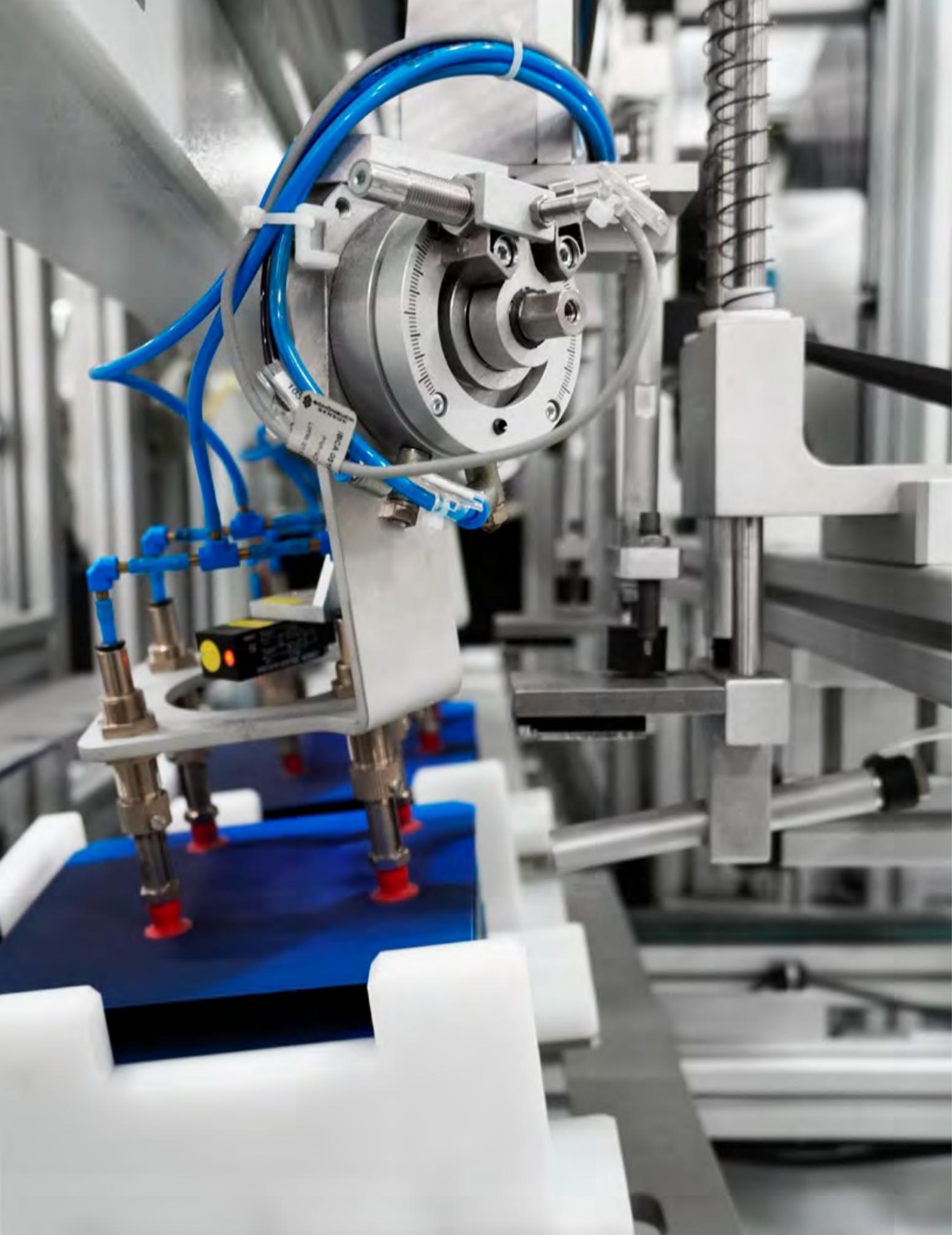


**SOLARTECH**  
UNIVERSAL

American Premium  
**Solar Panels**

| Powering the World Together





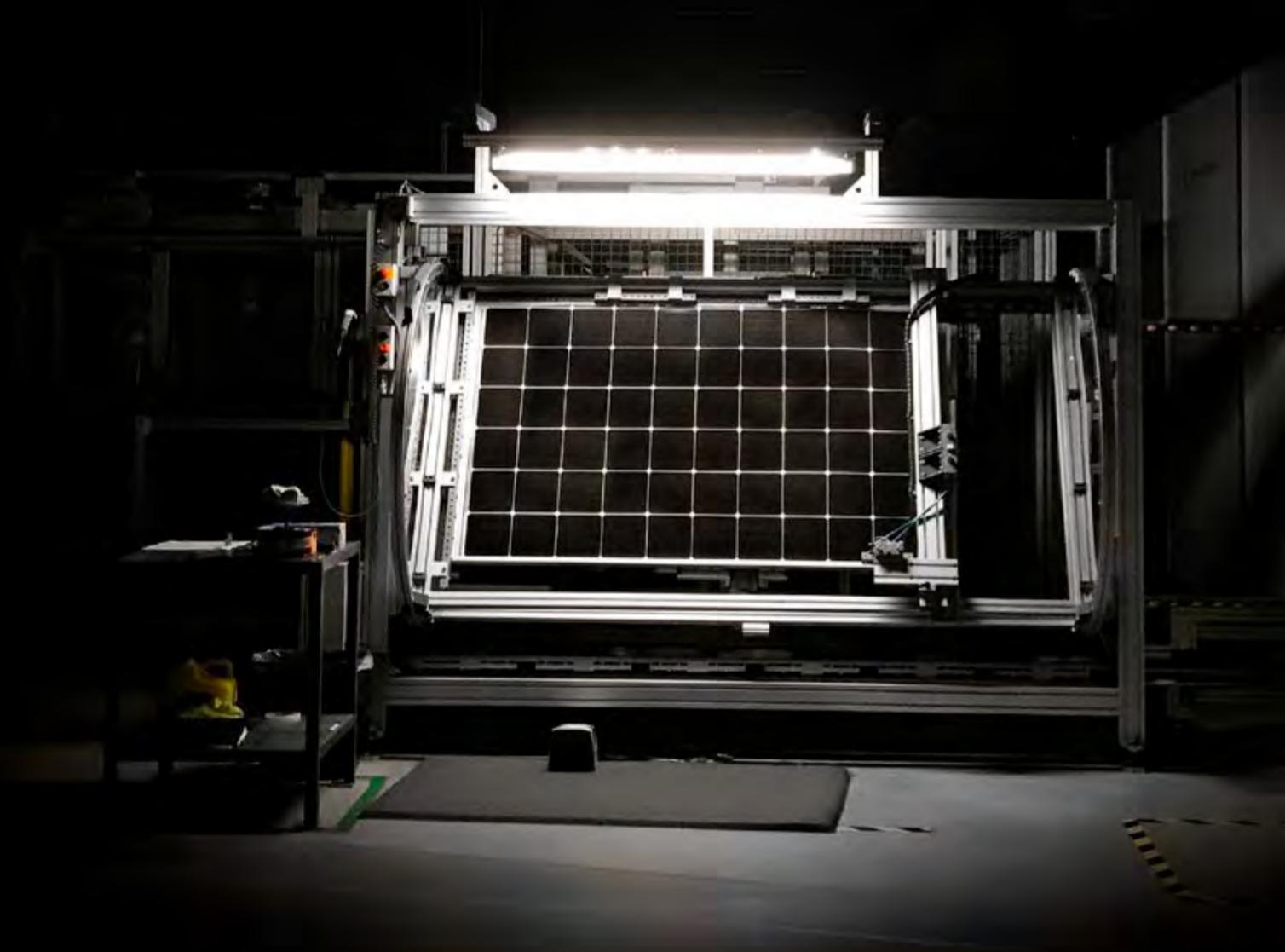
# Contents

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# Who is SolarTech Universal?

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Started in 2012, SolarTech Universal was built from the ground up into a state-of-the-art solar manufacturing plant located in Florida, USA. Within its walls is a team with the robust set of skills and experience required to realize the vision of becoming a renewable energy leader.



# Powering the World Together

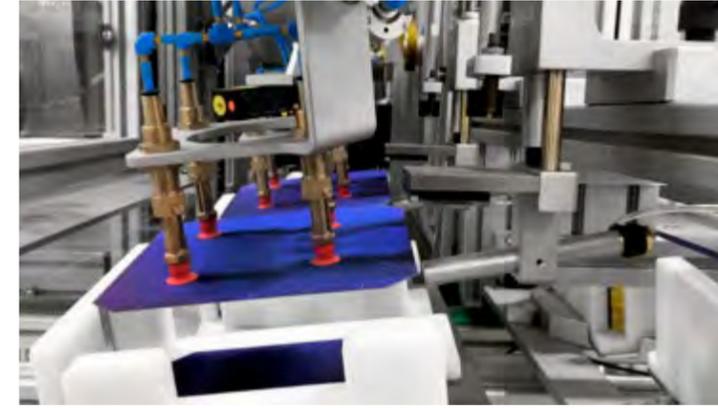
Through the power of renewable energy, we have the ability to create a better future for the next generation, that has yet to experience it. With solar, we can deliver on our mission of bringing clean, affordable renewable energy to the world. We are delivering a greener tomorrow.

We are Powering The World Together.



## Manufacturing

It takes a highly specialized team to create a high-performance solar module. We have applied our collective knowledge to bring together advanced robotics within an ISO 9001 certified facility and have the experience to deliver on this promise. This is SolarTech Universal.



## Quality

SolarTech chooses to source many of our materials from domestic partners, providing a quality that exceeds industry standards. From glass and backsheet to everything inside of our panels, each piece of material was handpicked to produce the absolute best solar panels, giving our customers the quality they deserve. That's why each SolarTech Universal, EPIQ, solar module includes an industry-leading 30 year performance warranty.



## Technology

SolarTech Universal utilizes a world-renowned proprietary technology from Switzerland called SmartWire Connection Technology. SmartWire Connection Technology (SWCT®) is a revolutionary cell connection process for solar module manufacturing. Standard busbars are replaced by 18 micro-wires that gather energy with greater efficiency and strengthen the overall durability of each cell. SWCT®'s superior performance results in advanced module efficiency while negative effects are significantly reduced such as hot spots, micro cracks and cell shading. It's truly the world's most advanced cell connection technology.

The world's best cell connection technology is built into every solar panel we manufacture. Through the use of SmartWire Connection Technology and PERC or HJT cells, we are able to build a solar panel that delivers on high-performance and superior results.



**EPIQ**<sup>TM</sup>  
NEXT-GENERATION SOLAR PANELS

SmartWire  
Connection  
Technology

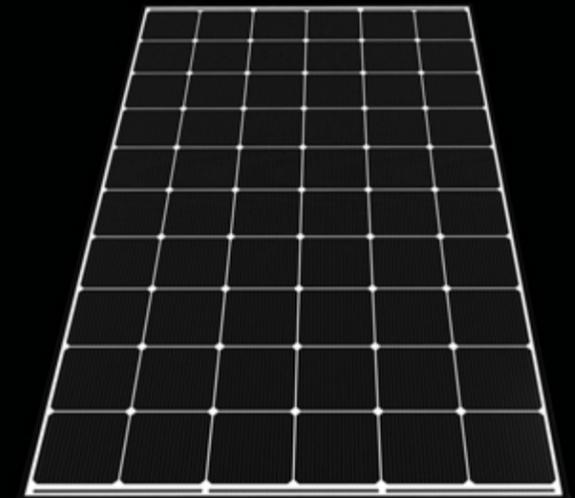
Welcome to the **American Premium**

# The Product Line

EPIQ Solar Panels are produced with the highest quality materials within the industry and feature an exclusive technology called SmartWire Connection Technology. The 60-cell design includes PERC and Heterojunction Cell Technology that allows for higher efficiency, greater power generation and a premium design from cell-to-cell.



up to  
**325W**  
of Power



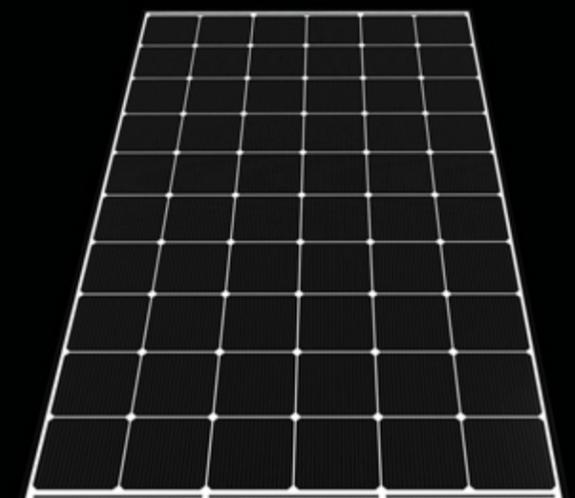
60 Cell - Black on White - HJT Panel

up to  
**19.9%**  
Panel Efficiency



60 Cell - Black on Black - PERC Panel

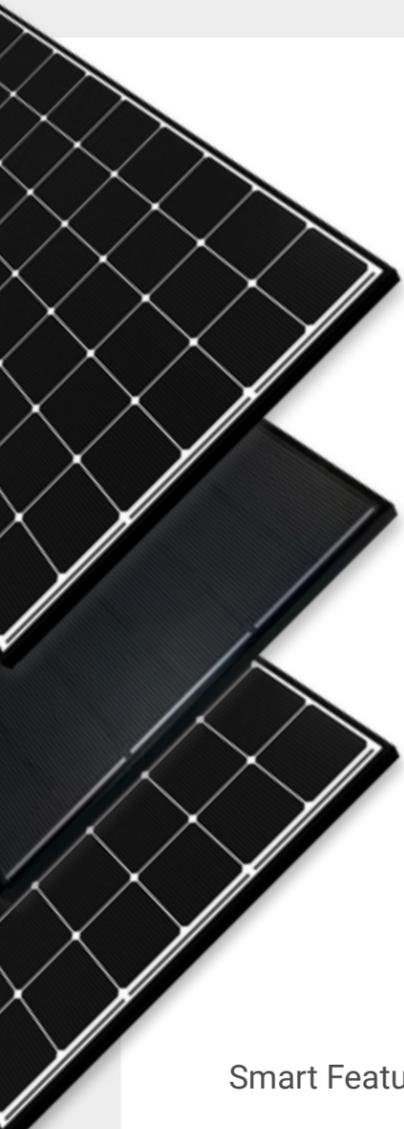
Industry Leading  
**30**  
Year Warranty



60 Cell - Black on White - PERC Panel

# Technical Data

## 60 Cell Solar Modules With Smartwire Connection Technology



SmartWire Connection Technology lessens the effects of micro-fractures and shading

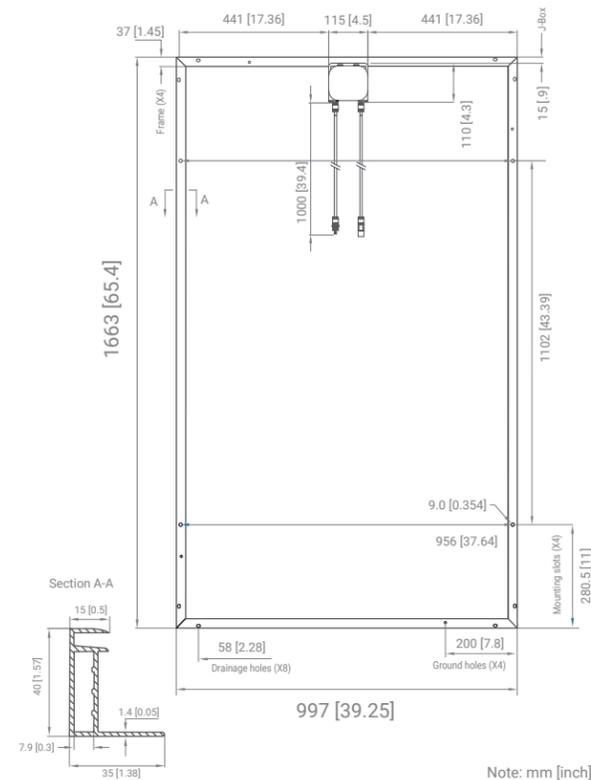
Bi-facial PERC Cells

Bi-facial Heterojunction Cells

### Warranties



### Certifications



### Electrical Characteristics STC

	PERC - Black on Black - 315W	PERC - Black on White - 315W	HJT - Black on White - 325W
Average Power	315W	315W	325W
Max Module Efficiency (%)	19.3%	19.3%	19.9%
Voltage at Max power (Vmp)	34.4V	34.2V	37.6V
Current at Max power (Imp)	9.2A	9.2A	8.7A
Open Circuit Voltage (Voc)	41.1V	40.9V	44.7V
Short Circuit Current (Isc)	9.7A	9.8A	9.3A
Operating Module Temperature	-40°C - 85°C		
Maximum System Voltage	1000V DC (IEC + UL)		
Maximum Series Fuse Rating	20A		
Power Sorting	-0/+5W		

STC: Irradiance 1000 W/m<sup>2</sup>, module temperature 25 °C, AM=1.5; Best in Class AAA solar simulator (IEC 60904-9) used, power measurement uncertainty is within +/- 3%

### NOTC

	PERC - Black on Black - 315W	PERC - Black on White - 315W	HJT - Black on White - 325W
Max. Power at NOCT (Pmax)	226.2W	230.2W	248.8W
Voltage Max. Power (Vmp)	31.3V	31.4V	35.5V
Current Max. Power (Imp)	7.2A	7.3A	7.0A
Open Circuit Voltage (Voc)*	38.0V	38.1V	42.5V
Short Circuit Current (Isc)*	7.7A	7.8A	7.5A

NOCT: 800 W/m<sup>2</sup> Irradiance, 20 °C ambient temperature, AM=1.5, wind speed 1 m/s. Values are based on RETC certified results from a light-soaked module.

### CEC Testing Results

	PERC - Black on Black - 315W	PERC - Black on White - 315W	HJT - Black on White - 325W
Maximum Power at PTC	292.3W	292.3W	308.75W
PTC Percentage of STC	92.9%	92.9%	95%

### Shipping Configurations

	GP	HC	Trailer
Container Length	20'	40'	53'
Pallets Per Container	12	24	36
Modules Per Pallet	20	23	23
Modules Per Container	240	552	828

### Certifications & Warranty

Safety	UL1703
Modules Fire Performance	Type 2 (UL1703)
Product Warranty	15 Years
Performance Warranty of Pmax	30 Years Linear*

1st year 97%, 30th year 80%. Details of these warranties can be found at [www.solartechuniversal.com](http://www.solartechuniversal.com), under "Downloads"

### Temperature Characteristics

	PERC - Black on Black - 315W	PERC - Black on White - 315W	HJT - Black on White - 325W
Nominal Operating Cell Temp. (NOCT)	45.02°C	45.3°C	46.06°C
Temperature Coefficient of Pmax	-0.366%/°C	-0.364%/°C	-0.25%/°C
Temperature Coefficient of Voc	-0.280%/°C	-0.281%/°C	-0.237%/°C
Temperature Coefficient of Isc	+0.043%/°C	+0.041%/°C	+0.035%/°C

### Mechanical Characteristics

Laminate Structure	Glass / TPO / Cells / TPO / Backsheet
Weight	Approx. 18 kg [40lbs]
Cell Connection	60 cells (Serial)
Junction Box	IP65/IP67 with 3 Bypass Diodes
Cables Length	1m [39.4 in]
Connectors Type	MC4
Module Dimensions	997 x 1663 x 42mm [39.25 x 65.4 x 1.65]
Encapsulant	(TPO) Hydrophobic
Front Load (Snow)	5400 Pa / 112.8 Psf
Rear Load (Wind)	3800 Pa / 79.4 Psf
Collection Pathways	18 Micro-wires
Glass Thickness	3.2mm [.125] Anti-reflective Tempered Solar Glass (≥94% Transmittance)

### Smart Features



#### Superior Energy Production

Module efficiency up to 19.9% achieved by utilizing the most advanced technology in the solar industry.



#### Advanced PERC Technology

An advanced monocrystalline cell which improves energy production by adding a special layer to capture more sunlight.



#### SmartWire Connection Technology (SWCT®)

The revolutionary process for connecting solar cells that out rivals busbars by spreading the electric current through 18 micro-wires.



#### Exceptional at Low-light Conditions

The round shape of SmartWire Connection Technology reduces the wire shading by 25% and introduces a light trapping effect.



#### Advanced HJT Technology

This cell combines the advantages of N-type crystalline silicon with the excellent absorption and passivation of amorphous silicon.



#### Remarkable Connection Durability

SWCT® acts as a protective layer for the solar cell, ensuring reliable contact points for decades of consistent performance.

A close-up photograph of a person's hand holding a blue solar cell. The solar cell has a fine grid pattern of lines on its surface. The background is a soft, out-of-focus greenish-grey.

## QUALITY OF MATERIALS

Quality in, quality out. That's why at SolarTech Universal, we hand-pick every piece of material that is used for EPIQ allowing for a high performance module with quality that exceeds industry standards.

## Quality of Materials



### Water Resistant Backsheet

The EPIQ backsheet is inherently water repellent. The composite laminate consists of polyethylene terephthalate (PET), aluminum, and polyolefin (PE) layers. The PET and PE exterior layers provide exceptional water repulsion, while the interior aluminum layer offers superior rigidity and durability, providing exceptional longevity for the module. The end result are modules that will not de-laminate and remain optically clear, providing a long lasting, high performance energy yield.



### Advanced TPO Encapsulant

The module is prepared for lamination with the addition of two sheets of encapsulant. EPIQ modules use a thermoplastic polyolefin (TPO) encapsulation material which is vastly superior to ethyl vinyl acetate (EVA) used in 80% of modules on the market today. TPO is a naturally water repellent material which is not subject to discoloration caused by ultraviolet exposure. EVA is a natural water absorber which experiences yellowing when exposed to UV.



### Tempered Glass

Our 3.2 mm fully tempered glass protects the solar cells from harsh environmental conditions. The outside surface has an anti-reflective coating which allows for an industry leading 93.8% light transmittance for a perfect synergy of performance and longevity.



## Quality of Materials



### Anodized Aluminum Frame

EPIQ's rigid 40mm, extruded 6063, T-5 hardened, anodized, aluminum frame is mechanically compressed with extruded aluminum corner keys. No screws mean no worries. Tested beyond standards for aggressive wind and snow loads, EPIQ can withstand at minimum 3,800 Pa uplift winds and 5,400 Pa snow loads.



### Dual Rated IP 65/67 Junction Box

The Tyco Electronic, Z-Rail, junction box is dual rated IP 65/67. This dust tight junction box is certified to withstand wind driven water up to 12.5L per minute and water submersion up to 1m. Outfitted with three bypass diodes, negative effects of shading and hot-spots are mitigated.



Wind Driven Water  
up to 12.5L x min



Dust Proof



Up to 1M water  
submersion



# Certifications you've come to expect & warranties that exceed industry standards

We go above and beyond to make sure our manufacturing is industry leading in every way. We're TUV and UL certified as well as ISO 9001 to the 2015 latest standards. We are constantly looking at new certifications that we can find so we're always ahead of the curve.



# Efficiency and durability that last a lifetime

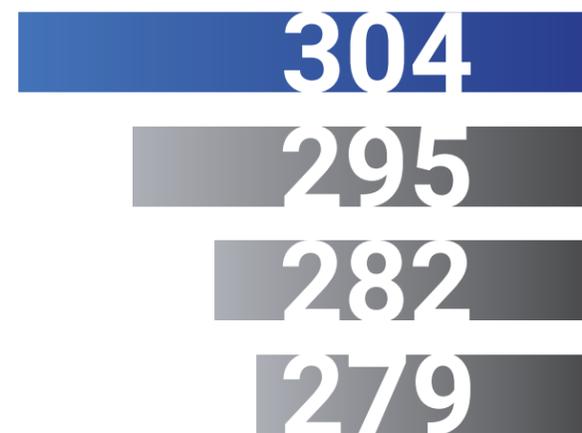
EPIQ PV Modules are backed by our industry leading 30-year performance warranty. Produced from high quality materials and an automated manufacturing process, EPIQ Modules deliver an unrivaled performance.



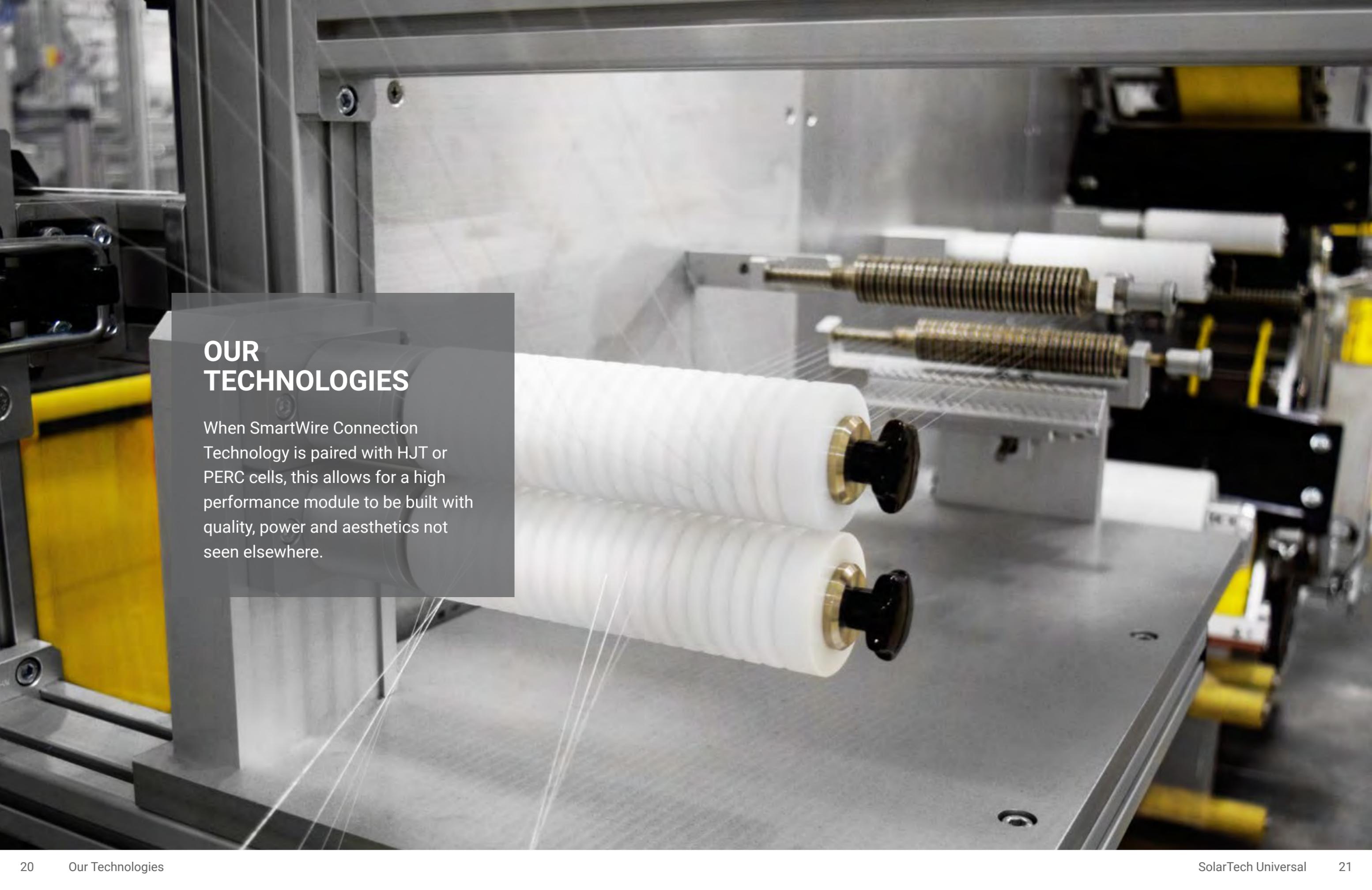
# #1 Panels as listed by the CEC

SolarTech's panels are listed as the #1 solar panel throughout every power class, as expressed by the California Energy Commission (CEC).

The CEC (California Energy Commission) puts panels of multiple manufacturers to test in real world conditions to determine the most accurate production that you would see if you installed it as part of your residential solar system. After the test a PTC value is given to show the real world expected production.



Values shown are based on testing of 60 cell, 320W panels



## OUR TECHNOLOGIES

When SmartWire Connection Technology is paired with HJT or PERC cells, this allows for a high performance module to be built with quality, power and aesthetics not seen elsewhere.

# SmartWire Connection Technology

SmartWire Connection Technology is a revolutionary cell connection technique, that replaces standard busbars with 18 micro-wires. These micro-wires gather energy more efficiently and lend strength to the cell. This results in highly durable modules and greater project savings.



Mitigates power loss  
from micro-cracks



Less cell shading,  
greater power generation

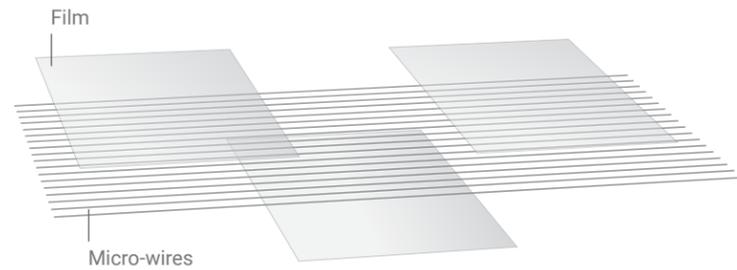


Superior cell  
connection technology

# Benefits

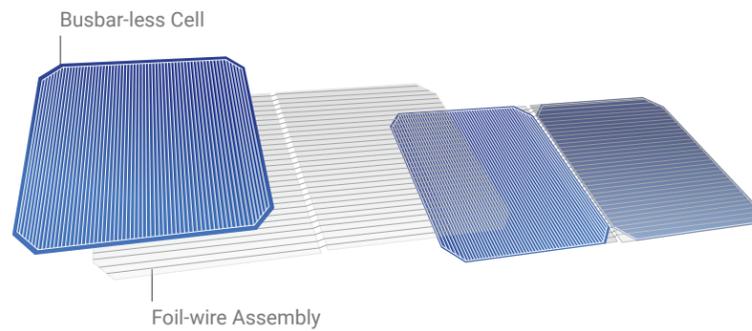
## Foil-Wire Electrical Conductor

The 18 micro-wires are robotically positioned in parallel and held in place by a transparent foil in an over/under pattern. This foil-wire assembly (FWA) forms the electrical conductor, designed with surgical precision, to interconnect the solar cells and eliminate the need of busbars.



## Automated Cell Connection

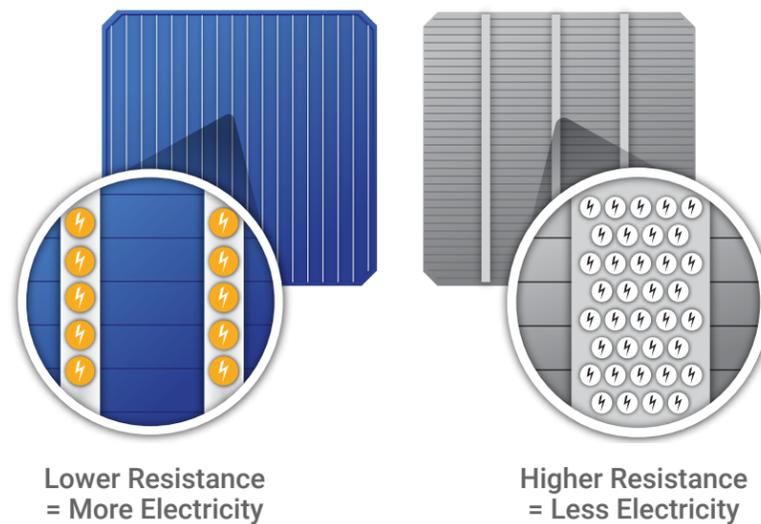
The solar cells are linked robotically with the FWA to form a cell string, eliminating the busbar to cell soldering process. The FWA interconnects the front side of a cell to the back side of the next cell, ensuring the proper connection from cell to cell.



## Advanced Energy Collection

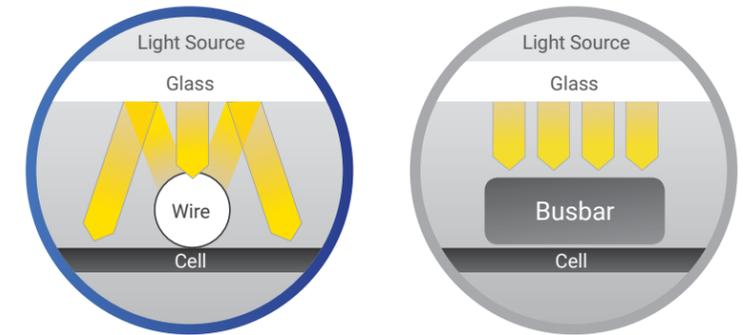
The superior efficiency of SWCT® is driven by 18 micro-wires that form a dense grid of up to 2,660 contact points on the solar cell. This structure allows electrons to travel a shorter distance in order to be collected, thus reducing resistive losses.

The lower resistance enables the extraction of more power from each individual finger, thereby increasing the power density when compared to traditional busbar panels.



## Redirecting Light

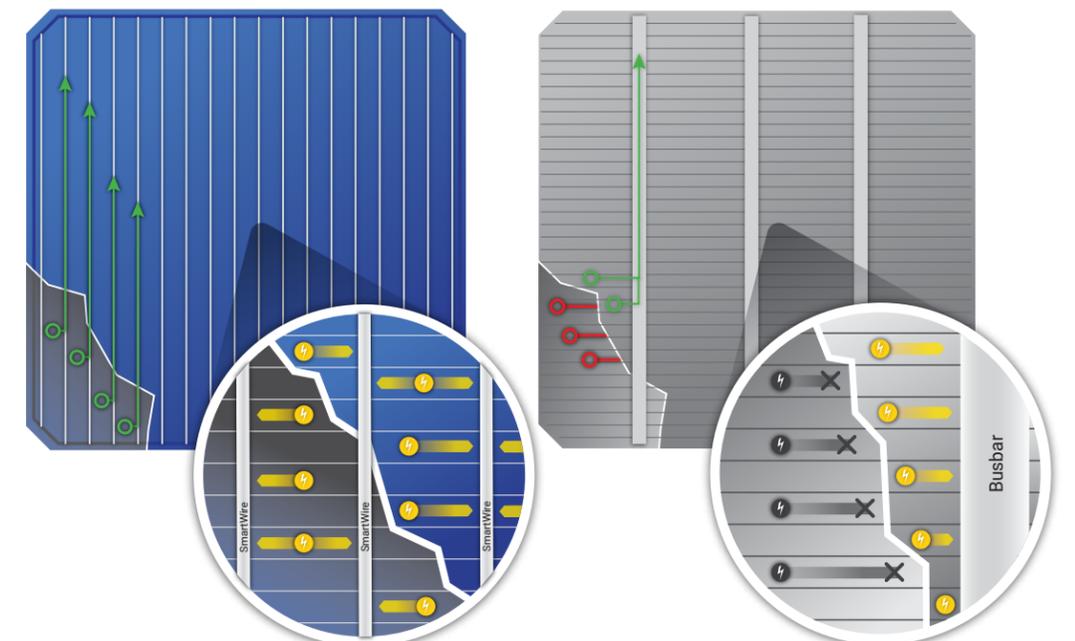
The round shape of the micro-wire introduces a light trapping effect which reduces the shading by 25% compared to busbar technology.



SmartWire  
Connection  
Technology

## Minimizing Micro-Crack Effects

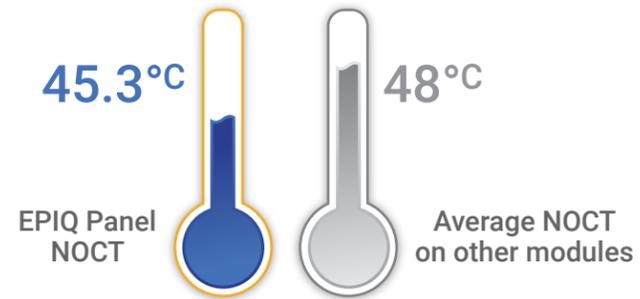
Micro-cracks have a minimum effect on modules with SmartWire, since the FWA acts as a protective layer for the solar cell with the dense grid of up to 2,660 contact points. Even a micro-cracked cell remains contacted, maintaining the energy collection at high levels.



# Performance

## Superior Performance During Sunny Days

Solar module performance is directly related to temperature. As outside temperatures rise, cells heat up, decreasing efficiency. EPIQ modules feature an outstanding Nominal Operating Cell Temperature (NOCT) of 45.3°C utilizing SmartWire Technology.

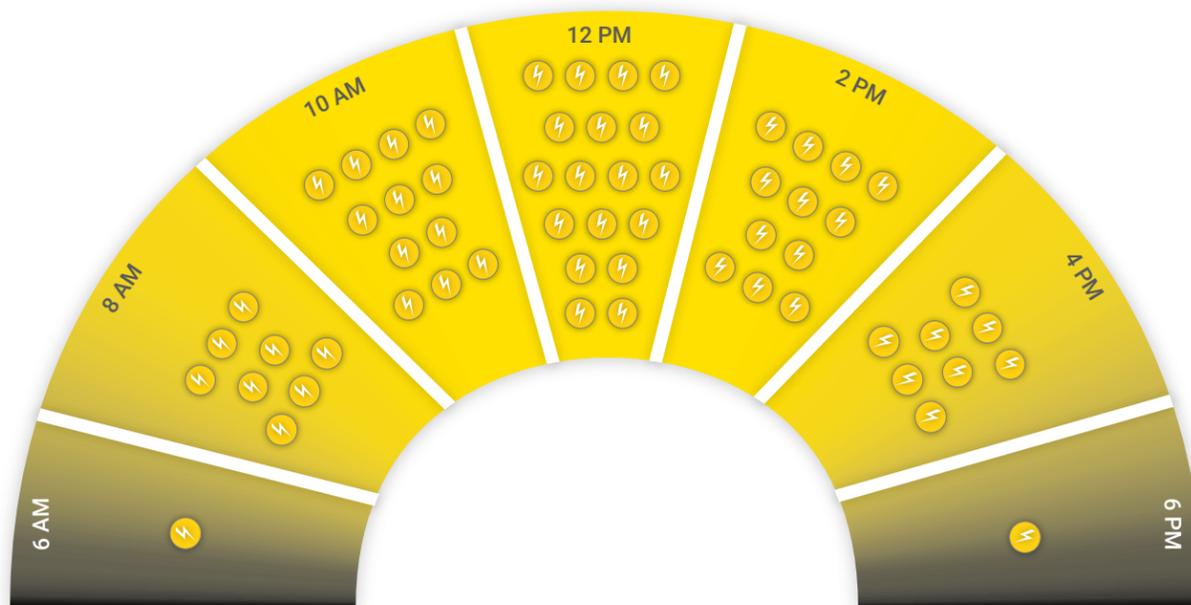


## Excellent Performance in Weak Sunlight

The advanced collection of energy from SmartWire Connection Technology, interacting with the internal reflectivity from monocrystalline PERC and N-Type HJT cells; ensures significant energy performance even during cloudy days.

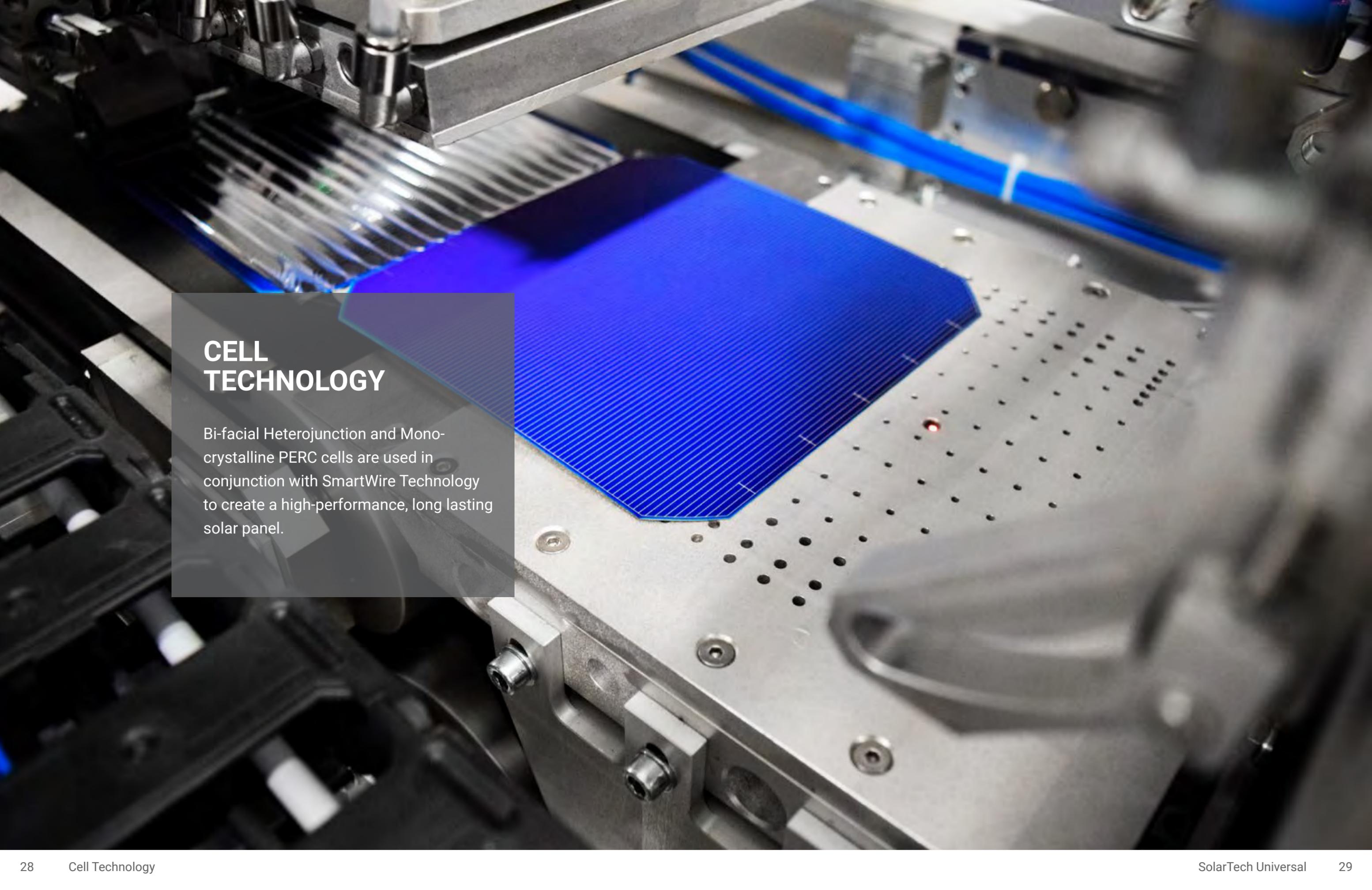
## Generate More Power Throughout The Day

EPIQ modules achieve a higher energy production throughout daytime hours, by combining SmartWire Connection Technology light absorption properties and the inherent advantages of PERC and HJT technologies.



SmartWire  
Connection  
Technology

The world's most advanced cell connection technology



## CELL TECHNOLOGY

Bi-facial Heterojunction and Mono-crystalline PERC cells are used in conjunction with SmartWire Technology to create a high-performance, long lasting solar panel.

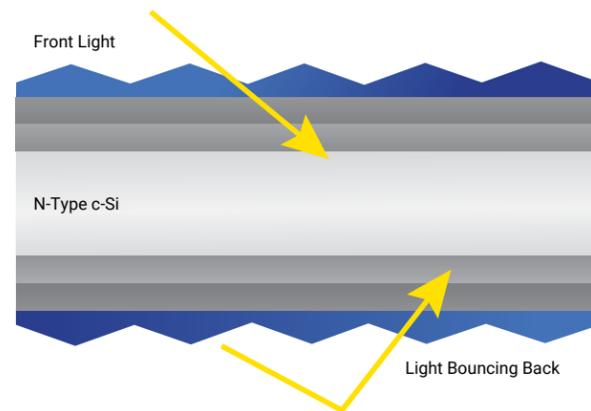
# Heterojunction Cells

## State-of-the-art solar cells with N-type wafers

Heterojunction (HJT) technology is a superior solar cell that generates energy from both sides. This bi-facial cell combines the advantages of N-type crystalline silicon (c-Si) with the excellent absorption and passivation characteristics of amorphous silicon (a-Si:H).

### Advanced bifacial cell designed for increased energy output

A bifacial cell design that generates energy from both sides, capturing and converting more sunlight into power even with a backsheet.



### High performance in all temperatures

This high-performing solar cell allows for excellent power generation in all climates, especially hotter temperatures, throughout the world.

Industry Leading  
**-0.264%/°C**  
Temp. Coefficient

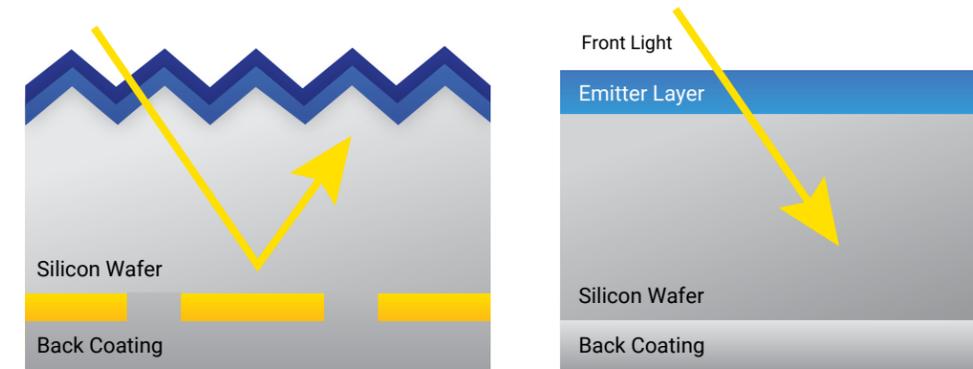
Immune to  
**Light Induced Degradation**

Up to  
**10x Longer Electron Life**  
Compared to P-type

# PERC Cells

## Advanced Monocrystalline cell to capture more energy

Passivated Emitter Rear Contact (PERC) is an advanced monocrystalline cell that captures more energy by adding an extra layer. This special layer creates an efficient internal reflectivity, while preventing electrons from recombining and blocking the free flow of energy.



Light is internally reflected creating an additional opportunity to generate current

Light is absorbed by the back coating, building up internal heat in the panel.

Top Performer in  
**High Temperatures**

Excellent Performance Under  
**Low Light Conditions**





## PRODUCTION LINE

Our State-of-the-art production line includes various inspection points, highly advanced robotics and is certified to the latest standards of ISO 9001.

## Production Line

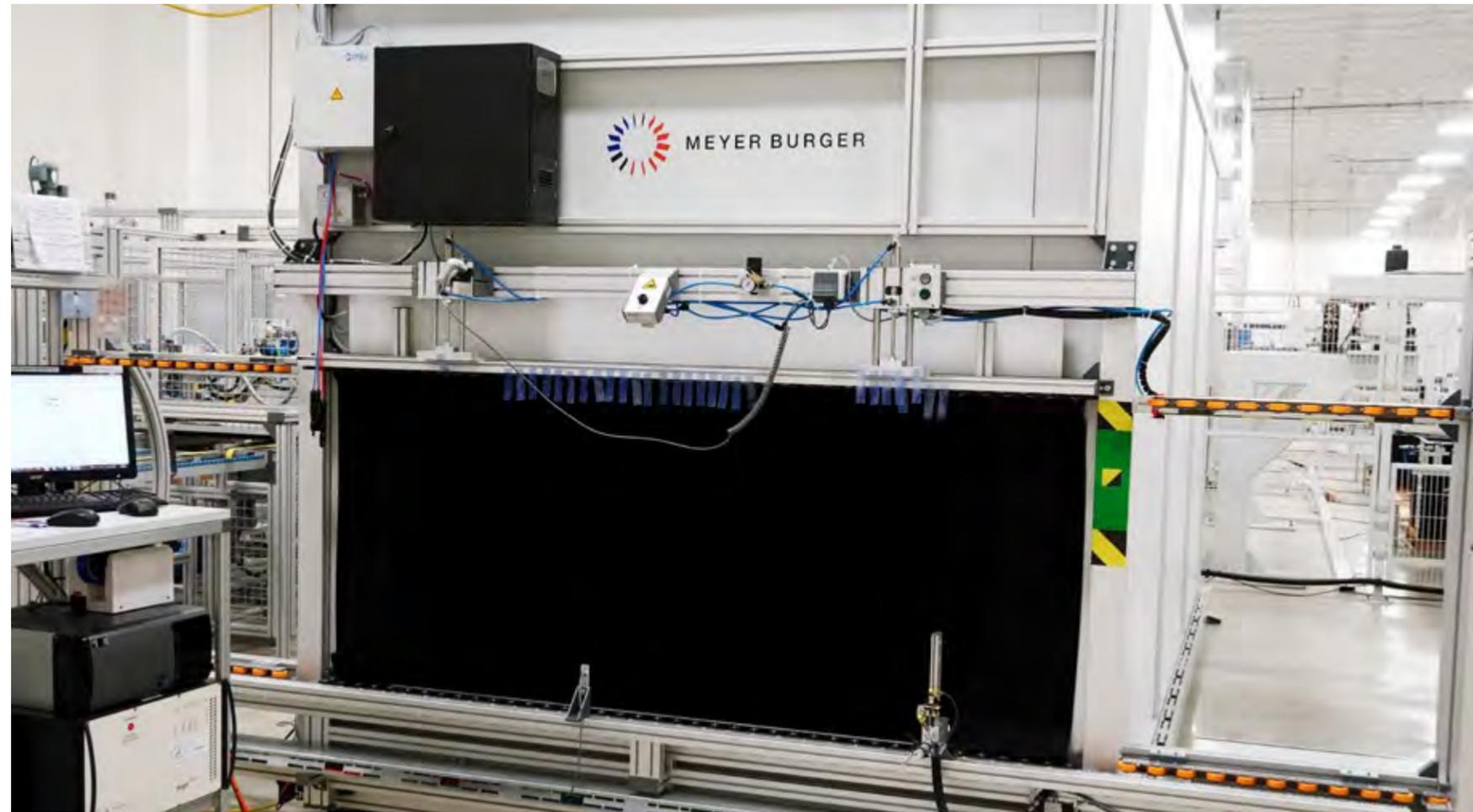
### Highest Rated Solar Panel Flasher in the Industry

*The National Solar UL / TUV Testing Association*

# A+A+A+

Within our state-of-the-art facility, SolarTech Universal's panels are tested by only the highest standards within the industry. Our Pasan panel flasher achieved an A+ rating with the UL and TUV administration for being the most accurate panel flasher and for providing the most efficient testing measures in the world.

Consistency and efficiency is critical to our mission. Our Pasan solar flasher certifies each module at the end of its production run ensuring we have an accurate measurement. Compared to the industry standards, our Pasan flasher is 20% more efficient than the minimum rate of .88%. Our panels will come out of manufacturing with peak performance and quality every time, while producing more kilowatt hours and increasing the customer's economic benefits.



### 80% Automated Manufacturing Process

### Meticulous Inspection Points Along The Build Process



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