SUNPOWER®

OASIS®

Product Overview

Summer 2017

SunPower®
Solutions Overview

SUNPOWER

SunPower has over 30 years of solar industry experience

- Founded in 1985, Silicon Valley
- Traded on NASDAQ (SPWR); Total majority investor
- Innovation platform: > 750 patents
- $2.6B revenue, $163M Adjusted EBITDA in 2016
- Global footprint, homes to power plants
- > 7,000 employees & 1,300 dealer resellers
- 7 factories; 1.4GW/year solar cell capacity
- > 7 GW solar deployed worldwide across all sectors

Total is committed to our customers' long-term success

TOTAL + SUNPOWER®

- Total is one of the largest companies in the world.
- Total intends to triple cell manufacturing production capacity over the next five years in order to supply the development of large-scale solar power plants and the installation of residential and commercial systems.[1]
- SunPower's credit support agreement with Total S.A. provides up to $500M by 2018 for current and long-term credit needs.
- Total and SunPower partner for the development and purchase of SunPower® utility-scale projects across the globe.

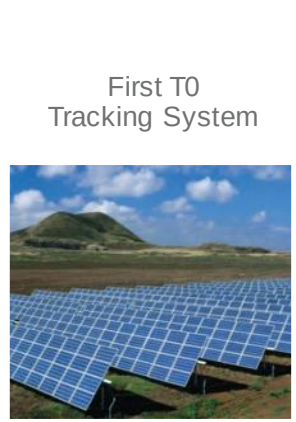
"Our ambition is to have renewables make up 20% **of our portfolio in 20 years' time"**

- Report: Integrating Climate into our Strategy, TOTAL 2016 [2]

1 http://www.total.com/en/commitment/environmental-issues-challenges/climate-change/renewable-energies
2 http://www.total.com/sites/default/files/atoms/files/integrating_climate_into_our_strategy_eng.pdf

A Leader in Solar Power Plant Innovation

Pioneering Power Plant Category Advancements & Largest PV Plants in the World at the Time of Commercial Operation (MWdc)



First T0 Tracking System

1999

10

First 10MW Power Plant

2004

11

T20 Tracker Prefabricated system

2007

14

First MW Scale PV Microgrid w/Storage

2008

18

1st Generation Oasis® Power Plant

First Productized Power Block

2010

37

84

Oasis® C7

2013

315

2nd Generation Oasis® Power Plant

w/ Robotic Cleaning

2014

747

3rd Generation Oasis® Power Plant

Global Scale Power Plants

2017

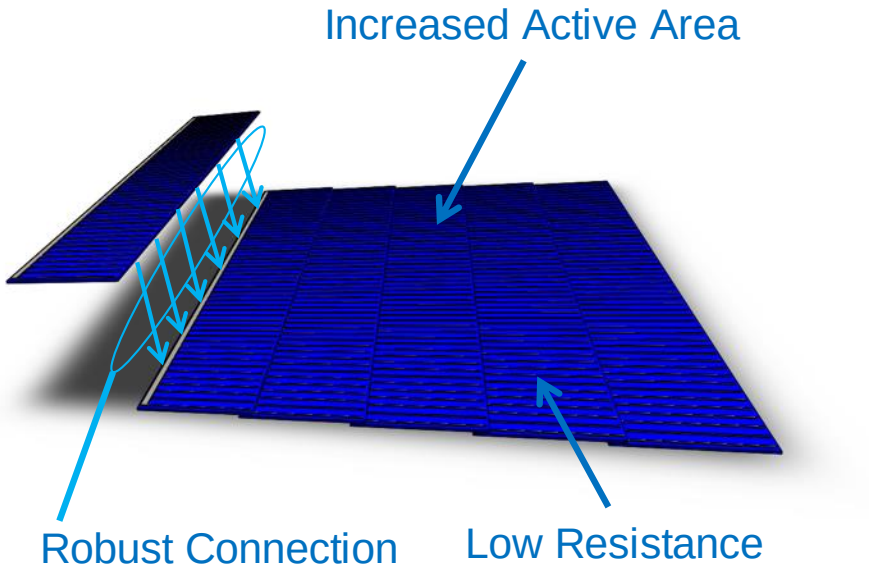
Our broad experience makes us a great product partner

SUNPOWER Historical Business Model

SUNPOWER Solutions Business Model – The Model for the Future

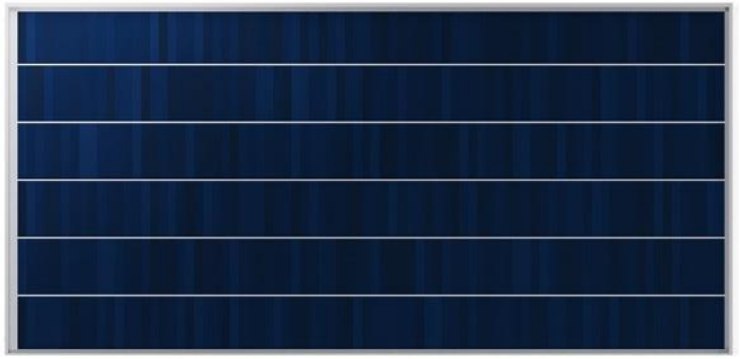
SunPower® PERFORMANCE SERIES
The Solar Module Rewired

SUNPOWER® Performance Series (P-Series)



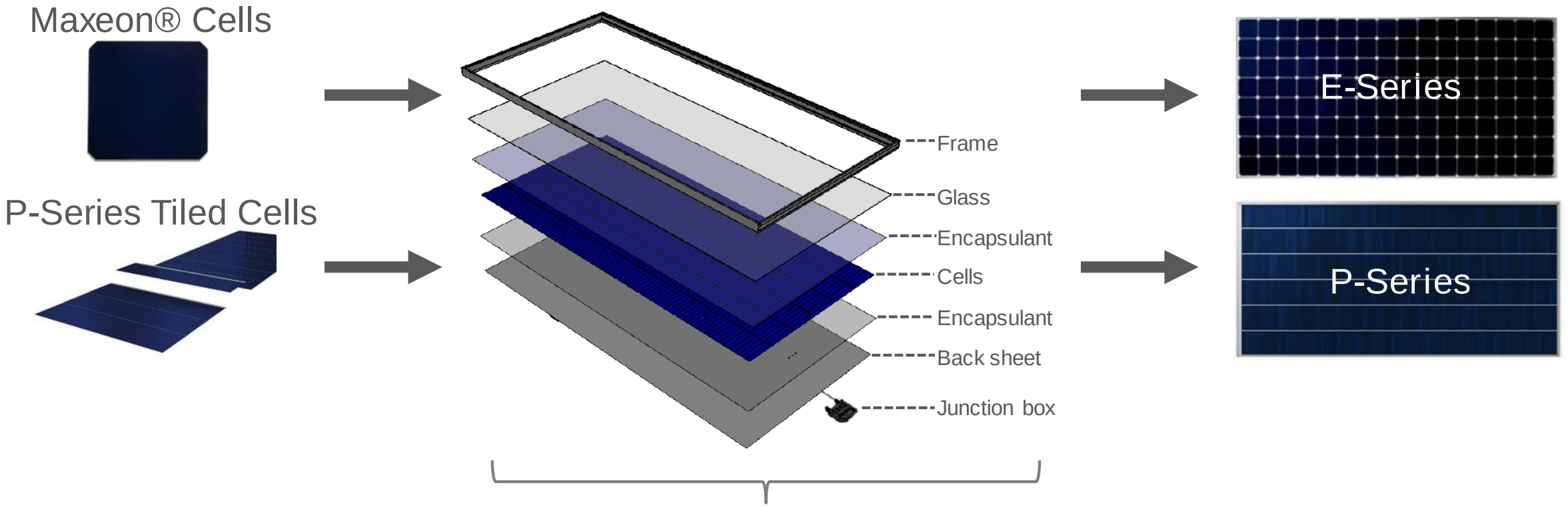
Shingled cells provide flexible and redundant electrical connections

Framed
Monocrystalline
400 W
19.4% eff.



Framed
Multicrystalline
350 W
17.1% eff.

SunPower® Superior Module Package



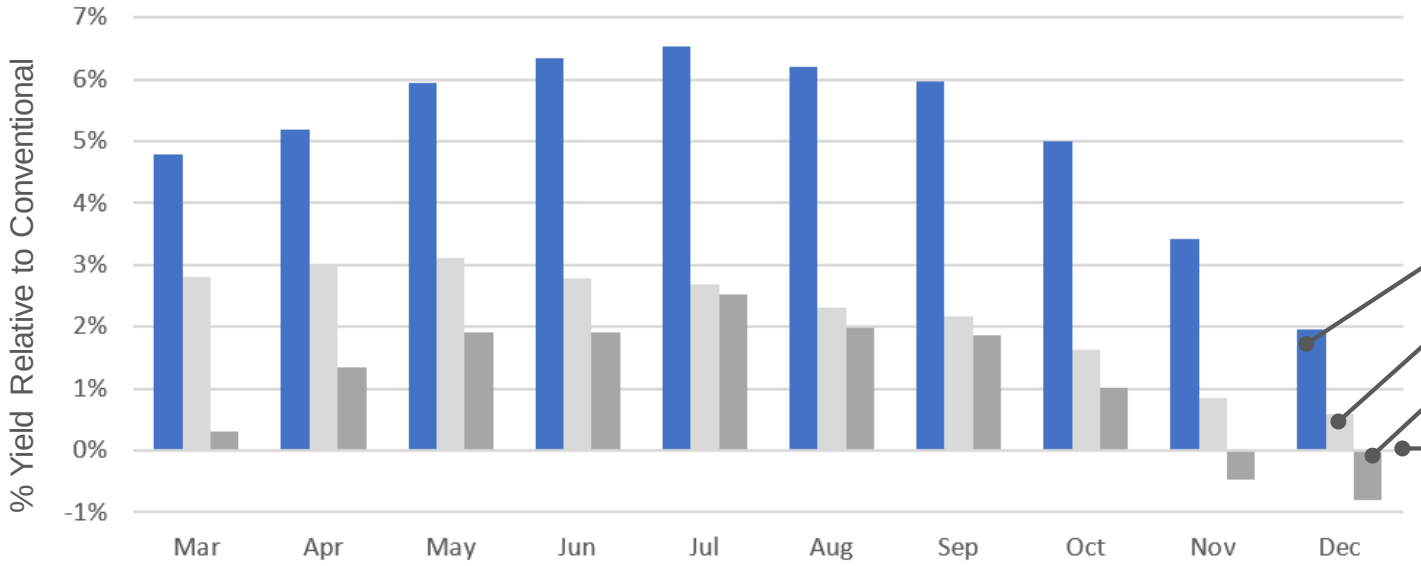
Proven module package, >4 GW deployed

- SunPower takes a holistic design view for its module materials, selecting top quality materials from a select list of extensively qualified partners, delivering world class reliability
- Consistently ranked among the top quality PV module manufacturers worldwide[1]

1. Gilligan, C., et al. 2015 PV Module Customer Insight Survey. IHS Consulting.

Outperforming Competition

- SunPower® operates a power plant with several brands of solar panels in Arizona, a hot and dry desert climate.
- Relative energy production is measured with panels on adjacent trackers in identical conditions.
- SunPower® P-Series panels demonstrate 5-6% more yield due to their superior performance in high temperatures[1].



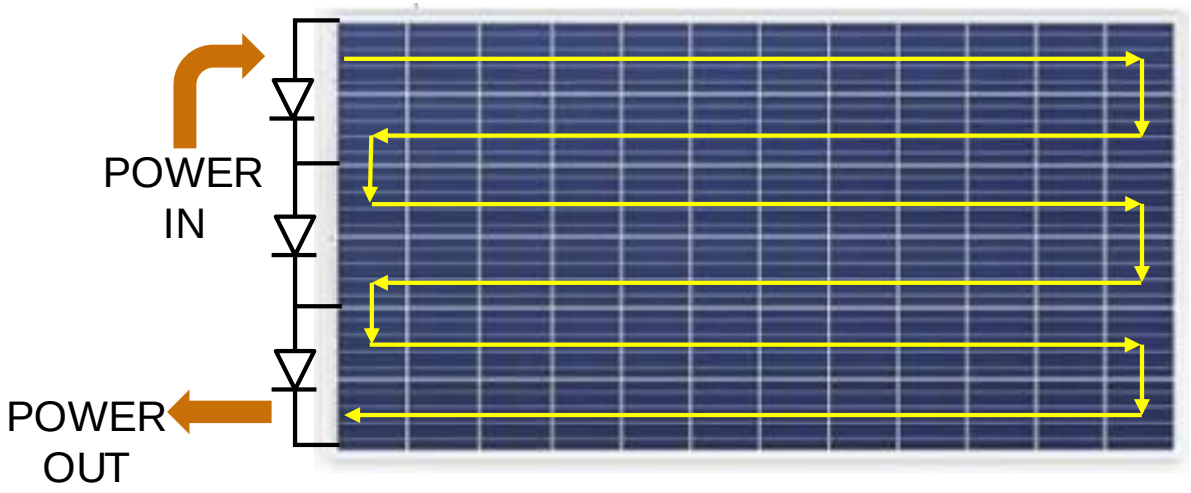
Solar Panel	Energy Yield
SunPower P-Series	+5.5%
Trina Solar	+2.4%
Canadian Solar	+1.4%
SolarWorld	+0%

[1] Zweibaum. "Performance of P-Series installation at TEP – Technical summary." 2017.

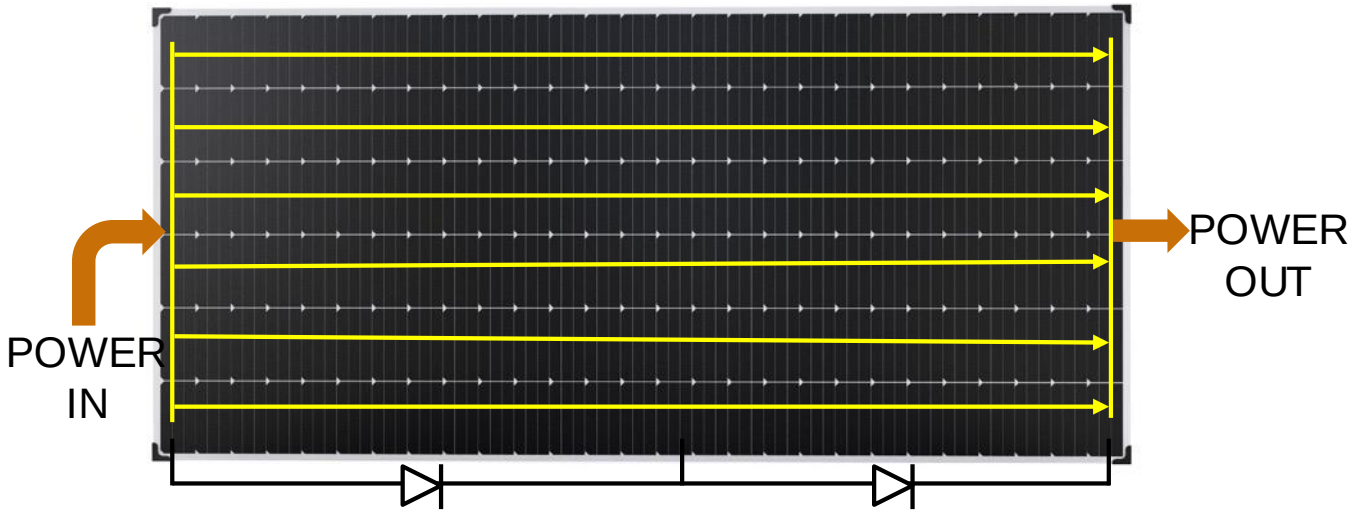
Parallel Circuit Delivers Better Performance

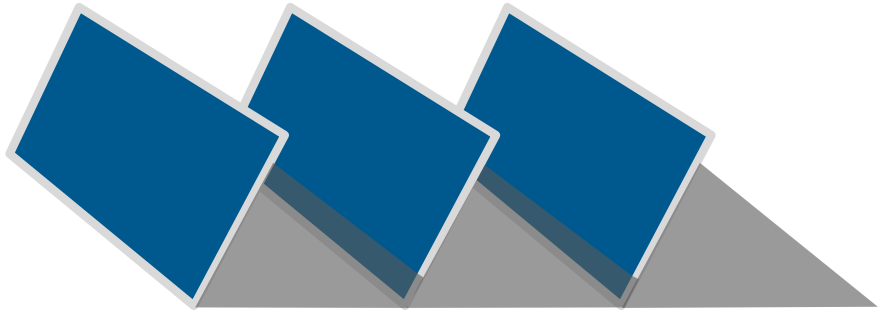
P-Series parallel circuit architecture → better current redistribution under partial shading

Conventional Panel



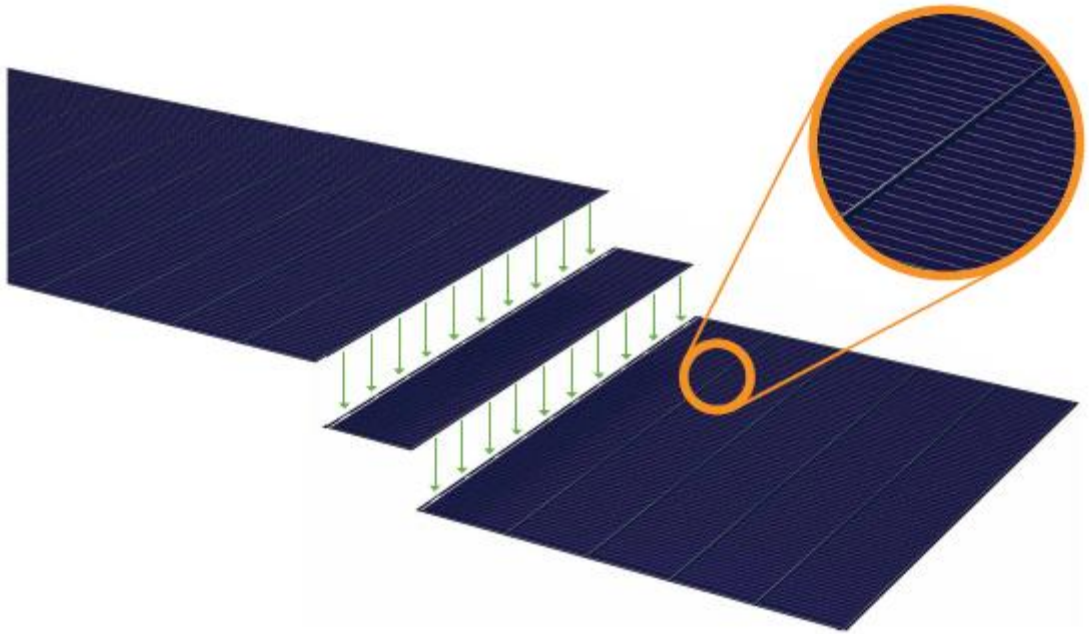
P-Series Panel





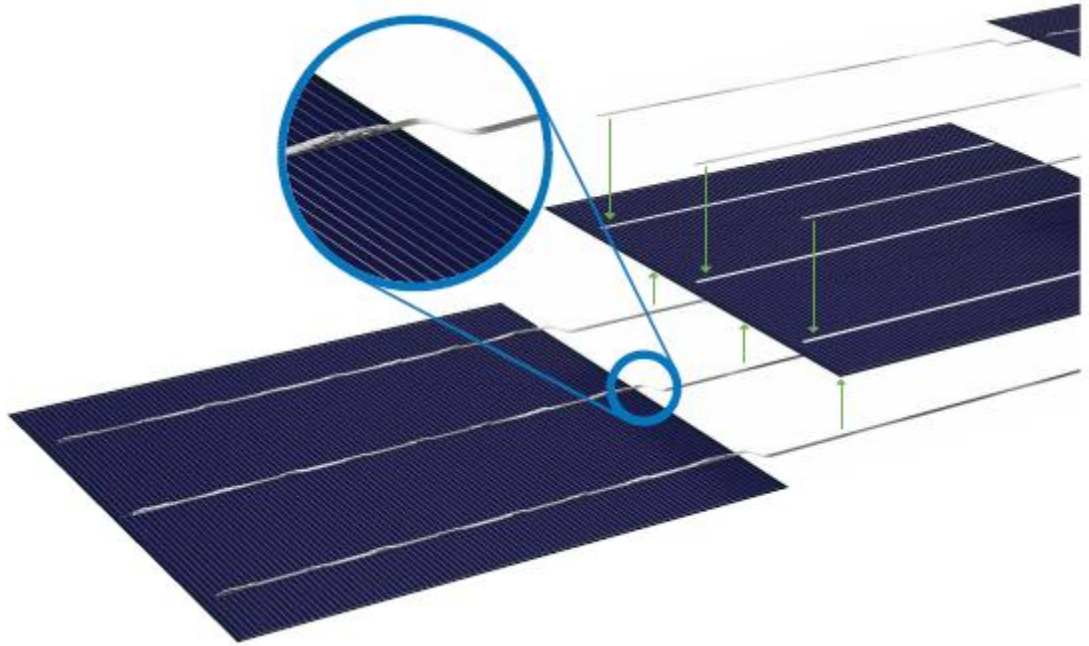
Tiled-cell Vs. Conventional Cell

Tiled-cell panel Solar Cells



1. Thin screen-printed metal lines on the front of the cells are protected from corrosion by SunPower's specially engineered encapsulant
2. No soldered ribbons along the length of the cell – one of the major failure modes of using traditional cells has been designed out of the panel.
3. Cells are connected across their length, creating many redundant paths for electricity, and no single point of failure.

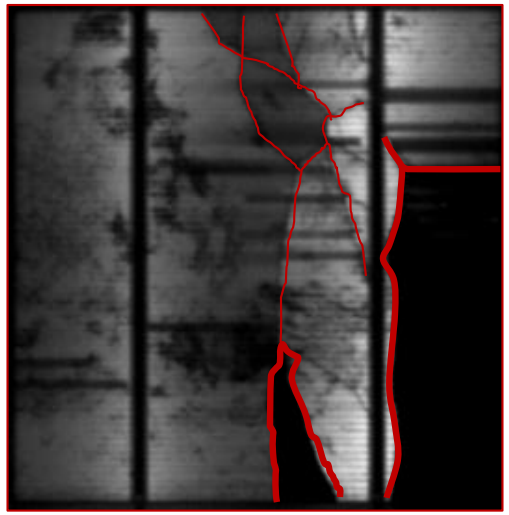
Conventional Cell (Front)



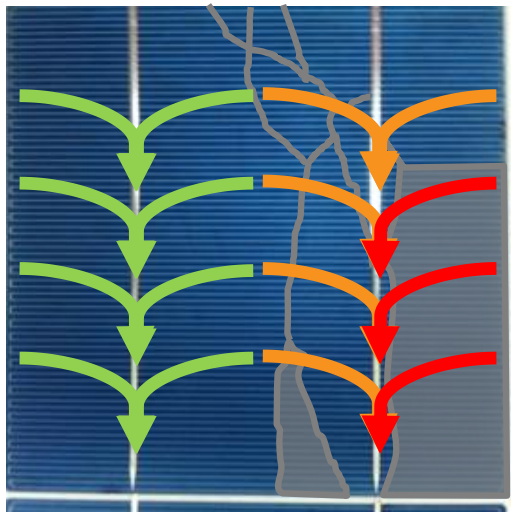
1. High-stress solder joints between the long copper ribbons and crystal solar cell
   - As the panels get hot in the day and cold at night the copper expands but the silicon cell does not.
   - Over time, this repeated stress causes cells to crack and solder bonds to break.
2. Single points of failure on copper ribbons between cells.
3. Very thin screen-printed metal lines on the front of the cell are susceptible to corrosion over time

Cell Cracking in P-Series

Conventional Cell[1]

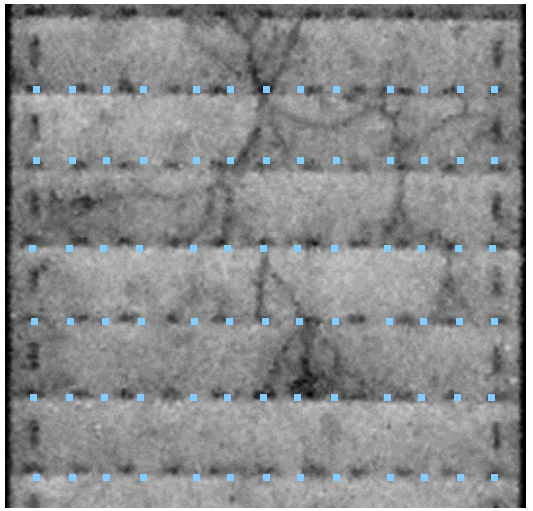


Cracks propagate until they encounter a ribbon or the edge of the cell

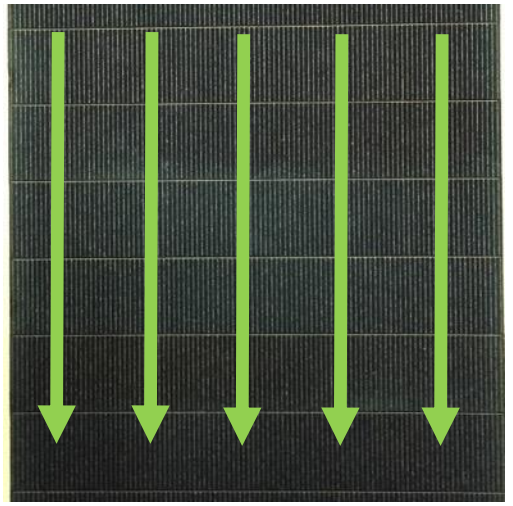


Current flows along silver lines to the ribbon so cracks prevent current from reaching the ribbon

SunPower® Performance Series



Short cell length, 1 inch, limits crack propagation, mitigating isolation of cracked cell areas



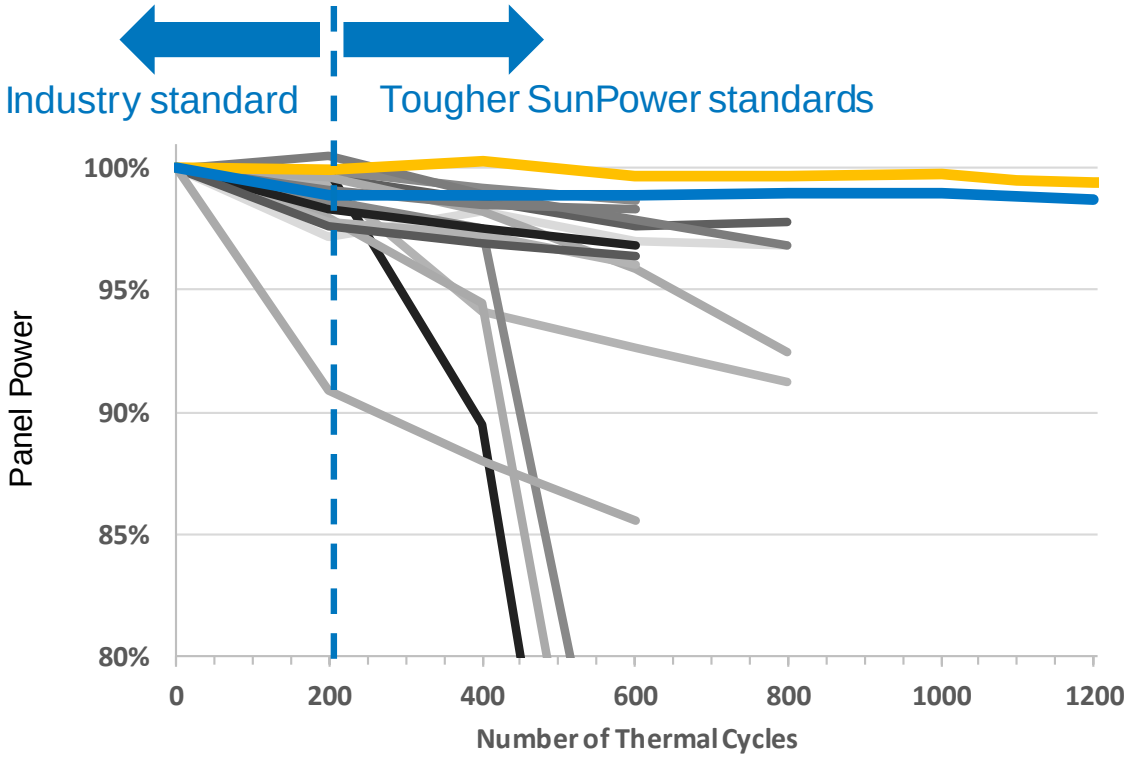
Highly redundant conductive adhesive connections act as a “mesh” to contain cracks and maintain current flow

Redundant connections limit power loss from cracks in P-Series

[1] Kontges, et. al. "Performance and Reliability of Photovoltaic Systems, Subtask 3.2: Review of Failures of Photovoltaic Modules." 2014.

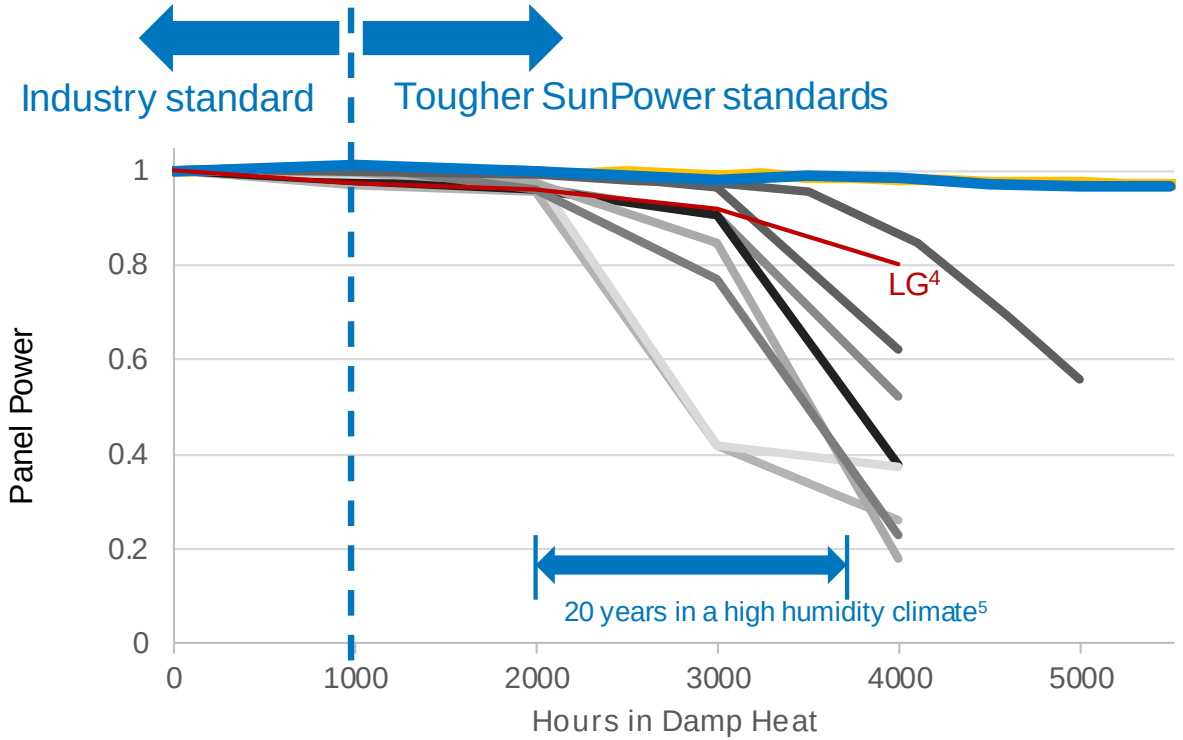
Reliability – Proven Performance Through Robust Testing

Thermal Cycling: IBC & P-Series Vs. Conventional



Number of Cycles: -40 to 85°C (-40 to 185°F), 5 cycles per day

Corrosion Test: IBC & P-Series Vs. Conventional



Hours in Damp Heat: 85°C (185°F), 85% relative humidity

Conventional Panels[1,2] SunPower® P-Series[3] SunPower® IBC

[1] Meakin, "PV Durability Initiative for Solar Modules." 2013.
[2] Ferrara, "PV Durability Initiative for Solar Modules: Part 2." 2014.
[3] Renewable Energy Test Center results, 2015
[4] PVEL Test Reports report R671H1
[5] Kempe, et. al. Modeling the Ranges of Stresses for Different Climates/ Applications. PVMQA Forum. 2011

Independent Testing against Upper Conventional Panels

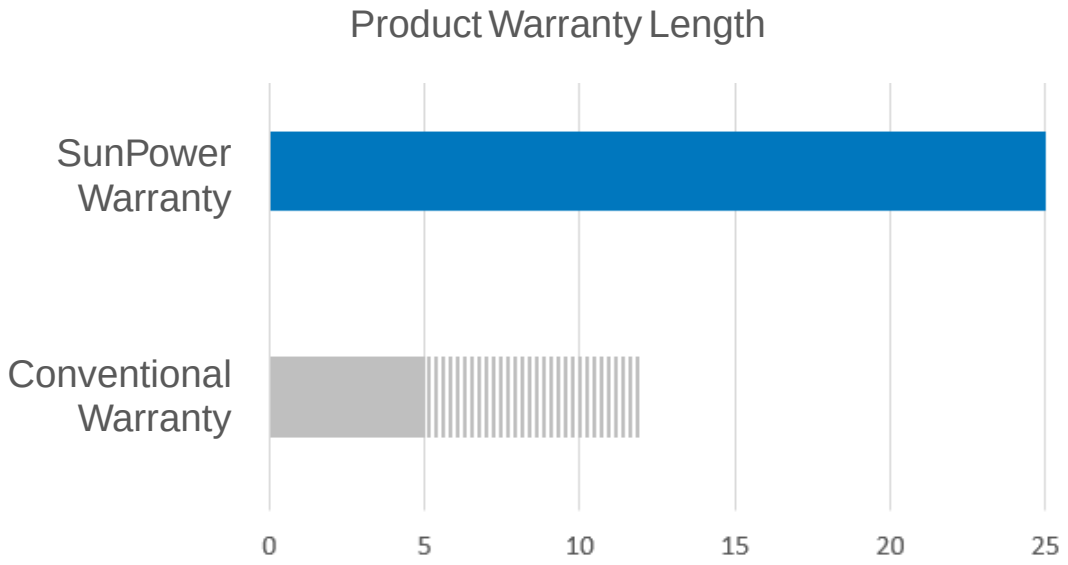
- PV Evolution Labs is an independent testing lab specialized in performance and characterization testing on PV panels owned by the independent engineering firm, DNV-GL.
- Long term reliability testing was conducted on LG and SunPower® P-Series panels:
  - Damp heat 3000 hrs (3x IEC)
  - Thermal cycling (TC) 800 cycles (4x IEC)
  - Humidity freeze (HF) 30 (3x IEC)
  - PID (85/85) 600 hours (>>6x IEC)
  - Mechanical loading +TC50 + HF10
- SunPower shows 5x less degradation than Conventional Panels.

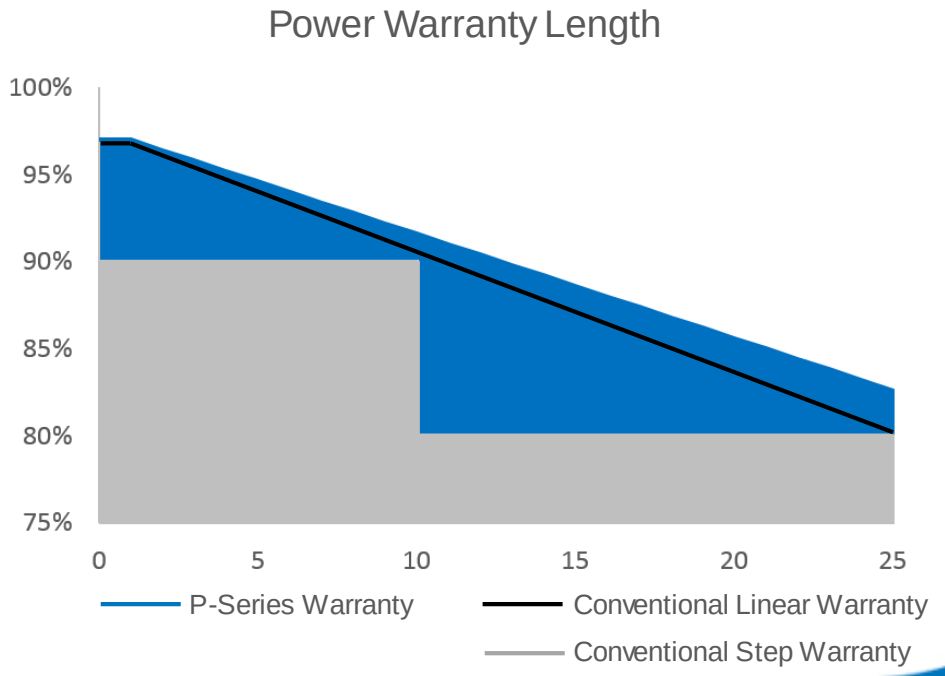
	LG Panels	SunPower® Panels
Average Power Loss	2.6%	0.5%
Maximum Power Loss	8%	1.9%

PVEL Test Reports report R10004723M-2 and R671H1

Product Warranty

- Panels come with a power warranty, which covers power loss, and a product warranty, which causes defects.
- Most product warranties are less than half as long as power warranties… creating confusion as to what defects may or may not be covered for 25 years.
- What happens if there is a product defect which causes power loss after the product warranty?
- SunPower's unique 25-year Combined Power and Product Warranty provides unambiguous coverage.





Thank You

Let’s change the way our world is powered.