

Phono[®]Solar

PHONO SOLAR TECHNOLOGY CO., LTD.

WORLDWIDE CONTACTS

Phono[®]Solar

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www.phonosolar.com

EN-B-150107



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STABILITY

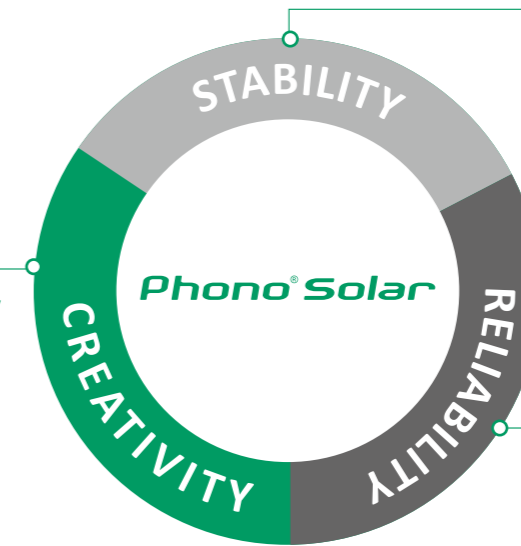
- State-owned Company
- 35-year History
- Interdependent Business Sectors

RELIABILITY

- Experienced Products
- Efficient Technology
- Rigorous Testing
- Leading Manufacturing
- Insured Warranty

CREATIVITY

- Research & Development
- Product Line Expansion



At Phono Solar, we strive to continuously innovate our products through R&D and to optimize our business model. We offer both a flexible and experienced service to our customers, ensuring that we always add value.

The strong background of SINOMACH and the SUMEC GROUP enables Phono Solar to offer a genuine 25-year product warranty. Interdependent business sectors have realized healthy and sustainable development.

Phono Solar adheres to the highest standards of quality, has rigorous quality control processes, and strives to consistently deliver high quality products.



Company Overview

Phono Solar Technology Co., Ltd., was founded by SUMEC Group Corporation, a member of the China National Machinery Industry Corporation (SINOMACH). Phono Solar is a leading brand in the new energy industry, providing high quality new energy products since 2004.

Driven by both innovations in technology and an effective brand strategy, Phono Solar continuously extends the industry chain downstream and has realized moderate horizontal expansion. This has been achieved through cutting-edge applications of technology including on/off-grid systems and smart micro-grid systems and also through the successful implementation of PV power plant investments, construction and operations globally.

The Phono Solar brand has become synonymous with high performing, top quality photovoltaic modules and specializes in PV technology innovation, application and system development. The company is a KEY COMPONENT SUPPLIER, SYSTEM INTEGRATOR and PROJECT DEVELOPER. Phono Solar's worldwide sales and marketing network and service system effectively provides end-users with accessible clean energy, whilst promoting its core brand values of STABILITY, RELIABILITY and CREATIVITY.





SUMEC
苏美达集团

SUMEC Group Corporation (SUMEC), founded in 1978, is a key member of China National Machinery Industry Corporation (SINOMACH). Its core business consists of shipbuilding and project contracting of complete equipment and engineering; the R&D, manufacturing and export of machinery and electric products including power tools, garden tools, power machinery, new energy products, etc., as well as textiles and garments; domestic trading and international tendering and the import of technological equipment and production materials. In the context of global economic integration, through long-term and unremitting exploration, innovation and development, SUMEC has become one of the largest import and export corporations in China.



China National Machinery Industry Corporation (SINOMACH), is a large state-owned enterprise approved by the State Council and administered by the State-owned Assets Supervision and Administration Commission. SINOMACH is a Fortune Global 500 enterprise.

Within the Chinese machine industry, SINOMACH has the most comprehensive lines of business both in terms of scale and diversification. It also has the strongest R&D capabilities. Within its portfolio, SINOMACH has 50 wholly-owned and holding subsidiaries, including 7 listed companies. It has more than 140 overseas servicer branches and globally employs nearly 100,000 staff. For many years, SINOMACH has sustained annual growth rates of over 30%. SINOMACH remains number 1 among the top 100 Chinese machinery enterprises and has been rated class-A in the performance evaluation for state-owned enterprises, as conducted by the State-owned Assets Supervision and Administration Commission.

FORTUNE GLOBAL 500

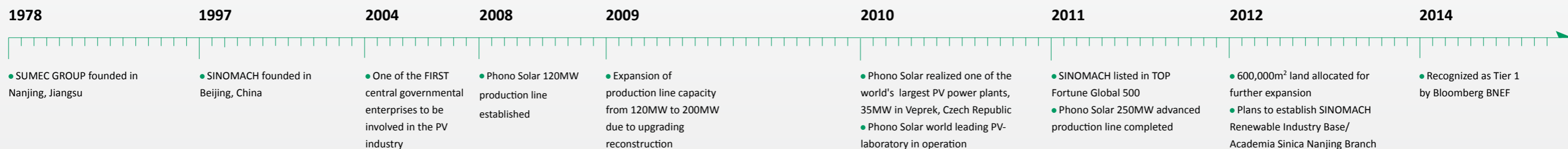
In 2014 Phono Solar's parent company SINOMACH was ranked #278 in Fortune Magazine's "Fortune Global 500"

Fortune Magazine's list of "Fortune Global 500" is an annual ranking of the top 500 corporations worldwide as measured by revenue, profit and management. This is the third year that SINOMACH has made the Fortune Global 500, we ranked #326 in 2013.



The President of SUMEC GROUP:
Mr. Cai Jibo

Milestones



STABILITY

Stay with us,
we are
always
here.



Rooftop PV Systems



PV Power Plants



Environmental Engineering



Harbor Engineering



Maritime



Power Engineering



Engineering Construction



Petro-chemical Equipment



Tools



Imports & Domestic Trade

Interdependent Business Sectors

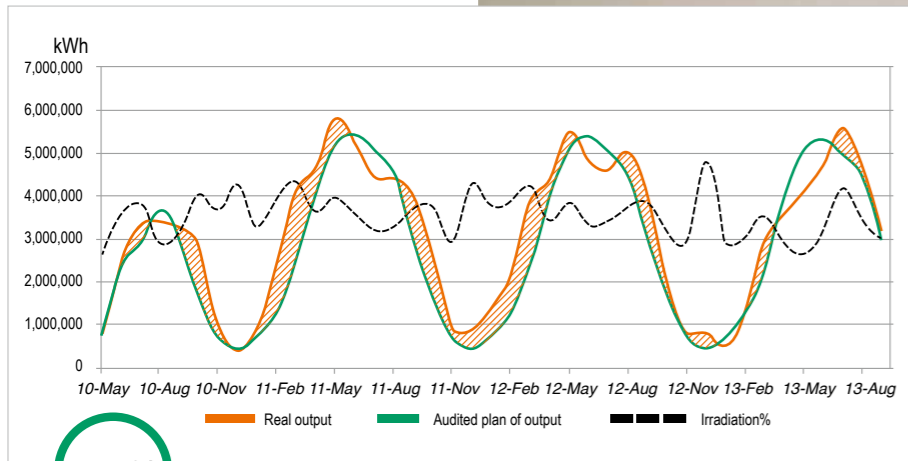
- Power Engineering
- Metallurgy and Mining Engineering
- Petro-chemical and General-purpose Equipment Engineering
- Industrial Engineering
- Communications and Transportation Engineering
- Shipbuilding Engineering
- Environmental Engineering
- Telecommunications Engineering
- Agricultural Engineering
- Light & Textile Industry Engineering
- Building Materials Engineering
- Logistics Engineering
- New Energy Engineering
- Cultural, Educational, Public Health & Residential Engineering
- Engineering Construction
- Civil Architecture Engineering
- Engineering Prospecting
- Engineering Supervision

国机集团 | **SUMEC**
SINOMACH | **苏美达集团**

Phono Solar
SHARE THE SUN, POWER THE FUTURE!

RELIABILITY

Work with us,
secure
your
business.



+15%

Experienced Products

The best way to verify solar module reliability is to observe its performance in a power plant. Modules must be able to withstand any external environmental factors and resist all types of natural stress as these both ultimately affect the power plant's performance and investment IRR.

Phono Solar can give customers real examples to prove product reliability. In Czech Republic, both Veprek and Smirice power plants use Phono Solar modules. Grid connected since 2010, the power plants have exceeded their expected electricity generation by over 15%.

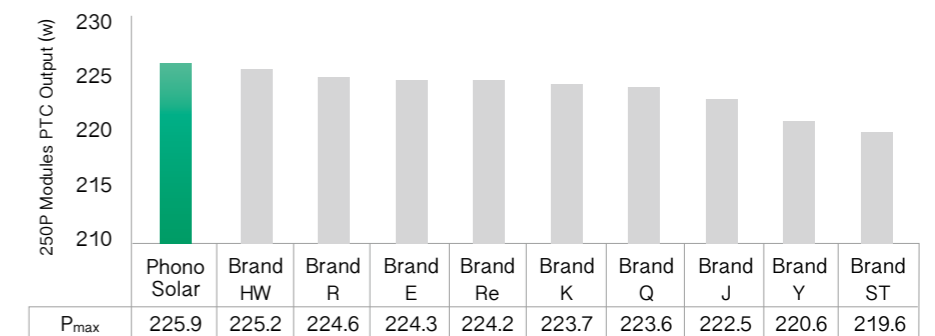


Efficient Technology

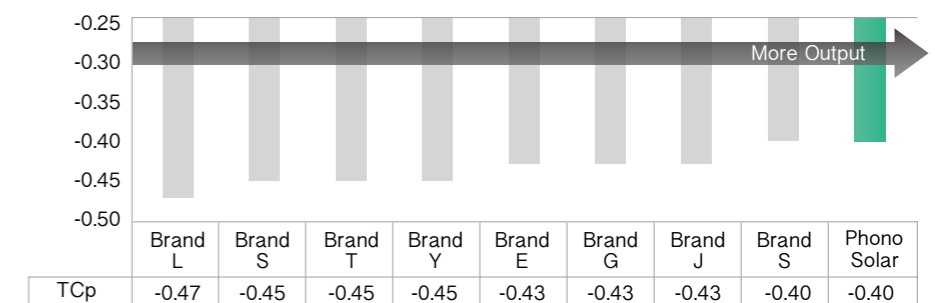
In order to offer our customers product value, Phono Solar invests heavily in efficient technologies to improve product reliability. In both our own laboratory and in an internationally-recognized laboratories' outdoor test site, we repeatedly test the actual performance of the product in non-standard test environments, which include low light conditions during dawn and dusk and windy conditions, etc.



PTC Rating



Temperature Coefficient



"The temperature coefficient of -0.40 percent per K is better than average. It is therefore expected that this module will be one of the higher yielding modules in the long-term test."



Rigorous Testing

Phono Solar owns a world leading PV testing centre, qualified by several international certification authorities. A broad range of equipment is used to conduct quality-control tests, product certifications, material reliability checks, and in-depth research. Up to 35 different tests can be run uninterrupted 24 hours a day, to higher standards than both IEC and UL. A 100% testing ratio for visual inspection, EL testing, pressure testing, mechanical load testing and age testing ensures that Phono Solar modules operate safely and smoothly for at least 25 years, therefore guaranteeing a strong and stable return on investment for investors.



• Qualified Laboratory



• Environmental Reliability Testing

We put a selection of PV modules through extreme environmental testing to ensure reliability and superior performance in even the world's most unforgiving conditions.

- UV Preconditioning
- Surface Impact
- Corrosive Atmospheres
- Hotspot Endurance
- Insulation (wet and dry)
- Thermal Cycling
- Wet Leakage
- Damp Heat
- Mechanical Load
- Highly Accelerated Stress
- Humidity Freeze
- Outdoor Exposure

• Components Testing

We carefully test the performance of each component both individually and together in order to maximize electrical output while minimizing the degradation of the module over its lifetime.

- Bypass Diode Test
- Materials and Components Testing
- Quality Checks Throughout
- Micro-crack Testing
- NOCT Measurement
- Electrical Component Testing
- Flash Testing

Leading Manufacturing

Phono Solar focuses on the manufacture of solar modules and selects only the highest quality materials and components. This, together with a world leading automated production line enables us to offer a competitive price for our modules. Our experienced engineers are committed to this round-the-clock operation and ensure each module, from soldering to packaging, flows smoothly along this world-class assembly line.

Insured Warranty

We provide customers with a 25-year warranty and liability insurance from a world-renowned insurance company to ensure your PV investment is secure.

- 25-year Warranty
- Public Liability and Products Liability Insurance
- Manufactures Errors & Omissions Insurance



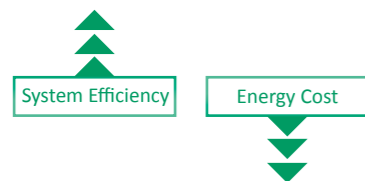
*Grow with us,
achieve
the impossible.*



We strive to develop products and optimize our business model to meet growing and changing market demands. We are committed to developing highly efficient and affordable new energy products in both technologically and commercially innovative ways, and to offering flexible services to achieve success with our customers.

Research & Development

Target



Focus

- Cells and Modules
- Black Silicon
- PV System PR
- Storage Systems

Partners



Product Line Expansion

Phonocube

Phonocube is an energy management unit that is suitable for integration in both new and existing photovoltaic systems. It combines the inverter, batteries and the photovoltaic system into one compact system. It presents you not only with an essential product, but with an energy management solution. You will notice nothing different, except the reduction in your electricity bills!

Features

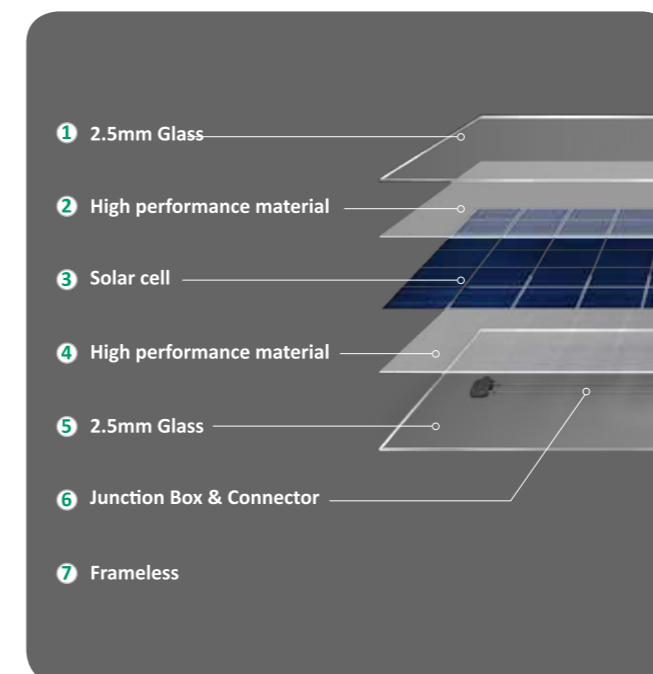
- Up to 100% daily self-consumption*
- Off-grid using and UPS function
- Operating mode switches automatically with no time delays
- Ultra-quiet design
- High-performance lithium batteries designed for service life of expected 20 years
- Certified by TÜV Rheinland

*Depending on PV Power/Battery ratio



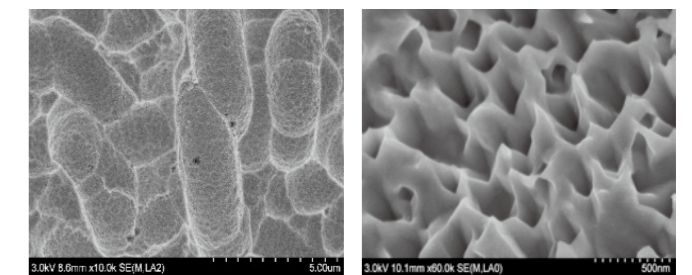
Dual-glass Module

- 30+ Years lifetime
- Anti-PID
- All-weather adaptability

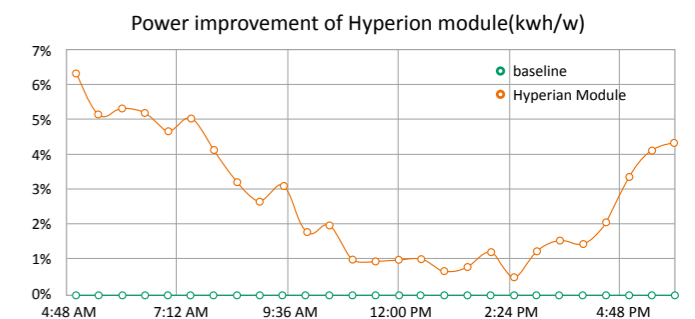


Hyperion™ Module

- Reflectivity <3%
- Wider spectrum response range
- Higher performance in low-angle oblique light



Traditional Poly Cell Hyperion Cell



NOTES: