

# PERC technology

# PERC – highest efficiency and performance



**More Power**



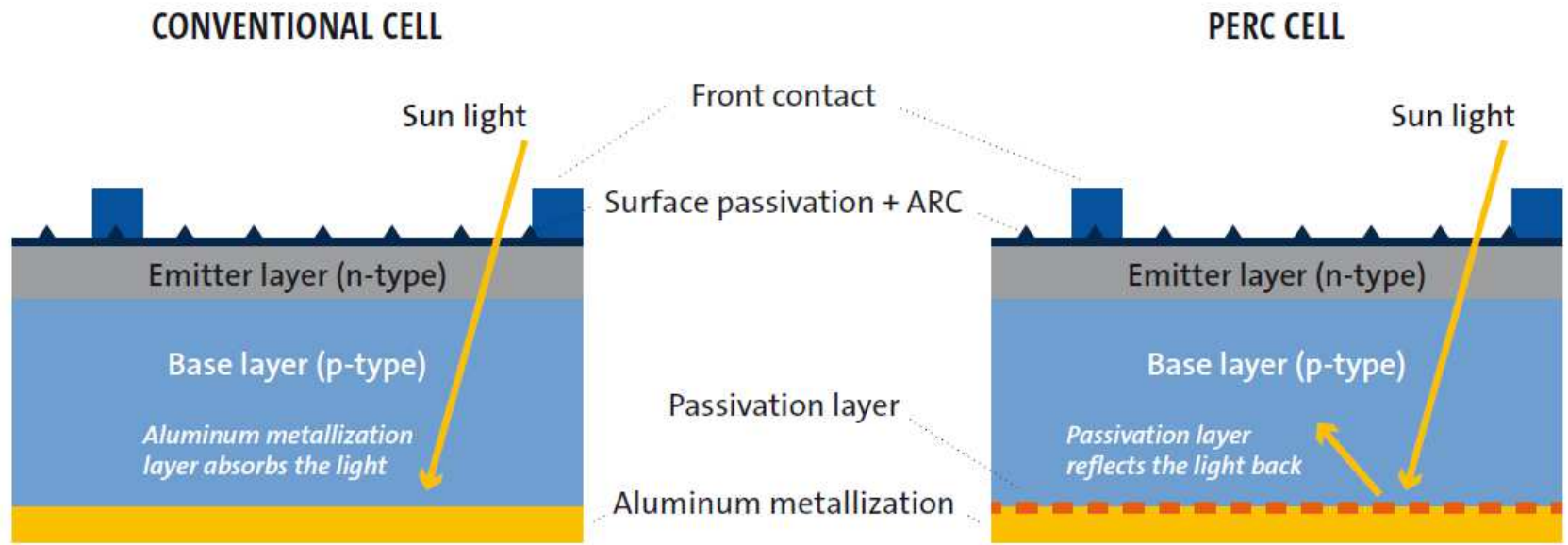
Higher current



More charge carriers

The advanced cell architecture of PERC solar cells helps to generate more charge carriers within the cell and helps to prevent their losses.

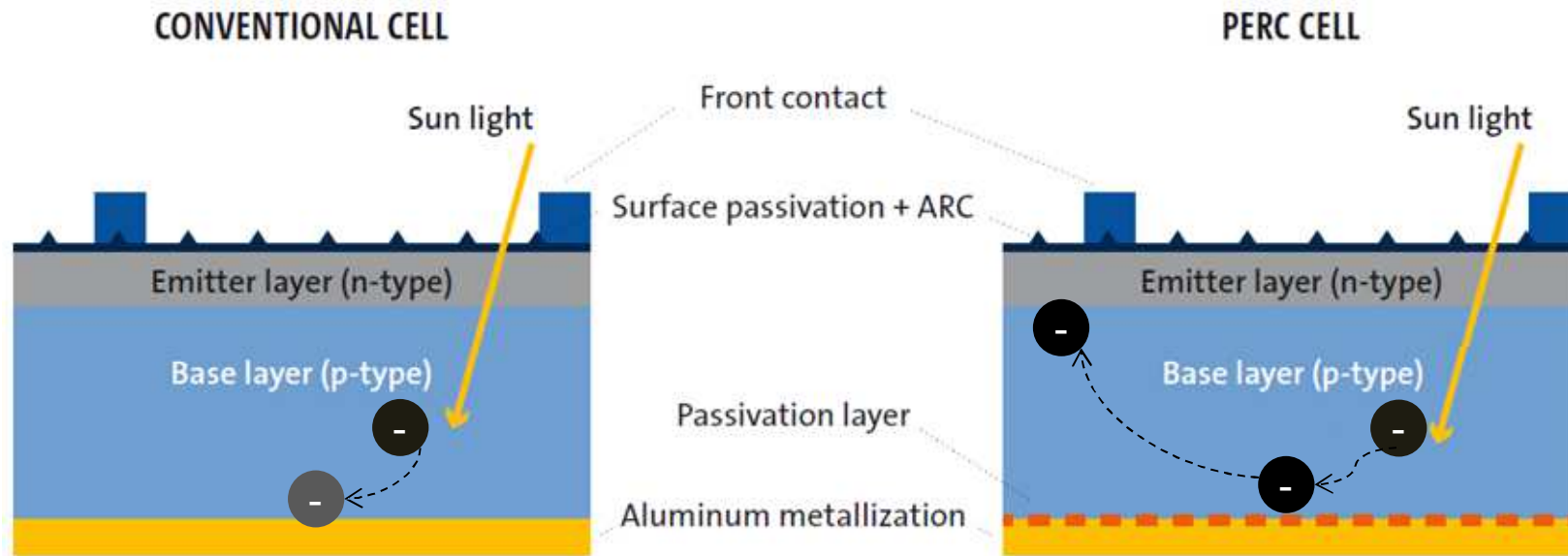
# PERC – Improved capture of light



In a **standard solar cell**, a portion of all sunlight that strikes the cell exits through the back side or is absorbed into its backing layer.

**SolarWorld PERC cells** have a special insulating layer between the silicon and the aluminum back coating that increases the cell's ability to trap more sunlight.

# PERC – Reduced loss of electrons



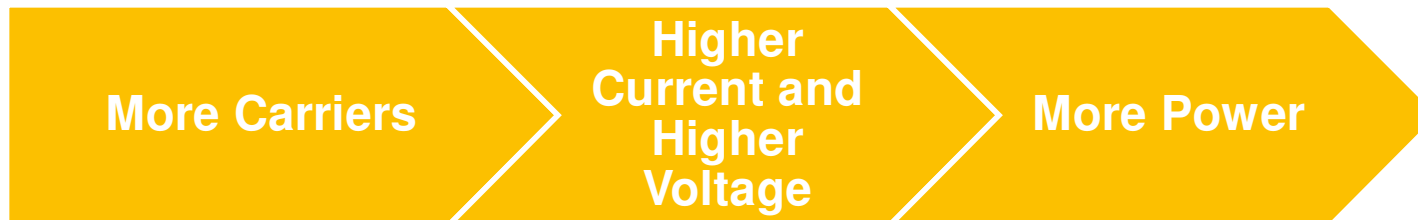
In a conventional cell the electron is captured by the rear metallization.

In a **SolarWorld PERC cell** a dielectric layer prevents the electron from being captured. The electron can move up to the emitter layer.

# The Advantage of **PERC** cells



- » The **advanced cell architecture** of PERC solar cells helps to generate more electrons within the cell and helps to prevent carrier losses
- » More free carriers within the cell means higher current and higher voltage, which means **higher power**

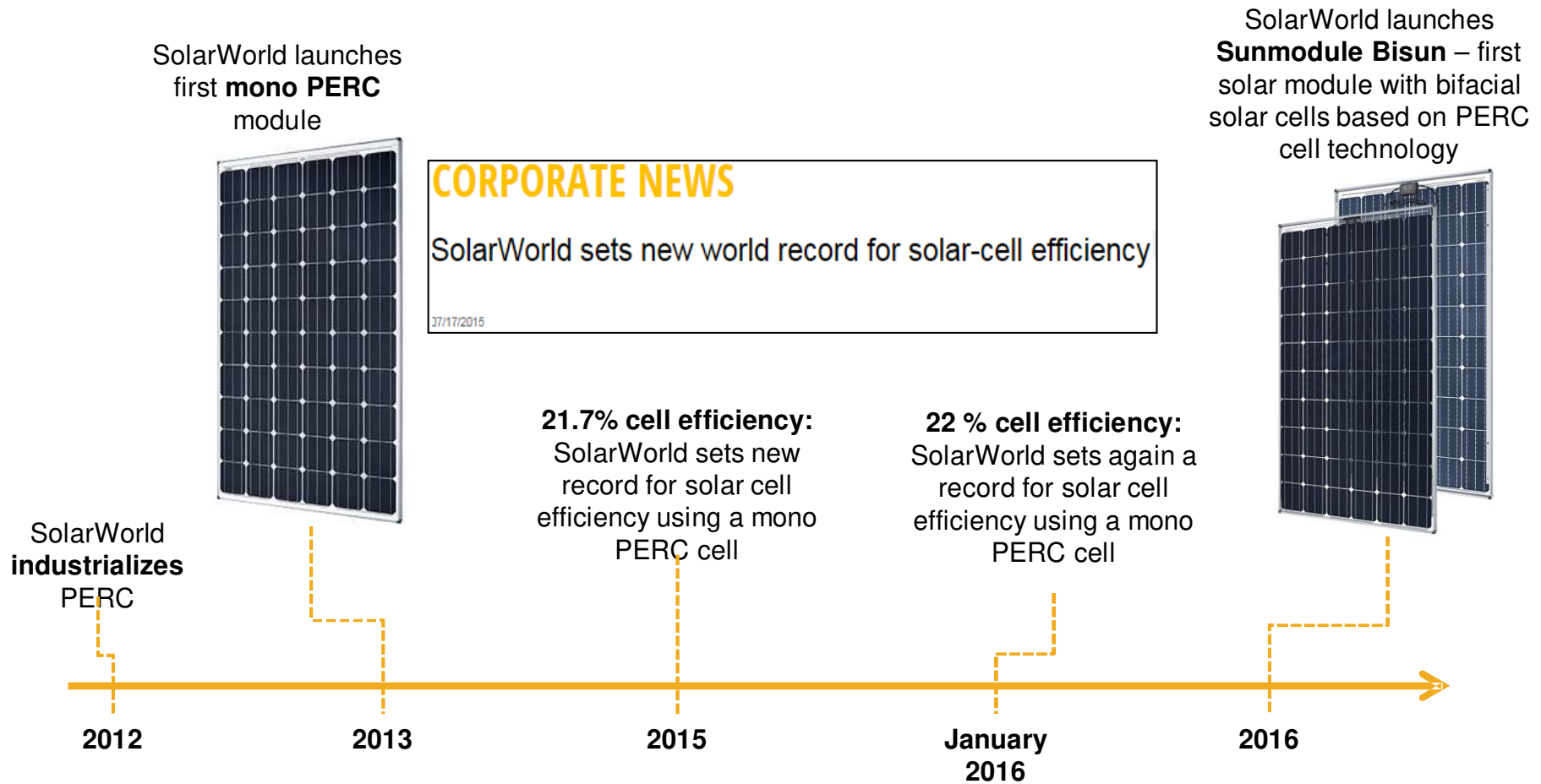


- » SolarWorld PERC cells **capture more light** and produce more energy than standard cells increasing your system's energy yield over time

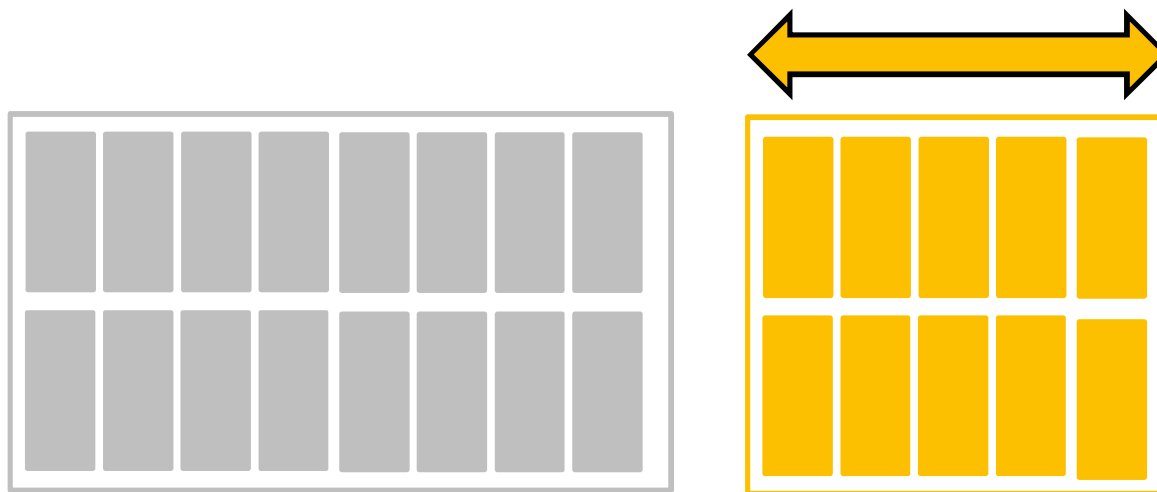
# PERC - Made by SolarWorld



Since 2013 SolarWorld operates one of the worldwide first and biggest PERC solar cell mass productions



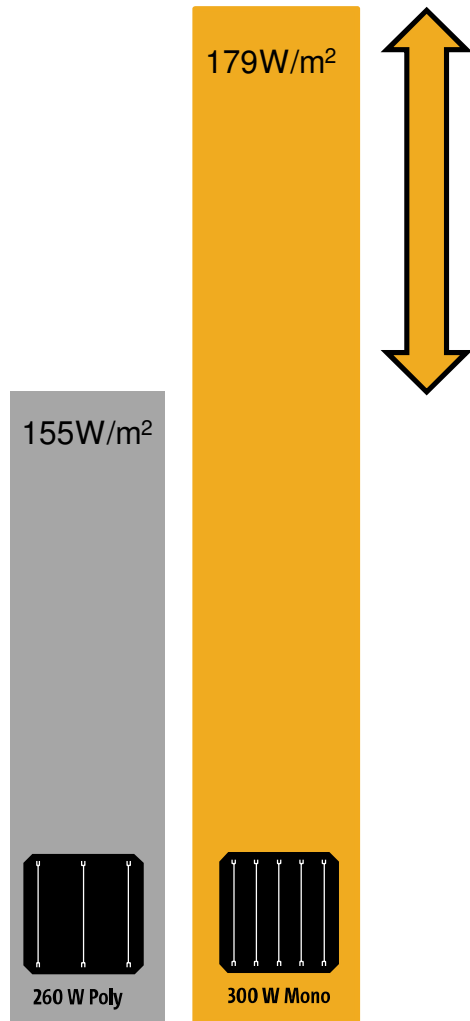
# PERC - higher energy density – lower costs of installation



Greater **energy density** per module makes the module perfect for limited space.

Less modules are required for same system size, this reduces **costs for mounting structure and installation.**

# PERC - brings more Power

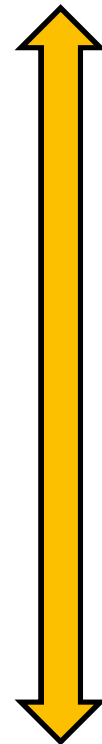


Greater energy density per module, **more Wp per m²**.

PERC **Excellent low light performance** on cloudy days, mornings and evenings.



# PERC technology – At a glance (1/2/3/4/5)



- ✓ PERC technology reacts **powerfully in low light**.
  - ✓ In early morning or late afternoon or under cloudy skies – solar's traditional off-peak periods – PERC cells shine.
  - ✓ As well, PERC cells generate less heat than traditional cells, further increasing power yield and outperforming cells from other manufacturers.
- = Higher **specific yield generates more power over lifetime**.



## WORLD RECORD BREAKING CELL TECHNOLOGY BRINGS MORE POWER

- >> Advanced cell technology, higher **module efficiency**
- >> Greater **energy density** per module, more Wp per m<sup>2</sup>
- >> Lower **BOS cost**
- >> Higher **specific yield**, more kWh per kWp

# Case Study: PERC vs. Poly



	Sunmodule Plus SW 265 poly		Sunmodule Plus SW 290 mono (PERC)		ADVANTAGE
system size in Wp	377	100.000	345	100.000	
specific yield kWh/kWp		1000		1030	
degradation p.a.		0,70%		0,70%	
lifetime in years		25		25	
energy production in life time in kWh		2.215.277		2.281.735	3,0%
invest Module	€ 123,00		€ 140,00		4,0%
mounting system	€ 25,00		€ 25,00		-8,6%
installation (mounting, DC, AC)	€ 27,50		€ 27,50		-8,6%
inverter and cables	€ 31,80		€ 34,80		0,0%
total cost per module	€ 207,30		€ 227,30		
<b>Total invest</b>		€ 78.226,42		€ 78.379,31	0,2%
<b>Costprice / kWh/ lifetime energy production</b>		€ 0,035		€ 0,034	-2,7%
savings from ownconsumption/kWh		€ 0,09		€ 0,09	
<b>total cash-in (over lifetime)</b>		€ 199.374,92		€ 205.356,17	3,0%
<b>REVENUES</b>		€ 121.148,50		€ 126.976,86	4,8%



**PERC is a save investment  
that brings more power**