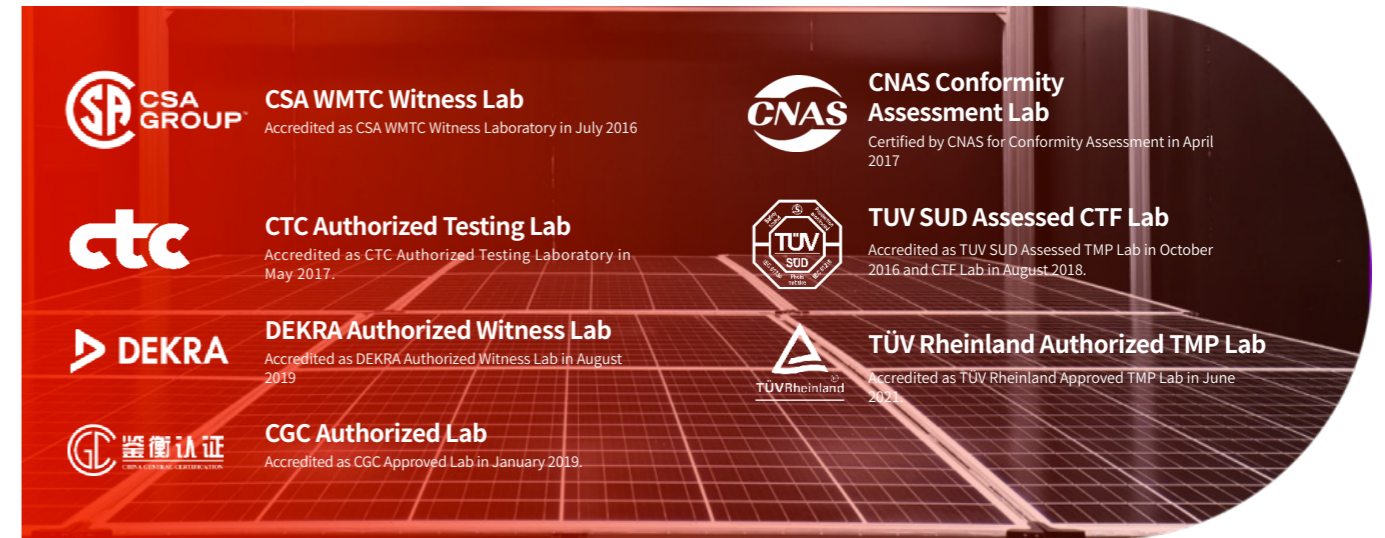
TechnOLOGICAL ADVANCEMENT

Seraphim's leading R&D strength has created a rich product family, with innovative new products coming out every year after 2016, among which the outgoing structure of the stacked tile product has won a national patent; we insist on innovation as the core competitiveness of the company, and strive to satisfy every stage of market development.



World-class photovoltaic R&D center

Leading-edge R&D Center
Seraphim invests great resources on material testing and module development. Our in-house laboratory has successively obtained seven authorized certifications from seven international third party authorities. It saves time and cost of taking new products from laboratory to the market and systematically increases company's detection capabilities and quality control performance.



The Seraphim laboratory is responsible for sampling and testing of production line products, i.e. reliability testing, to ensure that the overall and important module performance of each batch of products meets Seraphim's factory standards. It also undertakes testing during new product development and new material selection, and provides a customized testing platform for customers' special needs.

Experimental content

Reliability testing allows customers to have a clear and unambiguous understanding of the product's performance in a short period of time. For modules that pass the test, each test data can provide guidance for the customer's subsequent use; modules that do not pass the test can also provide effective information for the R&D staff to optimize the performance of the modules. As shown in the figure, the reliability test can be divided into performance test, environmental test, safety test, testing standards refer to IEC61215, IEC61730, UL1703.



Performance test

Performance test is the most basic and important test, which can help the customer to know about the product performance on the receipt of the product, thus making it easy for them to rationally distribute according to different projects.



Environmental test

Environmental test simulates the effects of outdoor environments on module performance and ensures the functional reliability of the product over a specified lifetime, under varying environmental conditions, and during transportation and storage.

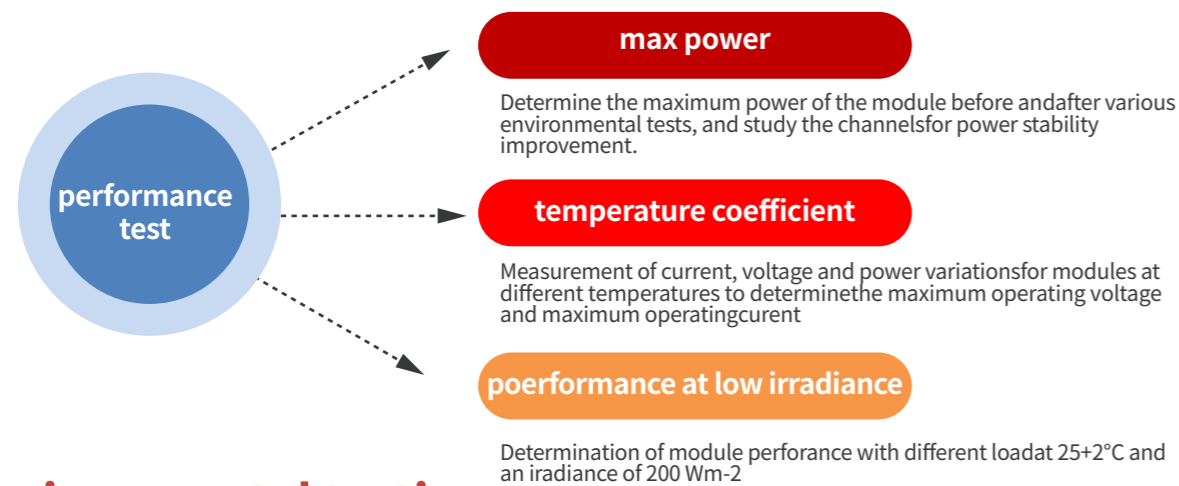


Safety test

Safety test provides the customer with professional safety testing, to ensure the safety of people that will contact the product during the installation and use of the product. It can also ensure the electrical and mechanical function reliability of the product during its expected use life.







PERFORMANCE TESTING

The performance tests in the Seraphim laboratory are the same as the IEC requirements, including maximum power tests, temperature coefficient tests, and performance tests under low irradiance. Each batch of products is sampled and tested in the lab to ensure that performance meets factory standards. The researchers then use the test results as the basis for experimental evaluation of the effect of new materials and accessories on module performance enhancement and reliability in accordance with IEC61215 and UL1703 standards, in order to provide customers with PV products with excellent performance and long-term reliability.



Environmental testing

Environmental testing simulates the impact of the outdoor environment on the performance of modules to ensure the functional reliability of the product in the specified life period, different environmental conditions and in the transportation and storage process; customers can accurately determine the environmental test of the product can withstand through the data, select the appropriate product and estimate the product life, calculate the revenue, to avoid the environment on the project may result in unforeseen losses; customers can, according to their own requirements Customers can choose different environmental simulation tests by themselves, so that it is convenient and targeted. Compared with the original long time environmental testing, highly accelerated aging test shortens the test cycle, which correspondingly shortens the development cycle of new products and reduces the comprehensive cost of research and development.

- 
UV
 module pre-treatment prior to HF/TC of the module to determine the UV attenuation of the relevant materials and bonding connections. The total irradiance of 15kWh/m² as per IEC 61215 shall apply.
- 
HF
 By cycling the temperature inside the chamber (25°C~85°C~25°C~-40°C) and maintaining the relative humidity inside the chamber at 85%±5% at temperatures ≥25°C to determine the ability of the modules to withstand the effects of high temperatures, high humidity followed by sub-zero temperatures.
- 
PID
 Verify the effect of potential-induced degradation on module power. If during/after the test, the module does not have any serious appearance defects nor circuit breakage with a maximum output power degradation Deg. ≤5%, passing wet leakage test and insulation test, then it is judged to have passed the test.
- 
TC
 Determine the ability of modules to withstand thermal mismatch, fatigue and other stresses due to repetitive changes in temperature by cycling the temperature inside the chamber (25°C~40°C~85°C).
- 
DH
 Maintain the box temperature at 85°C±2°C, relative humidity 85%±5%, with a test duration of 1000h in order to determine the ability of modules to withstand long-term moisture penetration.
- 
Highly accelerated aging
 Simulate and enhance the natural outdoor climate by controlling the temperature and humidity inside the chamber, in order to determine the problems or changes that may occur during the long-term use of modules or raw materials, etc. in a short period of time so as to determine the ability of modules to withstand long-term exposure to the natural environment.

Safety Test

Safety test provides the customer with professional safety testing, to ensure the safety of people that will contact the product during the installation and use of the product. It can also ensure the electrical and mechanical function reliability of the product during its expected use life. At the same time, the customer can know about the ability of the product to bear the external force majeure factors under severe weather conditions, decreasing operation and maintenance costs in later stages.

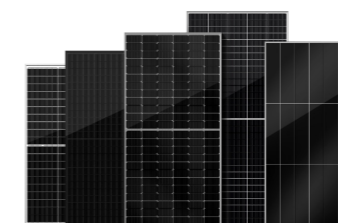
<div data-bbox="1584 741 1932 814" data-label="Section-Header"> <p>Insulation test</p> </div> <div data-bbox="1584 831 1932 936" data-label="Text"> <p>Determine whether the current-carrying part of the assembly is well insulated from the assembly frame or outside</p> </div>	<div data-bbox="2030 741 2377 814" data-label="Section-Header"> <p>Wet leakage test</p> </div> <div data-bbox="2030 831 2377 989" data-label="Text"> <p>Verify that moisture such as rain, fog, and snow melt cannot enter the working part of the internal circuit of the module Prevent corrosion, leakage and safety accidents caused by moisture entry.</p> </div>	<div data-bbox="2475 741 2822 814" data-label="Section-Header"> <p>Bypass diode test</p> </div> <div data-bbox="2475 831 2822 961" data-label="Text"> <p>It can evaluate the thermal design of the bypass diode and the relative long-term reliability of the performance to prevent harmful heat spot effects on the module</p> </div>
<div data-bbox="1584 1003 1932 1077" data-label="Section-Header"> <p>Extraction end strength test</p> </div> <div data-bbox="1584 1094 1932 1218" data-label="Text"> <p>Determine whether the outlet and its attachment to the assembly body can withstand the forces experience in normal installation and operation engineering.</p> </div>	<div data-bbox="2030 1003 2377 1077" data-label="Section-Header"> <p>Mechanical load test</p> </div> <div data-bbox="2030 1094 2377 1167" data-label="Text"> <p>Determine the ability of the module to withstand static loads such as wind, snow or ice</p> </div>	<div data-bbox="2475 1003 2822 1077" data-label="Section-Header"> <p>Hail impact test</p> </div> <div data-bbox="2475 1094 2822 1167" data-label="Text"> <p>Modules performing better as required by IEC standards can withstand hail impacts</p> </div>

New Product Development

The company focuses on the field of photovoltaic products manufacturing, providing professional and competitive products. The company has a number of core technology products, has always insisted on independent research and development, and now has more than one hundred technology patents. For each customer's unique needs and installation conditions, Seraphim has launched a variety of products and even customized services. In order to cope with different application scenarios, such as large-scale ground projects, industrial and commercial roof projects, residential roof projects, etc., Seraphim has developed a variety of industry-leading photovoltaic products and intelligent solutions, such as the 54 series, S5 series, lightweight double-glazed series, and N-type module

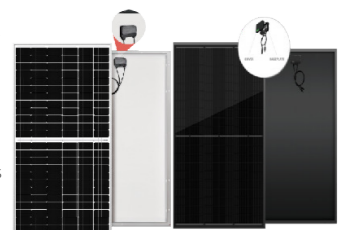
Achievements and ongoing research projects

Achievements and Projects in Progress Evaluation of Stacked Watt II Module Performance and Reliability; All-black module cost reduction and efficiency project; 166 MBB half-chip module layout design and reliability assessment; Additive chip module layout design and reliability assessment; 182 MBB half-chip module layout design and reliability assessment;



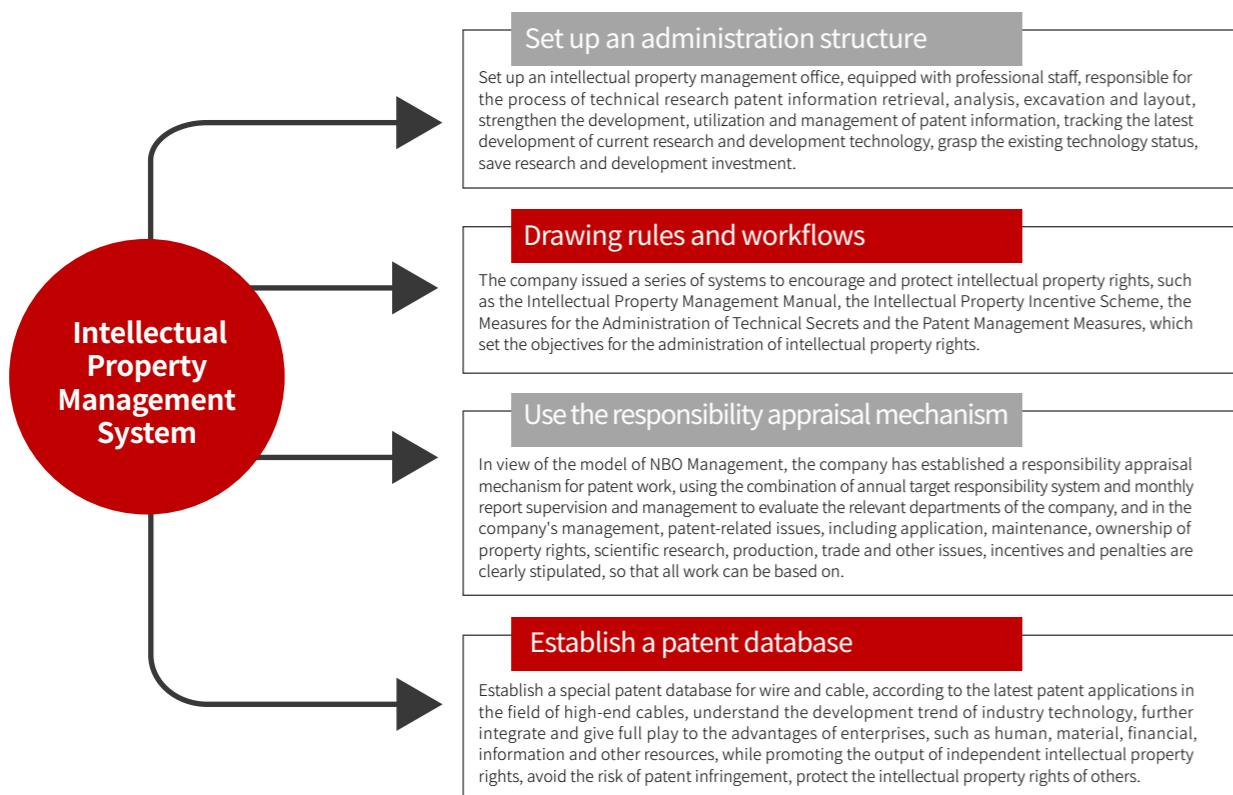
Customization

Seraphim provides customized solutions for specific requirements according to the customer's requirements. For example, if the project is located in equatorial regions (high temperature and high humidity), or in grassland regions (high temperature and low temperature variations), the laboratory can conduct environmental and safety tests on the whole module and its modules according to the specific environmental parameters, which is beneficial to the customer's ROI estimation. If necessary, materials can also be replaced to provide customers with customized PV solutions.

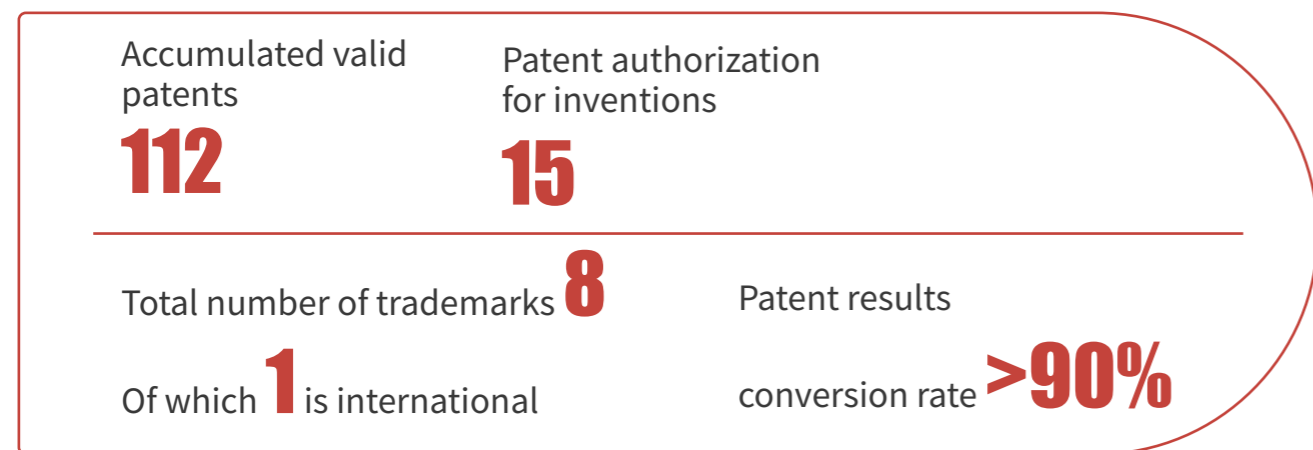


INTELLECTUAL PROPERTY PROTECTION

Seraphim is committed to technological innovation and intellectual property protection, guided by the scientific outlook on development, comprehensively implementing the national intellectual property strategy, establishing perfect intellectual property management rules and regulations and system structure, and reinforcing the guiding role of intellectual property rights in the company's management.



Intellectual property management system



WIN-WIN COOPERATION

Seraphim actively plays a leading role as a leading enterprise in the industry. Facing the development of the industry and the needs of customers, Seraphim continues to invest in technology research and development, industry chain resource integration, international exchanges and cooperation, and contributes to the development of the industry.

In-depth exchange and cooperation

SERAPHIM signed a strategic cooperation agreement with Hubei Power Construction

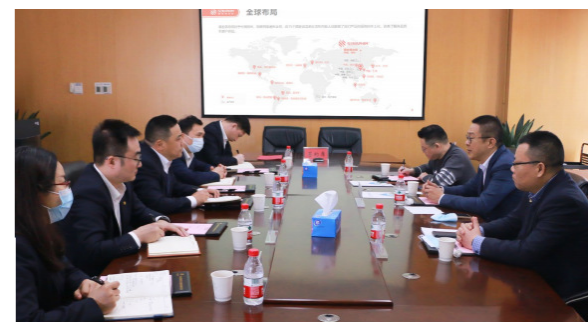


Enterprise dynamics

The cooperation between the two sides will become a model of the combination of strong and powerful in the aspects of project development, resource acquisition and project declaration. Two sides are very broad.

Seraphim signed a strategic cooperation agreement with Hydro Electric Power System Engineering Company in Wuhan (hereinafter referred to as Hubei Power Construction). Li Gang, president of Seraphim, Feng Qianming, vice president of Seraphim, Fan Yi, vice president of Sales of Seraphim, Xu Deheng, Secretary of the Party Committee and executive director of Hubei Power Construction and the vice presidents Tian Xiaofeng and Lin Song attended and witnessed the signing ceremony as well as persons in charge of relevant functional sectors and the branches.

According to the strategic cooperation agreement, Seraphim and Hubei Power Construction reached a consensus on the partnership in the field of clean energy, and agreed to establish a long-term and close strategic partnership, to utilize their respective strengths, and to carry out long-term cooperation on the development of projects in the field of clean energy across the country.



SERAPHIM signed a strategic cooperation agreement with Xinjiang Hami Company of State Power Investment Group



Enterprise dynamics

Li Yong, general manager and deputy Party secretary of Xinjiang Hami Company of State Power Investment Group, said that Seraphim has a leading advantage in photovoltaic technology innovation and product services, and the prospects for cooperation between the two sides are very broad.

The signing ceremony of strategic cooperation between Seraphim and Xinjiang Hami Company of State Power Investment Group was held in Jinzhai, Anhui Province. Li Gang, Chairman and President of Seraphim, Li Yong, General Manager and Deputy Secretary of Party Committee of Xinjiang Hami Company of State Power Investment Group, and Chen Hao, Deputy Director of Comprehensive Intelligent Energy Department of Xinjiang Company, attended the signing ceremony.

This strategic cooperation will unite the high-quality core resources of the two sides and accelerate the realization of the "dual carbon" goal.

The strategic cooperation reached in the development of clean energy projects and engineering construction, multi-energy complementary mode exploration and other areas to reach a larger scale, higher quality cooperation and development, to help the country's green and low-carbon energy transformation and upgrading and "achieve the goal of "carbon peaking and carbon neutrality".



LEADING THE INDUSTRY

The company actively organizes and participates in industry exchange activities, shares experience in the field of photovoltaic with domestic and foreign counterparts, discusses cutting-edge development trends and promotes the development of new energy.



European Photovoltaic Event Site



The 6th Shandong Solar Market Summit & 2021 "Double Carbon Target" Innovation Driving Summit Forum



The Netherlands International Photovoltaic Exhibition



The Netherlands International Photovoltaic Exhibition



São Paulo Solar PV Expo, Brazil



Solar Mexico (the largest solar PV exhibition in Mexico)

Regardless of the manufacturing end or the application end, Seraphim has always maintained an open stance and actively participated in the global PV market. We hope to bring advanced PV technology and high quality PV products to our customers around the world, and we look forward to working with our peers to promote the development of the clean energy business.



3 PRODUCTS AND SERVICES

Corporate support for the United Nations Sustainable Development Goals (SDGs)

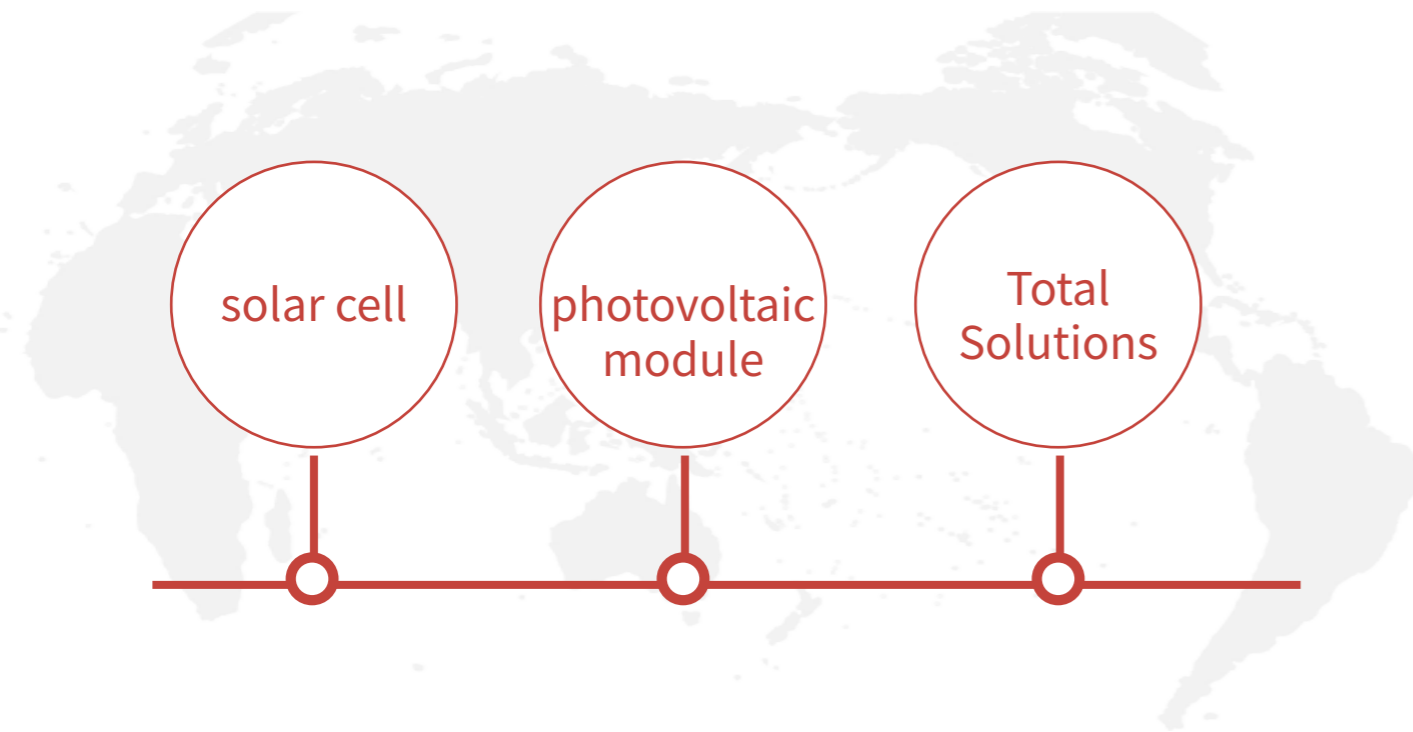
Goal 7: Ensure access to affordable, reliable and sustainable modern energy for all

Seraphim has always been focusing on providing economic, reliable and sustainable green new energy for the global community, continuously innovating photovoltaic technologies and products, reducing costs and enhancing the popularization of green energy.



Adhering to the belief and sentiment of contributing to the future of mankind, Seraphim continues to consolidate its business advantages in the field of photovoltaics, providing total solutions including solar modules, solar cells, and personalized customization, as well as focusing on the development of clean energy, and actively exploring the technologies of intelligent manufacturing and digital empowerment, in an effort to contribute to the cause of global energy and the environment.

THREE BUSINESS SEGMENTS



Extensive Product Range

Diversified products meet diverse customer needs. In order to adapt to different application scenarios, Seraphim's leading R&D technology has created a rich product series. Since 2016, Seraphim has produced at least one innovative new product every year. The latest TOPCON module introduced has been improved the conversion efficiency to 22.5%.

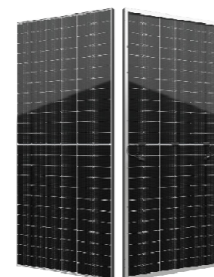
TOPCon SERIES

TOPCon SERIES



- Higher power output (580W+)
- Higher theoretic efficiency (22.45%)
- Longer power warranty, lower power degradation (25 years)
- Excellent temperature coefficient characteristics (-0.30%/°C)

TOPCon BIFACIAL SERIES



- Higher power output (580W+)
- Higher theoretic efficiency (22.45%)
- Longer power warranty, lower power degradation (25 years)
- Excellent temperature coefficient characteristics (-0.30%/°C)
- Higher Bifacial rate

In order to achieve the ultimate cost-effective, seraphim launched a new generation of ultra-high efficiency modules in 2022, the S5 series. The new series integrated 210mm silicon wafers, with PERC, multi-busbar cell technology and high-density encapsulation, increasing the module efficiency up to 21.6%. The power output of the two formats, 60 and 66, has officially entered the era of 600W

SV SERIES

SV SERIES



- Module efficiency is up to 21.6%
- Outstanding performance at low irradiance
- Less mismatch and parallel design reduce shading impact
- Lower risk of hot spot effects
- Significantly lower LCOE and more BoS savings

SV BIFACIAL SERIES

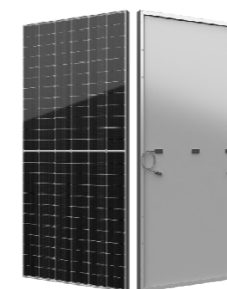


- Using reflected light, 10-30% more energy generation.
- Dual glass structure reduces micro-cracks, snail trails, and UV aging
- Less mismatch and parallel design reduce shading impact
- Lower risk of hot spot effects
- Significantly lower LCOE and more BoS savings

Seraphim launched the S4 series module in the fall of 2020. The series, specifically for large-scale PV power plants, integrates 182mm silicon wafers with PERC, multi-busbar, half-cell technologies and high-density encapsulation.

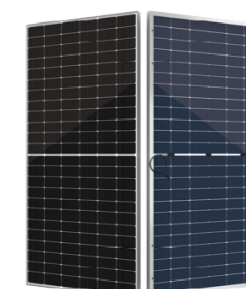
SIV SERIES

SIV SERIES



- 500W+ ultra-high power with 21% module efficiency
- High density encapsulation reduces the cell spacing to 0.5mm
- Lower internal loss and the risk of micro-cracking due to multi-busbar cells
- Significantly lower LCOE, and more BoS savings
- Perfect for utility scale projects

SIV BIFACIAL SERIES



- Using reflected light, 10-30% more energy generation
- High density encapsulation reduces the cell spacing to 0.5mm
- Lower internal loss and the risk of micro-cracking due to multi-busbar cells
- Significantly lower LCOE and more BoS savings

APPLICATION SCENARIO

With rich experience in module R&D process, Seraphim has redefined high-efficiency PV modules by combining 166mm large-size silicon wafers with multi-master grid technology and half-chip technology, and developed the new-generation S3 series modules and S3 bifacial series products, which are suitable for a wide range of application scenarios, by combining more advanced technologies.

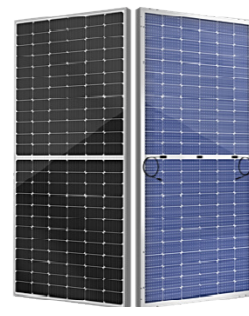
SIII series of products

SIII range



- Module conversion efficiency up to 20
- Outstanding power generation capacity in low light conditions
- Low internal consumption and parallel circuit design to minimize the effect of shadow shading
- Excellent temperature coefficient characteristics
- Effectively reduce the risk of hot spot
- Significantly reduces LCOE and saves BOS cost

SIII Double glass series

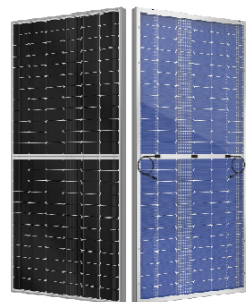


- Utilizes reflected light to produce a 10-30% gain in power generation
- Class A fire resistance
- Outstanding power generation capability in low light conditions
- Low internal consumption and parallel circuit design reduces the effects of shadow shading
- Dual-glass construction minimizes hidden cracks, snail lines and UV deterioration
- Significantly reduces LCOE and saves BOS costs

In order to better meet the booming demand for rooftop distributed PV, Seraphim has launched the S3 and S4 series of lightweight double-glass modules. These series are based on 166mm and 182mm wafers respectively, with module power ranging from 400-460W to meet the needs of different roof areas. The new lightweight double-glass modules adopt 1.6mm+1.6mm double-sided double-glass design, which is thin and efficient, and with 28mm ultra-narrow bezel, the weight of the modules can be greatly reduced.

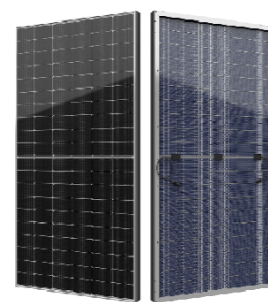
SIII&SIV Series Lightweight double-glazed modules

SIII Lightweight Double Glazing Series Products



- Lightweight and efficient to meet the needs of different roof areas Suitable for commercial and industrial projects and residential roofs Double-sided
- double-glazed PERC cells Achieve 10-30% power generation gain in different application environments

SIV Lightweight Double Glazing Series Products



- Module conversion efficiency of up to 21.3%
- Weight reduction by thin-filming reduces costs and increases production capacity
- Significantly reduces LCOE and saves BOS costs
- Weight reduction does not reduce quality, and still enjoys a long 30-year warranty.

<p>Ground-Mounted</p> <p>375MW</p> <p>Project Type: G-Mounted Product: SRP-545-BMA-BG Location: China / Gansu Commission Date (Estimated): 2023-6</p>	<p>Ground-Mounted</p> <p>176MW</p> <p>Project Type: G-Mounted Product: SRP-440-BMB-HV Location: Vietnam / Phu My Commission Date: 2021-10</p>
<p>Ground-Mounted</p> <p>60MW</p> <p>Project Type: G-Mounted Product: SRP-345-6MA,SRP-365-6MA Location: USA / Florida Commission Date: 2020-1</p>	<p>Ground-Mounted</p> <p>63MW</p> <p>Project Type: G-Mounted Product: SRP-400/405-BMA-HV Location: Philippines / Palaug Commission Date: 2021-3</p>
<p>Commercial</p> <p>6MW</p> <p>Project Type: Commercial Rooftop Product: SRP-450-BMB-HV Location: China / Jiangsu Commission Date: 2022-1</p>	<p>Commercial</p> <p>2.4MW</p> <p>2.4MW Project Type: Commercial Rooftop Product: SRP-450-BMB-BG Location: Croatia / Rugvica</p>
<p>Residential</p> <p>35kW</p> <p>Project Type: Residential Rooftop Product: SRP-370-BMB-Black-HV Location: USA / Kansas Commission Date: 2021</p>	<p>Residential</p> <p>32kW</p> <p>Project Type: Residential Rooftop Product: SRP-320-E01B Location: Philippines / Manila Commission Date: 2017-1</p>

INTELLIGENT MANUFACTURING

Advanced production equipment

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 SÜD 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+ Rated
H.A.L.M. Sun Simulator



ATLAS Fluorescent / UV
Instrument



VOTSCH Walk-in
Climate Simulation Chamber

Intelligent Factory



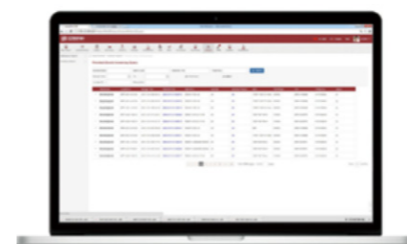
In line with the principle of "friendly to the inside and open to the outside", adopting the strategy of "overall planning and step-by-step implementation", and using the new technology of "Industrial Internet +", the company, as a pilot enterprise for the standardization of the management system integrating informatization with industrialization, is pushing forward the digitalization of the enterprise, covering the portal layer, the management layer, the execution layer and the control layer, promoting the innovation of informatization and automation of the whole process in all aspects, comprehensively enhancing the overall level of operation, making the management more efficient, the manufacturing leaner, and the management and control more finer, and creating the industry benchmark enterprise.





In recent years, the company continues to promote the integration of information technology and advanced manufacturing, through the layout design of the factory's flexible production line, implementing the "Seraphim Enterprise Management Platform (ERP + MES) system upgrade" project, creating several functional

modules including supplier management, sample modules, shipment data import/export, sample management center, production line defective product report center, P-pipe indicator, internal inspection of sample modules, uninventoried returns, inventory operation center, inventory query center, SN pallet transfer operation, AGV failure detail query, ERP/WMS data comparison function, and customer complaint product disposal review sheet, so as to realize the docking and integration of the Seraphim Corporation management Platform(ERP+MES) with the UFIDA U8 financial system. The docking and sharing of data in the field of business and finance can be improved.

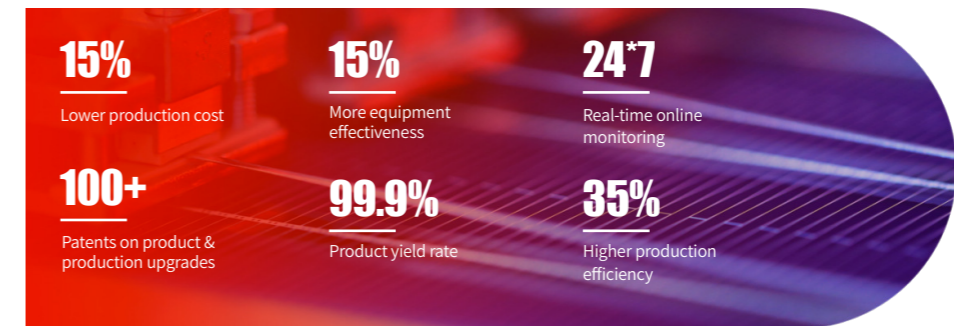
The company has set up an ERP/MES/OA enterprise management system, which has been comprehensively applied to supply chain, finance, sales, production, warehousing, HR management and other fields, and has promoted the realization of system integration with CRM (overseas)/AGV distribution, as well as the establishment of the company's private cloud platform, so as to improve the company's resource planning and management. Under the guidance of long-term plan generated by Seraphim enterprise management system, the system collects real-time production data and carries out short-term production operation planning and scheduling, monitoring, resource allocation and optimization of production process. Thus, it accelerates the research and development of automated production lines, promotes the system integration and intelligent docking of production equipment, manufacturing units and production lines, accelerates the interconnection of the company's personnel and machines, materials and equipment, and production services, and realizes the functions of equipment networking, remote real-time monitoring, production process synergy, intelligent diagnosis of faults, decision-making support, and safe production supervision. Ultimately, it will make our company's assets more efficiently utilized, product production costs lower, market risks controllable, and improve the overall competitiveness of the enterprise.

Seraphim strictly monitors the incoming materials and the production process to make the production operation transparent and open. Customers can log into the management system at any time to track all the parts, processes and production, and the traceability of the whole process from raw materials, production, transportation and delivery is realized. And through the monitoring of the whole cycle of the product, a lot of data support for product quality assurance and material and process improvement are provided, so as to achieve the maximum capacity utilisation rate and yield rate.



-  Continuously improve line efficiency and process management
-  Improve capacity utilization and yield rate
-  Reduce production costs
-  Guarantee customer trust by utilizing transparent and traceable production processes

Based on the requirements of plant layout, process optimisation and product non-discharge, Seraphim has developed a complete set of highly automated manufacturing structures. In addition, it also scientifically applies statistical engineering, equipment control and various management systems to lean production, which ensures the consistency of finished product quality, shortens the learning curve of yield rate and the cycle time of new product introduction to mass production, improves the output of the modules, reduces the production cost, and enhances the revenue level of the customers.



INTELLIGENT WAREHOUSE

Seraphim adopts intelligent and digital AGV warehouses: integrating ERP systems, WMS scheduling systems and NDC automatic guidance technology to manage the delivery, storage of raw materials and products in an efficient and accurate way.



Unmanned fork-lift trucks can execute directions from remote offices based on our self-developed ERP system, commands such as stack and pick pallets of modules, and automatically upload the latest status to the system.

Total Quality Management

Led by the policy of "quality first, quality management integrated into the whole process of business, continuous improvement", the company takes total quality management as the center and full participation as the basis, constantly applies advanced quality management tools, gradually introduces lean production, six sigma management and successfully implements the excellence performance model.

Continuously improve quality inspection means, introduce a series of advanced photovoltaic testing equipment, fully grasp the production process and finished product quality control, ensure the delivery. Continuously maintain the industry leading level in the three fields of solar cells, PV modules, and total solutions.

The company has become the first in the PV industry to be ranked as a "top module supplier" by PV Evolution Labs for five consecutive years, and a "top tier module supplier" by Bloomberg New Energy Finance for nine consecutive years, and has also passed the PV Module "Leader" Level 1 certification test by the China Quality Certification Center (CQC). The extreme pursuit of quality of Seraphim's modules is the best guarantee for customers' assets and earnings, setting the industry benchmark.



Stringent Quality Control

Quality is Seraphim's core value. With the unceasing efforts, we have developed Seraphim's exclusive quality management system based on international advanced management experience.

MATERIAL CONTROL	PRODUCTION CONTROL	Quality Management System Certification
<ul style="list-style-type: none"> Stringent Supplier Management Automatic Material Filtration and Sorting Spot Check Every Feedstock Batch Proper Storage at Fixed Temperature and Humidity Supplier Quality Engineering Incoming-material Quality Assurance 	<ul style="list-style-type: none"> 300+ Quality Check Points 100% 3x EL Testing In-process Quality Control 	
AFTER PRODUCTION	<ul style="list-style-type: none"> Open Box Audit (OBA) Test 	

During the national "Quality Month" activities in 2021 organized by JChina Association for Quality Inspection with the theme of "Deeply Implementing Quality Enhancement Actions and Vigorously Promoting the Construction of a Strong Quality Country", Seraphim was awarded six titles, namely, "National Quality and Integrity Benchmarking Enterprise", "National Quality Leadership Enterprise in the Photovoltaic Industry", "National Quality Leading Brand in the Photovoltaic Industry", "National Quality Reputation and Credibility Guaranteed Product", "National Stable and Qualified Product by Quality Inspection", and "National Top 100 Quality and Inspection Integrity Benchmarking Enterprises".



PREMIUM SERVICE

Whole Industry Chain Service System

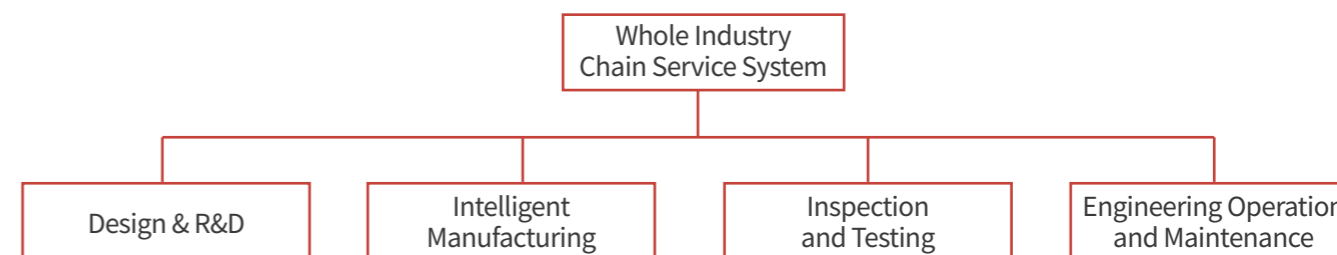
Always oriented to customer demand and supported by technological innovation, combining its own innovative advantages in the field of high-end photovoltaic technology, Seraphim has created a whole industry chain service system integrating design and development, intelligent manufacturing, inspection and testing, engineering operation and maintenance.

Design and R&D Jiangsu Seraphim Solar Systems Co., Ltd. has compiled the "210mm Large Silicon Wafer Battery Module Development Report", which clearly puts forward the concept and requirements of ecological design. The project's development and design of 210mm large silicon wafer battery module is aimed at accelerating industrial transformation, reducing production and manufacturing costs, and endeavoring to develop emission-free, noise-free, pollution-free, green and environmentally-friendly clean energy. Environmental awareness has been introduced at the beginning stage of design and development.

Intelligent Manufacturing Through the introduction of foreign advanced manufacturing technology, the United Nations equipment manufacturers, jointly developed domestic advanced, international leading production equipment, make full use of lean management, integration of equipment automation, management informatization and integrated process digital technology, the establishment of integrated PV manufacturing system, to promote the effective real-time control of the production process, the effective enhancement of the effectiveness of the workshop, the effective improvement of the quality of the product, safeguards the service life of high-end products such as solar PV modules and promotes the development of the industry's manufacturing level.

Inspection and testing By cooperating with third-party authoritative institutions, we test various indexes of products, and the result is a comprehensive reflection of product design, process work, operation level, civilized production and the management level of the whole enterprise, and it also points out the direction of product innovation , and it is also an effective means to protect the interests of the customers and the credibility of the company.

Engineering Operation and Maintenance Seraphim provides customers with one-stop professional services, from pre-sales professional technical consulting, tailor-made optimal solutions, fully transparent instant ERP management system, to more than 20 offices around the world to provide localized services and timely online services; the interlocking, professional and detailed services ensure that customers can easily enjoy the clean power and income brought by the sun. The company has a leading domestic PV project installation O&M service team, which has accumulated rich experience in system monitoring, condition assessment, on-site inspection, fault location and recovery, etc. It has established a professional, high-quality and efficient round-the-clock engineering service O&M system, realizing industry chain extension and independent controllability.



The company has always been oriented to customer experience, with the constant pursuit of excellence in products and service levels, etc., overall control of photovoltaic product quality, and at the same time, digitalization of the process of quality control and quality management, the realization of quality data sharing and solution flow, to enhance the remote management capabilities, and ultimately to achieve the optimal quality of the whole life cycle.

Quality: The company has set up quality control sections in each production division, which are subordinate to the quality management department of the company. From product design, raw material purchasing, production to packaging and delivery, the quality is strictly controlled throughout the whole process, and unqualified products are cut off from the source.

Service: The company has salesmen and related technicians to follow up before and during the sale, provide free service hotline to solve the customer's related problems, and after the sale, the company has the quality management department and engineering service department to accept the product feedback and complaints from the customers and give them a timely solution.



4 ENVIRONMENT

As a core photovoltaic supplier in China, Seraphim has been committed to protecting the ecological environment and contributing to a sustainable ecological civilization in all aspects by means including green management, expanding the company's green business, and phasing out and utilizing the most carbon-intensive assets, thus helping to achieve China's goal of reaching carbon peaks and carbon neutrality.



7715 tCO₂e (scope1+scope2)
Greenhouse gas emission

10712.85 tCO₂
Product carbon emissions

2041.93 t/standard coal
Comprehensive energy consumption

GREEN MANAGEMENT

Seraphim strictly abides by the Environmental Protection Law of the People's Republic of China, the Atmospheric Pollution Prevention and Control Law of the People's Republic of China, the Soil Pollution Prevention and Control Law of the People's Republic of China, and other national energy-saving and environmental protection laws and regulations as well as relevant local laws and regulations and policies; we actively respond to climate change, promote the construction of the company's energy conservation and ecological environmental protection through the energy-saving and emission-reduction management system, and comprehensively identify the company's environmental factors and risks of environmental protection management, guarding against environmental risks, and minimizing the impact of environment.

Seraphim's greenhouse gas emissions in 2022 (Jiangsu Seraphim)

0.971 tCO₂e/10,000RMB
Carbon emission intensity of production with a value of 10,000 RMB

7715.688 t
total greenhouse gas emission (scope1+scope2)

10712.85 tCO₂e
Greenhouse gas product carbon emission

300 t
reduction of greenhouse gas carbon dioxide emission compared to last year



GREEN CONSTRUCTION MANAGEMENT

In the development, design, construction and operation of its projects, Seraphim implements green construction management, continuously improving its processes and enhancing the efficiency of energy use; it also strictly manages and effectively controls the discharge of pollutants such as wastewater, exhaust gases and solid wastes, so as to minimize the impact of the company's production and operation on the ecological environment and promote the sustainable development of its projects.



All of our production facilities operate under an ISO 14001 certified environmental management system.

The water used for production adopts a recycling system, recycling the cooling water used in the production process without external discharge; the reuse rate of wastewater is 100%, which is at the advanced level in the industry.

•Each year, the monitoring unit is commissioned to conduct sampling and monitoring of the total wastewater discharged from the plant, and the results are all in line with the Integrated Wastewater Discharge Standard.

The top of the company's plant is equipped with a 2MW solar power generation system. In 2022, the solar power generated and supplied for the company was 2,060,900 kWh, and the use of renewable energy accounted for 11.92% of the total energy consumption of the building. Thus, there was an annual reduction of 1,413.7tCO₂ emission.

We have adopted low-noise fans and low-noise air compressors, and installed anechoic devices at the suction port of air compressors and sound-absorbing materials on the top of the plant to reduce the impact of industrial noise on production and life.

The company has also established the emergency response plan for environmental emergencies, adhering to the principles of unified leadership, hierarchical responsibility, territoriality-based coordination, rapid response, scientific disposal, resource sharing and solid protection, scientifically and efficiently protecting the company's staff's life and property safety and environmental safety in an orderly manner, and promoting the company's comprehensive, coordinated and sustainable development.

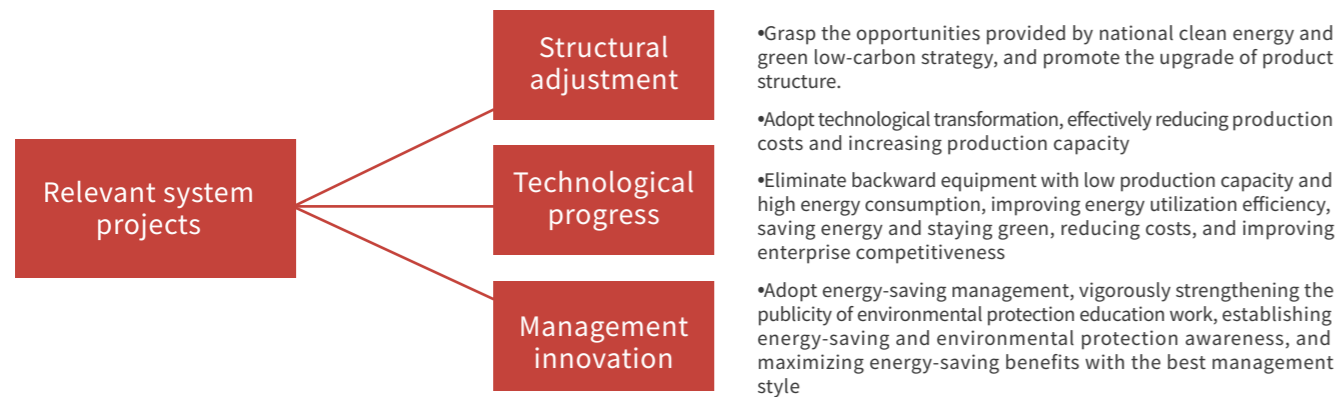
the proportion of new energy in the total energy consumption of the building in 2022			
Amount- of solar- px power-power- Total-amounte used(10.000kWh)e	Electricity-power- purchased(10.000kWh)	Total-amounte	Proportion-
206.09	1522.56	1728.65	11.92%

The company has also established the emergency response plan for environmental emergencies, adhering to the principles of unified leadership, hierarchical responsibility, territoriality-based coordination, rapid response, scientific disposal, resource sharing and solid protection, scientifically and efficiently protecting the company's staff's life and property safety and environmental safety in an orderly manner, and promoting the company's comprehensive, coordinated and sustainable development.



Waste disposal equipment

"ENERGY SAVING AND CONSUMPTION REDUCTION, TAPPING POTENTIALS AND INCREASING EFFICIENCY"



No.	Green transformation item	Effect
1	Retrofit string welders, laser scribes, laminators	Improvement of work efficiency by 15%, with an annual power saving of 390,000 kWh, equivalent to 4 tons of standard coal.
2	Acquisition of six SE75AD-8R inverter screw air compressors and one GV-200WII SVSDR inverter screw air compressor for compressed air preparation	Energy consumption decreased by about 15%, with an annual power saving of 60,000 kWh, equivalent to 7.3 tons of standard coal.
3	Equipped with a new plate heat exchanger in the auxiliary room	Annual reduction in steam consumption, equivalent to 25 tons of standard coal
4	Use ethanol instead of acetone as a scouring agent	Reduced consumption of the toxic and hazardous substance acetone and reduced raw material costs
5	Substitution of toluene isobutyl ketone for n-butanol in fluxes	Reducing the risk of harmful substances to human health
6	Replacement of packaging, all using spacer packs; elimination of fixed blocks and small corner protectors for internal packing, adding two long flutes per pallet	Improvement of packaging material utilization
7	In order to reduce the labor intensity of the personnel and the loss of materials, the introduction of large rolls of EVA and the backplane	Reducing material costs and labor intensity
8	Introduction of non-film profiles to replace film profiles	Increasing capacity and optimize manpower
9	Replacement of paper glass with paperless glass	Improving the yield rate of foreign matter, reducing the rate of rework before layer, improving the efficiency of the staff and reducing the intensity of work

FOCUS ON SUSTAINABLE DEVELOPMENT



Vision and Mission

Seraphim is devoted to promoting the global sustainable development.



In August 2022, Seraphim had been awarded a silver medal in the 2022 EcoVadis corporate social responsibility (CSR) rating, and will continue to make positive contributions to promoting energy reform, sustainable energy development and creating a more beautiful social environment.



In November 2021, Seraphim announced that it has officially joined the UN Global Compact, and will work with like-minded leading enterprises in various industries around the world to jointly promote the global sustainable development and create a beautiful new world that meets human aspirations.



In May 2018, driven by our mission, Seraphim joined PV CYCLE, an international PV waste recycling organization. In this way, Seraphim's products can be recycled, and reused in the areas covered by the association, thereby contributing to the sustainable development of the economy and the environment.

Seraphim announced that it has officially joined the UN Global Compact, and will work with like-minded leaders in various industries around the world to promote global sustainable development and create a better new world that meets the aspirations of mankind.

We believe that business should also have the power to do good. Over the past decade, Seraphim has focused on the innovative research and development and practical application of solar photovoltaic (PV) modules, and has made positive contributions to driving energy change, promoting sustainable energy development, and creating a more beautiful social environment. We clearly recognize that our business has a great responsibility to our customers, to the earth and to the future. The global social risks that are sweeping across the globe have made us realize the importance of cooperation between countries and businesses around the globe in achieving the Sustainable Development Goals (SDGs). This is why we have joined the United Nations Global Compact, and we are ready to take part, assume responsibility, and do our utmost to support the achievement of the Global Compact's common goals.

Our initiative: realize the goal of "Zero Carbon"

Manufacturing industry has always been seen as a "big energy user", and it is imperative that it undergoes a low-carbon transition. We attach great importance to this and are doing our best to reduce energy consumption, carbon emissions and carbon footprint. We have installed photovoltaic power generation systems in our factories in Changzhou, Jinzhai etc. to realize green power generation, thereby reducing carbon emissions during operations. In the future we will continue to invest in achieving the goal of "zero carbon" production and contributing to global sustainable development.

Our actions: incorporate sustainability into our corporate culture

We recognize that a large portion of our carbon emissions come from office and commuting. Therefore, we have formulated appropriate plans and codes of conduct to regulate the rational use of resources by our employees and to develop behavioral practices that will continue to reduce carbon emissions caused by office work and commuting, thus laying the foundation for the company's sustainable development.

Our vision: Shifting the Future

Seraphim's operation spreads over more than 40 countries and territories around the world. Regardless of the location or size of the project, we have always maintained a continuous dialogue with the owners and other partners in the process of the project, to share social responsibility and the management model of sustainability, and to work together to promote the transformation of society into a green and low-carbon society.



As a global photovoltaic brand, Seraphim is committed to promoting sustainable development by extending the goals of energy saving, carbon reduction, fairness and integrity, and win-win sharing to our employees, consumers and supply chain. Receiving the EcoVadis certification is a recognition of Seraphim's CSR initiatives and an incentive for us to continue to uphold the concept of sustainable development and work with our upstream and downstream partners to improve the overall development of the PV industry.

During the assessment, for several key aspects including environment, labor and human rights business ethics, sustainable procurement, etc., Seraphim has given outstanding performance. For example, in terms of environment, Seraphim reduces its impact on the environment through process improvement, equipment upgrading, employee training, use of clean energy and other energy-saving measures. In 2021, it has saved nearly 9,000 tons of carbon emission through green manufacturing, and more than 8,400 tons of carbon emission through the optimization of processes and production systems. In addition, Seraphim has made continuous efforts to shoulder more social responsibility and strengthen identification and assessment ability of business ethics risks, optimize sustainable procurement management procedures, and work harder on supplier social responsibility audits and environmental status surveys, so as to continuously regulate the business behaviors of suppliers and partners.

GREEN CULTURE

We advocate a civilized and healthy, low-carbon and environmentally friendly lifestyle, and actively promote green office, and through the construction of paperless office and digital system, we can help our employees to develop good environmental protection habits in their daily work and create a green and comfortable office environment.

- Promote water conservation through signage
- Replacement of conservation faucets
- Regularly check water fixtures for leaks
- Pour overnight water and tea into waste buckets and use the waste water to water the greenery

Water saving

Energy saving

- Prioritize public transportation for official travel
- Reduce business travels through videoconferencing
- Rationally distribution of vehicle resources in accordance with the official vehicle management system to economize on gasoline consumption
- Promote electricity conservation through reminder signs
- Set the minimum operating temperature of air-conditioners in summer and clean the dust net at the end of the air-conditioner on a regular basis
- Use of LED energy-saving luminaires

- Establishment of a system of registration of receipt of items to reduce consumption of office supplies
- Reduction in plastic purchases and use of disposable paper cups and cutlery
- Adopt paperless office as far as possible, promote double-sided use of paper office and waste paper classification and recycling

Material saving

5 EMPLOYEE



 **1151**
Staff on active duty

 **580,000RMB**
For employee training

We advocate "stay healthy, stay happy", adhering to the idea of people-oriented with a goal of building a community of common destiny for the enterprise and the staff. We eliminate all forms of child labor and forced labour, insisting on equal employment, equal pay and equal remuneration, and protecting employees' remuneration and benefits and all basic rights and interests. We open up career promotion channels and carry out training activities through multiple channels and at multiple levels to help employees grow and develop; we consolidate occupational health and safety management to protect employees' occupational health and safety; we also actively organize a variety of cultural and sports activities to spice up employees' work and life and enhance their sense of well-being.

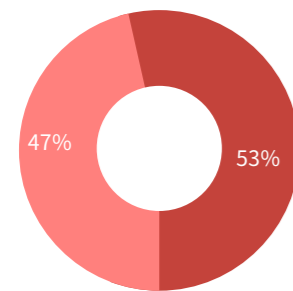
EMPLOYEES' RIGHTS AND INTERESTS

Employment management

Seraphim conscientiously implements the Labor Law of the People's Republic of China, the Labor Contract Law of the People's Republic of China, the Social Insurance Law and other laws and regulations of the countries and regions in which it operates overseas, abiding by the relevant international conventions ratified by the Chinese government, pursuing a policy of employing employees on an equal footing, fairly and equitably treating employees of different races, skin colours, nationalities, genders, ages, religious beliefs and cultural backgrounds, strictly prohibiting and resisting any form of child labor and forced labor.

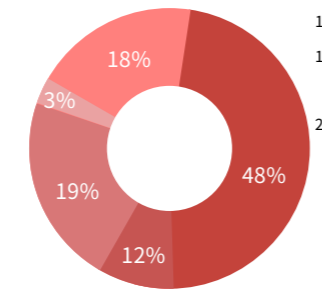
As at the end of 2022, there were 1,151 employees on board, with 25 employees from ethnic minorities, a total of 28 retired employees, an employee turnover rate of approximately 14.54%, a labor contract signing rate of 100%, and 105 female managers accounting for 15.07% of the total.

Employee gender structure



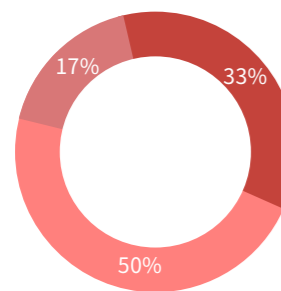
■ Female ■ Male

Employee specialty structure



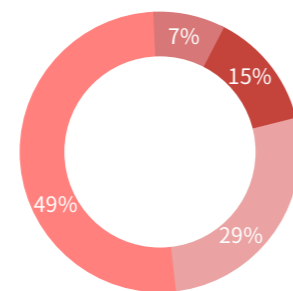
550人 Production staff
132人 Sales Staff
120人 Technical staff
32人 Financial officer
208人 Administration staff

Educational degree structure



389人 College degree or above
572人 Technical secondary schools, technical secondary schools and high schools
190人 Below high school

Age structure

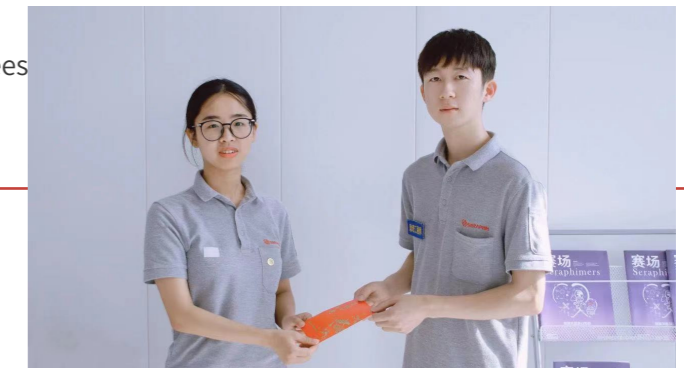


25人 Age 56 and older
171人 46-55 years old
398人 36-45 years old
557人 Under 35 years old

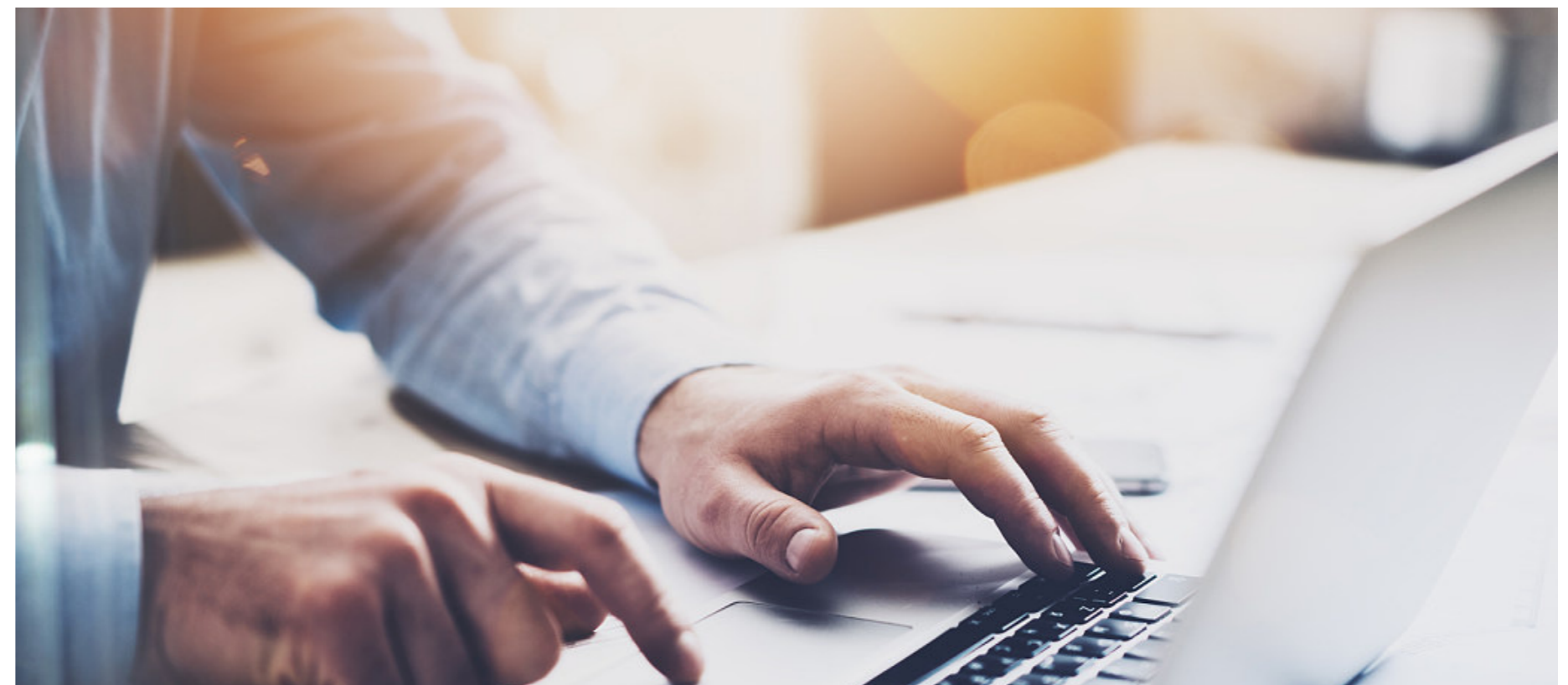
DEMOCRATIC MANAGEMENT

Seraphim attaches great importance to democratic management, building a democratic management system based on the Staff Congress, effectively focusing on the center of the company's work, playing a role in the construction of corporate culture, gathering heart and soul, and jointly promoting the construction of corporate culture featuring Seraphim's characteristics. It establishes labor union committee, women workers committee, the Labor Union Fund Review Committee, etc., adopts a mode featuring the attendance of staff representatives at important meetings of the enterprise and proposals of the staff representatives, smooths the channels for the staff to participate in the democratic management, democratic supervision and decision-making, and maintains and protects the rights and interests of the staff in the democratic management.

100% Proportion of employees participating in the Labor Union



The Labor Union would carry out enterprise veterans' condolence activities to pay high respect and holiday greetings to veterans and military families. Also, they would send them condolence money.



REMUNERATION AND BENEFITS

Seraphim strictly abides by the relevant state laws and regulations, standardize the salary and performance management, and constantly improves and optimizes the company's salary system and assessment and distribution system; the company pays salaries in full and on time, pays the insurance and housing fund for all employees, establishes a normal adjustment mechanism for the simultaneous growth of employees' salaries responding to the economic benefits of the enterprise, and maintains an annual increase of salaries at 5%-10%; in addition to the statutory benefits, the company actively improves the employee welfare system where the employees can enjoy statutory holidays, annual leave, marriage leave, maternity leave and other holidays, and the company gives the relevant benefits and condolences to the employees according to the provisions of the company's labor union expenditure management regulations, protecting the employees' work and life welfare.

ITEM	CONTENT
Insurance and housing fund	Pension, medical care, work injury, maternity, unemployment, provident fund, coverage rate of 100%
high temperature benefits	June-September each year as the legal high temperature period, employees working outdoors can enjoy 300 yuan /month
Annual festival benefits	Open door bonus, Dragon Boat Festival, Mid-Autumn Festival, Chinese New Year Gift Packs for employees
Employee physical examination	New employees can be reimbursed with invoices for physical examination with a reimbursement of 100 yuan physical examination- for the whole staff: 1 time/year
Departmental team building	Quarterly provide funds for each department for the organization of group building the cost standard is 80 yuan /person
Cafeteria meals	The company provides employees with meals during work
Staff dormitory	Dormitory provided
Phone bill benefits	G2 to G4 employees 50 yuan/ month G5 and above employees 100 yuan/ month
Birthday Benefits	Marriage gift funeral condolences hospitalization visits childbirth visits Birthday benefits in kind will be given to employees on their birthdays
Group accident insurance	The company provides- group accident insurance as the personal accident insurance for the staff



EMPLOYEE DEVELOPMENT

Seraphim New Generation" development strategy

Standing at the new starting point of the new era, Seraphim seeks innovation and breakthroughs, and puts forward the "New Generation" programme, which not only widely gathers the consensus of the new generation, but also stimulates the young vitality of them.

New Generation" Meeting

We regularly organize "New Generation" meetings to strengthen communication with young employees, get to know the difficulties and needs of young workers and their suggestions, effectively help solve production and life problems, and accelerate the growth of young employees together with the nation.

Visiting and learning activities- "Touching Intelligence, Building Dreams of Seraphim

The president of the company, Feng Qianming, together with more than 20 cadres and employees, went to various photovoltaic industry bases for visiting and learning. Focusing on the key word "intellectualisation", Seraphim is striving to build a new high ground of an industry featuring high-end intelligent manufacturing characteristics.



Reward fund for innovation management of Seraphim

The company has set up the Seraphim Innovation Management Reward Fund, which rewards employees with a minimum of 5% of net profit, effectively combining the interests of shareholders, the company and employees.

Every year, "Seraphim Innovation Fund" commendation meeting will be held, with a scope covering scientific and technological innovation, deepening management, market development and other fields, to commend the employees and teams with outstanding achievements and performance so as to further stimulate the staff's motivation and innovation ability to help create better benefits for the company, enhancing the core competitiveness of the enterprise and promoting the company's high-quality, stable and far-reaching development.

Talent allowance and house purchasing allowance and rewards for young employees with a cumulative number of

1,500,000RMB

Investment in youth protection, talent flats, sports field construction and training and education, etc. with a cumulative number of

More than 400,000RMB

In 2022, the total number of rewards is up to

79,000RMB

INDICATOR OF STAFF TRAINING HOURS IN 2022

Employee skills training (**1,151** employees); Employment training (**1,124** employees)

Safety training (**1,323** employees); Training hours per capita (**72** hours)

Incentive for Academic Upgrading

In order to follow the "SHIFTING·THE FUTURE" strategic thinking, we hold the idea of vision-oriented, unwaveringly adhering to the "2 seize" with the "Seraphim New Generation" as the grasp, providing the company's middle and senior management, the core talent and the individuals who are eager to improve their comprehensive abilities with incentives for academic or title/qualification upgrading. Also, the company will pay for the employees for the registration fee and evaluation fee involved in the upgrading process.

Educational background	Length of schooling (years)	Tuition subsidy	Award standard (RMB)	Category (corresponding to the categories below)	Award standard (RMB)
Postgraduate (PhD, Master)	2-3	100%	10000 and above	Senior professional title	10000
Undergraduate course	2.5	100%	5000	Deputy senior professional title, senior technician	5000
Junior college	2.5	100%	3000	Intermediate professional title, technician	3000
Senior high school	2	100%	1500	Advanced skill	1000
				Junior professional title	500

Employee care-Supporting fund

In each December, the "Month of Supporting", a centralised fundraising event is held.

8 person

in 2022, the number of employees that got benefitted

100,000RMB

in 2022, the total number of the fundraising

Staff activities

As a family, we advocate the health and simplicity of interpersonal relationships in the company, so that our employees could develop friendships of tolerance, stay happy in the work, realize personal growth and development with each other. The company actively carries out various interactions that are beneficial to the physical and mental health of employees, creates a good corporate culture and enhances corporate cohesion, promoting the common progress of employees and enterprises. On the occasion of the traditional festival, the company actively organises all kinds of activities, sparing no effort to encourage every employee to participate in them and feel the festive atmosphere so as to enrich the life of employees.



Employee benefits

As a people-oriented company, we have established a complete welfare protection system to ensure that employees enjoy legal rights and interests such as social insurance, statutory holidays, paid annual leave, etc. The company puts itself in the shoes of its employees and provides them with catering, transport, housing, medical care and other benefits as much as possible. We also provide additional care for front-line employees, employees in difficulty, and employees during maternity. Every year, the company will organize the whole staff to take part in the medical mutual aid protection, and carry out health check-ups and occupational disease check-ups on a regular basis.

Rights on parental leave

male (paternity leave) reentering rate	male (paternity leave) retention rate	female(maternity leave) reentering rate	female(maternity leave) retention rate
100%	73.53%	94.12%	89.29%

HEALTH AND SAFETY

Occupational health and safety culture

We actively carry out occupational health lectures and training to improve employees' knowledge of occupational health; we organize emergency drills to improve the emergency response capability of the employees on their position; we also organize safety activities to create an atmosphere of safety culture and raise employees' awareness of occupational health and safety risks.

5

Safety education training

4

Safety activity

2

Emergency drill

In order to further strengthen the safety work of the enterprise, create a good atmosphere of "everyone is responsible for safety management", and establish the ideological awareness of safety as the priority, from June to July in 2022, the company held the "2022 annual production safety" activity with the following main content: safety promotion, safety promotion video playing, emergency rescuer training, fire emergency drill, chemical leakage drill, safety knowledge quiz, volunteer firefighter drill, joint inspection, etc., to promote the company's work on production safety to a new level. In this activity, we adhered to the main line of "hidden danger investigation and management of safety" work, constantly consolidating the safety foundation, carrying out in-depth hidden danger investigation and management and safety supervision, promoting the guidelines and policies of production safety with rational deployment and overall advancing so as to make the management of production safety deeply rooted in people's hearts and minds, and further improve the safety awareness and responsibility consciousness of all the workers, and form a consensus of "safe production under the idea of people-orientation".

HSE MANAGEMENT SYSTEM

Seraphim HSE management work promotion system

We have adopted the HSE job responsibility system, continuously implementing and improving the HSE management system through in-depth grassroots, strengthened communication, and preventive management means and measures.

we have standardised information reporting and timeframe requirements, and recorded statistics; with the "hidden safety problems photo-taking" activity, every employee is encouraged to participate in HSE work.



We have built the HSE leadership team led by the chairman across all departments; each department has a commissioner responsible for dealing with statistical work of working data and the promotion and implementation work.

We have set up special funds for HSE management and special funds to reward departments and individuals with outstanding HSE management.

We have set up assessment criteria to assess staff in charge of HSE management and safety officers

HSE management results in 2022

We have significantly improved key HSE indicators, and achieved no major or above, no big safety accidents, and a continuous decline in the number of general accidents.

We have also achieved President Xi Jinping's important directive of "three continued declines".



6 GREEN SUPPLY CHAIN

We support for the United Nation's Sustainable Development Goals (SDGs)

Goal 12: Adoption of sustainable consumption and production patterns

Seraphim always gives priority to the procurement of environmentally friendly products and services, integrates the concept of sustainability into the procurement process, promotes responsible suppliers, and carries out the "green supply chain" model, focusing on energy saving and emission reduction, using renewable energy sources and building a sustainable photovoltaic industry chain.



Seraphim is committed to fair operation, always attaching great importance to good professional ethics and business standards. On the basis of ensuring the legitimate rights and interests of suppliers, Seraphim continues to improve the integration of sustainable development into the procurement management business, and to enhance the weight of sustainable development in the certification of suppliers, performance evaluation, and procurement decision-making, etc. Seraphim is committed to leading its suppliers to jointly build a positive business environment and to contribute to the sustained and healthy development of the photovoltaic industry.

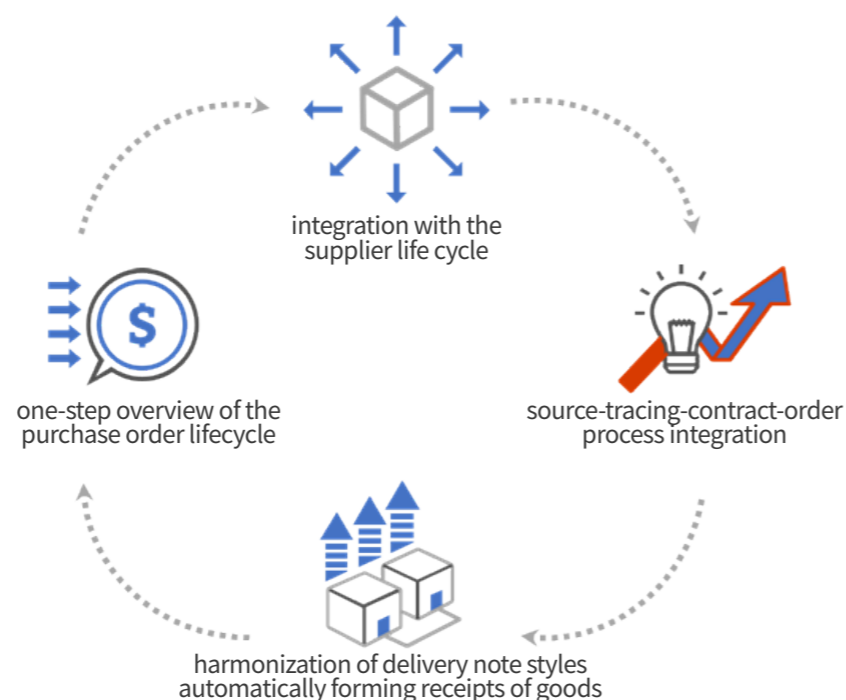
GREEN PROCUREMENT



Adhering to the procurement principle of "fairness, openness, impartiality and honesty", Seraphim fulfils its procurement responsibilities in accordance with the contracts, pays suppliers in an orderly manner, safeguards the legitimate rights and interests of suppliers, and guarantees the safety and stability of the industrial chain, which is the company's social responsibility to protect its suppliers. The Integrity Construction Responsibility Statement formulated by the company is an important step in the signing of the procurement contract and helps clarify the professional integrity of the company and the suppliers, prevent commercial bribery, and ensure the healthy and orderly conduct of all businesses with the suppliers.

The company has formulated documents such as Supplier Management System, Material Procurement Management System, Purchasing Basic Agreement, Qualified Supplier Evaluation System, etc., to clarify the management work of the Material Procurement Department on suppliers; and stipulated the purchasing process and guidelines for the control of suppliers, etc. to ensure compliant management of the procurement process. In order to ensure that the purchased materials comply with the quality requirements and keep the purchasing process in a controlled state. Meanwhile, in order to ensure that the purchased materials meet the quality requirements and keep the purchasing process under control, the Purchasing Control Procedures formulated by the company is a necessary tool for reference.

The company has built a digital platform for supply chain, which is a unified medium for communication and collaboration with suppliers, and is integrated with ERP system for information interaction, purchase order collaboration, etc., so as to record and supervise online to ensure the fairness and transparency of the procurement process; suppliers can access the platform through registered accounts for enquiries, maintenance, order confirmation, payment details enquiries, etc., so as to promote information and data sharing and efficient collaboration between the upstream and downstream sectors.



SUPPLIER MANAGEMENT

The company has formulated the Qualified Supplier List and Supplier Evaluation Rules, adopting quantitative assessment and selecting the best and eliminating the worst to manage the suppliers. From the four aspects of quality, price, delivery time and after-sales service, the company carries out a quantitative assessment and evaluation of the suppliers in the form of a "percentage system", so as to encourage the suppliers to continuously improve the quality of supply. At the same time, the company focuses on supplier enhancement, establishes a two-way communication mechanism with suppliers, and promotes regular visits between the technical and business personnel of the two sides. We aim for timely coordination to solve problems, if necessary, with the help of technology, quality and other departments, evaluating the supplier's process to help find the reasons for failure and improve the level of supply quality. By helping suppliers and partners to improve their performance, the performance of the organization will be improved. While consolidating the relationships with the original suppliers, we actively develop new suppliers to meet the company's production needs, so that the quality of supplier supply continues to improve and support the company's rapid development. In addition, the company focuses on the development of strategic co-operation with suppliers, and has built a long-term strategic co-operation and stable relationship with suppliers. The agreement clearly stipulates that the supply price corresponds to the market price of raw materials used in the products provided to the company, which provides a reliable basis for the suppliers to prepare the raw materials in due course, and has a far-reaching significance in reducing the cost of manufacturing for both parties in the co-operation.



The company always focuses on the concept of "green supply chain" and the development of renewable energy systems, encourages suppliers to establish, implement and continuously improve the occupational HSE management system, and spares no effort to do anything possible to ensure that the environmental protection meets the standards, to help suppliers with energy saving and emission reduction, to promote the green transformation of upstream enterprises, and to enhance the market competitiveness and sustainable development of the entire photovoltaic industry chain. At the same time, the company is committed to the enhancement of several energy-saving and environmental protection systems, such as carbon emission management, sewage discharge management, solid waste management, green materials, etc., and ultimately forms a green supply chain management platform for the whole life cycle of the solar photovoltaic industry, ranging from design, research and development, purchasing, production to service.

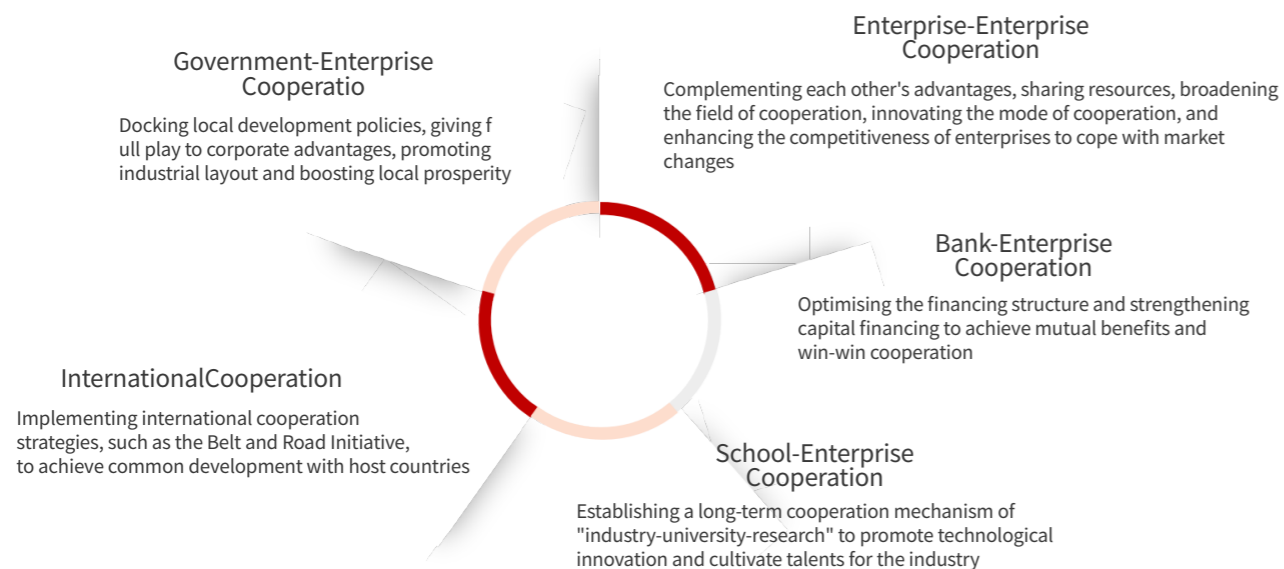
WIN-WIN COOPERATION



Tackle climate change

Our company actively responds to the national strategy of “carbon peak and carbon neutrality”, and always sticks to the road of green and low-carbon development. We have fully integrated climate risk indicators into our existing risk management system, and at the same time, we continue to carry out low carbon green work in the industry, and help the country to establish a sound green low carbon circular development economic system with our own practical actions.

Seraphim actively engages in creating a platform for co-operation and development with suppliers, develops new technologies, exchanges information on industry development, and shares market opportunities and bears risks together with them, complementing their strengths under the goal of leading the industry to develop together.



Our company attaches importance to the communication with partners and continuously strengthens the relationship with partners through the establishment of win-win co-operation. On the basis of adjusting the mode of talent delivery, improving the quality of talent training, and providing employment opportunities, the company joins hands with universities and research institutes to digest, absorb and re-innovate the introduced technologies or intellectual property rights, and form independent intellectual property rights or technical standards. At the same time, we jointly undertake scientific research projects on pre-competitive technologies and common key technological innovations, and carry out forward-looking, pioneering and exploratory research on cutting-edge technologies in new energy and other fields, so as to lay a good foundation for the cooperation between the two sides in the next step. In terms of the co-operation with banks, the company establishes strategic partnership with banks. With such relationship and the formation of a co-operation team, we aim to create a win-win cooperation.

Seraphim has been on the BNEF Tier 1 solar module makers list for 9 consecutive years and its products have been trusted by more than 80 international banks and 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.



Seraphim and China Huadian Anhui Branch reached a strategic co-operation agreement
 Promoting rural revitalisation
 Promoting realising the goal of carbon peak and neutrality



AGREEMENT SIGNING

On 17th November 2021, Seraphim and China Huadian Corporation Anhui Branch (hereinafter referred to as "China Huadian Anhui Branch") successfully held the signing ceremony of the strategic cooperation framework agreement and the signing ceremony of the cooperation agreement of Jinzhai County 100MW PV project in Jinzhai, Anhui Province. Pan Qihua, Deputy Director of the Planning and Development Department of China Huadian Anhui Branch, and Wang Mingsheng, Vice President of Seraphim, attended the ceremony.



On 21st October 2021, OFweek2021 (12th) Solar PV Industry Conference and Annual Award Ceremony was held in Futian, Shenzhen, where more than 1,000 solar PV industry insiders, academics, experts and senior engineers gathered to witness the new dynamics, new momentum and new development of the PV industry. As one of the winners of OFweek 2021 Ultra High Efficiency PV Module Award, Seraphim was invited to the conference.



COMMUNITY AND WELFARE

SDGs goal



890,000RMB

2022 total investment in social welfare

The fulfilment of social responsibility by an enterprise is a reflection of its competitiveness, business philosophy and morality, as well as a passport to market recognition. We have always been concerned about social development, people's livelihood, social welfare and charitable causes, actively assume social responsibility, abide by social norms and take on the social responsibility with an annual allocation of special funds for counterparts in poverty alleviation, children with autism, employees in need of assistance and charitable donations. As a member of the society, we are aiming to create a harmonious external business environment with a frank and positive mind, care for nature and the idea of repaying the society.

COMMUNITY DEVELOPMENT

Seraphim actively integrates into the communities where its projects are located and fulfils its social responsibilities. With its own resources and business advantages, Seraphim supports the construction of local infrastructures such as transport, drinking water, sanitation, electricity demand, etc., and improves the living environment of the communities; and adhering to the charitable motto of "Love in the East, Goodness in the World", Seraphim spares no effort to support the public welfare undertakings of the communities, and contributes to the development of the communities by making charitable donations, and by donating facilities and equipment.



In October 2013, Seraphim provided services to Litang, Sichuan County Heni Township Primary School and Pajiang County, Zhongba County, Tibet Township primary school donated 5KW solar photovoltaic power station.



In January 2018, Seraphim and China Energy Cloud Jointly donated by Nan Electric Power Technology Co., Ltd. 10kW photovoltaic system on rooftop of Myanmar Ministry of Energy Run successfully.



In November 2020, he served as the No. 12 Middle School in Xiangyang, Hubei Donated 60kW rooftop photovoltaic, the project started It will be connected to the grid in February 2021, with an annual power generation capacity of 60,000 kWh.

Seraphim Elected as the Vice President of Jinzhai County Charity Association

On 26th December 2021, the second general meeting of Jinzhai County Charity Association was held in Jinzhai County Theatr. And the first meeting of the new directors and supervisors was held on the site of the general meeting, and Seraphim was elected as the vice president unit of Jinzhai County Charity Association. After the election, Seraphim donated 100,000 RMB on the spot.



CHARITY ACTIVITY

Charity activity



In February 2018, Seraphim and iHEARu Charity Fund reached a long-term partnership on the "Cognitive Center" project for hearing-impaired children.



In September 2018, the charity flea market was opened, 547 items were sold, and more than ¥50,000 was raised.

Hearing the Future



In September 2019, a second charity flea market was successfully staged. More than 400 donated items were sold, and ¥30,000 was raised for employees with living difficulties.

Donation for Autistic Children



In September 2022, Seraphim provided material assistance to Fenghang Children's Learning Ability Training and Rehabilitation Center in Tianning District, Changzhou to help the healthy growth of autistic children and contribute to the realization of global sustainable development.

Helping Autistic Children



On 2 April 2021, the World Autism Day, Seraphim joined the international "Light It Up Blue" campaign in Changzhou, donated ¥100,000 for autistic children's rehabilitation and was awarded "Caring Enterprise" by Changzhou government.

In September 2021, we participated in Tencent's "99 Public Welfare Day" and donated ¥40,000 to autistic children.

ACHIEVEMENT INDICATOR

	Unit	2022
Economic performance		
Total assets	10,000RMB	274496
Operating income	10,000RMB	202725
R&D innovation		
Number of R&D technicians	person	120
Ratio of R&D technicians	%	10.42
R&D investment	100,000,000RMB	8552
R&D investment in operating income	%	4.2
Cumulative number of domestic patent applications	item	112
Cumulative number of domestic invention patent apply	item	15
Environmental management		
Electricity consumption (thermal power)	1TWh	/
Electricity consumption (wind power, photovoltaic power)	1TWh	/
Gasoline use	kL	/
Diesel use	kL	/
Liquefied petroleum gas use	10,000m ³	/
Natural gas use	10,000m ³	/
Water consumption	10,000t	22972
Water consumption per capita	t/person	/
Total energy consume of 10,000RMB business income	t standard coal/10,000RMB	0.97tCO ₂ e/10,000RMB (Jiangsu Seraphim)
Carbon dioxide emission	t	/
Greenhouse gas emission	t/ CO ₂ e	7715(scope 1+scope2)
Product carbon emission	t/10,000RMB	10712.85tCO ₂
Employee structure		
Total number of employees	person	1151
By gender		
Female	%	47
Male	%	53
By age		
29 years old and below	person	/
30 to 39 years old	person	/
39 to 49 years old	person	/
50 years old and above	person	/

By speciality		
Production staff	person	550
Sales staff	person	132
R&D technicians	person	120
Service personnel	person	32
Administrative staff	person	208
By education degree		
Postgraduate and above	person	65
Undergraduate	person	590
Junior college and below	person	496
Employee Turnover Rate		/
Employee Turnover Rate	%	8%
Equal and regulated employment		
Labour contract signing rate	%	100
Social insurance rate	%	100
Number and proportion of female managers	(person) %	15.07
Number and proportion of ethnic minority employees	(person) %	25
Number and proportion of foreign employees	%	79.06
Number of paid leave days per capita per year	%	/
Employee training		
Number of training hours per capita	hour	75
By gender		
Female	hour	75
Male	hour	75
Percentage of employees receiving training	%	100
By level		
Senior management	%	25
middle management	%	30
grassroots staff	%	45
Occupational health and safety		
Number of occupational diseases	time	0
Major safety accidents	time	0
Number of employee deaths at work	person	0
Number of safety training hours	class hour	10.5
Supply chain management		
Number of main suppliers		48
Social welfare		
Total public donations	10,000RMB	69

REPORT INDICATOR INDEX

Main scope, dimensions, general disclosure and key performance indicators		disclosure position or note
scope A:environment		
dimension A1:emission		
general disclosure: on waste and greenhouse gas emissions, discharges to water and land, and generation of hazardous and non-hazardous waste, etc. (a) policies; (b) and information on compliance with relevant laws and regulations that have a material impact on the issuer		P27-30
A1.1	emission types and relevant emission data	P27
A1.2	total GHG emissions (in tonnes) and, if applicable, intensity (e.g. per unit of production, per facility)	P28
A1.3	total amount of hazardous waste generated (in tonnes) and, if applicable, density (e.g. per unit of production, per facility)	P28
A1.4	total amount of non-hazardous waste generated (in tonnes) and, if applicable, density (e.g. per unit of production, per facility)	P28
A1.5	describe the measures taken to reduce emissions and the results obtained	P29
A1.6	describe methods of handling hazardous and non-hazardous waste, measures to reduce the generation, and results achieved	P28
dimension A2:resource usage		
general disclosure:policies for the efficient use of resources (including energy, water and other raw materials)		P28
A2.1	total direct and/or indirect energy (e.g. electricity, gas or oil) consumption by type (in MWh) and intensity (e.g. per unit of production, per facility)	P29
A2.2	total water consumption and density (e.g., per production unit, per facility)	P29
A2.3	describe the energy efficiency programme and the results obtained	P30
A2.4	describe any problems in accessing suitable water sources, and plans to improve water efficiency and the results achieved	P30
A2.5	total amount of packaging material used in finished products (in tonnes) and, if applicable, per unit of production	P30
dimension A3:environment and natural resources		
general disclosure: policies to minimise the issuer's significant impact on the environment and natural resources		P29
A3.1	describe the significant impacts of the business activities on the environment and natural resources and the actions that have been taken to manage the impacts	P30
scope B:social		
employment and labour standards		
dimension B1:employment		
general disclosures: on pay and termination, recruitment and promotion, hours of work, holidays, equal opportunities, diversity, anti-discrimination and other treatment and benefits: (a) policies; (b) and information on compliance with relevant laws and regulations that have a material impact on the issuer		P31-36
B1.1	total number of employees by gender, type of employment, age group and region	P32
B1.2	employee turnover rate by gender, age group and region	P32
dimension B2:health and safety		
general disclosure: on the provision of a safe working environment and the protection for employees from occupational hazards: (a) policies; (b) and information on compliance with relevant laws and regulations that have a material impact on the issuer		P32-36
B2.1	number and rate of work-related deaths	P31-36
B2.2	number of working days lost due to work-related injuries	P31-36
B2.3	describe the occupational health and safety measures adopted, as well as the related implementation and monitoring methods	P36

Main scope, dimensions, general disclosure and key performance indicators		披露位置或备注
dimension B3:development and training		
general disclosure:policies related to upgrading employees' knowledge and skills to perform their job duties. Describe training activities.		P34-35
B3.1	percentage of employees trained by gender and employee category (e.g., senior management, middle management, etc.)	P54
B3.2	average number of hours of training completed per employee, by gender and employee category	P25
dimension B4:labour standards		
general disclosure: on the prevention and control of child or forced labour: (a) policies; (b) and information on compliance with relevant laws and regulations that have a significant impact on the issuer.		P31-36
B4.1	describe measures to review recruitment practices to avoid child and forced labour	P32
B4.2	describe the steps taken to eliminate the situation when a violation is detected	P32
operating practice		
dimension B5: supply chain management		
number of suppliers by region		P37-39
B5.1	number of suppliers by region	P37-39
B5.2	describe the practices regarding the engagement of suppliers, the number of suppliers to whom the practices are applied, and the implementation and monitoring methods of the practices	P38
B6:product responsibility		
general disclosure: on health and safety, advertising, labelling and privacy matters and remedies relating to products and services offered: (a) policies; (b) and information on compliance with relevant laws and regulations that have a material impact on the issuer		P25
B6.1	percentage of the products that are subject to recall for safety and health reasons of total products sold or shipped	P26
B6.2	number of complaints received about products and services and how they were responded to	P26
B6.3	describe practices related to maintaining and securing intellectual property rights	P19
B6.4	describe the quality assurance process and product recall procedures	P25
B6.5	describe consumer data protection and privacy policies, and related enforcement and monitoring practices	P25
dimension B7: anti-corruption		
general disclosure: on the prevention of bribery, extortion, fraud and money laundering: (a) policies; (b) and information on compliance with relevant laws and regulations that have a material impact on the issuer		P13
B7.1	the number and outcome of corruption proceedings instituted and concluded against the issuer or its employees during the reporting period	P13
B7.2	describe the precautionary measures and reporting procedures, as well as the related implementation and monitoring methods	P13
Community		
dimension B8:community		
dimension B8: community investment general disclosure: policies on community engagement to understand the requirements of community operating and to ensure that its business activities will affect community interests		P40-41
B8.1	focus on areas of contribution (e.g. education, environmental issues, labour needs, health, culture, sports)	P40
B8.2	resources (e.g., money or time) used in above areas of contribution	P41

READER FEEDBACK

Dear readers,
 Greetings! Thanks for reading Jiangsu Seraphim Solar System Co., Ltd ESG report. We sincerely look forward to your sharing any comments and ideas about the report, which will help us to continuously improve the way we prepare the report and the performance of our sustainability work.

You can send us your feedback by post, e-mail or fax, or you can call us directly with your comments.

1 Which category of stakeholder does your workplace belong to in Seraphim:
 stakeholder employee supplier client government community/public bank peer
 industry association/NGO others (please specify) _____

2 Generally, what do you think of our report?
 excellent good fair bad terrible

3 You think that for this report:
 information disclosure: excellent good fair bad terrible
 layout: excellent good fair bad terrible
 readability: excellent good fair bad terrible

4 What part of this report are you most interested in?

5 What would you suggest for our future sustainability reports?



contact us

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