



**18.9 % EFFICIENCY**

**UP TO 315W**

**60 CELLS**

 **2015** TOP SOLAR PRODUCTS

**99% relative efficiency at weak-light**  
Because a 3% increase in yield is better than nothing.



**25 year linear performance guarantee**  
15 year product warranty.



**Protection against the weather and the elements**  
Because long term performance matters.



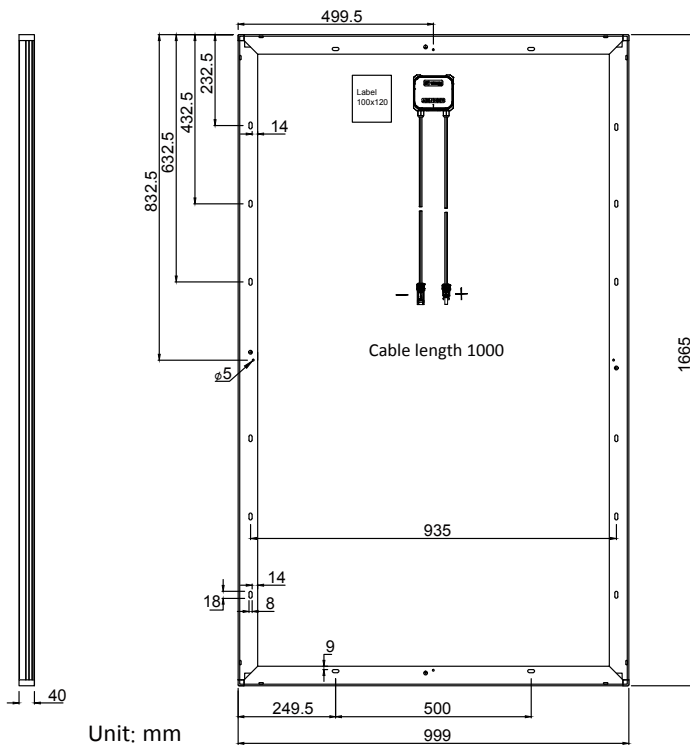
**2 years of free insurance included**  
Because you never know what tomorrow might bring.



**Designed for fire safety**  
Because plant fires mean more than financial losses alone.



**Made in Taiwan**  
Home of high precision semiconductor manufacturing.



Unit: mm

**Mechanical data**

Cell	Monocrystalline 156.75 x 156.75 mm silicon cells
Quantity and wiring of cells	60 in series
Dimensions	1,665 x 999 x 40 mm (65.55 x 39.33 x 1.57 in)
Weight	19.6 kg (43.2 lbs)
Glass thickness	3.2 mm (0.13 in)
Frame	Black anodised aluminium
Junction box	IP67
Connector type	MC4 (PV-KBT4/PV-KST4) IP68; QC4.10 IP67
Module fire performance	Type 1

**Operating conditions**

Operating temperature	-40 °C to +85 °C -40 °F to +185 °F
Maximum system voltage IEC/UL	1,000 V/1,000 V
Maximum series fuse	25 A
Maximum load	5,400 Pa
Nominal operating cell temperature NOCT	45 ± 3 °C
Temperature coefficient of P <sub>MAX</sub>	-0.43%/°C
Temperature coefficient of V <sub>OC</sub>	-0.29%/°C
Temperature coefficient of I <sub>SC</sub>	0.06%/°C

**Certifications**

IEC 61215, IEC 61730-1/-2, UL 1703 Ed. 3, MCS, CE

Electrical data (STC)		WSP-310M6	WSP-315M6	
Nominal performance	P <sub>MAX</sub>	310	315	Wp
Voltage at maximum performance	V <sub>MP</sub>	32.9	33.2	V
Current at maximum performance	I <sub>MP</sub>	9.42	9.48	A
Open circuit voltage	V <sub>OC</sub>	40.3	40.4	V
Short circuit current	I <sub>SC</sub>	10.1	10.2	A
Module efficiency		18.6	18.9	%
Power tolerance		-0/+5		W

Reduction in the module efficiency rating from 1,000 W/m<sup>2</sup> to 200 W/m<sup>2</sup>: < 4%. The electrical data applies under standard test conditions (STC): solar radiation 1,000 W/m<sup>2</sup> with light spectrum AM 1.5, with cell temperature 25 °C. Measurement tolerance of P<sub>MAX</sub> at STC: ±3%. Accuracy of other electrical data: ±10%.

Electrical data (NOCT)		WSP-310M6	WSP-315M6	
Nominal performance	P <sub>MAX</sub>	230	234	Wp
Voltage at maximum performance	V <sub>MP</sub>	30.2	30.5	V
Current at maximum performance	I <sub>MP</sub>	7.62	7.67	A
Open circuit voltage	V <sub>OC</sub>	38.1	38.2	V
Short circuit current	I <sub>SC</sub>	8.11	8.19	A

The electrical data applies under normal operating cell temperature (NOCT): solar radiation 800 W/m<sup>2</sup>, AM 1.5, air temperature 20 °C, wind speed 1 m/s.



This frame design, produced entirely from aluminium, guarantees the maximum stability and protection against material fatigue. The rounded corner elements provide greater torsional stiffness and waterproofing in the critical corner areas where the material is at its weakest. In contrast to corner connections that use mitred cuts or threaded connections, WINAICO corner pieces guarantee the best possible transfer of tension across each section of the frame.



WINAICO is a trademark of Win Win Precision Technology Co., Ltd.  
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*Power to Perform*

# YES TO PHOTOVOLTAICS!

7 Steps to WINAICO!

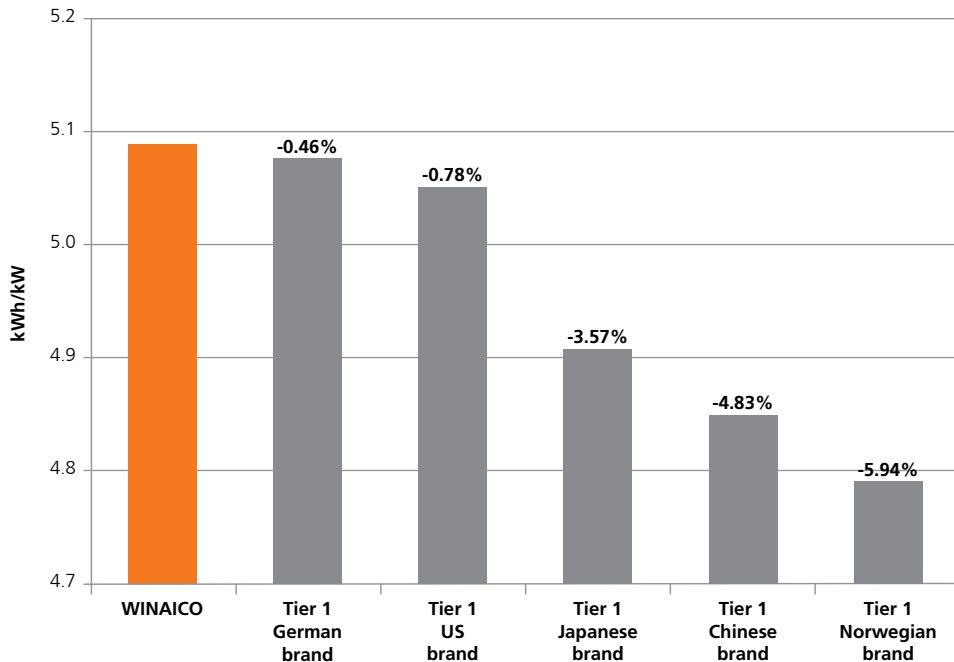


# 1. YES TO TOP PERFORMANCE – CONFIRMED BY INDEPENDENT INSTITUTES.



Whether it is about performance or reliability under actual conditions in the field – the ratings by industry experts and independent institutes always show WINAICO modules as a top performer. As a leading manufacturer of high-performance photovoltaic modules from Taiwan and a global photovoltaic specialist, WINAICO places great importance on 100% quality control in the entire process chain – with expertise range from material procurement, production, operation, and maintenance by our specialist partners.

- + In 2014, in the **PTC ratings** among 260 W poly modules, WINAICO achieved first place among more than 14,000 modules – ahead of leading brands and suppliers from around the world. The PTC rating (Photovoltaic Utility Scale Application Testing Conditions) was initiated by the California Energy Commission and evaluates real performance in practice. A higher rating means you get more electricity produced per installed watt, leading to greater return on investment.
- + Taiwan's Bureau of Energy has awarded WINAICO's WSP-M6 PERC module the **Taiwan Excellent PV Award** as the best PV module in terms of safety, reliability and efficiency. The award was evaluated on both reliability and performance, by Taiwan's leading test institute, ITRI, based on NREL's Qualification Plus and the new IEC 62782 initiative – all of which confirm WINAICO's product performance.
- + WINAICO's modules have proven their superiority in extreme conditions of the Australian desert, where modules have to survive large temperature variations day and night. In the **Desert Knowledge Australia Solar Centre**, WINAICO's solar modules achieve higher normalised daily output than competing products from other prominent brands and international market leaders..



### About Desert Knowledge Australia Solar Centre

The Desert Knowledge Australia Solar Centre is a demonstration facility for commercial solar technologies operating in desert conditions of Alice Springs, Central Australia. It provides live system level data of onsite installations in the Australian outback, and is a reference point for installations operating in extremely hot and dry conditions.

Since WINAICO modules were installed in 2012, our modules have shown the least degradation over the years, while consistently outperform modules from major brands. WINAICO quality is proven to withstand the harshest desert environment.

Desert Knowledge Australia, the Australian Government, the Northern Territory Government and the project managers, CAT Projects do not endorse, and accept no legal liability whatsoever arising from, or connected to, the outcomes and conclusions associated with the use of data from the Desert Knowledge Australia Solar Centre.

## 2. YES TO INVESTMENT PROTECTION THROUGH SUPERIOR QUALITY – WAY ABOVE STANDARDS!



Regulations and standards are there to be exceeded. WINAICO modules go through all the relevant tests and significantly exceed the market requirements in all areas. The complete set of reliability tests imitate all variations of hazards experienced by the modules during their useful lifetime. As a result of WINAICO's evaluation, the modules can withstand heat, snow, wind, and other adversities much better and much longer.

- + The **thermal shock test** measures how the modules withstand thermal stresses from changes in temperature. As such, they are cooled down from +85°C to -40°C and then reheated to +85°C to simulate temperature changes.
- + The **damp heat test** checks how the modules are capable of withstanding humidity and heat (85°C at 85% relative humidity) over a prolonged period of time.
- + The **mechanical load** test refers to the pressure a module can endure, such as snow. While the IEC standard requires only 5,400 Pa, WINAICO modules can bear a load up to 10,000 Pa, which is equivalent to about 1,020 kg per square metre.
- + In the **hail test** WINAICO modules have to deal with four times the kinetic energy prescribed by the IEC standard – and withstand it easily. Even if it is hailing golf balls, this is no problem for WINAICO modules.
- + **Dynamic mechanical load** test simulates changes in pressure on solar modules due to strong winds. WINAICO modules have been confirmed to withstand up to 5,000 Pa for 200 cycles, a test that exceeds the IEC requirements.
- + **Potential-induced degradation (PID)** may occur in conventional PV systems and lead to more than 20% power degradation. Related tests show WINAICO's modules can mitigate the PID effects to a minimum.
- + **High concentrations of salt** in the air are extreme environmental factors that cause corrosion and power degradation in PV modules. Compliance with IEC 61701 certification guarantees reliable energy yields even for sites with high salt concentration.
- + Ammonia emissions from livestock can accelerate the ageing of PV modules, reducing energy yields. WINAICO modules are tested for **resistance to ammonia** to alleviate this risk.

Thermal Cycling (TC) Cycles between -40°C and +85°C	IEC standard	TC 200
	WINAICO	3 times the IEC standard
Damp Heat (DH) Constant +85°C and 85% relative humidity	IEC standard	DH 1000
	WINAICO	3 times the IEC standard
Mechanical Load (ML)	IEC standard	5400 Pa
	WINAICO	10000 Pa
Hail Impact	IEC standard	25 mm ice ball at 83 km/h
	WINAICO	35 mm ice ball at 98 km/h 4 times the kinetic energy of IEC
Dynamic Mechanical Load (DML)	IEC standard	No IEC Standard
	WINAICO	5000 Pa for 200 cycles
Potential Induced Degradation (PID)	IEC standard	No IEC Standard
	WINAICO	-1000 V bias, 85°C, 85% relative humidity, 288 hours



### 3. YES TO TWO YEARS OF FREE INSURANCE COVERAGE – WITH AN OPTION FOR FIVE MORE YEARS.\*



A three-in-one insurance package provides additional security to your solar investment. When you buy WINAICO modules, two years of free insurance coverage is included. This secures the complete installation from any kind of material damage, including fire, natural disasters, such as storms and hail, theft, operational errors and even rodent damage. The coverage begins at the construction stage, before the system is operational to give the owners a complete peace of mind. In addition, the loss of Feed-in Tariff income during system outage is also compensated. The insurance ends automatically after two years or may be extended by a further five years, providing complete protection for a total of seven years.

- + All risk insurance: protection from damages  
Covers all unforeseen damages or destruction incurred.
- + Business interruption insurance: protection from loss of profits  
Compensates for loss of Feed-in Tariff if the photovoltaic system is interrupted or adversely affected by damage or non-delivery.
- + Reduced yield insurance: protection from long-term low yields  
Covers the loss of income if the annual yield is more than 10% lower than forecast.
- + Construction cover: protection at the construction stage  
All potential damage is already covered by the insurance during construction: whether it is a threat of theft, fire or storms on the construction site.

Exclusive partnership with leading international insurance group Willis Group Holdings plc.

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\*Please check with local WINAICO dealers for details.





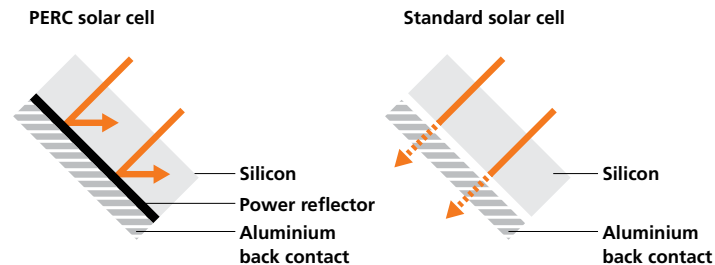
# 4. YES TO MARKET-LEADING TECHNOLOGIES AND PERFORMANCE – WITH THE RIGHT DETAILS!



Taiwan is widely recognised as the home of quality semiconductor manufacturers, and its technological leadership is reflected in the photovoltaic sector as well. This is why WINAICO has developed technological leadership with the PERC series and HeatCap<sup>®</sup>, to set new standards in high efficiency and reliability in solar modules.

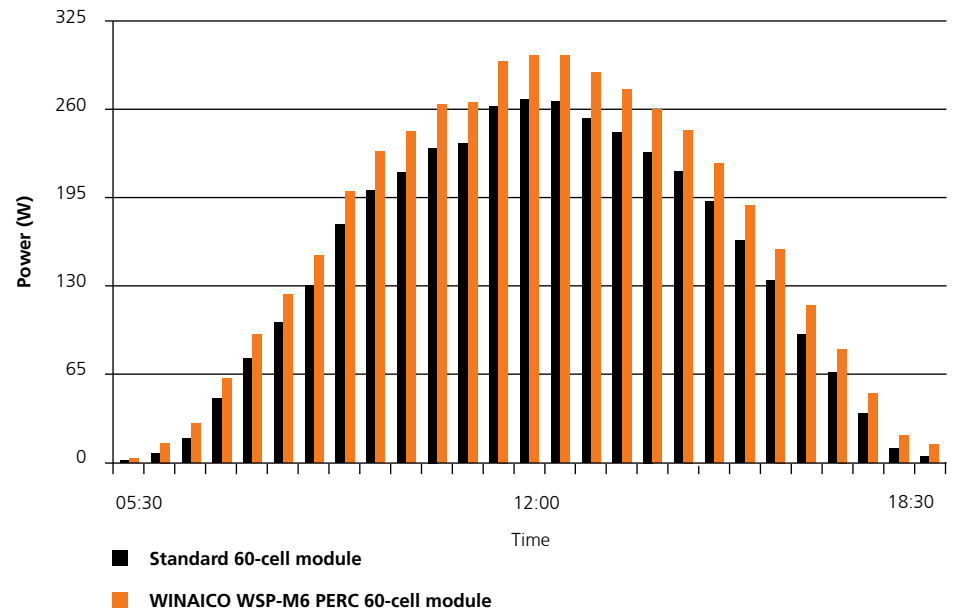
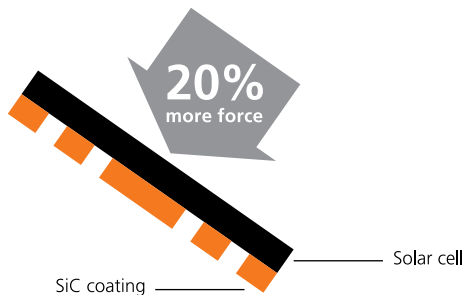
## PERC technology.

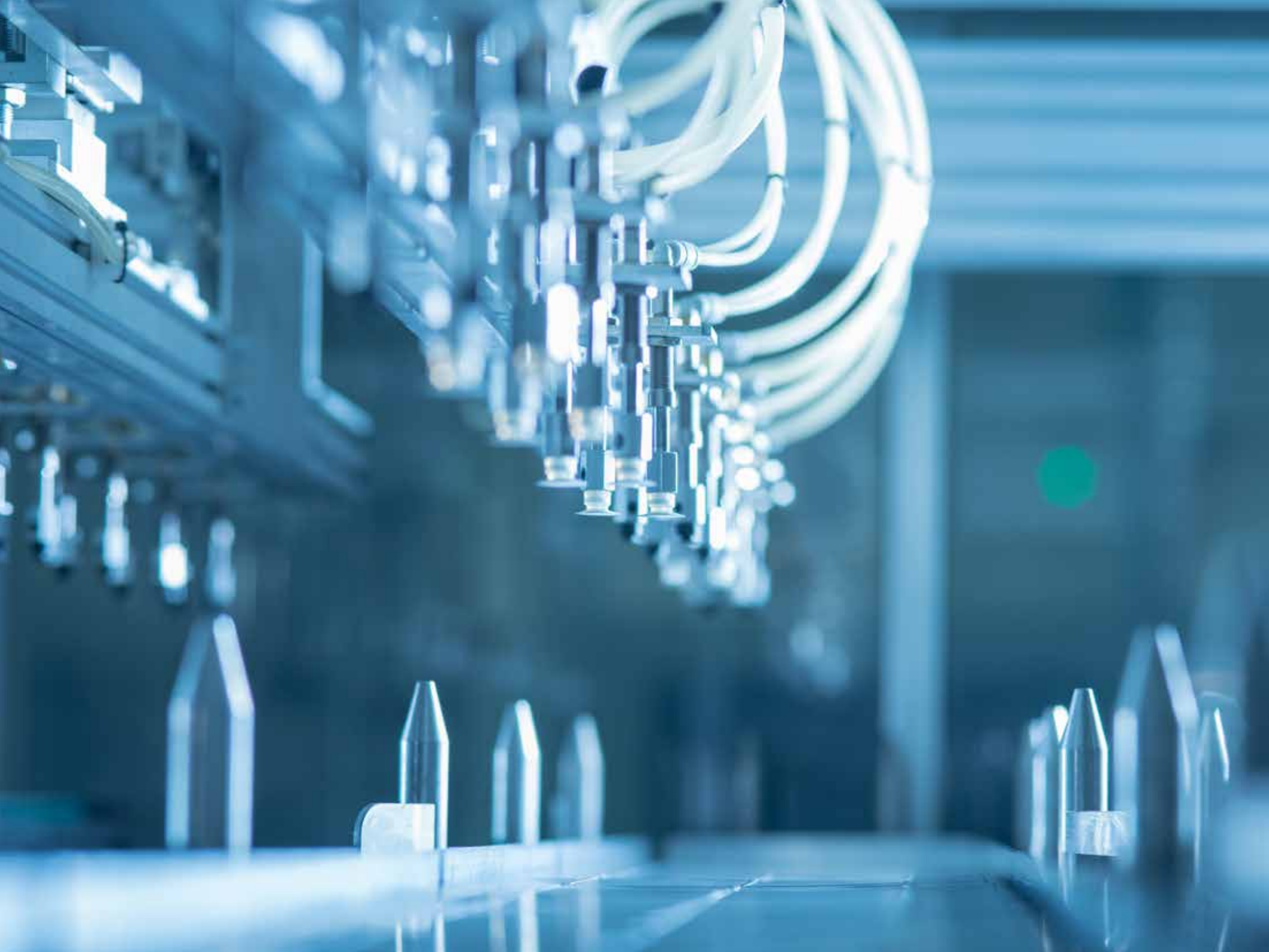
PERC stands for Passivated Emitter and Rear Cell technology, and it adds a power reflector layer to reflect unabsorbed light back onto the solar cells. It pushes the boundary of solar cell efficiencies by improving the cell's thermal and low light behaviour.



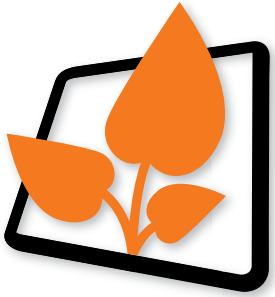
## HeatCap<sup>®</sup> technology.

The SiC coating at the back of each solar cell increases up to 20% the force each cell can withstand before breaking. The coating also has the effect of stopping the propagation of forces, preventing micro-cracks from appearing. This leads to more consistent energy output and less power degradation in the long term.





## 5. YES TO SUSTAINABLE BUSINESS MODELS – IN PRODUCTS AND PROCESSES!



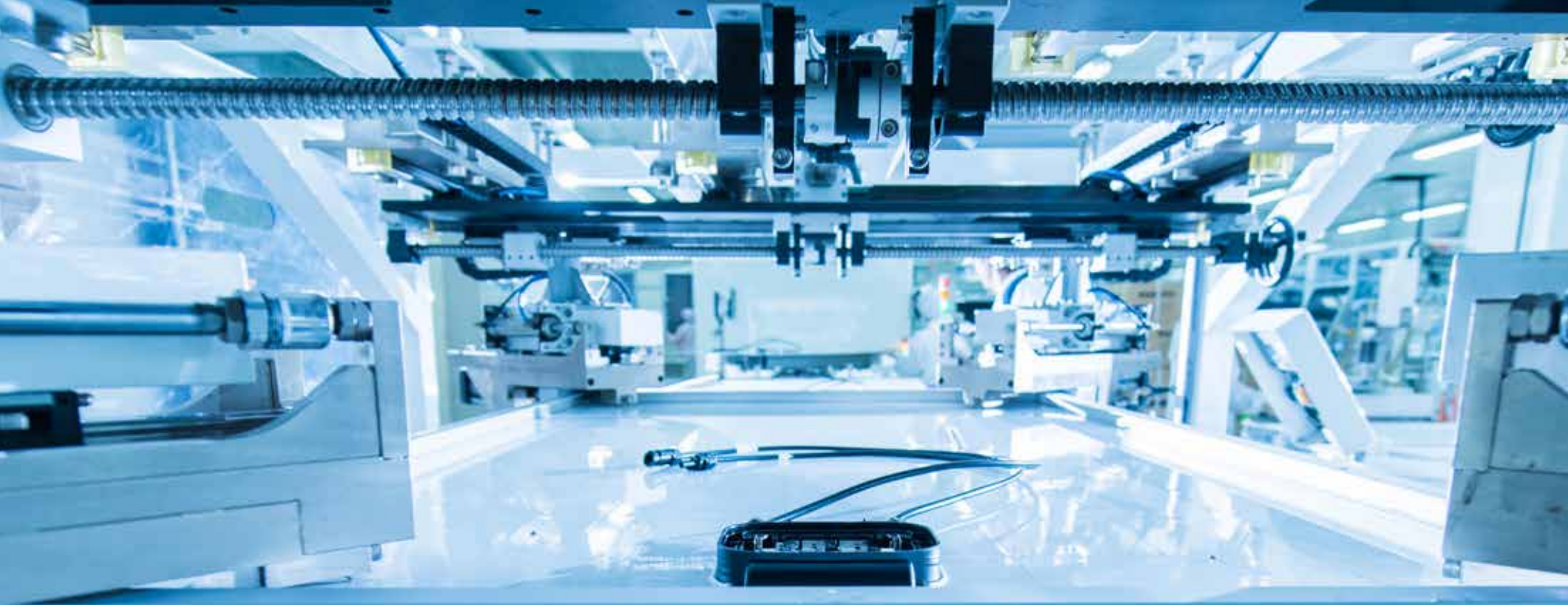
With WINAICO modules, you are taking a big step into a future independent of fossil fuels, with a sustainable, decentralised energy supply. Our products are good for the environment because they generate plenty of clean electricity while conserving resources. Solar investments work well with modern storage solutions and electromobility, to maximise the usage of solar electricity you generate, and move toward a self-reliant future.

Sustainability and resource conservation are not only associated with the products from WINAICO but our entire business operation. In cooperation with our recycling partners, we make sure our products are recycled in compliance with the WEEE directive (Waste of Electrical and Electronic Equipment) at the end-of-life. Our environmental management system is certified to ISO 14001 to make sure a decision in favour of WINAICO is also one in favour of the climate and the environment.

Behind all company successes stand reliable and dedicated employees. At WINAICO, health and safety in the workplace is our top priority. The Occupational Health and Safety Assessment Series – OHSAS 18001 in short – is the world's best known occupational health and safety management system, practised in over 80 countries. WINAICO's parent company, Win Win Precision Technology Co. Ltd., is one of the first companies in the PV sector to be certified in accordance with OHSAS 18001:2007.







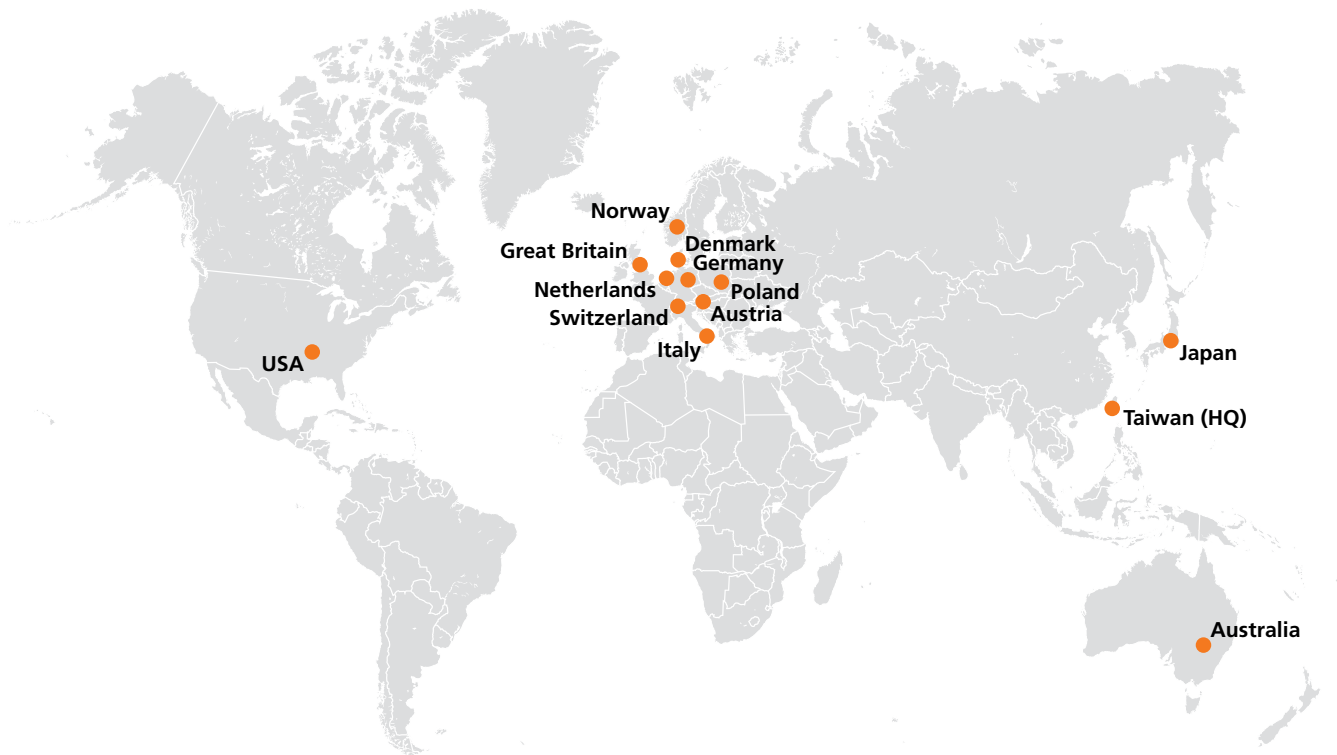
## 6. YES TO PROXIMITY AND CUSTOMER RELATIONSHIPS – ALL OVER THE WORLD.



Our relationships with over 2000 installers worldwide are based on geographical proximity and customer dedication. Since 2008, WINAICO has been serving its customers – now in over 25 countries – directly. This means that products are supplied by WINAICO directly to specialist partners on location, without trade detours and middlemen. WINAICO works exclusively with selected, experienced, and professionally trained solar specialists, to make sure every WINAICO PV system exceeds customer expectations.

WINAICO serves customers via direct sales to make sure goods are delivered directly to local specialist partners **without detours via the retail trade**. In order to ensure perfect service and stock availability, WINAICO has branches and warehouses in all major markets around the world.

WINAICO puts customers first, and local personnel are always available to answer your questions. WINAICO is transparent about sharing industry knowledge to make sure customers are up-to-date with the latest industry trends. WINAICO also frequently invites partners to visit the production facilities in Taiwan as a part of sharing industry experiences.

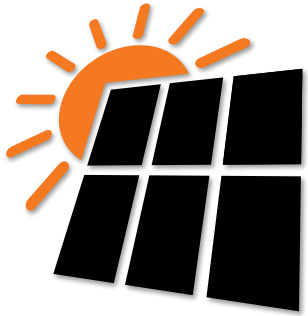








## 7. YES TO MORE SOLAR ELECTRICITY!



The quality and performance of photovoltaic modules should not be based on figures written on datasheets, but on actual performance on the roof, where they should perform day after day, year after year, to ensure a rich energy harvest. WINAICO's quality is proven by thousands of installations and happy customers. You too can choose our quality modules, and take an important step in the direction of becoming self-sufficient: only those who generate and consume their own power can make themselves independent of energy price fluctuations, and reduce their electricity costs.







# CHECKLIST: HOW TO CHOOSE THE BEST PHOTOVOLTAIC SYSTEM!



The price of a PV system is certainly important but it should not be the only consideration. With a useful lifetime of at least 25 years, the quality of the components and the installation work are also very important factors.

When deciding your purchase you should pay attention to the following points:

- + Ask to see **guarantees** and **certificates**.
- + Pay attention to the quality of workmanship and ask to see **samples**.
- + Ask about **reference systems** that exist in your vicinity.
- + Ask to see the **yield data of existing systems**.
- + Do not buy a system based on a description or a photo.
- + Ask for a **revenue projection of the PV system** to be drawn up and explained to you.
- + Find out more about the components' **origins**.
- + Does the manufacturer have a local warehouse for **responsive product dispatch**?
- + Can you get hold of the manufacturer **in case of a complaint**?
- + Find out more about people's **experiences with solar systems** installed by the company.

**WINAICO supports you in your search for a photovoltaic system from the start. Get in touch with us today.**

Your local partner



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