

AE Solar GmbH

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WEEE DE 20050710



Inspiring green energy since 2003



Deutsche  
Qualität  
Garantiert

PHOTOVOLTAIC MODULES MANUFACTURER



## Born in Germany ●●●

AE Solar GmbH was founded by Dr. Alexander Maier and his brothers Waldemar Maier, Victor Maier in Königsbrunn, Germany. AE Solar is one of the leading brands in the renewable energy industry, providing high quality new energy products and services since 2003.

Driven by both innovations in technology and an effective brand strategy, AE Solar continuously extends the industry chain upstream and successfully executes the downstream projects. AE 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** and **PROJECT DEVELOPER**. AE Solar's global sales and marketing network successfully provides end-users with accessible clean energy, whilst promoting its core brand values of **STABILITY, DURABILITY** and **RELIABILITY**.



Waldemar Maier  
Co-Founder  
CTO

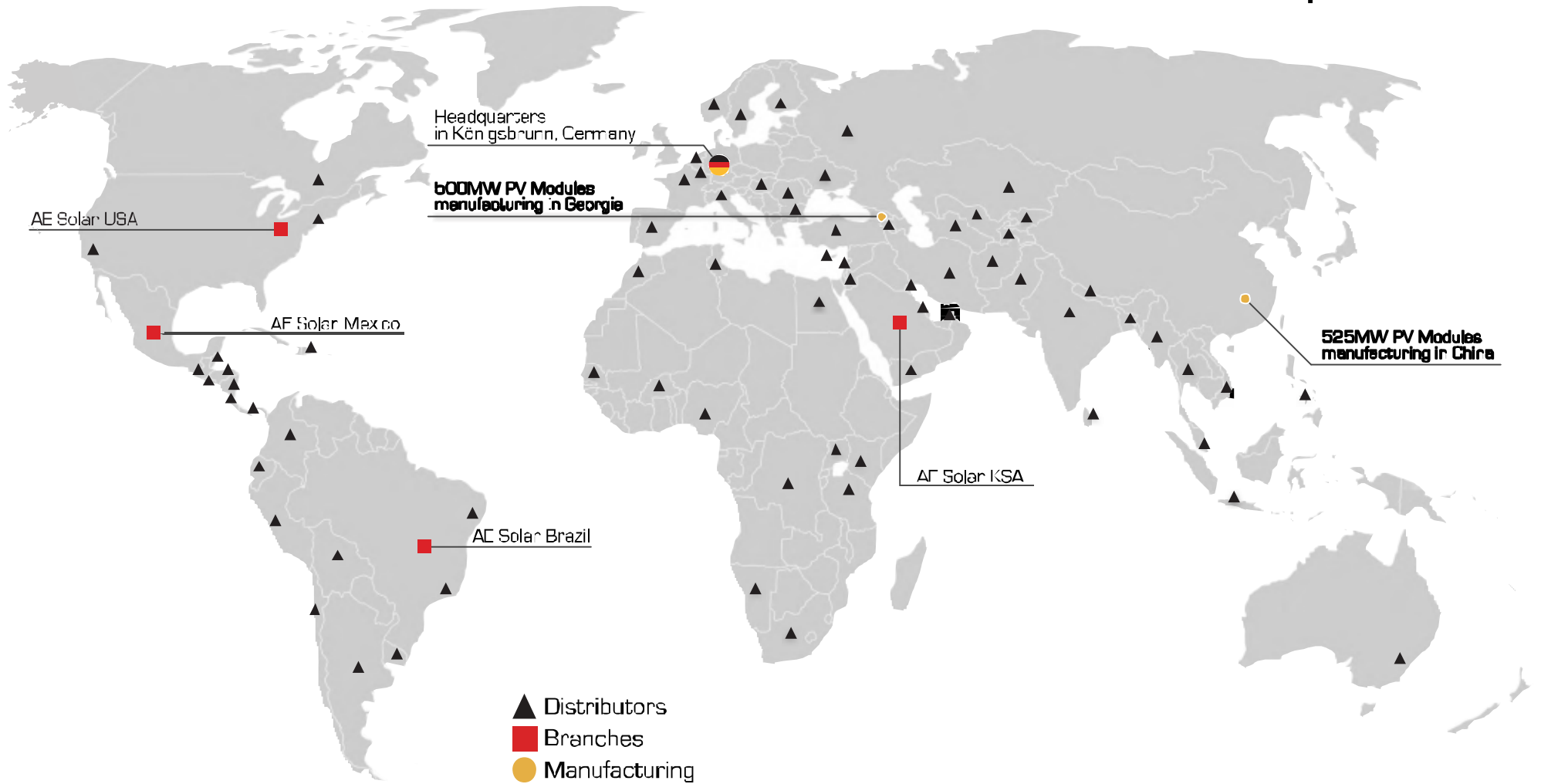


Dr. Alexander Maier  
Founder  
CEO



Victor Maier  
Co-Founder  
CPE

# World Footprint ●●●



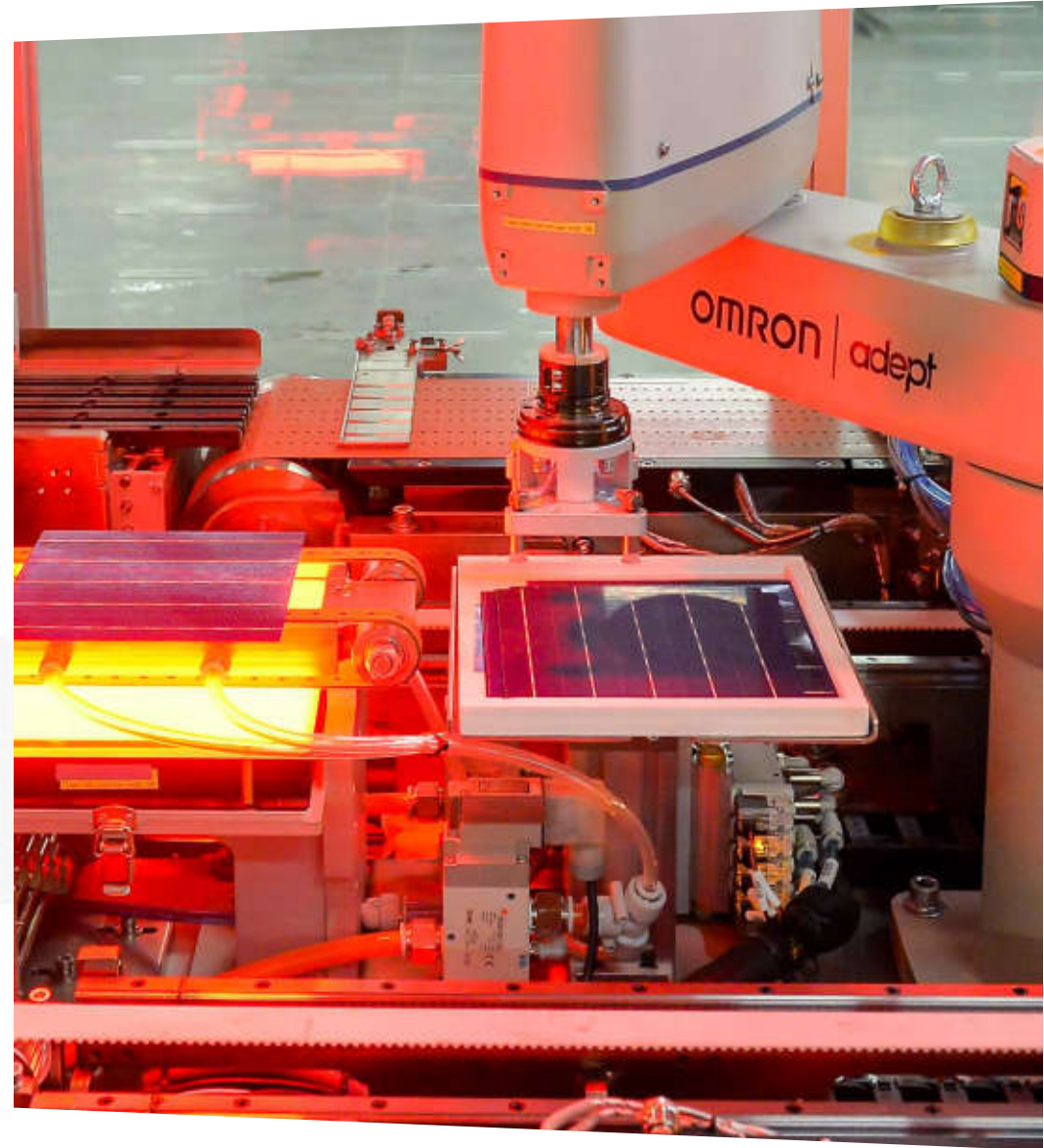
## World Footprint ●●●

- Distributorship network representation and sales in 72 countries
- Brand totally in-house made in own 2 manufacturing facilities
- 6 offices on 4 continents with more than 500 employees
- Staff speaks 12 languages for technical, sales support and documentation needs
- Providing engineering, capacity calculations, procurement support to our customers
- Participation in all major worldwide solar events, including Intersolar, SPI, SNEC, Electrix, WFES, WETEX and many others.
- Any time we are open for factory visits and provide trainings during visits as well as online by internet means



## Leading in Manufacturing ●●●

AE Solar focuses on the manufacturing of photovoltaic modules and selects only the highest quality materials and components. This, together with a world-leading automated production line enables us to offer a high-quality product at competitive price. Our German engineers are engaged to supervise the production process, testing and ensure each module, from soldering to packaging, meets the highest world standards.



## Leading in Manufacturing ●●●

PV Solar modules manufacturer headquartered in Königsbrunn, Bavaria, Germany;

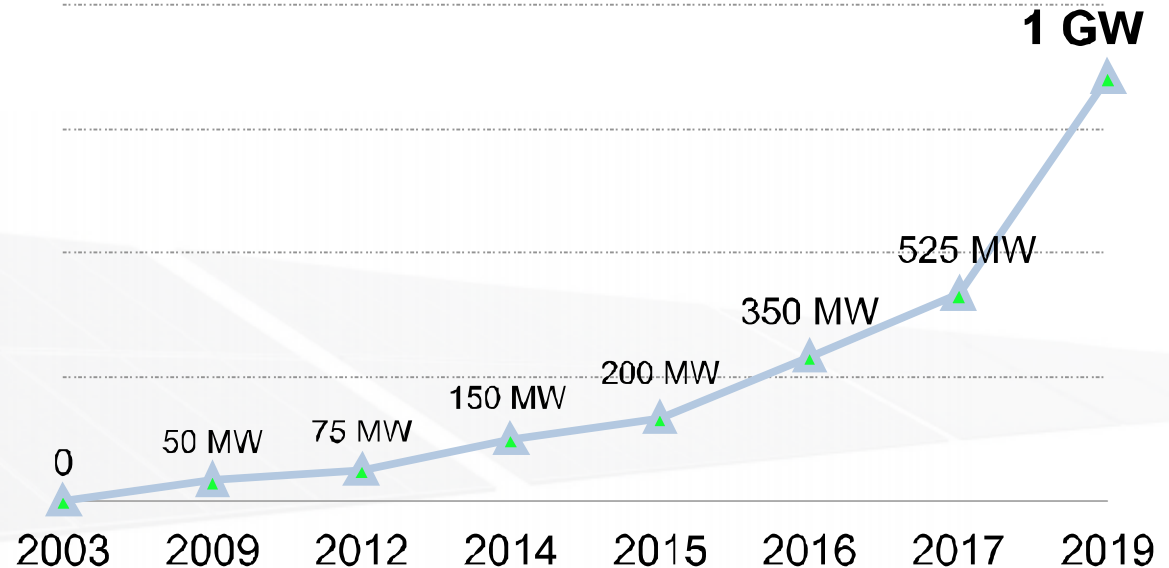
16 years in the market of supply and installation;

**10 years in manufacturing with capacity of 525 MW located in China and 500 MW located in Georgia;**

**Total manufacturing capacity reached over 1 GW**

7 years in solution and equipment providing for setting up of PV Solar Module Manufacturing Factories.

### AE Solar Global Manufacturing



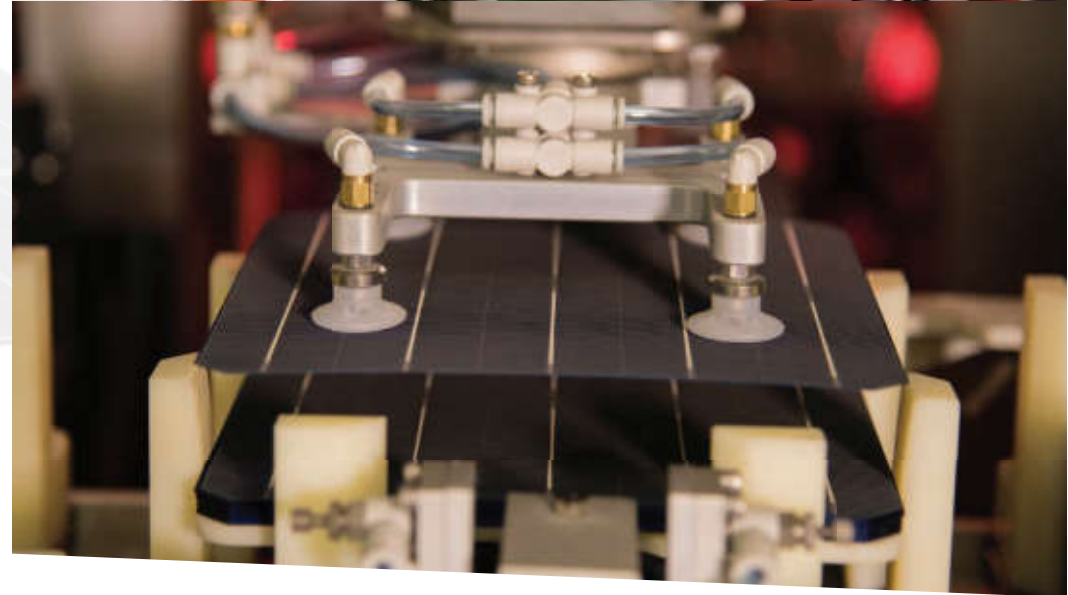
## Leading in Manufacturing ●●●

2009 AE Solar launched manufacturing in China. After several upgrades and modernization now it is fully automated PV modules manufacturing.

Capacity: 525 MW per year.

Total area: 45 000 sq m.

Production lines area: 22 000 sq m.



## Leading in Manufacturing ●●●

May 21<sup>st</sup> 2019 AE Solar launched new fully automated PV modules manufacturing in Georgia, Europe.

Capacity: 500 MW per year (the biggest in Europe).

Total area: 16 000 sq m.

Production lines area: 10 000 sq m.

Access by land to Europe and Asia.

Located near Poti Black Sea port.

Preferences in trade with EU, USA, India and others.



## Stability

Since 2003 AE Solar provides superior services to the clients and we are proud that in 2019 we have reached more than 3200 successful installations and commissioning of solar projects.

We are convinced that providing world-class, outstanding, efficient, professional services and exceptional quality products are crucial to enhance customer satisfaction and loyalty, that is very important to strengthen the relationships, customers and attract new ones.





## Durability

AE Solar commits to providing only the best quality for customers. Therefore, 100% testing ratio for visual inspection, EL testing, pressure testing, mechanical load testing and age testing ensure that AE Solar photovoltaic modules operate safely and smoothly for at least 30 years with the product warranty of 12 years. Hence, guaranteeing a strong and stable return on investment for investors.



## Insured Warranty



We provide customers with a liability insurance from a world-renowned insurance company to ensure your PV investment is secured.

# Reliability ●●●

The best way to verify photovoltaic modules 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 stresses as they ultimately affect the power plant's performance and investment IRR.

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.

**PID**  
resistant

resistant

resistant

resistant

AE Solar is qualified by several international certification authorities



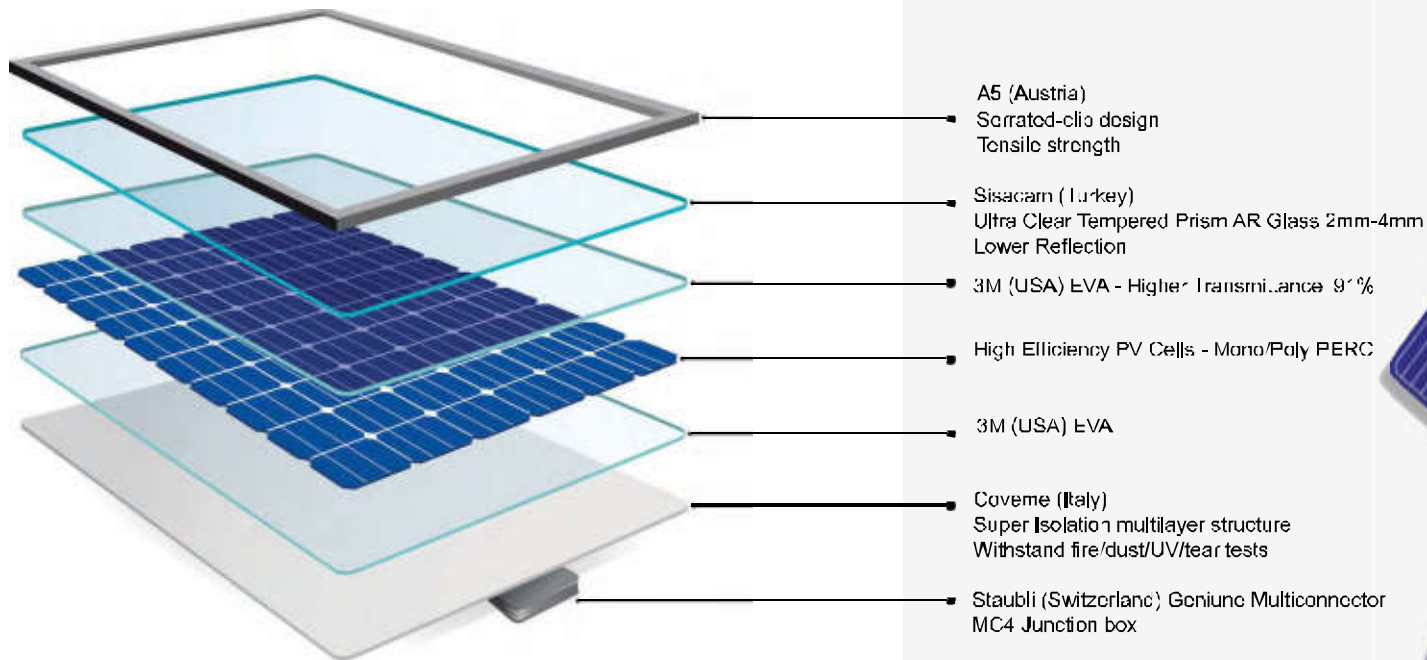




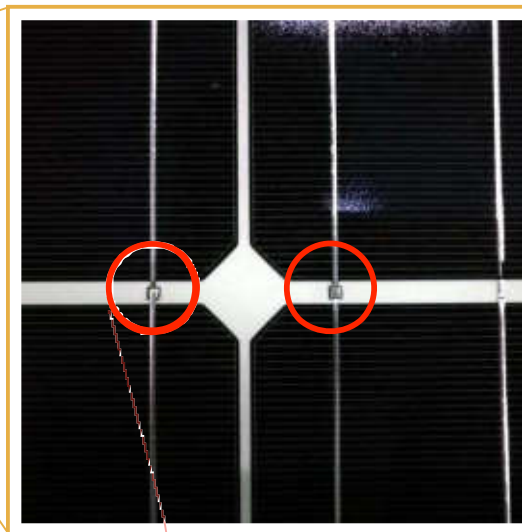



## Superior Materials

AE Solar guarantees high-quality and best performance of photovoltaic modules using only superior raw materials and components from leading suppliers.



# AE Smart Hot-Spot Free Module



Bypass Diodes

The Hot-Spot Free Modules developed by AE Solar use *bypass diodes* to eliminate the development of hot-spots and thus the damages and risks associated.

The temperature of Hot-Spot cells within AE Smart Hot-Spot Free Modules does not exceed 85°C. This temperature management eliminates material hazard, the safety of the module and its surroundings.

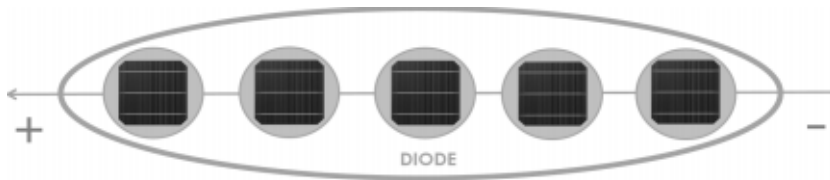
Available from 350W to 385W range, the AE Smart Hot-Spot Free Modules offer up to 30% more power output compared to standard PV Modules thanks to their improved efficiency.

This added efficiency translates into less modules needed and less space required for installation.

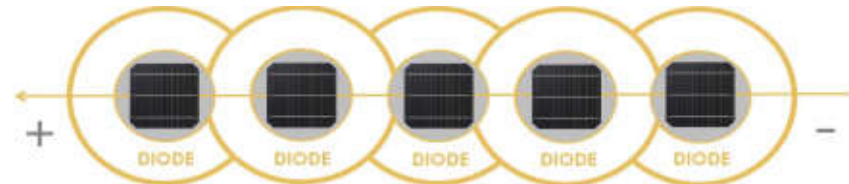
Space Saving for PV plants by using Smart Modules compared to standard "non smart" modules  
 Temperature of cells does not exceed operating temperature of PV modules  
 No reduction of PV module stability and no fire risk from hot-spots.

# How it works

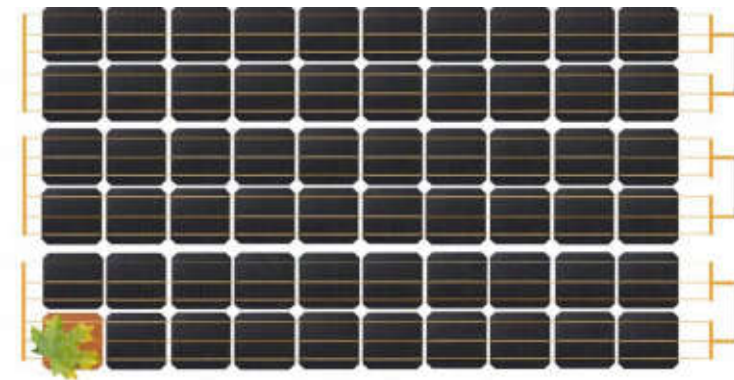
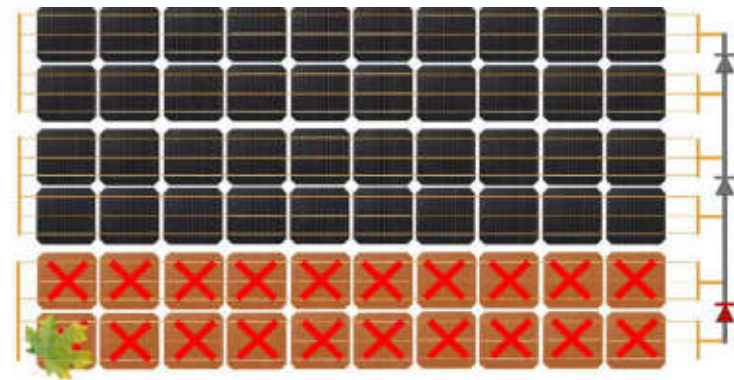
Standard Module



AE Smart Hot-Spot Free Module

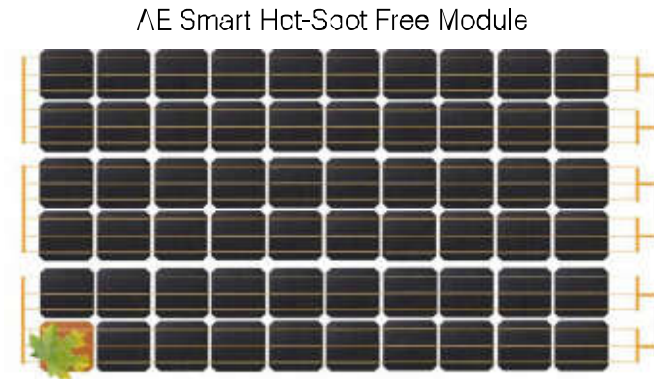
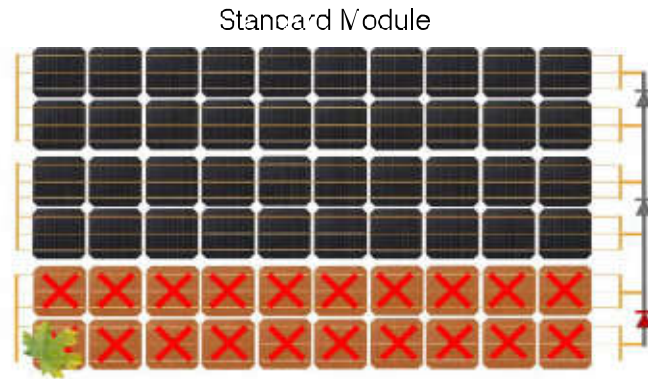


HOT-SPOT FREE technology protects each cell by an *individual bypass diode*.



In a standard module, the impact of shading on a single cell affects a whole string, while an AE SOLAR SMART MODULE with HOT-SPOT FREE technology loses the output of only one single cell during the shading.

# Higher efficiency added value



Shading In % of a single cell	0 %	10 %	20 %	30 %	40 %	50 %	100 %
Output from AE Smart Hot-Spot Free Module	100 %	98 %	96 %	96 %	96 %	96 %	96 %
Output from Standard Module	100 %	98 %	91 %	83 %	73 %	65 %	65 %
Additional efficiency in Power Generation	0	0	5 %	13 %	23 %	31 %	31 %

# Higher efficiency added value

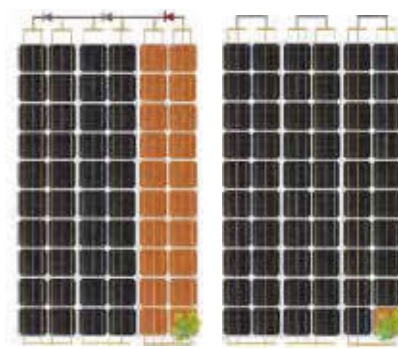
**Shades**

One Cell in One String

One Cell in Two Different Strings

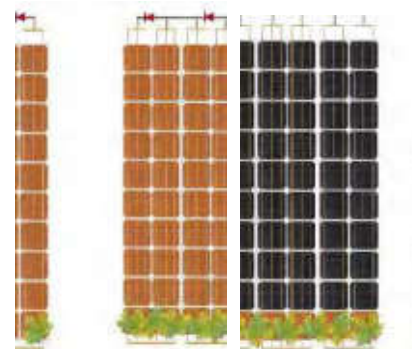
Row of Cells Across Different Strings

**Illustration**



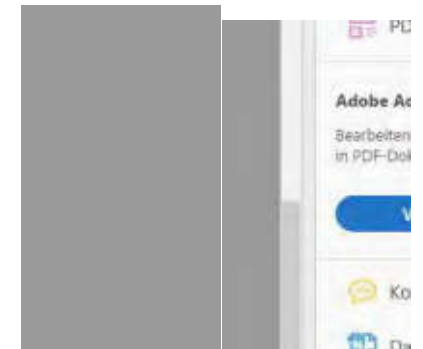
Standard

Hot-Spot Free



Standard

Hot-Spot Free



Standard

Hot-Spot Free

**Output from AE Smart Hot-Spot Free Module**

95 %

93 %

83 %

**Output from Standard Module**

64 %

38 %

1 %

**Additional efficiency in Power Generation**

**31 %**

**55 %**

**82 %**

AE SOLAR SMART MODULE with HOT-SPOT FREE technology has a lower operating temperature, which not only eliminates a potential cause for back sheet degradation, but also prevents damage to silicon-based cells.

Enhanced lifetime of AE SOLAR SMART MODULES with HOT-SPOT FREE technology is up to 25 years over standard warranty term.



## Awards ● ● ●



# Global references



