

Q.ANTUM TECHNOLOGY

HIGH PERFORMANCE, RE-DEFINED.

Q.ANTUM technology supercharges ordinary crystalline solar cells and modules. Unlike expensive high-end solar modules, **Q.ANTUM** does not involve a complex new cell design. No special system components are required. **Q.ANTUM** delivers exceptional performance under real-world conditions. No PV system sees direct sunlight every minute of every day. So we designed **Q.ANTUM** to generate more power when the sun is rising, setting, or even behind clouds.

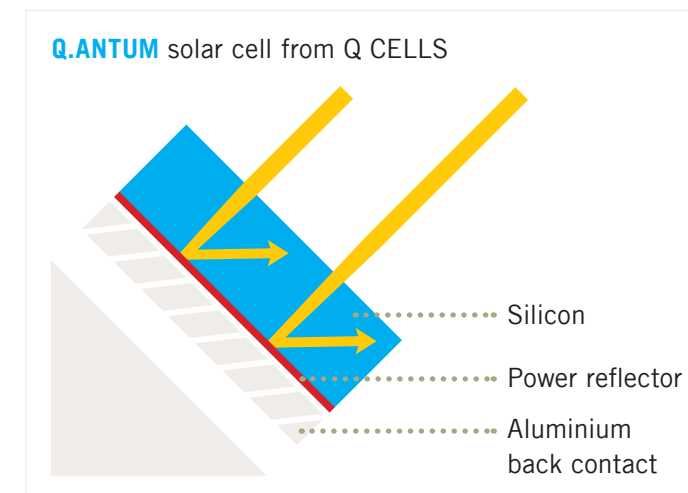
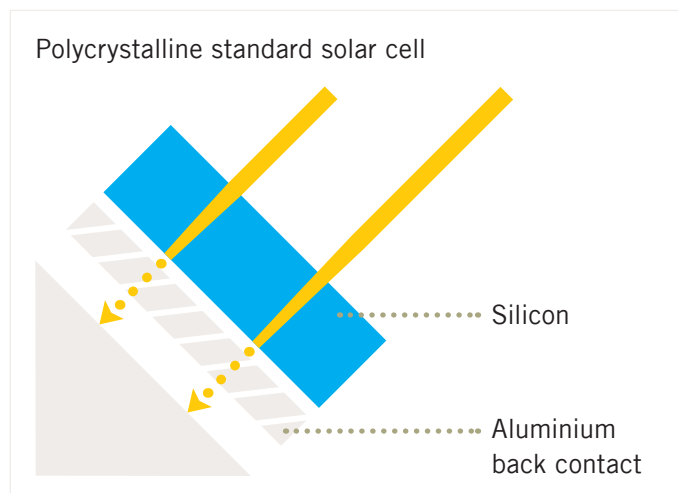
But you'll also see higher yields in the middle of hot and sunny summers — and during clear fall and winter days, when the sun is not as high in the sky. Because we decided to focus on all of the key determinants of performance, not just the ones that make our datasheets look good. We enhanced low-light performance, but also the output of our modules across a range of temperatures — all to bring you higher profits.

Q.ANTUM PHYSICS

MORE LIGHT. MORE PERFORMANCE. MORE ELECTRICITY.

Don't maximize, **OPTIMIZE**. The rear surface of **Q.ANTUM** solar cells are treated with a special nano coating that functions much like a typical household mirror. Rays of sunlight that would otherwise go to waste are reflected

back through the cell to generate more electricity. Laser-fired contacts complement the nano coating to enhance the module's electrical properties, increasing its efficiency considerably.



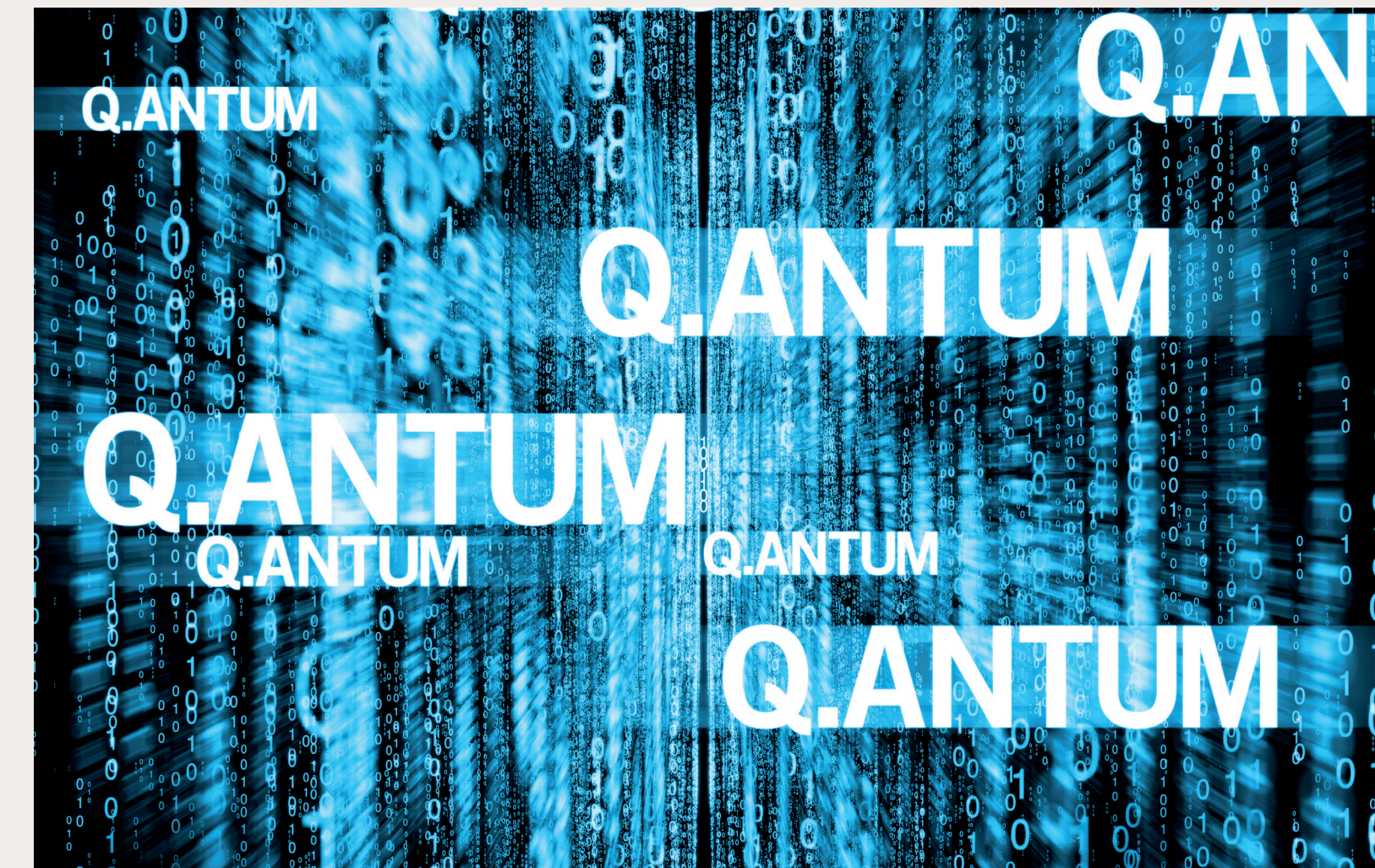
CONTACT

HANWHA Q CELLS GMBH
OT Thalheim
Sonnenallee 17-21
06766 Bitterfeld-Wolfen
Germany

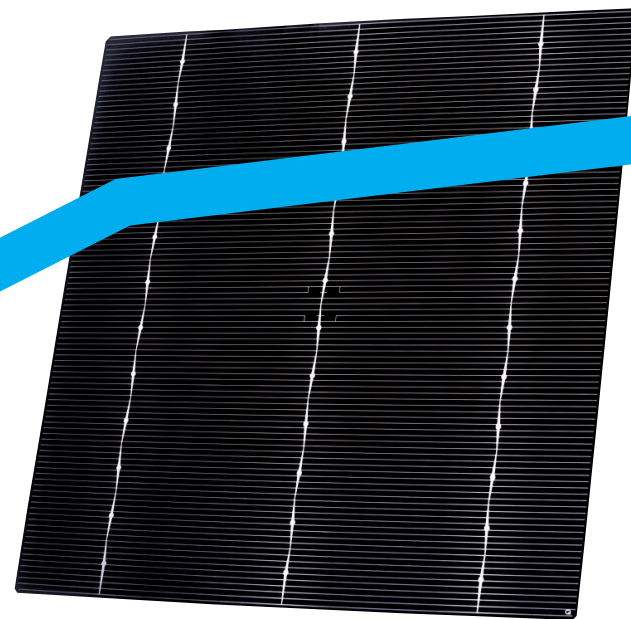
TEL +49 (0)3494 66 99 - 23222
FAX +49 (0)3494 66 99 - 23000

EMAIL q-cells@q-cells.com
WEB www.q-cells.com

5% HIGHER YIELDS. 19.5% EFFICIENCY. 100% RELATIVE EFFICIENCY.



Specifications subject to technical changes © Hanwha Q CELLS GmbH Q.ANTUM_Flyer_2014-05_Rev01_EN



+5%

HIGHER YIELDS
annually compared to the average of major manufacturers (location: Munich)

19.5%

EFFICIENCY WORLD RECORD
Q.ANTUM technology set a new world efficiency record for crystalline solar cells in 2011 as confirmed by the Fraunhofer Institute (ISE)

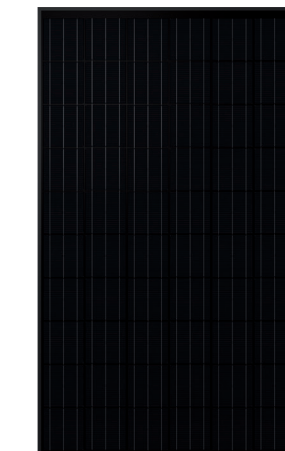
100%

RELATIVE EFFICIENCY
At just 200 W/m², Q.ANTUM solar modules achieve 100% relative efficiency

Q.ANTUM PHILOSOPHY THE BEST. ONLY BETTER.

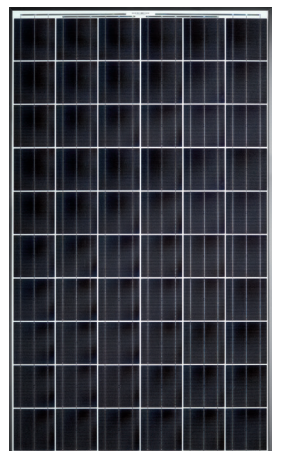
Q.ANTUM combines the best properties of all the major cell technologies to achieve high outputs at a low LCOE. With their homogeneous surface structures, Q.ANTUM solar modules stand up to the most demanding aesthetic requirements in whichever color you choose. Whether you decide

on blue or black cells, silver or black frames, white or black backsheets — Q.ANTUM 60-cell solar modules always give you the best possible value for your money. What's more, your investment stays safe over the long term thanks to the exacting standards and proven quality of Q CELLS.



Q.ANTUM Black Prototype

Q.ANTUM Ultra Prototype



	Conventional modules	Q.ANTUM	Q.ANTUM Black	Q.ANTUM Ultra
Power	●●●●●	●●●●●	●●●●●	●●●●●
Yield	●●●●●	●●●●●	●●●●●	●●●●●
LCOE	●●●●●	●●●●●	●●●●●	●●●●●
Temperature coefficient	●●●●●	●●●●●	●●●●●	●●●●●
Low-light performance	●●●●●	●●●●●	●●●●●	●●●●●
Design	●●●●●	●●●●●	●●●●●	●●●●●

Q.ANTUM ADVANTAGE MORE YIELD. MORE PROFIT. MORE FOR YOU.

In the end, it's all about your bottom line. How much electricity does your photovoltaic system produce in total over the course of an entire day or year — and at what cost? Q.ANTUM takes mature, cost-efficient crystalline silicon wafer technology and optimizes it to give you superior value for your

money. It's a combination of high efficiency, high power ratings, and high maximum yields at extremely competitive prices that gives you one of the best solar deals under the sun. Q.ANTUM — for roof-mounted installations, flat roof systems, and utility-scale solar. For higher profits. For you!

SOLAR MODULE EFFICIENCY
Q.ANTUM INNOVATION
OPTIMIZED YIELDS

Q.ANTUM HISTORY RESEARCH. DEVELOPMENT. PRODUCTION.

High performance meets mass production: In 2011, Q.ANTUM technology set a new world record for crystalline solar cells by achieving 19.5% efficiency. Q CELLS began producing modules based on Q.ANTUM in 2012, putting some of the highest-output modules available in its product lineup. The 2013 PHOTON module test ranked our Q.PRO-G2 235 module at the top of all the polycrystalline modules tested. The high-output models in our

2014 Q.PRO-G3 line now ship with Q.ANTUM technology and surpass even the world-beating module tested by PHOTON in 2013 in any performance or yield category you look at. The Q.ANTUM Black and Q.ANTUM Ultra prototypes introduced at Intersolar are even more powerful with outputs of up to 295 Wp, 100% relative efficiency all the way down to 200 W/m² in low light, and over 5% more yield compared to the average competing module.

POWER REFLECTOR
Q.ANTUM NANO LAYER
HIGHER YIELDS

Q.ANTUM EFFICIENCY SUN. CLOUDS. 100 PERCENT.

High yields when the light is low: A solar module's low-light performance tells you how high its relative efficiency is when there is comparably little solar radiation available to collect. It determines how much electricity you can generate when the sun is rising, setting, or obscured by clouds. At light levels as low as 200 W/m², Q.ANTUM

solar modules achieve 100% relative efficiency. That is a quantum leap for a mass-produced panel — it's truly unique and ensures you get optimal value for your money. It doesn't matter if the sky is clear or cloudy, Q.ANTUM beats all the conventional cell technologies. But don't believe us, try Q.ANTUM and see for yourself.

CLEAR SKIES OR CLOUDY
Q.ANTUM ADVANTAGE
BENEFITS FOR YOU