2020 SUSTAINABILITY REPORT

Stand the Test of Time

SUNTECH

SUNTECH

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An Overview of the *Suntech Power Sustainability Report*

About the Report

- This report is the third publicly published sustainability report from Wuxi Suntech Power Co., Ltd. Henceforth, Suntech reports will be published once a year.
- This report was prepared by referencing the standards set forth in the GRI *Sustainability Reporting Guidelines (G3)* and with respect to the current situation at Suntech Power.
- In the report, "Wuxi Suntech Power Co., Ltd." is referred to as either"Suntech Power" or "Suntech".

Scope of the Report

- The report covers the time span from the beginning of 2007 to December, 2020, and it includes an overview of major events and important work done before 2020.
- The subjects of the report are the factories of Wuxi Suntech power Co., Ltd. and the group's management departments. Partof the information involves additional branches of Suntech Power.

Verification of the Report

- This report has been verified on the spot by Bureau Veritas. Please, see the last page for the Validation Statement.

Text Language, Forms of Publishing and Contact Information

- This report was published in both Chinese and English. In case of any ambiguity, Chinese version shall prevail.
- This report is available in both printed and electronic forms. Additionally, the electronic version can be read or downloaded from Suntech official website, *www.suntech-power.com.*
- If there is any inadequacy in this report, or if you have any questions, please, call or email us. Our contact information is as follows:

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The 5G Era for Business Civilization

Mankind is calling for a brand new era of business model

As the earth gets more crowded, warmer, and the sea level rises, our business model has already gone through the 1G era. It has even been moving slowly from the 3G era to the 5G era. In the 1G era, our business model focused on good products. Hence, inexpensive, well-made products were the magic weapon to win the trust of our customers. During the 5G era, apart from product quality, our business model extended its concern to our living environment, where it began to advocate for environmentally friendly green production. Now in the 5G era, our business model has not been just characterized by good products and green production. We have also had to shoulder more social responsibilities while striving to be a great company.

Suntech Power has opened its arms to embrace this new era of civilization with courage that goes beyond

Inexhaustible Sunshine

01. About Suntech

Founded in 2001, Suntech has supplied over 21GW photovoltaic modules to more than 100 countries. As a leading photovoltaic manufacturing company, we specialized in the research and production of crystalline silicon solar cells and modules, and always dedicated ourselves to the improvement of production technology, and also the R&D technology to ensure the most reliable and highest quality to our customers. We aim to become the most trusted PV company through continuous innovation and excellent management.

Suntech has over 39 years of experience in distribution power generation projects for overseas markets. The company's distribution power generation brand "Soleasy" has been committed to bringing green energy into thousands of households. We will remain rooted in our original aspiration; we will spare no effort to light up every corner of the world with the cleanest and richest solar energy that can be found in nature.

MISSION:

Solar powering a green future

VISION:

Through continuous innovation and excellent management to become the most trusted PV company.

Humanity and Virtue for Perfection (Our Corporate Motto)

The "Humanity" we advocate was inspired by the Analects of Confucius. The Analects state, "humanity means that one must stand firm before helping others to stand up, and one must develop well before helping others to develop." To "Advocate Humanity" means that weadvocate humanity, and we value humanity. These values require Suntech employees to help others to stand in society while, at the same time, stand on their own feet in society. They accomplish this through their assiduous efforts and by helping others to succeed, while they pursue their own successes. They not only love their fellow human beings, but they also respect nature by taking good care of the earth. Suntech employees not only contribute to the present, but they also take responsibility for our future sustainable development.

The "Virtue" we value was inspired by the Book of Changes: "Heaven is energetic, so too, a gentleman should likewise continue with his own the basis for living in this world. This requires Suntech employees to regulate their behaviors with lofty virtue; to treat and serve others with lofty conduct.

Suntech Values

The seven values of Suntech determine and guide our work conduct every day. These principles contribute to the sustainable development of our individuals and the company. Every Suntech employee must follow these principles in their everyday work. The first letters of the above seven phrases make up SUNTECH. We must act in accordance with these seven values and principles to ensure the continuous success of Suntech in the highly competitive global market, while at he same time, provide a bright future for Suntech employees.

A Clear Vision of the Future

Without a clear vision, we would not be able to achieve success today, let alone realize it in the future. We firmly believe that "preparedness ensures success, while unpreparedness guarantees failure." Looking into the future, by planning for the road ahead, we keep one step ahead of others.

Unite All Members

The strength of Suntech lies in its united employees. We believe that only through cooperation are we able to succeed. We work together to achieve our common goal of benefiting mankind.

Never Give Up

We believe in the power of perseverance. We always emphasize the importance of hard work and advocate for a spirit of holding on, through setbacks, until the very end.In the face of difficulties and setbacks, we keep hope alive, and we respond optimistically.

Take on Responsibility

Our responsibility cannot be put on others. We are taking on heavy responsibility while the way ahead is still long. We must be responsible for our own conduct and work results. We need to perform our job duties to the fullest, while working dutifully and responsibly to complete the company's mission and objectives.

Excellence in Conduct and Performance

Excellence is our eternal pursuit. We value performance and results. We are committed to the pursuit of high quality and performance. We strive to do everything well.

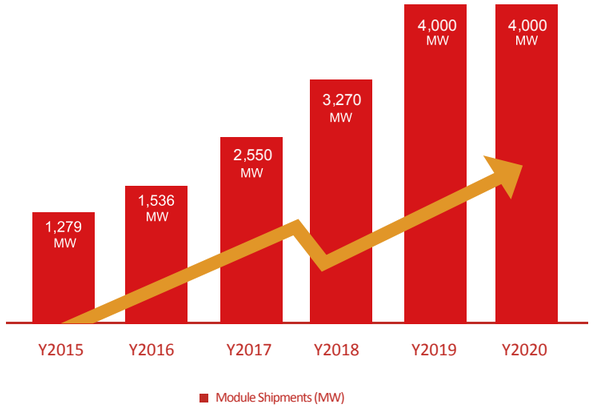
Continue to Innovate

The life of our business is highly dependent on innovation. We respect innovation, pay attention to improving personal ability and quality, constantly challenge the status quo and test new things, and make continuous improvements that benefit our customers and company.

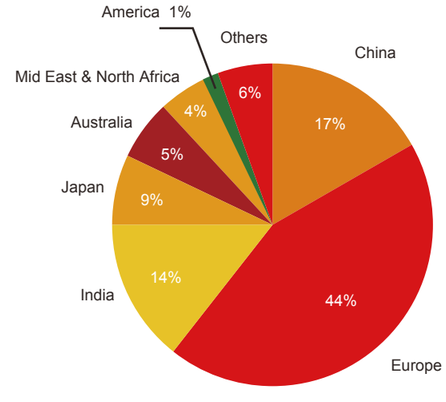
Highest Degree of Integrity at all Times

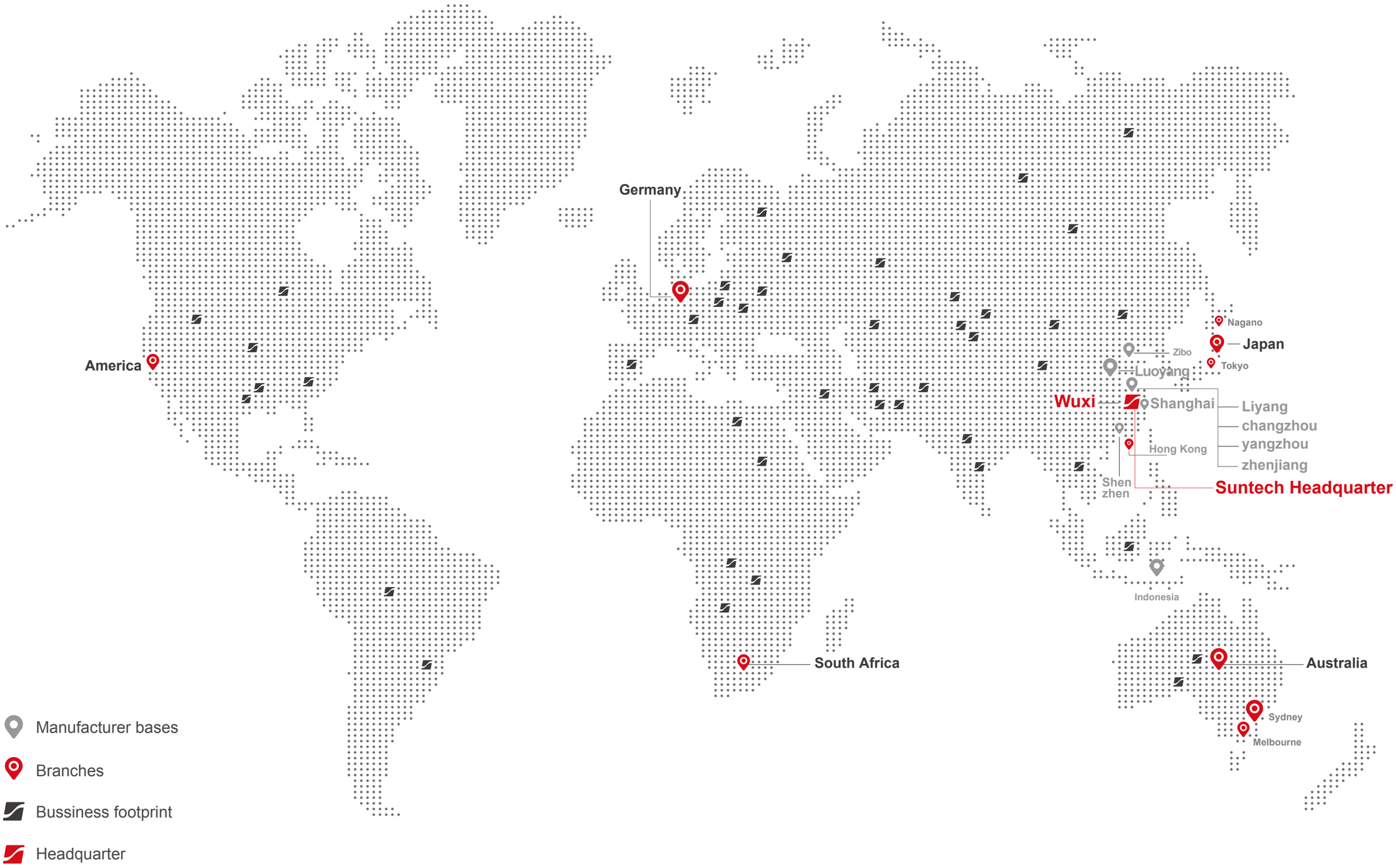
There is nothing quite as important as integrity. We base our entire business on integrity, to build a more trustworthy image and a better brand. We uphold integrity and trustworthiness in everything we do.

Shipments



Sales Distribution Map




Germany
America
Nagano
Japan
Tokyo
Zibo
Luoyang
Wuxi
Shanghai
Liyang
changzhou
yangzhou
zhenjiang
Hong Kong
Shen zhen
Suntech Headquarter
Indonesia
South Africa
Australia
Sydney
Melbourne
Manufacturer bases
Branches
Bussiness footprint
Headquarter

SUNTECH MILESTONES

2001

Suntech was founded in Wuxi, China.

2002

Suntech initiated its first 10 MW production line with the capacity equivalents to China's total PV cell production in the previous 4 years.

2005

Suntech launched its initial public offering (IPO) on the NYSE as the first China's solar company.

2006

Suntech acquired MSK Corporation, one of Japan's largest PV manufactures and its production capacity expanded to 300MW. 2008 Annual production capacity reached 1 GW.

2011

Annual production capacity reached 2.4 GW, and shipped 2.1 GW modules worldwide, which made Suntech the biggest PV module supplier for two consecutive years.

2014

Shunfeng International Clean Energy Limited, a HKSE listed renewable energy investment / EPC Company, announced to invest and acquire.

2018

Annual module shipment exceeded 3GW. Suntech set up European Customer Service Center in Germany.

2019

Suntech's cumulative historical shipments exceeded 21 GW.

2020

Suntech's annual module capacity exceeded 10 GW/year.

Coordinated Advantage of Vertical Integration

With coordinated advantage of vertical integration, Suntech expands production bases in Wuxi, Changzhou, and Indonesia. Up till now, Suntech has launched its 10GW+ high power capacity globally. In the next step, Suntech will continue to improve industry chain cooperation with establishment in management, technology, distribution channels and brand advantage. As aiming to improve Suntech's high-efficiency and high-reliability photovoltaic module production capacity, as well as its all-round service capacity to meet customers' high-efficiency demands.

In addition, Suntech Power has wholly acquired MSK, a Japanese company with 39 years of sales and service experience in the photovoltaic industry. MSK has opened the long-time inaccessible Japanese market in one stroke and successfully extended the downstream industry chain for the construction of large-scale, photovoltaic system projects.

Through a series of strategic moves with the goal of optimizing structures and integrating resources, Suntech has been helping the healthy and rapid development of China's solar photovoltaic industry.

Core Competitiveness of Suntech

Suntech Power leads the industry with innovative technologies. We have a first-rate global research team made up of top-tier R&D personnel with a spirit of innovation and teamwork within the global photovoltaic sector.

It's the strategic goal of Suntech Power to enhance photoelectric conversion efficiency while cutting production costs. Realizing a fair-price, grid-connection and bringing solar energy into average people's homes has been Suntech's inexhaustible driving force for continuous innovation.

Goodwill and Brand of Suntech

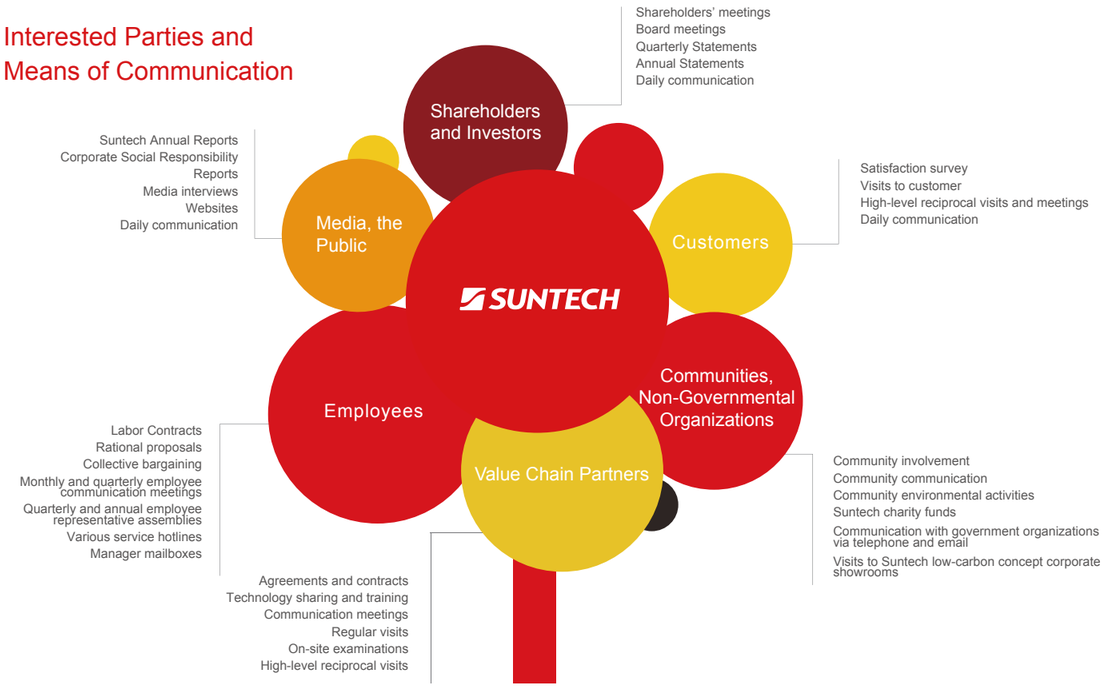
In 2009, SUNTECH was awarded the title of "Famous Trademark of China" by the State Administration for Industry and Commerce of China. Our photovoltaic module products earned the Certificate for the Exemption from Export Inspection from the General Administration of Quality Supervision, Inspection and Quarantine. SUNTECH has become an excellent "Made in China" brand within the global photovoltaic sector; it's won respect and trust from customers around the world.

Suntech Power has a rigorous and scientific product quality management system covering the entire production process. This system helps Suntech to ensure that all of its products meet the most stringent international quality control standards. All Suntech Power products have earned certification by well-known international authorities, such as TUV, IEC, CE, UL, and VDE. All of these companies have been widely used in the safety analysis of power, communications, radio and TV, transportation, maritime, military, and other fields.

Suntech Power has earned the ISO 9000 certification of quality management systems and the ISO 14000 certification of the environment management system in succession. Suntech Power has proven technologies, rich insight, and a good reputation in the design, construction, and maintenance of various large-scale photovoltaic, grid-connected, and independent power generation systems.

IEC CE UL VDE TÜV Rheinland® Precisely Right.

Interested Parties and Means of Communication



Famous Projects of Suntech

The first Suntech product shipped abroad in 2002 marked the first step of Suntech's march into the international market. Since then, Suntech's footprints have spread over 100 countries and regions worldwide. The constantly improved supply system and after-sales services enable Suntech to build a complete global network of sales and services.

Over the past 20 years, Suntech Power has been creating green highlights. We provided green electricity for Bird's Nest Stadium during the Beijing Olympic Games. Suntech Power supported the Olympic flame in reaching the top of Mount Everest. With advanced photovoltaic technologies, Suntech Power provided green energy for the themed pavilions and Chinese pavilion during the Shanghai World Expo. It was even Suntech Power that bathed the World Expo in sunshine; In addition, the largest single solar project in Europe, the largest solar project with half-cell modules in India, the largest project with bifacial modules in the UK, etc., all covered by Suntech products.

Suntech has engineered photovoltaic projects all over the world. In Canada, Suntech's photovoltaic project built for the Vancouver Olympic Winter Games' Olympic Village was well received by residents. In the USA, Suntech Power's photovoltaic project constructed for the San Francisco International Airport Terminal became an iconic Green Building. In Australia, Suntech built another photovoltaic project for the world-famous Sydney Opera House. Suntech had truly performed a green symphony of art and technology. In Germany, Suntech supplied modules to Germany's largest floating solar power plant. in Spain, Sierra Nevada is covered with snow all year long, and snow fall here is particularly heavy every winter. Suntech's PV modules can resist 550 kg/m² (or 3.7 m thick) snow, so they can comfortably handle the snow fall in the plant site. In Yemen, water pumping and irrigation system was built up with Suntech modules. After the power supply is switched on, continued flow of underground water is pumped out and then flows into the cracks of the previously dried-out earth, wetting and revitalizing the land that has long been barren.

Public Utilities by Suntech

Suntech Power, as a corporate citizen, actively assumes social responsibilities. Internally, we have constantly improved energy conservation implementation, emission reductions, clean production, and our employees' occupational health. Externally, we have participated in and supported various public benefit activities. We've even made great contributions to environmental education, green innovation, and poverty relief, etc.

Policy Environment of Suntech

The incentive policies of governments around the world on renewable energy have promoted technological progress in the photovoltaic industry. This progress has led to a disruptive development in the global photovoltaic industry. In particular, the Chinese government has actively supported and promoted the photovoltaic industry, providing a good policy environment for Suntech Power's rapid growth.

Suntech's Market Environment

Rationally speaking, The photovoltaic industry is changing rapidly. Competition has been intensifying and market variables have been increasing year by year. At Suntech Power must participate in this market competition, so certain operational risks are inevitable.

However, Suntech Power is convinced that it will continue to growsteadily with its inexhaustible innovative power and strong technical strength. Past experience and facts are a powerful support to this vision.

Suntech's Internal Controls

According to the Basic Standard for Enterprise Internal Control and application guidelines, Suntech has established an internal control system, which is subject to constant improvement. Suntech has been acting proactively to create a benign control environment, establish a standardized corporate governance structure, properly set up internal departments, clarify responsibilities and authorities, strengthen internal audit, formulate and implement HR

policies in favor of sustainable development, and enhance the construction of enterprise culture. For major operation and management activities of the company, necessary control procedures and management regulations have been designed to control risks and pursue business objectives. An information and communication system has been built, in order to clarify the procedures for collecting, processing and transferring information concerning internal control within the

company,so that the company can effectively screen, inspect, analyze and aggregate information; and leverage information technologies as a way to facilitate the integration and sharing of information; in addition, the Reporting Management System has been formulated to make reporting one of the important ways for the company to learn about valid information. Aside from definite internal control and supervision mechanisms, the company has also laid out the

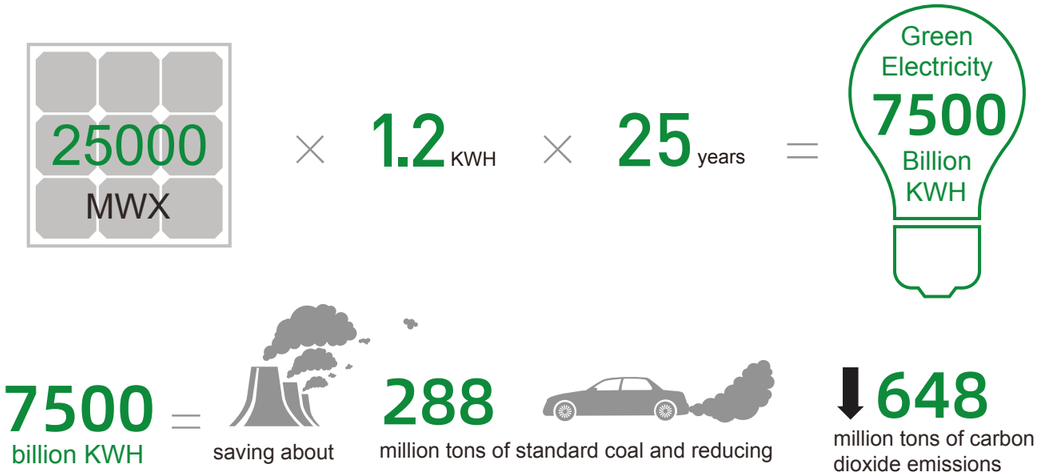
Internal Audit Management Rule. The internal audit department is supposed to conduct internal audits of the group and its subsidiaries (including but not limited to sales, procurement, business performance, and engineering projects, etc.), at both regular and irregular intervals, and

post-departure audits of personnel in key positions in these organizations. As to any issue or advice proposed during each project audit, the company's management and relevant

departments will be informed by the internal audit department, where the internal control and internal audit department is obligated to oversee rectification measures to be implemented by the department accountable.

02. Solar Powering a Green Future

Suntech's Low-Carbon Contribution



Environmental Enhancement

Our Goal: Clean Production
Our Awareness: Energy Conservation and Emission Reduction

For the sake of the long-term development of mankind, Suntech Power regards improving energy efficiency as its own responsibility, and it continues to explore new technologies and methods for energy conservation and emission reduction. Through the construction and promotion of our environmental management and clean production systems, the environmental performance and clean production level of Suntech Power are continuously being improved. Meanwhile, through extensive publicity and training, energy conservation and emission reduction have become tangible in the heart of every Suntech Power employee. These assets have become the daily code of conduct and responsibility of every Suntech Power employee.

Start with the System

In order to strengthen the control on greenhouse gases and reduce greenhouse gas emissions, Suntech Power has developed the "Guidelines on Greenhouse Gas Response" and the "Guidelines on Clean Production." These documents detail how Suntech Power formulated and implemented a series of strict rules and management systems to continuously improve their electrical, heating, power, water supply, and waste-water treatment systems while optimizing energy use. Remarkable results in energy conservation and consumption reduction have been achieved.

Start with the Details

"I feel deeply guilty every time I see someone in Suntech write only a few words on a piece of white paper and throw it away." Suntech management's words and deeds have a subtle influence on Suntech's 4,000 employees."Turn off the water dispenser before going off work," "Don't take the elevator when going to the immediate floor above or below," and "Use both sides of the office paper." These have become part of the collective consciousness of Suntech employees. The idea is to start with the trivial things in life and then to start with a scientific system design to save energy and reduce consumption.

Achievements in Energy Conservation(using solar cell manufacturing as the example)

Electricity Saving

By adopting various energy-saving measures, Suntech Power's annual electricity consumption per unit in production has been reduced from 72094 kWh/MW in 2018 to 65890kWh kWh/MW in 2019. This represents an electricity consumption reduction per unit as high as 8.6%. From 2017 to 2019, Suntech Power saved 10.6 million kWh of electricity and cut 7.21 million yuan from its electricity bill.

Water Conservation

By improving water recycling efficiency and reducing direct water consumption during production, Suntech Power's water consumption per unit of product has decreased year by year, from 613TT/MW in 2018 to 548 T/MW in 2019. These figures represent a water consumption reduction per unit as high as 10.6%. From 2017 to 2019, Suntech Power's P2 factory alone saved 111,000 t of water; cutting 0.46 million yuan from the water bill.

A comparison of Suntech Power's concentrations of emissions and the national standards

Monitored Item (unit: mg/L)	National Standard	2017	2018	2019	2020
PH	6-9	7.21	7.41	7.46	7.37
COD emission concentration	150	59	108	55	32
NH3-N emission concentration	30	2.54	21.29	2.94	3.83
TN emission concentration	40	12.42	37.11	21.44	18.51
TP emission concentration	4	1.46	2.46	2.56	2.44
Fluoride emission concentration	8	2.16	2.05	1.84	/

Note: The conversion coefficient between CO2 emission reduction and electricity consumption reduction is the "emission factor value." The Eastern China regional power grid's conversion coefficient is 0.8825 as listed in the "Announcement on Releasing the Baseline Emission Factors of China's Regional Power Grids in 2009."

Method I: Save energy with advanced technology

In Nov, 2009, Suntech Power installed an air compressor group control system.

A.Microcomputer control is used to reduce the range of loading and unloading and reduce the exhaust pressure under the condition of ensuring the minimum pressure for air using equipment.

B.Multi-unit control can automatically select the number of required machines according to the actual use of air, thus avoiding the huge waste caused by multiple machines running at the same time.

Method II: Reuse recycled water for multiple purposes

Suntech Power recycles and reuses concentrated water produced from the reverse osmosis process of preparing pure water ≥ 17.25 Ω.cm (25℃) for toilet flushing and acid mist tower water replenishing. This action greatly reduces the consumption of tap water. It, alone, saves 260 t per day and 78,000 t of tap water each year (300 days a year).

Method III: Reuse waste water to reduce discharges and improve efficiency

Suntech Power treats some types of waste-water generated by the company in depth. The pure water produced is used in the manufacturing workshops while reducing waste-water discharges. At present, Suntech has put into use a system with a treatment capacity of 600 T/D and a waste-water recycling rate of over 97%.

Carry Clean Production Through to the End

To reflect the green mission of Suntech Power, improve the efficiency of resource utilization, reduce and avoid the generation of pollutants, protect and improve the environment, protect the physical and mental health of employees, and promote the sustainable development of the company, Suntech Power is determined to carry out clean production to the end.

System Design

Suntech Power requires the R&D department or technical department to constantly optimize the design, use clean materials, and adopt advanced technology and equipment to eliminate pollution at the source. Suntech's goal in this is to improve the efficiency of resource utilization when developing new processes or making technological improvements.

During the planning and implementation of new construction, reconstruction, or expansion projects, the facilities department should optimize the production process, human flow, logistics routes, strictly confirm the demand for the production process and equipment, rationally allocate related facilities, and give priority to clean energy technology and energy-saving facilities.

The logistics department should create a reasonable arrangement of routes and the number of shuttle buses. When selecting suppliers, the shuttle buses' oil consumption and exhaust emission control should be taken into consideration. When selecting canteen fuel and energy, energy-saving lighting equipment and cooking utensils should be selected. In addition, the classified collection and management of domestic waste as resources should be strengthened.

At the same time, all subsidiaries and operating units are required to formulate corresponding implementation rules with respect to their own production process characteristics to ensure the implementation of the following items:

1. Environmental impact assessment is required for all new construction and expansion projects. The use of raw materials, resource consumption, comprehensive utilization of resources, and the generation and disposal of pollutants must be analyzed and demonstrated, so that 100% of them pass the environmental acceptance checks by the state's environmental protection departments. Priority should be given to clean production processes, technologies, and equipment with high resource utilization and low pollutant production.

2. Construction projects should adopt energy-saving and water-conservation building design proposals, building materials, decoration materials, building structural fittings and equipment that is conducive to environmental and resource protection. Construction and decoration materials must conform to national standards. No construction and decoration materials with toxic or harmful substances exceeding the national standards may be used.

3. Resource consumption and waste generation during production and services should be monitored. Clean production audits of production and services should be conducted as required. An incentive and constraint mechanism should be adopted to ensure the implementation and effectiveness of the company's system.

4. In the design of product packaging, the impact on human health and the environment during its life cycle should be taken into consideration. Non-toxic, harmless, degradable, or recyclable materials should be given priority, to reduce the excessive use of packaging materials and the generation of packaging waste. Products and packages on the compulsory recycling list must be recycled after the products and packages are used and discarded.

Investment in Emissions Reduction

To reduce and avoid the generation of pollutants and implement clean production in its place, Suntech Power follows the principle of simultaneous design, construction, and acceptance check of environmental and main facilities. While investing in project expansion, the company also invests in the construction of environmental treatment facilities. Up to now, Suntech Power has invested more than 100 million yuan in environmental protection facilities. The results of operation and treatment are good and the desired effect is apparent.

Measures and Results

To reduce and avoid the generation of pollutants and implement clean production in its place, Suntech Power follows the principle of simultaneous design, construction, and acceptance check of environmental and main facilities. While investing in project expansion, the company also invests in the construction of environmental treatment facilities. Up to now, Suntech Power has invested more than 100 million yuan in environmental protection facilities. The results of operation and treatment are good and the desired effect is apparent.

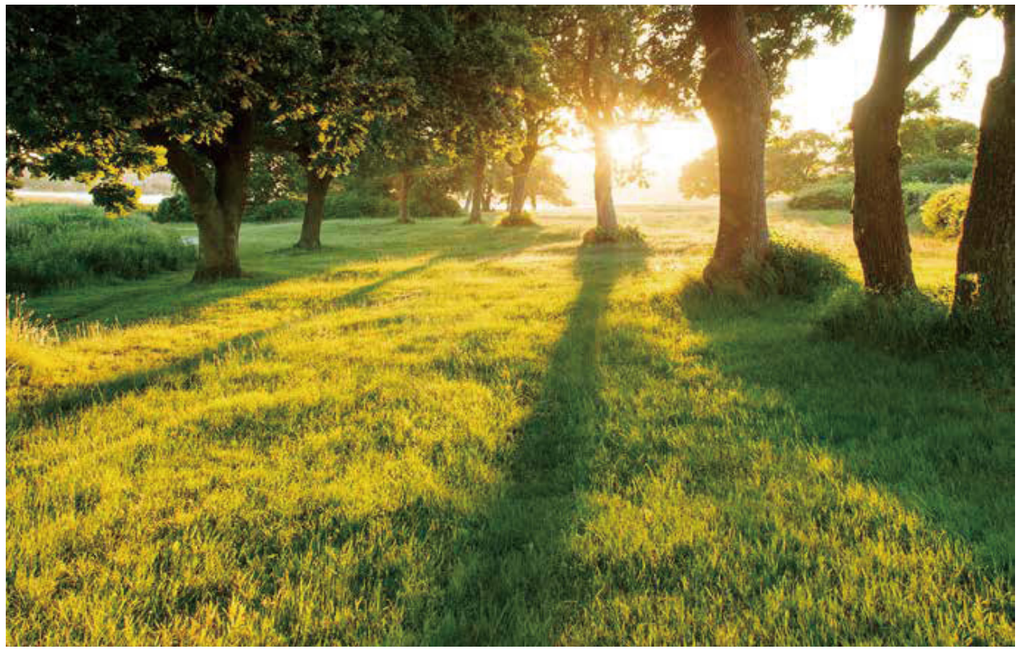
Since its establishment, Suntech Power has not received any penalties for environmental problems. All the discharges of various pollutants meet the relevant requirements. The rate standard attainment is 100%. Our emission concentrations of pollutants are far lower than the national emission standards.

To improve the utilization of resources and reduce waste generation, Suntech Power has concluded agreements with chemical suppliers. After the chemicals are used, empty bottles and cases are transported back for recycling. This not only reduces the consumption of resources, but it also avoids environmental pollution. It makes an obvious contribution to environmental protection and clean production. At the same time, Suntech, since 2007, has made improvements to our production process and equipment. Efforts made have seen a reduction in the waste of chemicals and improvement in the safe use of those chemicals. Additional efforts have been made to reduce the probability of employees' exposure to chemicals and to protect the safety of all employees. Suntech also adopted the central automatic dosing system to more safely supply chemicals. In the meantime, Suntech improved the level of automation of its production line, enhanced the performance of products and production capacity of the equipment, and reduced the number of employees, labor intensity, and safety risks.

To reduce the pollution of heavy metals into the environment, Suntech Power is committed to R&D of new products and new processes. At present, in poly-crystalline cell production, the nitric acid texturing process has replaced the chrome acid texturing process. This procedure reduces the release of harmful heavy metals into the environment and on to human beings.

In addition, Suntech has also made a clear contribution to CO2 emission reduction. There is no direct CO2 emission in Suntech Power's production process. However the company has reduced 181,109 tons of greenhouse gas emissions (carbon dioxide) from 2017 to 2019 by reducing energy consumption, providing clean power generation equipment, and reducing power consumption per unit. The application of Suntech clean power generation equipment can indirectly reduce 150,011,928.41 t of greenhouse gas emissions (carbon dioxide) in 25 years, as calculated from 1,500 operating hours a year. Suntech's productivity growth in 2019 was translated into a greenhouse gas (represented by carbon dioxide) emission cut of 6.24 tons by each MW of solar panel (52.02 t/MW in 2018, and 45.78 t/MW in 2019). The capacity of solar panels produced in 2019 reached 1,709.63MW, cutting greenhouse gas emission by 10,668.09 tons in total.

Note: The conversion coefficient between CO2 emission reduction and electricity consumption reduction is the "emission factor value." Eastern China regional power grid's conversion coefficient is 0.8825 as listed in the "Announcement on Releasing the Baseline Emission Factors of China's Regional Power Grids in 2009."



Measure I: Waste-water Treatment

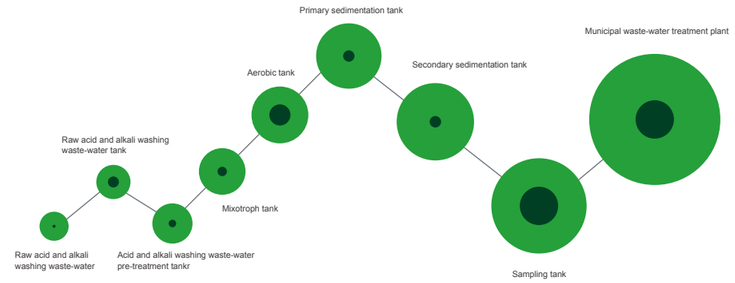
The wastewater from Suntech Power mainly includes concentrated fluorine wastewater (third-order reaction + flocculent settling, then entering the diluted fluorine wastewater treatment system + denitrifying in the Ampang Tower + anoxic/aerobic biochemistry + connecting pipe), concentrated nitrogen and diluted fluorine wastewater (second-order reaction + flocculent settling, then denitrifying in the Ampang Tower + anoxic/aerobic biochemistry + flowing along the tube into Debao), wastewater from waste gas treatment facilities and pure water stations (entering the dilute fluorine wastewater treatment system + denitrifying in the Ampang Tower + anoxic/aerobic biochemistry + flowing along the tube into Debao), and domestic wastewater (septic tank + biochemistry + connecting pipe), of which concentrated nitrogen wastewater, wastewater from waste gas treatment facilities and pure water stations, and dilute fluorine wastewater all flow in a dilute fluorine wastewater treatment system together before denitrifying in the Ampang Tower and entering the biochemical treatment system. After biochemical treatment, domestic wastewater mixed with concentrated water resulted from the preparation of pure water then flows along the tube into the sewage treatment plant of the Wuxi Xinwu District for further processing. After pre-treatment, concentrated fluoride-containing wastewater, diluted fluoride-containing wastewater, concentrated nitrogen-containing wastewater, discharged water from waste gas treatment systems, and concentrated water prepared by pure water devices are all sent into the diluted fluoride-containing treatment system (with a treatment capacity of 1,600 t/d) for treatment. Next, the wastewater will be further treated in the new biochemical denitrogenation system (1,600 t/d treatment capacity) and A/O biochemical system (1,600 t/d). After all these steps, the wastewater is sent to Deppel Water Investment (Wuxi), where it is deeply processed and recycled for other uses.

I. Concentrated fluoride wastewater treatment system

As concentrated fluorine wastewater enters the Level 1 first-order reaction tank, a fixed quantity of additives are added to adjust the pH value, in order to have fluoride precipitated. Then in the second-order reaction tank, additives are added again, to further remove fluoride ions in the wastewater. As the tail water from the second-order reaction tank flows into the third-stage reaction tank, a certain quantity of flocculating additives are added, for the wastewater to react and coagulate. Then the wastewater flows into the agglomeration tank, which contains a fixed amount of coagulant aid, so that agglomerates can adsorb and combine to form larger alumen ustums. After coagulating, the wastewater flows into the sedimentation tank to separate the sediments from the treated water. The settled sludge, which is collected at the bottom of the tank, will be transported to a sludge tank by a sludge pump regularly, while the supernatant liquid will then be processed in the dilute fluorine wastewater treatment system and the Ampang biochemical system.

Suntech Power's acid and alkali washing waste-water treatment process

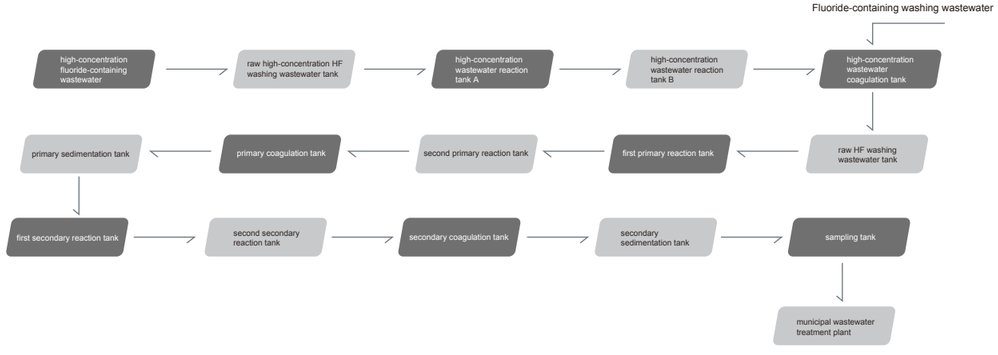
Acid and alkali washing waste-water are mixed in the raw waste-water tank, to adjust the water quantity and quality. The waste-water then enters the acid and alkali washing waste-water pre-treatment tank. After the gas stripping treatment, the waste-water is pumped into the mixotroph and aerobic tanks for biological treatments. After that, the waste-water flows into the primary and secondary sedimentation tanks to filter out most of the suspended solids before being channeled to the municipal waste-water treatment plant. The current waste-water treatment capacity is 3,000 T/D.

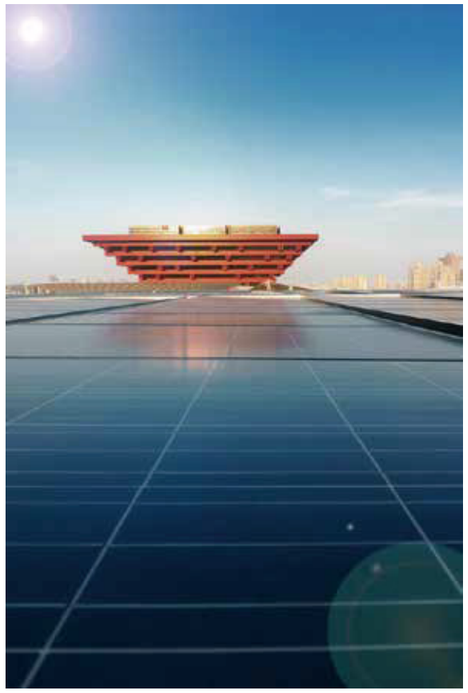


Suntech Power's fluoride-containing waste-water treatment process

High-concentration, fluoride-containing waste-water is collected by pipelines and discharged into the high-concentration fluoride-containing waste-water collecting tank. From there it's lifted by a pump to the high-concentration waste-water reaction tank A. Chemical compounds, like CaCl2, Ca (OH)2, and NaOH, are then added and mixed well [to adjust and set the proper pH value]. Then, the mixture enters high-concentration waste-water reaction tank B. This is where PAC and NaOH are added and mixed [to again adjust the pH value]. This is done to make the waste-water react with them and coagulate through stirring. The waste-water then enters the coagulation tank, where PAM flocculant is added. After coagulation, the waste-water enters the sedimentation tank. The settled sludge is transported to the sludge tank by the sludge pump. The supernatant fluid overflows to the fluoride-containing, washing waste-water tank for subsequent treatment.

Fluoride-containing, washing waste-water discharged from workshops is collected by pipelines and discharged into the raw HF, washing waste-water tank together with pre-treated, high-concentration, fluoride-containing waste-water. Then, the fluoride-containing waste-water is lifted by a pump to the first primary reaction tank, where CaCl2 and NaOH are added and mixed [to adjust the pH value]. Then, the wastewater enters the second primary reaction tank, where fixed quantities of PAC and NaOH are added and mixed [to adjust the pH value]. Later, the wastewater enters the primary coagulation tank, where PAM flocculant is added. After that, the wastewater enters the primary sedimentation tank. The settled sludge is regularly transported to the sludge tank by the sludge pump. The supernatant overflows to the first secondary reaction tank, the second secondary reaction tank, the secondary coagulation tank and the secondary sedimentation tank. Finally, the settled sludge is regularly transported to the sludge tank by the sludge pump. The supernatant overflows to the sampling tank before being channeled to the municipal wastewater treatment plant.





Method II: Waste Gas Treatment

The main waste gas generated by Suntech Power includes the acid waste gas (HF, NOX, HCl, Cl2) generated in processes such as texturing, pickling, removing PSG and phosphorus diffusion, alkaline waste gas (NH3) generated by PECVD, organic waste gas (terpinol, ethanol) from screen printing and sintering. The rate of reaching the standard under monitoring is 100%.

Treatment Process:

A. Acidic waste gases are collected via sealed pipes and sent into the acidic gas washing tower, where they are cleaned through second-grade alkaline spray (NaOH solution and Na2SO3 solution), and then discharged out of the exhaust funnel after the contents of acidic waste gases fall under the allowed range for emission.

B. The NH3 alkalic waste gas generated in PECVD, etching, and other procedures is first burnt in the combustor built into the PECVD device. Then after gravitational dust removal, it passes through second-grade water spray in the washing tower, and dilute sulfuric acid absorption. Lastly the alkalic waste gas is discharged out of the exhaust funnel after the concentration of alkalic components falls under the allowed range for emission.

C. During screen printing, drying and sintering processes, a small amount of organic waste gas is produced due to the small amount of organic matter in the slurry. The waste gas is treated in the activated carbon fiber adsorption tower and discharged through the exhaust funnel into the air after adsorption by the activated carbon fiber.

Certification System


SGS

无锡尚德太阳能电力有限公司

OHSAS 18001:2007


SGS

无锡尚德太阳能电力有限公司

OHSAS 18001:2007

Work Safety Standardization Certificate in 2012


安全生产标准化
Work Safety Standardization
证书
CERTIFICATE
证书编号：AQBⅡGT苏201200158
无锡尚德太阳能电力有限公司
安全生产标准化二级企业
（轻工其他）
有效期至：2015年11月
二〇一二年十一月七日
国家安全生产监督管理总局监制
State Administration of Work Safety

Work Safety Standardization Certificate in 2016


安全生产标准化
Work Safety Standardization
证书
CERTIFICATE
无锡尚德太阳能电力有限公司
安全生产标准化二级企业
（机械）
国家安全生产监督管理总局监制
State Administration of Work Safety

03. From Manufacturing to Intelligent Manufacturing

Environment for Innovation

Suntech Power actively advocates for the concept of “continuous innovation.” We have formulated many rules and regulations, such as the Incentive System for Science and Technology Projects, Reward System for Scientific and Technological Achievements, Measures for the Implementation of Good Ideas and Suggestions, and have established an assessment mechanism and incentive mechanism conducive to innovation, to encourage employees to innovate and actively offer good ideas. We also link performance to income, to stimulate employees’ enthusiasm for innovation.

Investment in Innovation

To keep increasing the photoelectric conversion efficiency, develop and improve photo-voltaic cell materials, Suntech Power invests more than 3% of its main business revenue back into technology R&D every year.

Focuses of Innovation

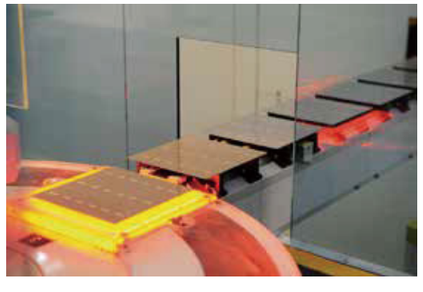
Suntech Power’s R&D Typically Focuses on Four Aspects:

The first priority for Suntech is to focus on the R&D of modules featuring low costs, high power and high reliability. Suntech Power is committed to the continuous innovation of products, which allows it to cater for various markets with diversified requirements by means of their innovative technologies and superior product quality. Upholding unswervingly the "Global & Local" market strategy, Suntech has been optimizing its global layout, and established a localized sales service system, so as to provide global customers with high-quality modules applicable to various scenarios.

The second aspect deals with module sealing technology and material science. The technologies and materials developed by Suntech Power are aimed at prolonging the service life of our products and improving the stability and durability of power generation. In order to improve the quality of solar photovoltaic products and reduce product costs, Suntech Power has also been studying alternative materials, such as EVA, glass, the backplanes, and junction boxes, etc.

The third aspect deals with manufacturing techniques. Suntech strives for perfection in manufacturing techniques to make products more efficient and less costly.

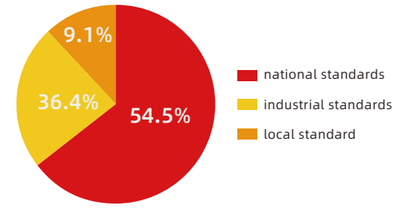
The fourth aspect deals with system integration. The purpose of system integration research is to improve power generation efficiency and stability for the entire system while reducing the overall system cost.



Achievements of Innovation

In recently years, Suntech has achieved remarkable results with regard to the technological innovation of low-cost crystalline silicon solar cells and modules, and the preparation of solar cells. The perseverance in the R&D oriented to high-efficiency, low-cost crystalline silicon solar cells, new modules (including BIPV), new processes and new technologies will ensure Suntech to be a long-standing technological leader in both China and the world, and a strong competitor in the market.

Over the past three years, Suntech Power completed three national, provincial science and technology projects. Suntech has actively carried out cooperative technical efforts with various scientific research institutes. These collaborative efforts have led to keeping Suntech’s R&D prestige at the forefront of the industry.



Up to now, Suntech Power has presided over and participated in the drafting of more than 30 technical standards, including 3 advanced international standards, 3 national standards, 4 industrial standards, and the development of a local standard that Suntech presided over.

Project List

NO.	Project Type	Project Name	Project Duration
1	A transformation and upgrading project sponsored by special funds of Jiangsu Province	R&D of Key Technology for New High-power Poly Modules by the Technology Center of Wuxi Suntech Power Co., Ltd.	2020年12月项目结题验收
2	National key R&D program of China	Intelligent Operation and Maintenance Technology for Distributed Photovoltaic System (Subject 3)	2019.4-2022.3
3	A key R&D project (focusing on industry foresight and key core technology) of Jiangsu Province	R&D of Key Technology and System for High-power, Low-cost Solar PV Modules	2019.6-2023.6

List of Standards

NO.	Standard Type	Standard Name	State
1	Advanced international standard	Specification for Anti-Reflective-Coated Glass, Used in Crystalline Silicon Photovoltaic Modules	Published
2	Advanced international standard	Specification for Aluminum Paste, Used in Back Surface Field of Crystalline Silicon Solar Cells	Published
3	Advanced international standard	Specification for Silver Paste, Used to Contact with N+ Diffusion Layer of Crystalline Silicon Solar Cells	Published
4	National standard	General specification of crystalline silicon terrestrial solar cells	Published
5	National standard	Photovoltaic devices - Part 11: Test method t of initial light-induced degradation of crystalline silicon solar cell	Published
6	National standard	Photovoltaic (PV) module performance testing and energy rating – Part 1: Irradiance and temperature performance measurements and power rating	Published
7	Industry standard	Code for operation and maintenance of building mounted photovoltaic system	Published
8	Industry standard	No-clean flux used for crystalline silicon photovoltaic (PV) modules	Published
9	Industry standard	Tin-based solder dipping ribbon used for crystalline silicon photovoltaic (PV) modules	Published
10	Industry standard	Test method for mechanical vibration of crystalline silicon photovoltaic(PV) modules in shipping environment	Published
11	Local standard	The technology code in integration of building and photovoltaic	Published

R&D

Patents filed			Patents granted		
Patents for inventions	Patents for utility models	Patents for designs	Patents for inventions	Patents for utility models	Patents for designs
401	470	25	91	452	20

List of Patents for Inventions Granted as of December 31, 2020

NO.	Patent Type	Patent Name	Date granted	Patent Number/ Application Number
1	Invention	A method for poly-crystalline silicon surface texturing	2007/10/17	200410064831.1
2	Invention	An acid etching solution for poly-crystalline silicon surface texturing and its application method	2009/3/11	200610065676.4
3	Invention	A method for preparing solar cell electrodes and electro-chemical deposition devices	2009/12/30	200610076375.1
4	Invention	A method for generating a solar cell conductive electrode	2010/5/12	200610139717.X
5	Invention	A chemical treatment method and a device for the surface of semiconductor substrates	2009/9/16	200710135836.2
6	Invention	A method for electro-chemical deposition of the metal electrodes of a solar cell	2011/4/13	200710188267.8
7	Invention	A set of rollers conveying thin substrates and a method for chemical treatment use	2012/12/12	200710188268.2
8	Invention	A hybrid silicon solar cell and its manufacturing method	2012/3/28	200780051088.8
9	Invention	A gallium-doped mono-crystalline silicon solar cell and its manufacturing method	2010/9/22	200810171923.8
10	Invention	A treatment method for waste water of crystalline silicon surface texturing and the system used	2010/12/1	200810187371.X
11	Invention	A heating device and method for making mono-crystalline wafer surface texturing	2012/4/18	200910127197.4
12	Invention	A low-voltage diffusion process applied to polycrystalline black silicon solar cells process	2020/4/24	201810166588.6
13	Invention	A solar cell welding equipment and welding process	2010/12/29	200910025426.1
14	Invention	A solar cell module installation system	2014/3/19	201110349354.3
15	Invention	A method for preparing a substrate with gallium-doped zinc oxide surface texturing and the substrate prepared with this method	2011/12/14	200910146478.4
16	Invention	A solar cell module frame, the solar modules and their installation system	2012/2/1	200910223669.6
17	Invention	A photo-voltaic system and its junction box and voltage conversion device	2012/7/4	200910137271.0
18	Invention	A solar cell quick turn-on and turn-off system, turn-off method and start-up method	2020/6/19	201811433871.7
19	Invention	A solar cell module and its precise cascading method	2011/8/3	200910173704.8
20	Invention	A junction box for solar cell modules and the solar cell modules	2013/2/27	200910178805.4
21	Invention	A junction box for solar cell modules	2013/7/2	200910206629.0
22	Invention	A solar cell module and its cascading method	2012/5/2	201010176006.6
23	Invention	A junction box for solar cell modules	2012/7/4	201010118329.X
24	Invention	A quartz boat automatic wafer loading and unloading device	2011/11/23	201010204525.9
25	Invention	An automatic wafer loading and unloading system and method for solar cell manufacturing	2012/5/23	201010204547.5
26	Invention	A liquid waste recovery device and its method of use	2012/6/27	201010244229.1
27	Invention	A wiring system, a photo-voltaic power generating sail, and a solar power cruise ship with the sail	2013/11/27	201010536452.3
28	Invention	An inflating method and controller for the door opening process of vacuum equipment	2016/2/3	201110248993.0
29	Invention	A method for making an embossing on the surface of a photo-voltaic solder strip	2016/3/30	201410357331.0
30	Invention	A solar module series welding machine's electrode pressing device	2016/5/4	201410158656.6
31	Invention	A junction box to prevent overflow	2016/5/11	201410441692.3
32	Invention	A photo-voltaic series welding machine with a lower shade	2016/9/7	201410742302.6
33	Invention	A solar panel maximum power follower	2016/9/14	201510002810.5
34	Invention	A silicon wafer cleaning method and cleaning equipment for preparing high-efficiency solar cells	2017/2/8	201210197214.3
35	Invention	A concentrated strong acid supply system	2017/1/11	201410159200.1
36	Invention	A composite embossed photo-voltaic solder strip and its processing method	2017/1/25	201410817971.5
37	Invention	A wafer feeding transmission mechanism for photo-voltaic series welding machines	2017/2/15	201410579920.3
38	Invention	An inter-connector for solar cells and its manufacturing method, the method of solar cell interconnection and their components	2017/4/5	201310090297.0
39	Invention	A method for removing the belt print on PERC	2017/4/5	201610345127.6
40	Invention	A solar cell equipment and self-weight soft contact conduction device	2017/6/30	201210342891.X
41	Invention	A BCSC passivated contact electrode structure and the preparation method	2017/8/8	201610180452.1
42	Invention	A structure of solar cell rear passivation film and the preparation method	2017/9/1	201610865158.4
43	Invention	A four-grid testing structure of solar cell testing equipment	2017/10/20	201510975593.8
44	Invention	A structure for reducing the black line on the rear of PERC	2017/11/10	201510003478.4
45	Invention	A method for manufacturing selective-emitter, double-sided, PERC crystalline silicon solar cells	2017/11/10	201610902698.5
46	Invention	A method for manufacturing localized rear contact silicon solar cells	2018/1/9	201210091883.2
47	Invention	A double-rail four-station rotary switching feeding machine	2018/3/20	201610269281.X
48	Invention	A floating photo-voltaic system on water	2018/6/15	201610057123.8
49	Invention	A method for determining the passivation quality of the rear passivation film of PERC	2018/6/15	201610642301.3
50	Invention	A Method for Detecting the Temperature of Tubular PECVD Graphite Boat Sheet	2019/1/1	201610860447.5
51	Invention	Structure of a PV Module without Insulation Strips and Its Processing Technology	2019/3/15	201710192578.5
52	Invention	A Kind of Half-cell PV Module Circuit and Half-cell PV Modules	2019/4/9	201710567102.5
53	Invention	A Method for Improving Welding Crack Issues of Monocrystalline Cells	2019/10/22	201810699639.1
54	Invention	A Crystalline silicon solar cell tube PECVD preheating boat storage device and film coating method	2020/3/30	201810989882.7
55	Invention	A pretreatment method for graphite boat of crystalline silicon solar cell	2020/3/17	201810037001.1

Innovation Activities

1. “Good Idea” activity: “Grassroots” employees make creative solutions for problems at work. The ideas are submitted to relevant departments for review and put into practice, if practicable. If the ideas are proven effective, the employees will be awarded (after a vote).

2. “Continuous Improvement” activity: To create solution to various problems at work, employees form groups of 2-3 people to create improvements. They adopt 7 steps (identify the problem, find the truth, find solutions to the problem, choose the best solution, thoroughly solve the problem, standardization, promotion, and extension) for systematic improvement.

3. “QC Team” activity: To help solve company-wide work issues, a team is organized to make improvements by using QC tools, statistical methods, a systematic activity program, and a scientific activity principle.

4. SPS: This system covers the company's improvement activities in all aspects. These typically include IE, value process development, management and process improvement, waste elimination, etc.

Suntech SPS-centered improvement model

Suntech Photovoltaic Technology Institute

Organizational Structure of the Institute

At the beginning of 2008, based on its Enterprise Technology Center and Jiangsu Photovoltaic Energy Engineering Technology Research Center, Suntech undertook the major science and technology infrastructure project in Jiangsu, the construction of Jiangsu (Suntech) Photovoltaic Technology Institute (hereinafter referred to as Suntech Photovoltaic Technology Institute). The keynote in the construction of Suntech Photovoltaic Technology Institute was to improve scientific and technological innovation capabilities. Relying on Suntech, hand-in-hand with domestic and foreign scientific research institutions, 3 research centers will be established after 3-5 years of construction. These centers will be the Solar Cell Research Center, Photovoltaic Module Research Center, Photovoltaic System Integration and Application Technology Research Center. In addition, there are plans for a Silicon Material Lab and a Photovoltaic Product Testing Center. In the meantime, a management center will be established to carry out science and technology management and services.

Hardware Facilities Construction of the Institute

The planned total investment in construction of Suntech Photovoltaic Technology Institute’s facilities is 260 million. This includes a total investment in Phase 1 of 60.802 million. Phase 1 will focus on construction of the Solar Cell Research Center and Photovoltaic Product Testing Center.

Solar Cell Research Center

The Solar Cell Research Center has an 800㎡ lab and a 2,300㎡ pilot plant (pilot line). Additionally, the center benefits from 42 pieces/sets of world-class scientific research and testing equipment. This state-of-the-art equipment is used to carry out world-class research on photovoltaic technology projects.

Photovoltaic Product Testing Center

The Photovoltaic Product Testing Center has a 1,600㎡ photovoltaic module indoor testing lab and a 3,000㎡ outdoor experimentation site. The Testing Center has 3 functional labs: the Performance Testing Lab, Safety Testing Lab, and Environment Testing Lab. There are 52 sets of various test equipment, which is used to study and assess all quality and performance indicators of photovoltaic modules. At present, the labs have earned the WTDP certificate issued by UL from the USA, the TDAP certificate issued by VDE, the CNAS accreditation, and the CGC Golden Sun accreditation of the factory lab for solar photovoltaic products. It has taken less than two years to go, from its establishment to the acquisition of various international certifications and multiple instances of accreditation. The Testing Center has become China's largest and most advanced testing lab for photovoltaic modules and products.

Operational Mode of the Institute

Post-Doctoral Research Station

In Oct, 2008, with approval by the National Post-Doctor Regulatory Commission, a substation of the Wuxi National High-Tech Industrial Development Zone’s Post-Doctoral Research Workstation at Wuxi Suntech Power Co., Ltd. was established. Operation of the post-doctoral research substation has further promoted the company’s industry-uni-versity-research cooperation with various universities and colleges. It has further expanded the channels for attracting the top and cutting-edge talent, improved the level of technological management innovations, and enhanced the company’s core competitiveness. The workstation has even cooperated with Sun Yat-Sen University, Nankai University, Jiangnan University, Jiangsu University in postdoctoral training.

In February, 2010, on the basis of its approved enterprise substation of a national post-doctoral workstation and drawing on the experience of running this substation for more than a year, Suntech applied for the establishment of a national post-doctoral workstation. This is one of the key steps to establish an enterprise scientific research entity with “first-class technology, first-class quality, first-class talent and first-class management,” Suntech takes on these endeavors based on its enterprise, facing the whole industry, and with the whole world in mind.

With a national post-doctoral research station acting as the training platform of talents, Suntech absorb talents by utilizing multiple channels, for instance, by means of bringing in the professionals, jointly cultivating high-end talents, and recruiting external experts, a talent pool mastering the world's advanced PV technologies has been gathered. The national post-doctoral station has also cooperated with Sun Yat-sen University, Technical Physics of the Chinese Academy of Sciences, and Nankai University in nurturing post doctors; and with the University of New South Wales and Jiangnan University in co-training doctors and masters, as well as technological leaders and high-end talents, by "Bringing in" and "Going Global". At present, there are 4 doctors in the station. In May of 2020, two projects undertaken by Suntech's post-doctoral research station were selected into the list of post-doctoral research projects in Jiangsu Province, including "Research on suppression and attenuation of hydrogenated crystalline silicon solar cells" and "Research on construction and related basic problems of nano self-assembly collaborative flexible solar cells". In addition, together with Jiangnan University, it has also established a PV talent cultivation base and a graduate station in Jiangsu Province, which was awarded the Excellent Station title in Jiangsu Province in 2017.

Industry-University-Research Cooperation

The institute promotes effective contacts and a win-win interaction with universities, research institutes, and enterprises. It actively explores the investment mechanism, talent flow, training mechanism, and benefit distribution mechanism for establishing industry-university-research cooperation. It is this type of cooperation that boosts technical cooperation, knowledge flow, and technology transfer between universities, research institutes, and enterprises.

In recent three years, the institute has established industry-university-research cooperation activities with many institutions. It has cooperated with Jiangsu University in the research and development of key technologies and systems for high-power and low-cost solar photovoltaic modules; cooperated with Southeast University in the research of diagnosis and analysis technology for defects such as hot spots and hidden cracks of photovoltaic modules; cooperated with Jiangnan University in the research of photo induced hydrogen reuse and reliability of crystalline silicon solar cells.

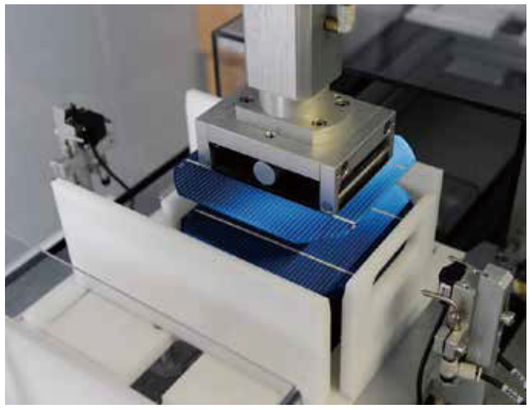
Research Results of the Institute

Suntech Photovoltaic Technology Institute has achieved a series of major research results in recent five years:

In recent five years, the institute has undertaken six national, provincial science and technology projects:

Project Name

- R&D and Industrialization of High-efficiency Crystalline Silicon Solar Cells (a tendering project of the Electronic Information Industry Development Foundation of China)
- Key Packaged Technology for Industrialization of Selective Emitter Solar Cells based on LDSE with an Efficiency above 20% and Demonstrative Production Line (Subject 2) (National 863 Program)
- R&D and Industrialization of New High-efficiency Solar Cells (a project sponsored by special funds for strategic development of emerging industries in Jiangsu Province)
- R&D of Key Technology for New High-power Poly Modules by the Technology Center of Wuxi Suntech Power Co., Ltd. (A transformation and upgrading project sponsored by special funds of Jiangsu Province)
- Intelligent Operation and Maintenance Technology for Distributed Photovoltaic System (Subject 3) (National key R&D program of China)
- R&D of Key Technology and System for High-power, Low-cost Solar PV Modules (A key R&D project (focusing on industry foresight and key core technology) of Jiangsu Province)



Suntech Photovoltaic Product Testing Center

An Overview of the Center

Photo-voltaic Product Testing Center has a photo-voltaic module indoor testing lab with an area of about 1,600 ㎡ and an outdoor experiment site area of approximately 3,000 ㎡. The indoor laboratory consists of a component laboratory and a raw and auxiliary materials laboratory.

Advanced Equipment

The lab now features a great deal of sophisticated testing equipment, such as pulse and steady solar simulators, several walk-in environment experiment cabins, ultraviolet damp heat comprehensive aging box, static/dynamic mechanical load and hail testers, and EL and high-precision infrared cameras. The lab test equipment can test and assess all quality and performance indicators of photo-voltaic modules. It has multiple high-precision testing equipment such as Fourier Infrared, DSC, Vulcan meter, Water Permeability Tester, etc., which can quickly detect and evaluate the performance of raw materials.

Achievements

The Photo-voltaic Product Testing Center has become China's largest and most advanced testing lab for photo-voltaic modules. Building a world-class testing platform is one of the goals of Suntech Photo-voltaic Technology Institute.

Authoritative Accreditations

In June, 2009, Suntech received the WTDP (Witness Test Data Program) certificate issued by UL, and we became the first WTDP photo-voltaic testing lab certified by UL in China's photo-voltaic industry.

In Dec, 2009, Suntech received the TDAP (Test Data Acceptance Program) certificate issued by VDE, and we became the first TDAP photo-voltaic testing lab certified by VDE in Asia.

In Feb, 2010, Suntech received the national lab accreditation certificate issued by CNAS and became the photo-voltaic enterprise lab with the largest number of and most complete accredited test items nationwide.

In May, 2010, Suntech became one of the first group of factory labs in China to earn the CGC Golden Sun accreditation.

Through authoritative accreditations, Suntech Photo-voltaic Product Testing Center has enhanced its market competitiveness and won the trust of government departments and the other sectors of society.

In February 2012, Suntech became the first enterprise authorized with the WTDP Lab certification for VDE junction boxes.

In February 2016, Suntech passed the CNAS CL55 Guidance on the Application of Testing and Calibration Laboratories Competence Accreditation Criteria in the Field of Photovoltaic Products Testing.

In February 2017, Suntech was one of the first batches passing the CNAS IEC61215: 2016 & 61730: 2016 Latest Standard Extension.

In June 2018, Suntech obtained the qualification of TÜV NORD witnessing laboratory.

In January 2019, Suntech obtained the qualification of TÜV Rheinland Witnessing Laboratory.

In April 2020, Suntech raw and auxiliary materials laboratory was accredited by the China National Laboratory (CNAS).

Product Carbon Footprint Verification Statement

Statement: CO 50227602 0001

Report No.: 53184556 001

SUNTECH

Suntech Power Holding Co., Ltd.

16 Xinhua Road, New District, Wuxi,
Jiangsu 214028, P.R. China.

The inventory of product life cycle greenhouse gas emissions for a **Poly-crystalline PV module** of **Suntech Power Holding Co., Ltd.** has been verified in meeting **ISO/DIS14067** requirements.

Following activities were conducted during verification:

- Document review
- Interview
- Site visit
- Recalculation

Based on the information we have received and evaluated, it was verified by TÜV Rheinland Taiwan that:

- The level of assurance carried out in this PCF verification was agreed by both parties is **Reasonable Assurance Level**.
- Required materiality of the verification is **5%**.
- System boundary of this product: **Cradle-to-gate.**
- Product carbon footprint inventory report period: **Jul. 1, 2011** to **Jan. 31, 2012.**
- The total GHG emissions for a standard 72 cells of Poly-crystalline PV module (Model: **STPXXX-24/Vd**) please refer to TUV Rheinland Evaluation Report No. 14029300.002.
- The total GHG emissions for a standard 60 cells of Poly-crystalline PV module (Model: **STPXXX-20/Wd**) please refer to TUV Rheinland Evaluation Report No. 14029300.002.

Date of Issue 2012/04/30
TÜV Rheinland Taiwan Ltd.
11F, No. 758, Sec. 4, Bade Rd.,
Taipei 105, Taiwan, R.O.C.

Jason J. S. Wu
TÜV Rheinland Systems Greater China
2012/04/30

This statement is valid from 2012/04/30 until 2015/04/29

This Verification Statement is based on the information made available to TÜV Rheinland Taiwan and the engagement conditions detailed above. Therefore, TÜV Rheinland Taiwan can not guarantee the accuracy or correctness of this information. TÜV Rheinland Taiwan can not be held liable by any party relying or acting upon this Verification Statement.

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QMA TRLP 6.1-350
Version: 1
01.08.2011

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Precisely Right.

Prüfbericht - Nr.: *Test Report No.:*	**14029300 002**	**Seite 1 von 36** *Page 1 of 36*	
Auftraggeber: *Client:*	**Suntech Power Holding Co., Ltd.** *16 Xinhua Road, New District, Wuxi, Jiangsu 214028, P.R. China.*		
Gegenstand der Prüfung: *Test item:*	PV Modules (See product model and specifications in report)		
Bezeichnung: *Identification:*	**See page 2**	**Serien-Nr.:** *Serial No.:*	**See page 2**
Wareneingangs-Nr.: *Receipt No.:*	**N/A**	**Eingangsdatum:** *Date of receipt:*	**N/A**
Zustand des Prüfgegenstandes bei Anlieferung: *Condition of test item at delivery:*	**N/A**		
Prüfort: *Testing location:*	**1. Suntech Power Holding Co., Ltd.** **2. TÜV Rheinland (Shanghai) Co., Ltd.**		
Prüfgrundlage: *Test specification:*	**1. GABI Software version 4.4 for Carbon Footprint Analysis** **2. ISO 14040:2006 (referred to only): Life Cycle Assessment – Principle and Framework** **3. ISO 14044: 2006 (referred to only): Life Cycle Assessment – Requirements and guidelines** **4. PAS 2050:2011 (referred to only): Specification for the assessment of the life cycle green house gas emissions of goods and services.**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item(s) were assessed in accordance with the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (Shanghai) Co., Ltd.**		

geprüft/ *tested by:*			**kontrolliert/** *reviewed by:*		
2012-04-11	Jill Zhou/PE		2012-04-11	Eng Ann Ng/TC(Reviewer)	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges/ *Other Aspects:*

As the client modified some data, this assessment report has been revised accordingly. The manufacturing location remains as original. The modified data are as follows:

1. Quantity of chemicals, which are valid for cell workshop.
2. Power and water consumption for cell workshop
3. Duration of PV module solidification.

Abkürzungen:				*Abbreviations:*			
P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*	
F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*	
N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*	
N/T	=	*nicht getestet*		*N/T*	=	*not tested*	

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04. Human-oriented

We care about employees and regard talents as capital, we make career development lead to career opportunities.

In 2020, the number of jobs available was

2,653

the training time per employee was

62.1 hours

In 2019, the number of jobs available was

3,439

the training time per employee was

49.2 hours

In 2018, the number of jobs available was

3,364

the training time per employee was

46.8 hours

Care for Employees

A human rights system is established to protect the rights and interests of employees

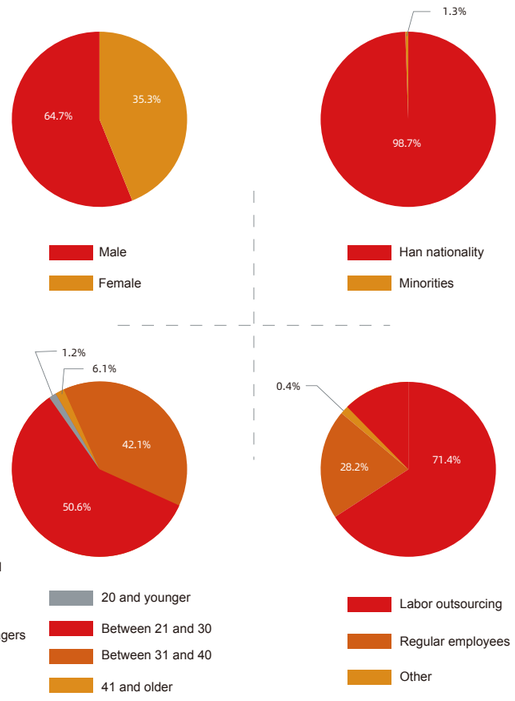
At the beginning of 2010, the company established a social accountability management system in accordance with SA80002008 for the standardized, scientific and systematic protection of employees' rights, health and safety. Meanwhile, our company set up a Social Accountability Committee and earned the SA80002008 certification in Sept. 2010.

Social accountability policy: we must remain people-oriented, honest, law-abiding, fair and just, improve management quality and risk control through continuous improvement, fulfill our responsibility to employees, customers, suppliers and the society, so that we meet the requirements of SA8000, achieve the company's sustainable development, promote the sustainable development of mankind and provide a thorough energy solution for mankind.

Social Accountability Management Manual

Forced or compulsory labor	Forced Labor Control Procedures shall be prohibited Regulations on Demission Management Regulations on Security Work
Remuneration	Regulations on Wage Management Regulations on Benefits Management Performance Management System
Working Hours	Regulations on Attendance Management Regulations on Leave Management
Disciplinary Measures	Employee Opinion and Complaint Management Procedures Regulations on Awards and Penalties Release of Documents Concerning Employee Interests
Health and Safety	OHSAS18000 System Establishment
Child Laborers	Child and Underage Workers Management Procedures
Freedom of Association	Freedom of Association and Collective Bargaining Management Procedures Employees' Congress System
Discrimination	Procedures on Prohibition of Discrimination and Disciplinary Measures Regulations on Recruitment and Employment

Diversified Workforce



A Vigorous Team

We have a vigorous team consisting of young staff, with the average age of 31.7. Among which, 24.2% of them have a university degree or above.

Our company respects every employee and treats every employee fairly. The benefits system applies to all employees:

Mandated Benefits

A
- Social insurance and housing provident fund
- Statutory holidays
- Occupational health surveillance (including occupational health examination, etc.) and labor protection
- Relevant allowances, including high temperature allowance and childbirth allowance.

Supplementary welfare

B
- Working meals and shuttle buses
- Company clinic
- Supplementary commercial insurance
- Annual physical examination

C
- Wedding allowance
- Funeral allowance
- Only-child allowance
- Childcare allowance
- Holiday benefits

D
- Benefits for female employees
- Mobile bill allowance (use the group's mobile service package)
- Seniority bonus
- Other, such as travel allowance

Scope of application

A
- 100% regular employees and 100% outsourced employees
- 100% employees
- 100% employees
- 100% qualified employees

B
- 100% employees
- 100% employees
- 100% employees (comprehensive overseas travel insurance for employees working overseas)
- Employees who have served for two years: employees aged 35 and older are entitled to the allowance

C
- 100% qualified employees
- 100% qualified employees
- 100% qualified regular employees, at present about 1555 employees are entitled to the allowance
- 100% qualified regular employees, at present about 1555 employees are entitled to the allowance
- 100% employees

D
- 100% employees
- 100% female employees
- 100% of the employees who apply for the allowance, at present about 604 employees are entitled to the allowance
- 100% qualified employees
- 100% qualified employees

Special Care for Female Employees

Our company provides two special cancer examinations for female employees every year, as well as a 128-day maternity leave and a 32-day paid leave during the lactation period for female employees who marry late and have childbirth late. Our company has a maternal and infant health care room special for female employees during the early lactation period. The “Collective Agreement on Special Protection of Female Employees” is adopted to institutionalize the protection of female employees.

Dialogue on an equal footing, open to suggestions and opinions

We actively communicate, care about and help employees to solve problems

Multiple communication channels	Multiple service hotlines	Other approaches
Monthly meeting of employees	HR service hotline	
Monthly communication meeting with employees	Shuttle bus service hotline	Labor union’s aid mailbox
Congress of employees	IT service hotline	
Irregular employee interviews	Clinic hotline	

We support employee innovation, to exert the influence of the company’s grassroots

Continuous innovation activities	Selection Rules	
Good Ideas	Carried out monthly by the SPS Office	20-100 yuan is awarded according to the quality level of the ideas
Continuous Improvement	After the completion of each project, a review meeting is held for comprehensive assessment	500 yuan to 1% of the project’s half-year profit is awarded according to the project’s profit

Employee Training Is a Long-Term Investment

At Suntech, employee training is not is not deemed as cost, but a long-term investment. Suntech Power is always aspired to be a learning enterprise, whose aim is to achieve the dual sustainable development of the company and employees, so that both employees and the company achieve win-win situation.

To achieve the company’s strategic development goals, over the years, Suntech Power has been providing targeted, planned and step-by-step job training for employees, to improve employees’ professional skills and ethics.

Training System of Suntech

Suntech Power attaches great importance to employee learning and training. We have formulated policies and regulations such as “New Employee Training”, “Outsourced Employee Training”, “On-the-job Training for Direct Operators”, “Operation Instructions” and “Internal Lecturer Management Regulations”, to provide a good institutional guarantee for employee growth.

Training Investment of Suntech

Since 2008, Suntech Power has invested in building a standardized and large-scale Leadership Academy. At present, the academy has standardized training classrooms, which equipped with multimedia teaching facilities and audio equipment. Moreover, the e-learning platform has been established to create a good learning environment for employees.

Training System of Suntech

In terms of realizing the company's goals, based on the company's overall development strategy and HR development plan, Suntech conducts a training demand survey, makes an annual training plan and breaks it down into monthly training plans at the beginning of each year. The HR department works with each department to classify the personnel, confirm their job requirements, capabilities and training needs, develop and implement training plans, so as to meet the requirements of the company's production management, technical development and personnel development. The HR department announces the specific training plan, course content and training schedule at the beginning of each month. Employees can enter for training by themselves, or be recommended and assigned by their department or the leaders to attend training.

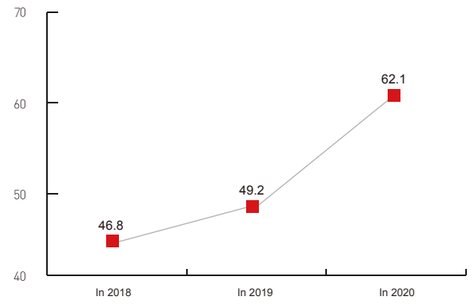
Training Implementation

Internal Training

To improve the professional qualities of new and old employees, our company actively encourages employees to participate in various skills and management training, and bears all the relevant learning costs. In recent years, in our company, more than 50 employees have obtained a junior college diploma or bachelor degree through part-time study; more than 300 employees have been promoted. Since 2006, 60 backbones have been selected to take the professional qualifying examinations for quality engineers, safety engineers and HR managers, etc. More professional learning opportunities have been provided for employees. Up to now, through our company's forceful training, 30 employees have obtained an intermediate professional title and 15 have obtained a senior title. Many young technical talents have stood out and made full use of their strengths at work.

In 2019, 30 professional managers participated in a series of training courses known as "Managers' Training Camp", and achieved substantial growth in self-management, business management, and management team. A comprehensive evaluation, involving 71 key employees, provided important references for their career planning, post matching, and advanced training, to which subsequent advanced courses may refer as well, thereby continuing to enhance the all-round abilities of high potentials. Thanks to the company's dedicated efforts in training, numerous young technical talents stand out, and give play to their strength at their respective posts.

The tendency chart of training time per employee (hour/year)



External Training

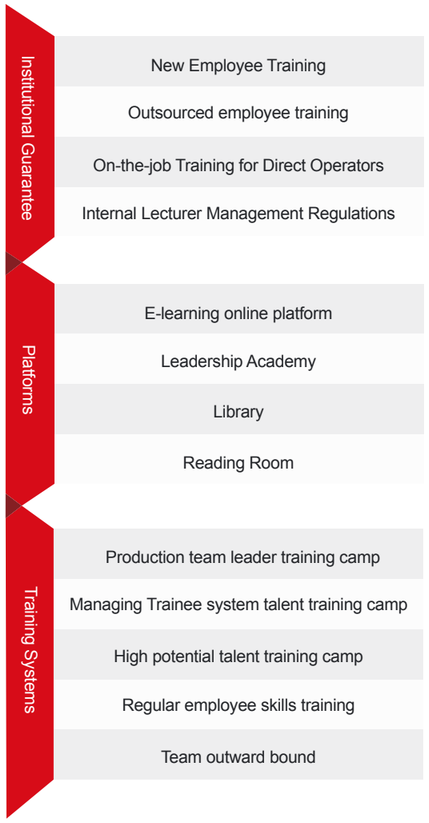
To improve employees' overall quality and management training at all levels, Suntech strengthens external cooperation, regularly invites various experts and well-known trainers to give professional skills and leadership training, and conducts systematic and targeted professional quality training for employees by means of internal training. To broaden employees' horizons, Suntech has worked with Times Bright CreSuccess, MESC, AMA and other well-known training institutions at home and abroad and obtained some training results. Our company selects and sends personnel to participate in all kinds of high-level training classes at home and abroad from time to time for study, research and investigation in Australia, Singapore and other countries. Our company works with the International Business Center of Nanjing University in the EMBA program to train senior management personnel.

Personalized Support for Employees

For new employees, our company provides teamwork-themed training. The courses include company rules and regulations, corporate culture, teamwork, etc. For operators, there is also military training.

For the management and technical personnel, the company's HR department and each department work together to develop annual training plans according to the needs of the employee's work and career development. At the same time, employees are encouraged to share knowledge with team members after completing the training. Knowledge sharing is assessed as part of the value and personal contribution of employees, so as to improve the effectiveness of employee training. With regard to management personnel, our company also regularly organizes various training camps such as team leader training, high potential talent training camp and reserve talent training camp to improve the management's skills and reserve personnel training.

For employees in the forefront of production, our company mainly provides targeted training to improve their educational attainment, job skills and teamwork. We encourage employees to learn in their spare time, support employees to learn at professional skills training institutions according to their job requirements, and reimburse employees who gain the corresponding qualification and certification for their training expenses.



Training Effect Assessment

Our company generally assesses the training effect in the following aspects:

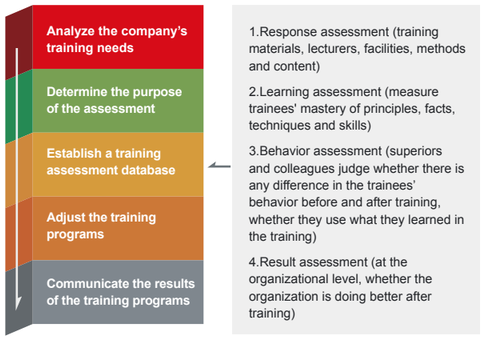
A. Comprehensive Assessment: at the end of each year, the completion of training plans and the realization of training objectives, etc. are systematically assessed.

B. Training Assessment:

1. Assessment of trainees' training effect: post-training tests for skills and knowledge training courses.

2. Program assessment: assessment of the effectiveness of the entire training program (lecturers and logistical support, etc.)

C. Training effect tracking (each department carries out post-training assessment on its trainees): the specific training assessment process is as shown in the following chart.



Employees' Career Development

Suntech provides multi-level career development channels with management and technical routes

To motivate employees to achieve excellent performance, Suntech provides different promotion opportunities for employees of different levels. In terms of level setting, Suntech provides comprehensive management and technical promotion routes for employees' career development, not only giving employees clear development paths, but also offering relevant guidance and help for employees' development. First, there are 3 levels for operators: new operators are Level I operators, and they may be promoted to Level II and Level III operators, then they can take the technical or management development route. In addition, there are also crossover promotions between technical and management staff. For example, an engineer may be promoted to supervisor or senior engineer along the technical route. There are also crossovers between management and technical staff. Senior engineers correspond to supervisors; chief engineers correspond to managers.

Suntech has an effective career development mechanism to ensure employees' healthy career development along the predetermined paths

We improve the company's internal competition and recruitment system, set the minimum qualifications required for various positions at all levels, and competition methods and length of service subject to levels of personnel.

Our company has an open, fair and equitable mechanism for talent selection. Internal recruitment information is released company-wide and posted on the bulletin board, so that all employees know. The job providing departments, relevant departments and HR form a 3-party team for interview and selection.

Job titles Leve	Name of job level	Typical job name			
L7	Vice President	Vice President	Chief Engineer	NA	NA
L6	Director/ General Manager	Director, Senior Director, General Manager	Deputy Chief Engineer	NA	Regional Sales Director, Veteran Sales Manager
L5	Manager	Vice Manager, Manager, Senior Manager	Lead Engineer, Veteran Lead Engineer	Senior Auditor, Senior Specialist, Senior Customs Declarant, Senior Purchaser, Senior Accountant, Senior Analyst, President Assistant, Executive Secretary, Executive Assistant, Senior Project Manager, Senior HR Partner, Senior Legal Adviser, Function+Vice Manager/Manager/Senior Manager	Sales Manager, Senior Sales Manager
L4	Supervisor/ Senior Professional Technicians	Vice Supervisor, Supervisor, Senior Supervisor	Senior Engineer, Veteran Senior Engineer	Senior Specialist, Senior Purchaser, Senior Analyst, Senior Assistant of Executive, Senior Assistant, Senior Planner, Senior Secretary, Senior Project Analysis Engineer, Auditor, Trademark Director, Accountant, Physician, Senior Auditor, Senior Training Officer, Project Manager, HR Partner, Senior Legal Adviser	Senior Customer Manager
L3	Professional Technician	NA	Assistant Engineer Engineer	Fleet Leader, Head Chef, Safeguard Leader, Reception Specialist, Cashier, Purchasing Specialist, Billing Specialist, Project Coordination Specialist, Planning Specialist, Nurse, Specialist, Fund Specialist, Information Control Specialist, Secretary, Executive Assistant, Accountant, Analyst, Assistant Auditor, Project Analysis Engineer, Head Nurse, Legal Adviser, Function + Specialist	Assistant Customer Manager, Customer Manager
L2	Supporting Staff	NA	Technician Senior Technician	Market/Administration/HR/ Planning/Project/Finance Affairs/Customs Affairs/Customer Service/Legal Affairs Assistant, Receptionist, Driver, Billing Clerk, Function + Specialist	NA
L1	Front line staff	Group Leader, Shift Leader	Outsourced Worker, Operator, Quality Controller Material Management Staff	Sanitation Worker, Kitchen Worker, Backup Operator, Trainer, Data Handler, Statistician, Senior Trainer	

Note: In the management levels: job level L5 and higher only apply to department leaders; the "General Manager" title at job level L5 only applies to the head of a branch company or subsidiary company; titles at L7 and higher can only be decided by resolutions of the board of directors.

We strengthen the training of Managing Trainee

Our company carries out various kinds of training to strengthen the cultivation of reserve cadres. For example, we regularly organize various training camps such as the team leader training camp, reserve talent training camp, high potential talent training camp, etc., to improve the management skills of employees. In addition, our company also selects and sends reserve management cadres to study and practice abroad. In cooperation with Nanjing University, we select and send reserve cadres to study the EMBA program, all of them have graduated smoothly.

Improve the job skill level of frontline employees

Personnel skills training are the foundation of the sustainable development of a company. In 2020, Suntech became the first PV enterprise that has the qualification to certify Photovoltaic Module Operator in Jiangsu Province, after the self-compiled Specifications for Professional Skills Certification of Photovoltaic Module Operator had been successfully approved.

Production team leader training camp

The level of on-site management has a direct impact on the efficiency and competitiveness of factory management, as well as on product quality, cost, delivery time, work safety and staff morale. Therefore, Suntech Power launched the team leader training camp program.

The team leader training camp mainly provides such training courses as experiential management, JR (job relation), JI (job instruction), job duties, job roles identification, color personality analysis, sunshine state of mind, quality, health and safety, corporate culture, basic concept of SPS, performance management, lean production, site management tools - SPC (TPM) fundamentals, site safety incident review [OPL interpretation], QCC fundamentals, daily management, etc.

The training camp adopts a variety of lively forms such as live performances, live observations, speeches, lectures, roundtable discussions and teacher-student interaction, which effectively combine management theories with frontline operations, greatly improving the on-site production management capabilities of frontline team leaders. Someone call it the "small Huangpu Academy of Suntech".

So far, the "small Huangpu Academy of Suntech" has finished several sessions of team leader training. Several hundred frontline team leaders have graduated from the training camp. Practice shows that with these well-trained team leaders leading the employees at the forefront in the factory, combat effectiveness is indeed different.

Dual Prevention Mechanism

Hidden danger investigation and management, risk classification and control

Risk classification and control

Risk assessment - LEC method for full staff and process risk identification

Risk grading - major, high, average, low

Risk summary - major safety risk list, risk database

Risk control-engineering technology, management, education, protection, emergency measures

Double control review-appropriateness of risk control measures

Risk announcement warning - four-color chart,
job safety information card, enterprise high risk bulletin board,
operation risk comparison chart, etc.

Hidden danger investigation and management

The basis of hidden danger investigation - as per laws and regulations, standards and management system, etc.

Types of investigation - daily, comprehensive, special, seasonal, etc.

Control measures - engineering technology, management, education, protection, emergency measures

Standardization of safety production

Machinery manufacturing enterprises safety standardization level 2

Contents covered - objectives and responsibilities, institutionalized management, education and training, site management, safety investment, safety risk control and hidden danger investigation and management, emergency management, accident investigation and handling, performance evaluation and continuous improvement, etc.

Objectives and responsibilities - production safety management objectives, institutions and facilities, annual safety objectives

Institutionalized management-safety production management system

Education and training-Level 3 safety education, special operator education, safety management personnel education

Site management - daily safety inspection, special safety inspection, holiday safety inspection

Safety investment-education and training costs, labor protection supplies costs, safety visualization and management costs

Risk control and hidden danger investigation and management - risk source identification, hidden danger investigation, risk public announcement

Emergency management - emergency plans, emergency plan drills

Accident investigation and handling-accident files, accident education

Performance evaluation for continuous improvement - special safety meetings, performance evaluation, standardized self-assessment

Enterprise self-assessment - interview, questioning, document review, site inspection

Production Safety Activities

June is the national production safety month. The EHS Department actively responds to the national production safety month activities and carries out a series of production safety month activities with the theme of "eliminating accident hazards and building a safety protection line".

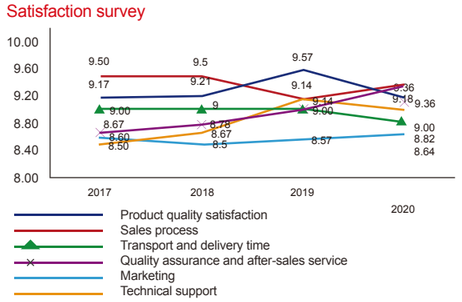
Activity name	Activity content	Activity time
Safety and environmental protection publicity activities	Produce banners and display boards to promote safety and environmental protection culture in the two factories	June 1 - June 30
Special training	Carry out (special operations, fire knowledge, environmental protection and solid waste) special training	June 10 June 11 June 12
Safety quiz activity	To enhance employees' awareness of production safety and accident prevention ability by means of question and answer	June 18
Find safety risks	By providing pictures of hidden dangers at the factory site, let the employees identify safety risks and enhance their risk identification ability.	June 11
Environmental tabloid	Make a handwritten newspaper with writing text as the main content and decorate it with drawings. Talk about our own knowledge, suggestions and actions on environmental protection, and our own opinions on the factory environment.	June 5
Safety inspection	The team leader led a safety inspection of the two factories to check the site for hidden dangers and curb accidents.	June 20, June 21
Safety "look back"	Review all the third-party reviews and inspections of the two factories in the past three years and make corresponding corrective measures for the current situation.	June 1 - June 30
Emergency evacuation drill	Conduct a comprehensive evacuation drill in the component factories to improve the emergency evacuation ability of employees.	June 22
Wastewater leakage disposal drill	Conducted wastewater leakage disposal drills in the PV cell factory to improve the staff's wastewater leakage disposal ability.	June 18
EHS management committee work meeting	Presented the existing EHS-related problems and description of the current situation in the two factories, proposed solutions to the problem points and discussed them	June 26

05. Customer-centric

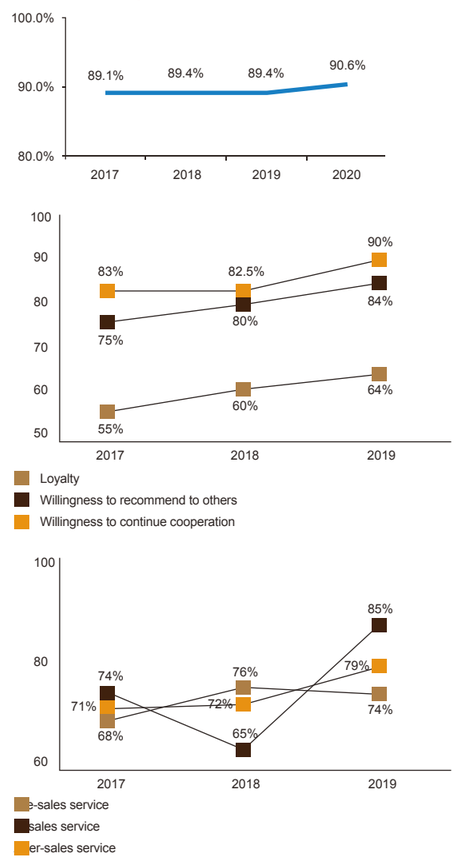
Responsibility delivery:
Not just for customer satisfaction

The company insists on regarding customers and market as the orientation, strategic goal as the direction, serving society as the duty. After years of hard work, we have made excellent achievements and received satisfactory results.

Satisfaction survey



Satisfaction survey



Our company's customer group segmentation and market segmentation determine the needs and expectations of customers and markets. We improve the sales network and channels and establish long-term cooperation with customers to win the trust of customers, retain customers and improve customer satisfaction, so as to continuously enhance customer satisfaction and loyalty.

Our company does not support grabbing competitors' customers. We prefer to let our customers and other potential customers know about Suntech, take the initiative to understand Suntech and try to contact with Suntech through the power of brand and word of mouth. Our Marketing Department's customer-relations division provides the information in need for the customers, to let them feel our good service quality different from other competitors.

Our company uses the following methods to learn customers' needs and expectations:

1. Our sales, marketing and customer service personnel realize timely vertical and horizontal communication via phone calls, email, regular meetings and reports.

2. Our company website has a page for customers to input their needs.

3. We collect customer needs at exhibitions and events.

4. Global customer service hotline & customer service email.

In the above ways, we learn about the needs and expectations of customers in different sales channels, and take different measures in light of their needs and expectations, to ensure customer satisfaction.

Customer needs and expectations

Customers (sales channels)	Needs and expectations	Measures
Retailers/distributors	Stable products, timely delivery, excellent after-sales service, training and instruction, high cost performance.	We set up logistics centers and warehouses in corresponding sales areas, and assign customer service staff locally to provide quick service accordingly.
Project contractors System integrators Project developers System installers	Reliable and safe products, outstanding design, good brand maintenance, high cost performance.	We have established photovoltaic product labs and earned UL and VDE certification, to test product reliability on a regular basis and ensure reliability; through QC team and SPS, we improve product quality and improve product awareness.

Our company assesses and analyzes the ways of understanding customers and markets through customer feedback, such as customer complaints, customer satisfaction survey results, and customer comments and suggestions. In addition, according to the data analysis of customer loss and the customer concerns at photovoltaic exhibitions, we adjust the way to identify customer needs in a timely manner.

Our company uses CRM and SFA software for customer relations management. Existing customers are divided into different categories according to their transaction history for different CRM marketing management.

Suntech is a manufacturing company, but we learn from the services and FMCG sectors and define ourselves as a customer oriented organization. In sales, every existing customer has a one-to-one dedicated account manager. As the main window, every account manager is backed by marketing staff, financial staff, order confirmation and tracking staff, customer service staff and technical support staff, to ensure quick confirmation and response to customer needs.

Our company provides multiple ways for domestic and foreign customers to query information, make transactions and complaints

Our company has laid down the “Control Procedures for Customer Comment/Complaint Handling”. Acceptance, investigation and analysis of customer complaints are handled by the International Customer Service Department in a united manner, which forms complaint handling teams with the responsible departments in each factory to analyze and handle the complaints in detail, then gives the customers feedback on the results. We have laid down the “Solar Module Customer Complaint Handling Procedures”. The rule of “1235” is adopted in handling customer complaints, which means that we give the customer preliminary comments on the complaint within 1 working day; we check the products on production lines and in stock for the same problem within 2 working days, and take emergency corrective measures if any and confirm the quantity and status of suspected risky products in transport and in the hands of customers; Within 3 working days, the complaint handling team preliminarily analyzes the cause and propose corrective measures to prevent the occurrence of defective products and their flow to customers within 3 working days; we give the customer our complaint handling results and solutions within 5 working days.

Communication channels for customers to query information make transactions and complaints

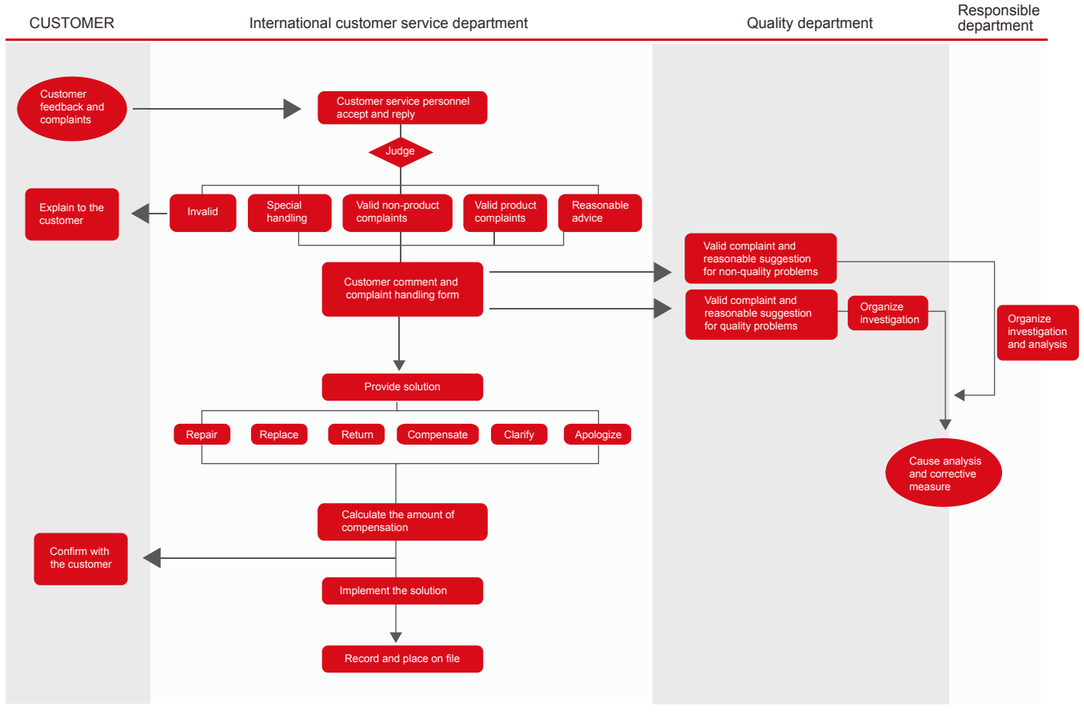
Type	Method
Search information	Make phone calls (including sales hotline and customer service hotline), visit Suntech website, check promotional materials, send emails, pay visits, visit exhibitions and service websites in various places
Make transactions	Order: direct supply of goods in stock, order by agreement Delivery: goods in stock
Make complaints	Contact customer service directly, global customer service hotline, customer service email, or make complaints directly to any Suntech employee

According to the requirements of customers, Suntech selects the communication methods that customers are willing to adopt, and communicates the collected customer demands to relevant departments in the company through meetings and documents, etc. and implements them in the specific operation processes. For details, please see the following table:

Type	Methods of Contact	Key customer (mature customer) requirement confirmation	Communication of key customer demands
Inquiries	Company website	Quick access to product information	Collect and sort out the requirements, and communicate to relevant departments through meetings
	400 global customer hotline	The call is convenient to make and there’s someone to answer the phone 24 hours a day	Communicate to lower levels as management rules
	Customer service email	Reply within 24 hours	Communicate to lower levels as management rules
	Publicity materials	A clear understanding of Suntech products and Suntech information	Communicate to relevant departments through meetings
	Reciprocal visits	Regular meetings, reciprocal visits at all levels	Communicate to relevant departments through meetings
Complaints	Contact customer service directly	Quick solution, reply within 24 hours	Customer service executives record customer suggestions and complaints and report to the factory’s quality department and other relevant departments in a timely manner. Meanwhile, a FA panel is set up to discuss the follow-up action plan and communicate thereof to other internal departments, track and record the results
	400 global customer hotline Or branch customer hotline	The call is convenient to make and there’s someone to answer the phone 24 hours a day	
	Customer service email	Reply within 24 hours	
Transactions	Order: direct supply of goods in stock, order by agreement	Sign contracts and agreements	Communicate the contracts and agreements to relevant departments, execute and complete the contracts according to the company’s contract management procedures
	Delivery: goods in stock		

Our company studies, analyzes and improves the above methods of establishing customer relations on a regular basis. For example, due to the brand and quality effect of Suntech, there are many illegal manufacturers who fake Suntech products to deceive customers. For the purpose of protecting the interests of customers, our company added product authenticity information search, which wasn’t available before, and joined PIATS. Customers can identify the authenticity of products by checking the barcode information. In addition, Suntech used to send domestic sales staff to have business contacts with customers in most regions of the world. Due to cultural differences, the needs of customers couldn’t be well understood and the response to customers was not enough in a timely manner. As a result, our company began to employ local sales and customer service personnel (i.e. local European personnel in the European market and local Australian personnel in the Australian market， local Japanese personnel in the Japanese market) to conduct business and provide services. Now, under the unified management of the headquarters, customers’ various requirements are satisfied better.

Flow chart of customer comment/complaint handling



Satisfaction Survey Mechanism

Corporate Self-Examination

We learn about customer needs and satisfaction through any contact with them. When marketing personnel and our direct customers, customer service personnel and our direct customers and end customers have contacts, they shall not only do their sales and service work, but also learn about customer satisfaction with our products and services. The customer service department classifies and summarizes the data to identify the major factors that lead to customer dissatisfaction. The group's quality management department urges relevant departments to make improvements, so as to continuously improve customer satisfaction.

Improve the Company's Work Through the Information of Customer Satisfaction Surveys

Our company analyzes the results of customer satisfaction surveys to identify our strengths and weaknesses. We should maintain and enhance our strengths; for weaknesses, we need to find the root cause, and then develop countermeasures for improvement.

Table of measures for improving customer satisfaction survey results of Suntech in 2020

Item to improve	Measures
Improve the after-sales follow-up mechanism	In overseas markets, we set local customer service personnel to provide quick after-sales follow-up. Customer service staff at the headquarters strengthen daily communication with customer service staff in overseas regions, including exchanges via emails and telephone calls, and have regular monthly teleconferences with the local customer service staff. Customer service staffs at the headquarters visit customers in regional markets once a year.
When conditions are mature, more engineering and technical support personnel should be considered and local branches should be established to speed up the response	In 2009, the customer service department set up a technical support team to provide faster support for customers. We have a clear division of labor; according to the fields of product technology that customers concern, specialized teams are formed to provide more professional technical support. We provide local customer service engineers with on-site tools and testing equipment, so that they can better solve problems on site for customers.

06. Economic Responsibility

We regard customer demand as the basis and create the source of profits with intensive production.

1,131.3 million

In 2019, our net sales revenue

In 2018, our net sales revenue

1,082.9 million

In 2017, our net sales revenue

940.0 million

Financial Data

WUXI SUNTECH			
ITEM/YEAR	YEAR 2017	YEAR 2018	YEAR 2019
Quantity	2.55	2.39	3.21
Sales	940	1083	1131
Cost	858	979	1041
Gross Profit	82	104	90
Gross Profit Rate	9%	10%	8%
Expenditure	63	80	69
Net Proceeds	4	28	37
Current Liabilities	435	714	485
Long-term Liabilities	60	55	38
Expense Ratio	7%	7%	6%
Debt-to-asset Ratio	40%	50%	41%
Current Ratio	183.0%	156%	193%
Net Margin	0.44%	2.60%	3.30%