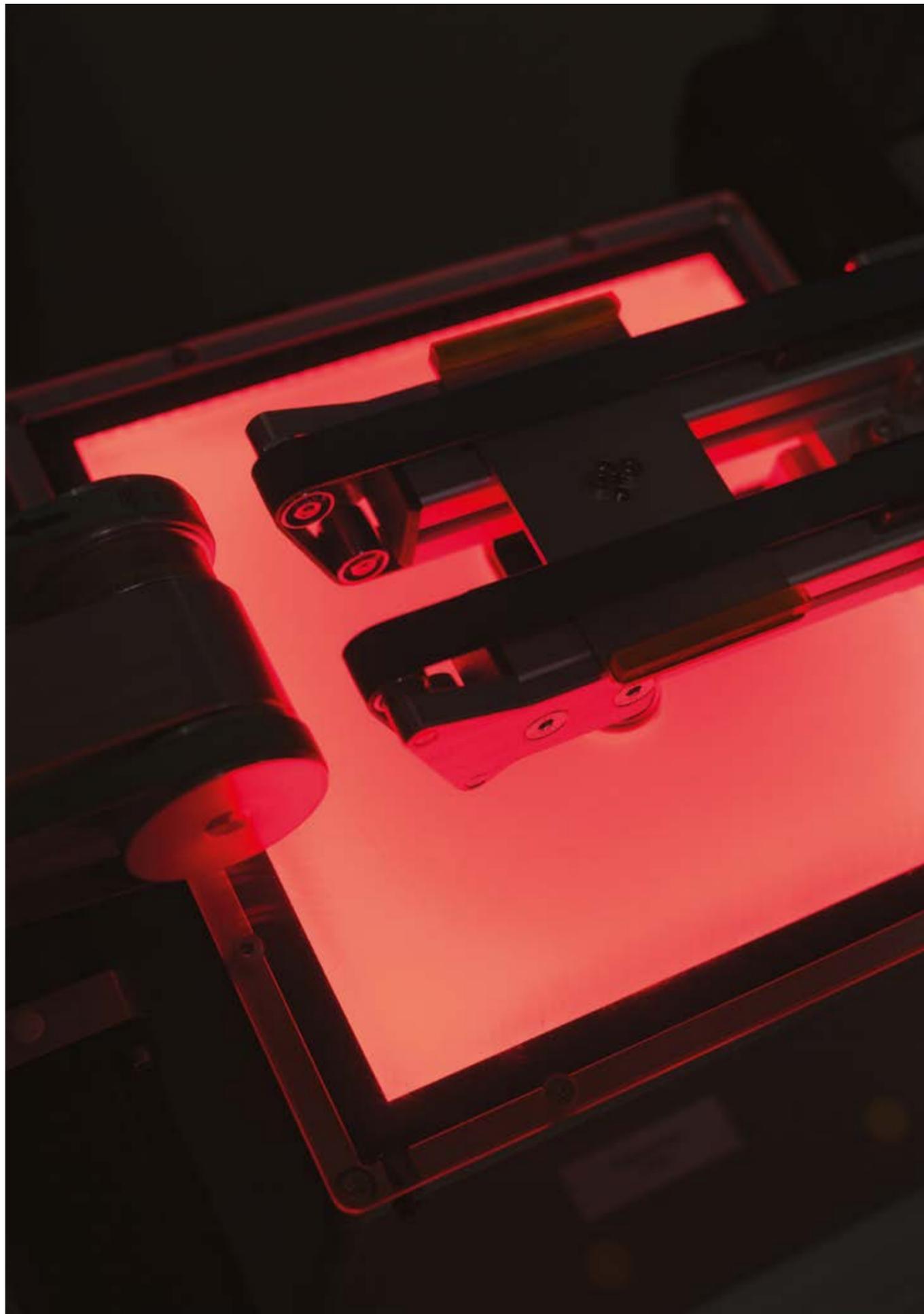


# Q CELLS PRODUCT CATALOGUE 2018

PREMIUM HIGH PERFORMANCE SOLAR MODULES AND COMPONENTS



# HANWHA Q CELLS

## GERMAN QUALITY BACKED BY KOREAN FINANCIAL STRENGTH

FOR HANWHA Q CELLS, PHOTOVOLTAIC TECHNOLOGY IS NOT JUST A PRODUCT. IT IS THE KEY TO RELIABLE, POWERFUL, AND SUSTAINABLE ENERGY SUPPLY – TODAY AND FOR FUTURE GENERATIONS.



### AN ALLIANCE OF TECHNOLOGY AND FINANCE.

Hanwha Q CELLS Co., Ltd. (NASDAQ: HQCL) is one of the world's largest and most recognised photovoltaic manufacturers for its high-quality, high-efficiency solar cells and modules. It is headquartered in Seoul, South Korea (Global Executive HQ) and Thalheim, Germany (Technology & Innovation HQ) with manufacturing facilities in South Korea, Malaysia and China. Hanwha Q CELLS offer the full spectrum of photovoltaic products and solutions, from modules to systems and large-scale solar power plants. Hanwha Q CELLS, as an affiliate of the Hanwha Group with assets over \$150 billion,

is both a trusted and bankable solar partner for our customers worldwide. Our cell production capacity of 8GW and solar module manufacturing capacity of 8GW<sup>1</sup> (as of January 2018) makes us the largest cell manufacturer and one of the largest solar module manufacturers in the world. Unlike many other manufacturers, Hanwha Q CELLS only uses solar cells of its own cell production to make sure that all of its Q CELLS solar modules and -systems benefit from its outstanding high technological standards. We have a Tier 1 Bloomberg rating and we are a BNEF Top Tier module supplier.

<sup>1</sup> Including the manufacturing capacity from Hanwha Q CELLS Korea

# HANWHA GROUP

## KEY FACTS AND FIGURES

IT IS EASY TO CLAIM TO BE A GLOBAL LEADER AND INNOVATOR, BUT THE PROOF IS IN THE DETAILS. HANWHA GROUP'S EXPERIENCE, BROAD EXPERTISE AND FINANCIAL STRENGTH UNIQUELY POSITION US TO ADDRESS OUR CLIENT'S ENERGY NEEDS TODAY – AND TOMORROW.

### CREATING A MORE SUSTAINABLE FUTURE FOR OUR PLANET.

As a member of the Hanwha Group, one of South Korea's eight largest corporations, Hanwha Q CELLS is backed by a strong partner with a proud 65-year history. Hanwha Group specialises in other businesses, including manufacturing and construction, finance, and services and leisure. Globally, it is ranked 246<sup>th</sup> among Fortune Global 500 companies and operates 258 networks worldwide. At the center of it all, it is our group's belief and desire to lead a sustainable future for both mankind and our planet. These beliefs are what drive Hanwha Q CELLS to pursue different possibilities – developing and innovating new energy solutions.

Through each of our businesses, we provide energy to our customers, partners, and communities for a sustainable and vibrant future. The sun powers everything that grows on earth – it is clean, cost-effective, and infinite. Driven by our corporate philosophy of giving and earning trust and loyalty, we are able to meet the energy needs of people and institutions in diverse markets. Our full-scale entry into the photovoltaic business in 2010 was a natural extension of this mission, allowing us to offer a world-class array of sustainable solar products and services for generations to come.



2016 TOTAL SALES (USD)

53,89<sub>B</sub>



FOUNDED IN

1952



IN ASSETS

150<sub>B</sub>



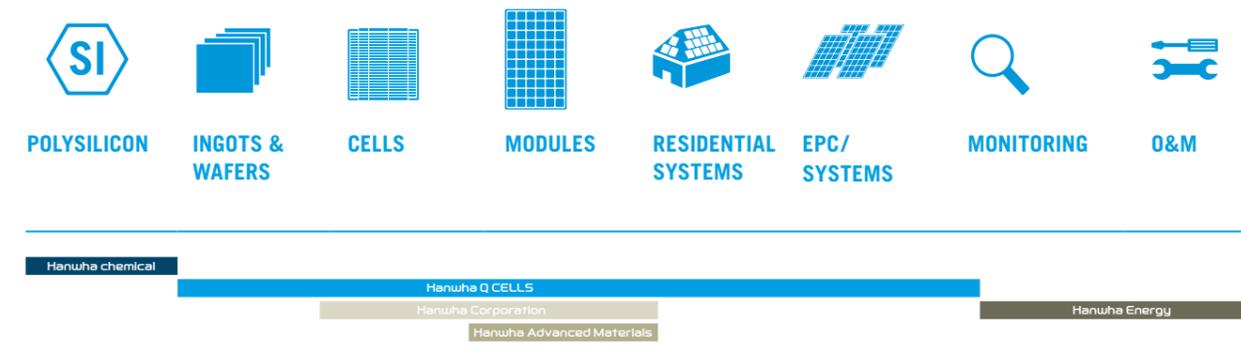
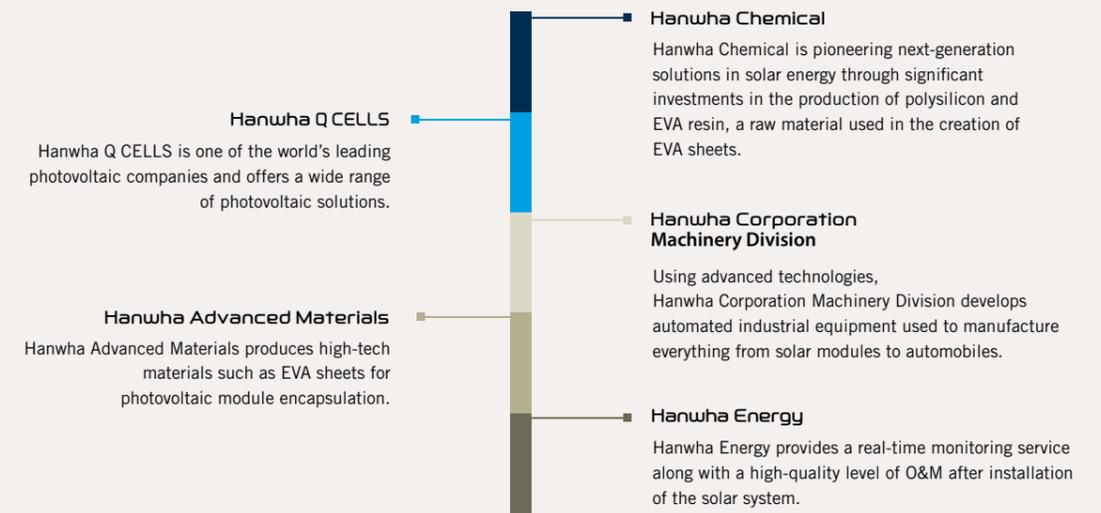
GLOBAL NETWORKS

285

# HANWHA GROUP SOLAR

## BUSINESS VALUE CHAIN

HANWHA GROUP IS VERTICALLY INTEGRATED ACROSS THE ENTIRE PHOTOVOLTAIC VALUE CHAIN FROM SILICON TO LARGE-SCALE SOLAR POWER PLANTS.



# HANWHA Q CELLS CERTIFIED QUALITY

FOR OUR PRODUCTS, HIGH QUALITY MEANS A LONG SERVICE LIFE AND EXCELLENT TECHNICAL CHARACTERISTICS. THAT'S WHY QUALITY ASSURANCE PLAYS A CRITICAL ROLE FOR US.



# Q CELLS THE FOUR LEVELS OF QUALITY

BEFORE A PRODUCT IS WORTHY OF THE NAME “Q CELLS”, IT HAS TO UNDERGO AND PASS FOUR INDEPENDENT QUALITY PROGRAMS:

## LEVEL 1 YIELD SECURITY

Since 2011, Q CELLS Yield Security has been the guarantee for the reliability of our products. It combines guaranteed PID resistance, Anti LID and LeTID Technology, security against Hot-Spots, and protection against the counterfeiting of our company's products.

## LEVEL 2 ONE-TIME CERTIFICATION TESTS

The second level is comprised of international initial certification tests, for example, in accordance with IEC, CSA/UL, MCS, JET and Kemco. These guarantee that the electrical safety of the modules and the safety of its construction comply with international standards.

## LEVEL 3 VDE QUALITY TESTED

The “VDE Quality Tested” program exceeds the initial certification testing. In addition, monthly re-testing guarantees consistent quality and product testing at all times.

## LEVEL 4 Q CELLS QUALITY PROGRAM

Q CELLS internal quality program ensures that all products meet our company's high standards on a daily basis.

## GLOBAL NETWORK, GERMAN QUALITY

As a leading global manufacturer of solar modules, solar cells and PV systems, Hanwha Q CELLS boasts leading technology, financial stability, and a global network – for safe energy provision and a clean future.

### Hanwha Q CELLS:

- is German Engineering from Bitterfeld-Wolfen, Germany.
- is guaranteed quality with an outstandingly low rate of module degradation backed by a 12-year product warranty and a 25-year linear performance warranty.
- is the first manufacturer of solar modules to participate successfully in the Quality Tested program of the VDE – an independent certification institute from Germany. For the first time, periodic testing is now required.
- operates the largest technology and module test centre in the industry, as well as its own VDE-certified testing laboratory.
- tests its products under extreme climate conditions, such as tropical humidity, desert heat, and arctic cold.



www.VDEinfo.com  
ID. 40032587



- ANTI PID TECHNOLOGY (APT)
- HOT-SPOT PROTECT (HSP)
- TRACEABLE QUALITY (TRA.Q™)
- ANTI LID TECHNOLOGY (ALT)

## REQUIRED TESTS

	IEC certification	VDE Quality Tested	Q CELLS quality program
<b>Test frequency</b>	once, only for initial certification	continuous sampling, quarterly monitoring	continuous sampling and monitoring
<b>Thermal Cycling Test (TC)</b>	200 cycles	400 cycles	additional tests
<b>Humidity Test (DH)</b>	1000h	1500h	additional tests
<b>Humidity-Frost Test (HF)</b>	10 cycles	10 cycles	30 cycles
<b>Load Trial</b>	✓	dynamic load test (after UV test, before TC and HF)	additional tests
<b>Hot-Spot Test</b>	✓	✓	100% of cell production
<b>EL Test</b>	only certification module	100% of module production	100% high-resolution, EL inspection
<b>PID, LID, LETID Test</b>	–	–	weekly monitoring of production

# Q.ANTUM CELL TECHNOLOGY

## LOWER LCOE THANKS TO HIGHER YIELDS

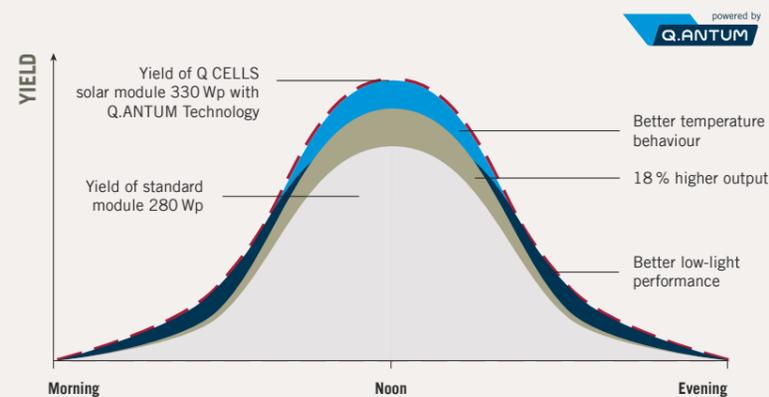
Q.ANTUM COMBINES THE BEST CHARACTERISTICS OF ALL AVAILABLE CELL TECHNOLOGIES TO OBTAIN HIGH PERFORMANCE UNDER REAL CONDITIONS, ALL WITH LOW LEVELISED COST OF ELECTRICITY (LCOE).

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

Bottom line, only one thing counts: the total amount of electricity your PV plant produces throughout the day and throughout the year – and how much it costs. Q.ANTUM takes sophisticated and cost-effective crystalline silicon technology and optimises it to offer you the very best price-performance ratio.

The combination of high efficiency, high performance classes and optimised yields under real conditions guarantees that you will profit from your business with the sun.

YIELD IN THE COURSE OF THE DAY WITH Q.ANTUM TECHNOLOGY



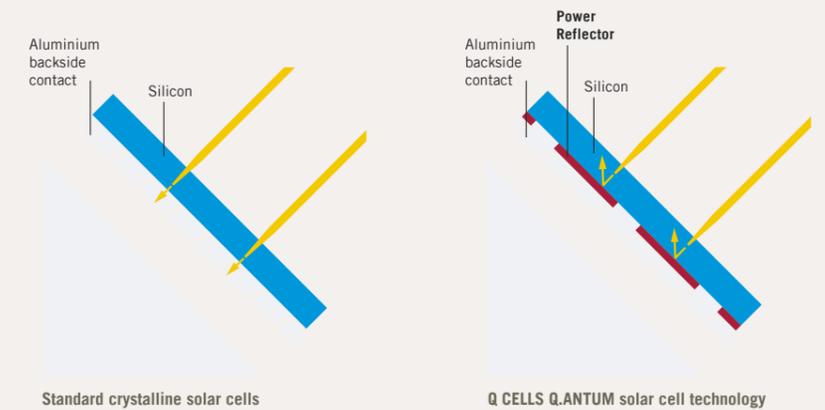
# Q.ANTUM PHYSICS

## MORE LIGHT. MORE PERFORMANCE. MORE ELECTRICITY.



Don't maximise, optimise: The rear surfaces 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. This enhances the electrical properties, considerably increasing the efficiency.

Q.ANTUM CELL TECHNOLOGY IN DETAIL



### HIGHER PERFORMANCE CLASSES

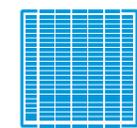
Thanks to Q.ANTUM Technology, Q CELLS solar modules offer more power per surface, resulting in higher yields at lower BOS costs.

### TEMPERATURE COEFFICIENT

Even on hot days, Q CELLS solar modules produce reliable yields and lose less efficiency than standard solar modules.

### LOW-LIGHT BEHAVIOUR

High yields with low radiation intensity, for example, during sunrise and sunset and on cloudy days, but also in autumn and winter when the sun is flat over the horizon.



### Q.ANTUM HISTORY – RESEARCH. DEVELOPMENT. PRODUCTION.

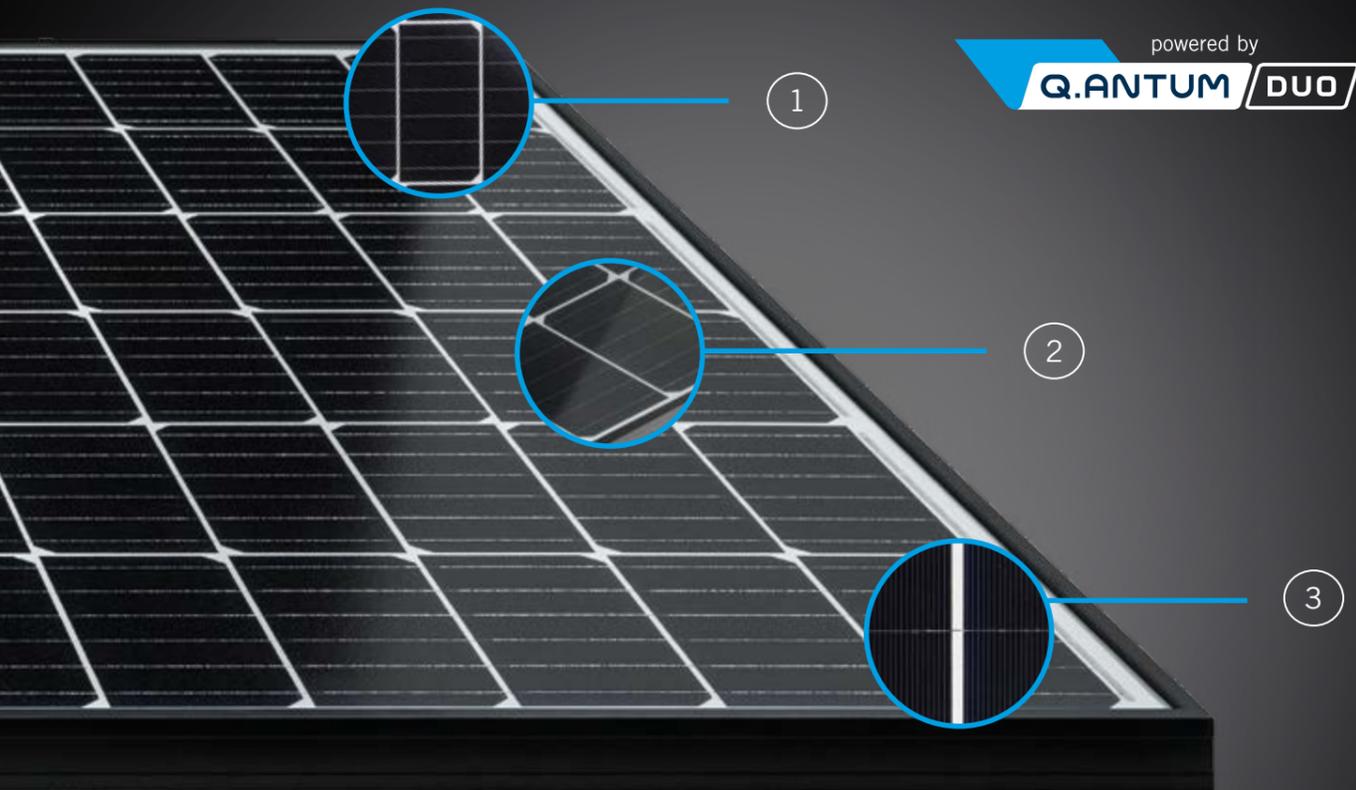
High performance meets mass production: In 2011, Q.ANTUM Technology set a new world record for crystalline solar cells by achieving 19.5% efficiency. Q CELLS began producing modules based on Q.ANTUM in 2012, putting some of the highest-output modules available in its product

line-up. The 2013 and 2014 PHOTON module test ranked the Q.PRO-G2 235Wp module at the top of all the polycrystalline modules tested. The current Q.PLUS BFR-G4.1 with Q.ANTUM Technology surpasses even this winning module in every performance and yield category. In 2015, Q CELLS for the first

time crossed the 300Wp line with a polycrystalline solar module, and doing so, already reached a module efficiency of 19.5% - another world record. Since 2017, Q CELLS has produced solar modules with 300Wp in series for its clients, based on Q.ANTUM Technology.

# Q.ANTUM DUO TECHNOLOGY PERFORMANCE HAS NEVER LOOKED THIS GOOD

THE Q.PEAK DUO-G5 AND Q.PEAK DUO BLK-G5 SOLAR MODULES BENEFIT FROM THE NEW Q.ANTUM DUO TECHNOLOGY FOR OUTSTANDING PERFORMANCE AND AESTHETICS

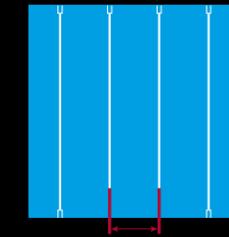


1

## 6 BUSBAR TECHNOLOGY

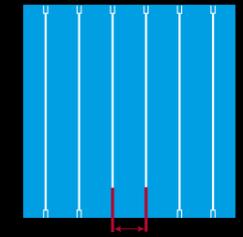
Reduced distance in between the busbars and additional paths for electric current results in 0.5 % power increase. More paths means lower congestion which in return reduces resistive losses.

STANDARD 4 BUSBAR TECHNOLOGY



Wider distance between busbars causes longer ways for electrons and higher resistance

ADVANCED 6 BUSBAR TECHNOLOGY



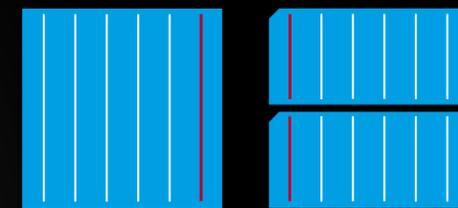
Shorter distance means less resistance and better capture of excited electrons

2

## HALF-CELL TECHNOLOGY

Halving the cell halves the current. Combined with a module layout which reduces the distance travelled by the electric current results in an increase of power by 3 %.

## HALF-CELL TECHNOLOGY



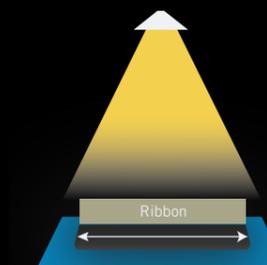
Two half-cells with 6 busbars have the same or even greater output as a full cell with 12 busbars

3

## WIRE INTERCONNECTION

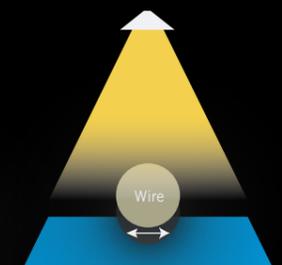
Utilising wires instead of flat ribbons reduces both the width and the effective shading width decreasing shading by 75 % and increasing the power by 2 %. The light reflected from the round shape of the wires improves the light capturing effect of the module.

CONVENTIONAL TECHNOLOGY



100% of ribbon width is effective for shading.

Q.ANTUM DUO TECHNOLOGY



Reduced width and internal reflection decreases shading by a total of 75 %.

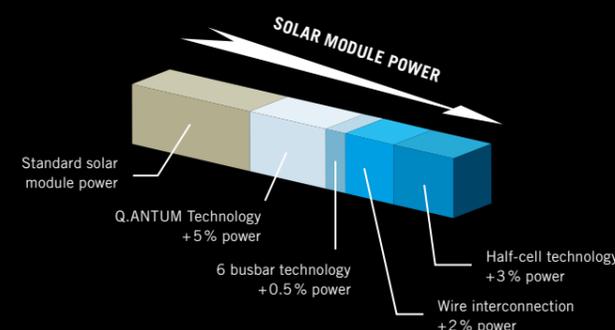
## WHAT IS DUO TECHNOLOGY ALL ABOUT?

The new Q.ANTUM DUO Technology combines cutting edge advancements in cell separation technology with round wires – reducing both electrical and optical losses, respectively. This is achieved by halving the current passing through each cell and making use of incident light more effectively. Q.ANTUM DUO not only increases nameplate power, but also im-

proves reliability. Anti LID/ LeTID ensure low initial degradation and the half-cell design minimises cell stress reducing the potential for micro cracks in the field. This is backed by improved guaranteed initial and yearly degradation ensuring the highest energy yields. Combined with Q CELLS award winning Q.ANTUM cell technology, Q.PEAK DUO-G5 and

Q.PEAK DUO BLK-G5 are the modules with the highest power available at a reasonable price, maximising energy yields and ensuring low LCOE. With more than 5 GW of Q.ANTUM solar cells deployed, only Q CELLS has the experience and the knowledge to push forward cell and module technology simultaneously, to create Q.ANTUM DUO.

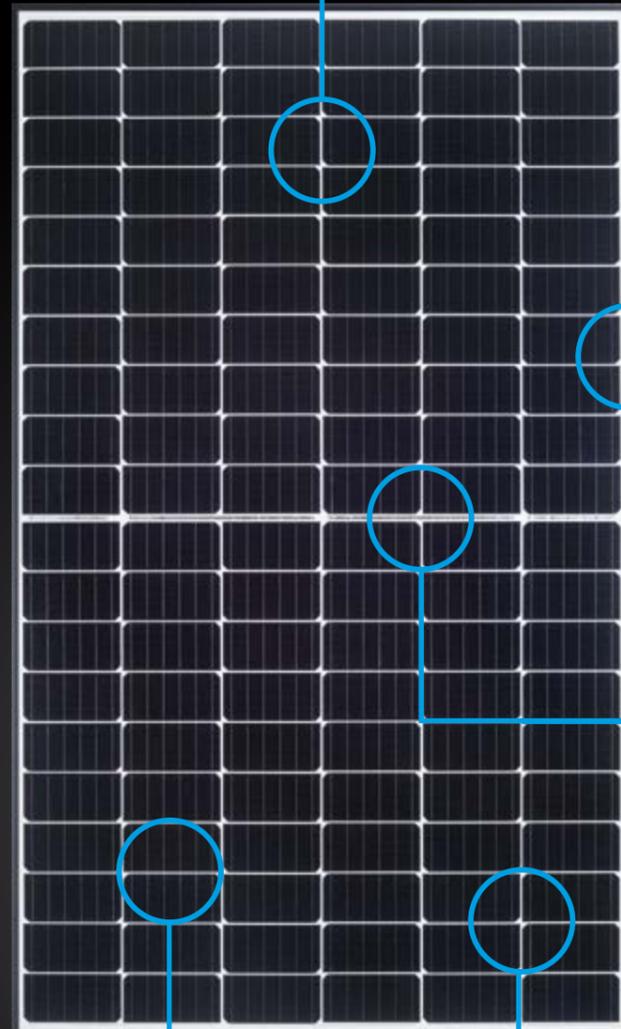
## THE Q.ANTUM DUO EFFECT



## EXCEPTIONAL POWER, SUPERIOR EFFICIENCY AND BEST-IN-CLASS WARRANTIES

Q CELLS solar modules equipped with Q.ANTUM DUO Technology not only offer impressive performance under real life conditions, but also best-in-class warranty terms of 98 % power in the first year and 85 % after 25 years.

# WE PAY ATTENTION TO DETAIL – THE NEW Q.PEAK DUO-G5 GENERATION



**Q.ANTUM DUO half-cells with 6 busbar technology for higher yield per surface area and low BOS costs**

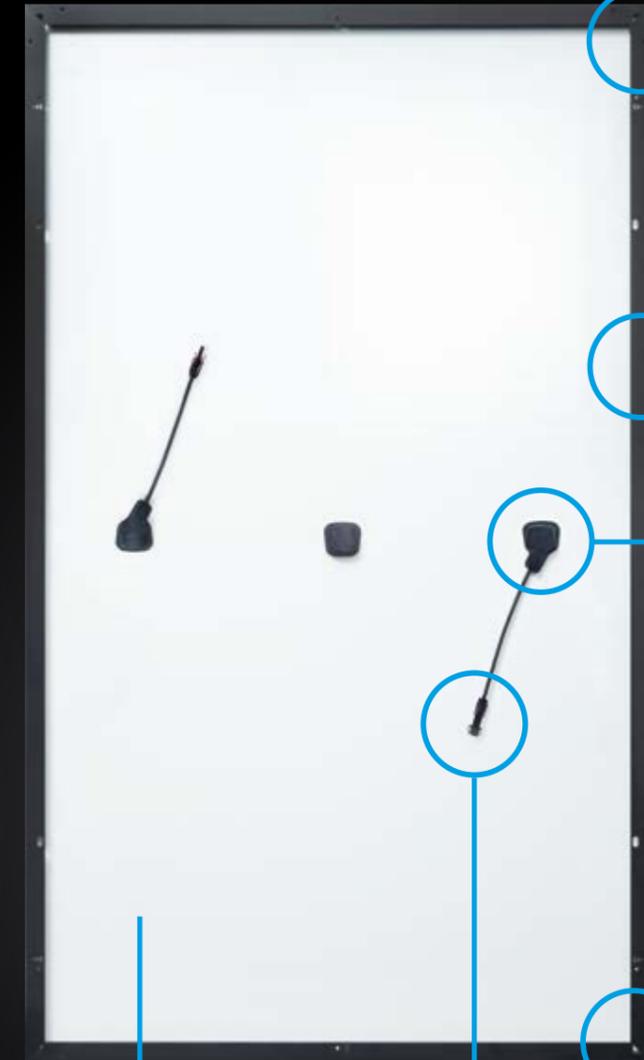
**32 mm high-tech frame for high wind and snow loads up to 4,000/5,400 Pa (IEC, UL)**

**Independent upper and lower module-halves connected in parallel ensure improved yield when modules are partly shaded**

**New wire technology instead of ribbons with round shape and smaller width increasing internal reflections and reducing shading by up to 75%**

**Q CELLS Yield Security**

- Anti PID Technology against power loss through Potential-Induced Degradation
- Hot-Spot Protect to protect against module fire
- Tra.Q™ laser identification for additional protection against counterfeiting
- Anti LID Technology against power loss through Light-Induced Degradation



**Reduced frame edge avoids moss and dirt build-up**

**Reliable silicone connection for excellent stability and durability**

**Optimised junction box design with welded connections for increased energy yields and corrosion protection**

**High-quality backside for permanent sealing**

**High quality Multi-Contact MC4 connectors with 1,100 mm cable length**

**Optimally positioned, large drainage holes protect against frost damage**

# Q.PEAK DUO-G5 ENDURING HIGH PERFORMANCE



THE NEW Q.PEAK DUO-G5 SOLAR MODULE FROM Q CELLS IMPRESSES THANKS TO INNOVATIVE Q.ANTUM DUO TECHNOLOGY, WHICH ENSURES PARTICULARLY HIGH PERFORMANCE ON A SMALL SURFACE.



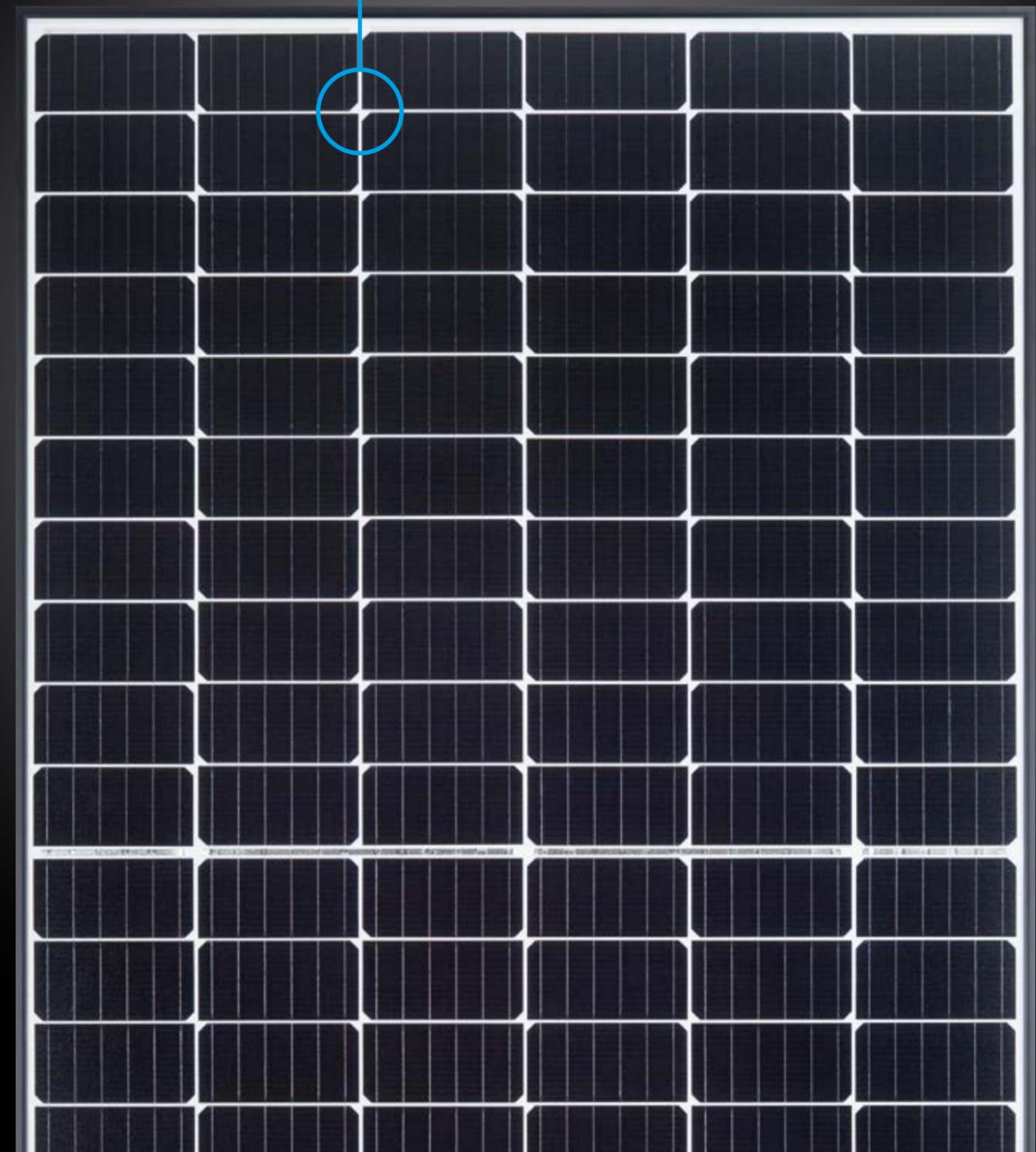
Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology

## MONOCRYSTALLINE Q.ANTUM DUO TECHNOLOGY

The new Q.PEAK DUO-G5 is a monocrystalline solar module with power classes up to 330Wp and an efficiency of up to 19.9%. Q.PEAK DUO-G5 solar modules offer higher yields over smaller surface areas. This is made possible by the new generation of Q.ANTUM's world-record-

holding cell concept which has now been combined with state-of-the-art circuitry, half-cells and a six-busbar design. The black half-cells of the Q.PEAK DUO-G5 enhance the visual appearance of even the most exclusive residential system. The Q CELLS Anti LID Technology eliminates light

induced degradation (LID), which can greatly reduce system performance, almost completely. Other conventional monocrystalline solar cells will lose much of their initial performance, once exposed to sunlight. With Q.PEAK DUO-G5 this is not the case, thanks to Anti LID Technology.



## TECHNICAL DATA

Type	120-half-cell module
Capacity	Up to 330Wp
Efficiency	Up to 19.9%
Sorting	+5/-0W
Weight	18.7 kg

## HOW YOU BENEFIT

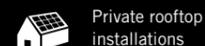


Optimal yields, whatever the weather with excellent low-light and temperature behaviour (-0.37%/K)



Separated operation of upper and lower module-half enables better shading resistance

## THE IDEAL SOLUTION FOR



Private rooftop installations



Excellent stability: tested for wind loads up to 4,000Pa and snow loads up to 5,400Pa



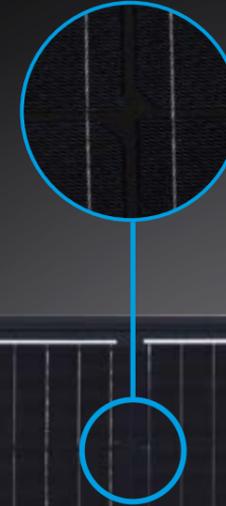
Q CELLS solar modules have a 12-year product warranty and 25-year linear performance warranty

# Q.PEAK DUO BLK-G5

## HIGH PERFORMANCE AND AESTHETICS



THE NEW Q.PEAK DUO BLK-G5 SOLAR MODULE FROM Q CELLS IMPRESSES WITH ITS OUTSTANDING VISUAL APPEARANCE AND PARTICULARLY HIGH PERFORMANCE ON A SMALL SURFACE THANKS TO THE INNOVATIVE Q.ANTUM DUO TECHNOLOGY.



Enhanced visual appearance due to complete black front surface

### MONOCRYSTALLINE Q.ANTUM DUO TECHNOLOGY

The new Q.PEAK DUO BLK-G5 is a monocrystalline solar module with power classes up to 320Wp and an efficiency of up to 19.3%. Q.PEAK DUO BLK-G5 solar modules offer higher yields over smaller surface areas. This is made possible by the new generation of Q.ANTUM's world-record-

holding cell concept which has now been combined with state-of-the-art circuitry, half-cells and a six-busbar design. The front surface of the Q.PEAK DUO BLK-G5 is completely black and enhances the visual appearance of even the most exclusive residential system. The Q CELLS Anti LID

Technology eliminates light induced degradation (LID), which can greatly reduce system performance, almost completely. Other conventional monocrystalline solar cells will lose much of their initial performance, once exposed to sunlight. With Q.PEAK DUO BLK-G5 this is not the case, thanks to Anti LID Technology.

### TECHNICAL DATA

Type	120-half-cell module
Capacity	Up to 320Wp
Efficiency	Up to 19.3%
Sorting	+5/-0W
Weight	18.7 kg

### HOW YOU BENEFIT

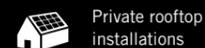


Optimal yields, whatever the weather with excellent low-light and temperature behaviour (-0.37%/K)



Separated operation of upper and lower module-half enables better shading resistance

### THE IDEAL SOLUTION FOR



Private rooftop installations



Excellent stability: tested for wind loads up to 4,000Pa and snow loads up to 5,400Pa



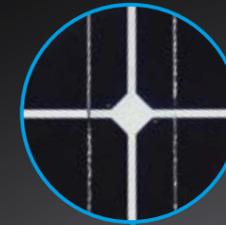
Q CELLS solar modules have a 12-year product warranty and 25-year linear performance warranty

# Q.PEAK-G4.1

## EXCELLENT PERFORMANCE AND INNOVATION



THE NEW HIGH-PERFORMANCE MODULE Q.PEAK-G4.1 IS THE IDEAL SOLUTION FOR RESIDENTIAL BUILDINGS THANKS TO ITS INNOVATIVE Q.ANTUM CELL TECHNOLOGY.



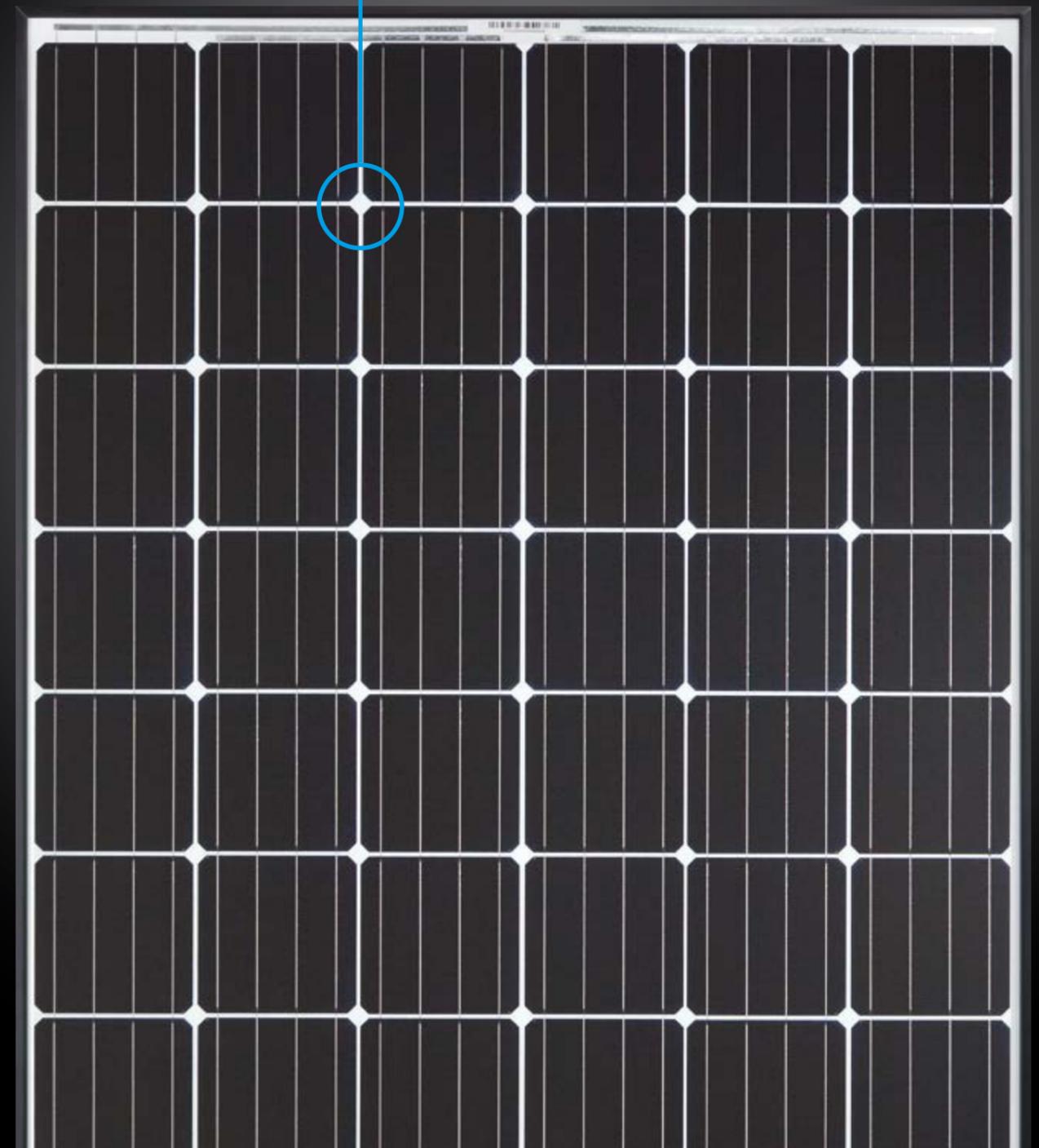
Optimised, even cell spacing improves performance

### MONOCRYSTALLINE Q.ANTUM SOLAR MODULE

The new Q.PEAK-G4.1 is a mono-crystalline solar module with performance classes up to 305Wp and an efficiency of up to 18.6%. Q.PEAK-G4.1 solar modules offer higher yields over smaller surface areas. Q.ANTUM Technology combined with the outstanding Q CELLS

module architecture made this possible. The front surface of the Q.PEAK-G4.1 enhances the visual appearance of even the most exclusive private house system. The Q CELLS Anti LID Technology eliminates light induced degradation (LID), which can greatly reduce system

performance, almost completely. Other conventional monocrystalline solar cells will lose much of their initial performance, once exposed to sunlight. With Q.PEAK-G4.1 this is not the case, thanks to Anti LID Technology.



### TECHNICAL DATA

Type	60-cell module
Capacity	Up to 310Wp
Efficiency	Up to 18.6%
Sorting	+5/-0W
Weight	18.5kg

### HOW YOU BENEFIT



Optimal yields, whatever the weather with excellent low-light and temperature behaviour



Optimised design with 32mm frame height

### THE IDEAL SOLUTION FOR



Private rooftop installations



Excellent stability: tested for wind loads up to 4,000Pa and snow loads up to 5,400Pa



Q CELLS solar modules have a 12-year product warranty and 25-year linear performance warranty

# Q.PEAK BLK-G4.1

## AESTHETICS AND POWER



**THE NEW MONOCRYSTALLINE HIGH-PERFORMANCE MODULE Q.PEAK BLK-G4.1 IS THE IDEAL SOLUTION FOR RESIDENTIAL BUILDINGS THANKS TO ITS INNOVATIVE Q.ANTUM CELL TECHNOLOGY AND ALL BLACK APPEARANCE.**



Completely black front surface enhances the visual appearance of even the most exclusive private house systems

### MONOCRYSTALLINE Q.ANTUM SOLAR MODULE

The new Q.PEAK BLK-G4.1 is a monocrystalline solar module with performance classes up to 300Wp and an efficiency of up to 18.3%. Q.PEAK BLK-G4.1 solar modules offer higher yields over smaller surface areas. This is made possible by the new Q.ANTUM generation

of Q CELLS module architecture. The front surface of the Q.PEAK BLK-G4.1 is completely black and enhances the visual appearance of even the most exclusive private house system. The Q CELLS Anti LID Technology eliminates light induced degradation (LID), which can greatly reduce

system performance, almost completely. Other conventional monocrystalline solar cells will lose much of their initial performance, once exposed to sunlight. With Q.PEAK BLK-G4.1 this is not the case, thanks to Anti LID Technology.

### TECHNICAL DATA

Type	60-cell module
Capacity	Up to 300Wp
Efficiency	Up to 18.3%
Sorting	+5/-0W
Weight	18.5kg

### HOW YOU BENEFIT



Optimal yields, whatever the weather with excellent low-light and temperature behaviour



Up to 10% less logistics costs due to higher solar module capacity per transport box.

### THE IDEAL SOLUTION FOR



Private rooftop installations



Excellent stability: tested for wind loads up to 4,000Pa and snow loads up to 5,400Pa



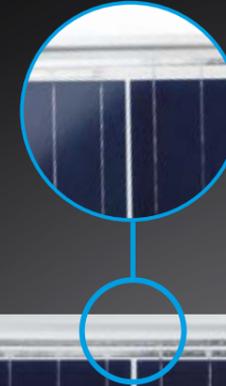
Q CELLS solar modules have a 12-year product warranty and 25-year linear performance warranty

# Q.PLUS-G4.3

## VARIABLY APPLICABLE AND RELIABLE



**THE POLYCRYSTALLINE HIGH-PERFORMANCE MODULE Q.PLUS-G4.3 IS THE IDEAL SOLUTION FOR ALL APPLICATIONS THANKS TO ITS INNOVATIVE Q.ANTUM CELL TECHNOLOGY.**



High-quality manufacturing using the „SolGel Roller Coating“ method reduces light reflection by 50 % and provides long term corrosion protection

### Q.ANTUM SOLAR MODULE

Our Q.PLUS-G4.3 high-performance solar module is the solution for all solar applications thanks to its innovative cell technology Q.ANTUM. This polycrystalline solar module is designed to achieve

best performances under real conditions – even with low radiation intensity and on clear summer days. The Q.PLUS-G4.3 with Q.ANTUM Technology achieves high module efficiencies of up to 17.7 %

and are characterised by above average durabilities and high operational safety. Like all Q CELLS solar modules, installation is quickly and easily done to guarantee immediate use.

### TECHNICAL DATA

**Type** 60-cell module  
**Capacity** Up to 290Wp  
**Efficiency** Up to 17.7 %  
**Sorting** +5 / -0W  
**Weight** 18.5 kg

### HOW YOU BENEFIT



Optimal yields, whatever the weather with excellent low-light and temperature behaviour



Up to 10 % less logistics costs due to higher solar module capacity per transport box.

### THE IDEAL SOLUTION FOR



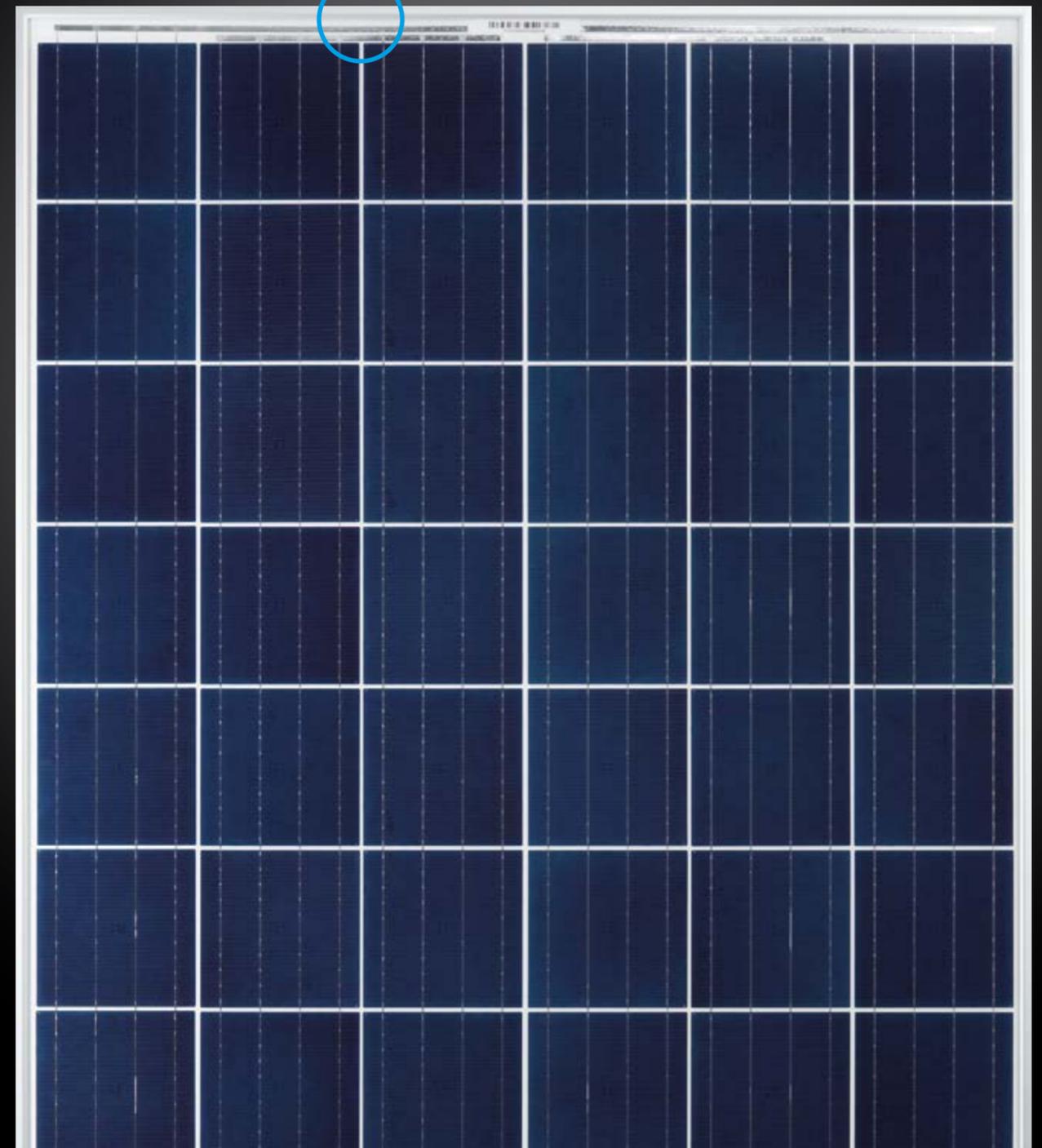
Commercial and industrial rooftop installations



Excellent stability: tested for wind loads up to 4,000Pa and snow loads up to 5,400Pa



Q CELLS solar modules have a 12-year product warranty and 25-year linear performance warranty



# Q.FLAT-G4

## THE SIMPLE AND RELIABLE SYSTEM FOR FLAT ROOFS

Q.FLAT-G4 IS MORE THAN JUST A SUBSTRUCTURE FOR FLAT ROOFS: IT FORMS THE BASIS FOR AN ENTIRE SYSTEM SOLUTION FROM A SINGLE SOURCE.



### QUICK INSTALLATION VIA 1-2-3 ASSEMBLY

The modules only have to slide into the central support column – there is no need for additional and complicated clamping above the module.

### INSTALLATION WITHOUT SPECIAL TOOLS

All screws are standard types, which means no special tools are required.

### QUICK AND EASY CABLING

When the modules slide in and are angled, there is enough free space to carry out the cabling conveniently.

### LESS MEASURING WORK

Once aligned, there is no longer any need for measurement. The ballast carriers serve as a distance gauge between the base profiles. As soon as the first base profile is aligned, the distances to the following base profiles result by hanging in the ballast carriers.

### KIND TO THE ROOF

The building material is spared thanks to installation without penetration of the roof membrane. The ballast floats above the roof area and prevents damage by the ballast, which means no moss can accumulate below the tiles, naming only one example.

### LONGEVITY AND ABSENCE OF STRESS

The stability of the base profiles also ensures problem-free installation of the roof even when it is uneven, while mechanical loads on the modules are also reduced.

### HIGH YIELDS

The specific yield is improved almost independent of the system's alignment and enables a high level of flexibility in the design of the rooftop array. With a significantly higher power density of over 165 Wp/m<sup>2</sup> compared to standard systems, Q.FLAT-G4 is the best solution for high yields.

# Q.MOUNT

## THE UNIVERSAL SYSTEM FOR SLOPING ROOFS

Q.MOUNT ENABLES FAST AND EASY INSTALLATION OF SOLAR SYSTEMS ON SLOPING ROOFS.



### DIVERSE APPLICATIONS

Due to the variety of different roof shapes and roofing materials, sloping roofs provide a unique challenge when it comes to installing a solar system. Whether on traditional tiled roofs, corrugated Eternit, corrugated sheet metal or tin joint roofs, Q.MOUNT includes easy-to-install elements for quick, efficient and safe installation of solar systems on sloping roofs.

### QUICK AND EASY INSTALLATION

Different roof types also create very different requirements for the installation of a solar system. Whichever roof-parallel configuration is necessary, the modular components of Q.MOUNT and Q CELLS solar modules make the installation process quick, easy and cost-effective.

### EXTENSIVE COMPONENT SELECTION

The Q.MOUNT system from Q CELLS offers a comprehensive selection of mounting elements, which are individually adapted to the respective roof surface. All Q.MOUNT components are manufactured using high-quality, corrosion-resistant materials that are extremely durable and designed to ensure a long service life. Using the Q CELLS Rooftop Planner, the system can be designed quickly and easily, all necessary mounting components can be determined in a single step and the structural feasibility can also be checked.

### SUITABLE FOR ALL STANDARD SLOPING ROOF TYPES

Q.MOUNT is the ideal system for installing private and commercial rooftop arrays equipped with Q CELLS solar modules, because both the module layout and the substructure can be planned and implemented easily using the Q CELLS Rooftop Planner and Q.MOUNT.

### YOUR BENEFITS:

- ✓ Q.MOUNT is suitable for all common types of sloping roof
- ✓ High quality, durable components
- ✓ Fast and safe installation
- ✓ Straightforward planning of the solar system and the required components via the Q CELLS Rooftop Planner

# ALL-IN-ONE SOLUTION INVERTER, BATTERY AND MANAGEMENT SYSTEM

THE Q CELLS Q.HOME+ ESS-G1 ENERGY STORAGE SOLUTIONS ALLOW TO STORE THE ENERGY PRODUCED FOR MORE ENERGY SELF-SUFFICIENCY.

## THE Q CELLS Q.HOME+ ESS-G1 ENERGY STORAGE SYSTEM

Our Q CELLS Q.HOME+ ESS-G1 is the ideal solution for the environmentally-friendly reduction of electricity costs for private houses and ensures a reliable long-term operation and high output. The combination of its integrated inverter with a proven Samsung lithium-ion battery makes Q.HOME+ ESS-G1 the perfect choice for your all-in-one device for energy self-consumption.

With Q.HOME+ ESS-G1 you may store your clean and cheap solar energy for the use during nighttime or whenever the sun is not shining.



# Q.HOME+ ESS-G1 OPTIMISED CAPACITY FOR RESIDENTIAL HOUSES

SINCE EACH RESIDENTIAL HOME DIFFERS IN SIZE AND IN THE SPECIFIC ENERGY NEEDS OF ITS OWNERS, BOTH THE PHOTOVOLTAIC AND THE ENERGY STORAGE SYSTEM NEED TO BE ATTUNED OPTIMALLY TO EACH OTHER.



## Q.HOME+ ESS-G1 3.6

Q.HOME+ ESS-G1 3.6 is the smallest version of our optimised product range. With its 3.6kWh capacity it is the ideal solution for solar systems with a size of up to 6.6kWp.

## Q.HOME+ ESS-G1 5.5

Q.HOME+ ESS-G1 5.5 offers 5.5kWh battery capacity while maintaining its compactness.

## Q.HOME+ ESS-G1 8.0

Q.HOME+ ESS-G1 8.0 with a capacity of 8.0kWh is the ideal storage solution for solar systems of up to 10kWp. With its three phase inverter it is more efficient than the smaller devices of our product range.



## PV INVERTER

The integrated PV inverter converts the direct current generated by the solar system into alternating current, which is fed directly into the home network. This means that no additional equipment is necessary.



## BATTERY INVERTER

Whenever the sun isn't shining, the DC power stored in the battery can be converted into AC by the integrated battery inverter and used directly in the home network.



## SAMSUNG LITHIUM-ION BATTERY

Automotive industry proven Samsung lithium-ion battery tested by VDE.



## 10 YEARS PRODUCT WARRANTY

10 years product warranty as well as 80% Performance Warranty after 10 years ensures a reliable long-term operation.

## PRODUCT SPECIFICATION Q.HOME+ ESS-G1

Item	Q.HOME+ ESS-G1 3.6	Q.HOME+ ESS-G1 5.5	Q.HOME+ ESS-G1 8.0	
DC Input (PV)	Max Power	6.6kWp	6.6kWp	10.0kWp
	Max Voltage	550V	550V	1.000V
	MPPT/Rated Voltage	125V ~ 500V/400V	125V ~ 500V/400V	320V ~ 800V
	Min./Initial Input Voltage	125V/150V	125V/150V	150V/180V
	No. of Strings (MPPT)	2 (2)	2 (2)	2/4 (2+2)
AC Output	Power	5.0kVA/4.6kVA (DE)	5.0kVA/4.6kVA (DE)	8.0kVA (DE)
	Feed-in Phase/Connection	1/1	1/1	3/3
Efficiency	PV to Grid (European)	95 %	95%	96 ~ 97 %
	Power	2kW	2kW	3kW
Lithium-Ion Battery	Nominal Capacity	3.6kWh	5.5kWh	8.0kWh
	Usable Capacity	3.24kWh	5.0kWh	7.2kWh
Case	Dimension (L x W x H)	1.000 x 260 x 680mm	1.000 x 260 x 680mm	1.070 x 260 x 880mm

# THE Q.PARTNER PROGRAMME SETTING STANDARDS AND PROVIDING ADDED VALUE

AS A PARTNER OF HANWHA Q CELLS, YOU BENEFIT FROM A STRONG GLOBAL BRAND, EXTENSIVE MARKETING SUPPORT, PROFESSIONAL TRAININGS, AND ATTRACTIVE SERVICES.

# TOGETHER, WE WILL TAKE ONE GIANT LEAP FORWARD — BENEFITS FOR OUR PARTNERS

ARE YOU A BELIEVER IN OUR PRODUCTS, AND WANT TO SHOW IT? WOULD YOU LIKE TO RECEIVE MARKETING SUPPORT? THEN CHOOSE A PARTNERSHIP WITH Q CELLS AND BECOME OUR Q.PARTNER.



#### SO MUCH MORE FOR YOU

As a Q.PARTNER, you benefit from attractive prices to help you to stay even further ahead of the competition. Plus you can also ensure you qualify for a targeted bonus. More performance, more bonus, more for you.



#### EXTENSIVE MARKETING SUPPORT

Our partner portal has all Q CELLS communications ready for you — you can also order your promotional material directly via the marketing store.



#### Q CELLS ROOFTOP PLANNER

As a Q.PARTNER, you can save time and resources by implementing all configuration steps in a single program. This results in a structured list of all the materials you need, including the respective prices, which you can easily export as an Excel document or a project report in PDF format.



#### TRAINING FOR PROFESSIONALS

Take part in our professional training sessions for installers. You will learn everything you need to know about application-specific installations, and the advantages of Hanwha Q CELLS' high-quality products.



#### Q.SHOP

You can put your solar package together in just a few clicks and request a no-obligation quote from us — simple and direct.



#### ATTRACT NEW CUSTOMERS

For example, take advantage of our online solar calculator and projects from the Hanwha Q CELLS network, and earn a reputation as a strong Q.PARTNER for both consultation and installation.



#### PERSONAL SUPPORT

Your direct contact partner at Hanwha Q CELLS will be ready and waiting to help you whenever the need arises. Our qualified employees will be happy to answer any questions you may have about technical details, your orders and current deliveries.

#### All benefits at a glance:

- Attractive pricing
- Bonus compensation
- Individual contacts
- Professional sales documents
- Individual marketing and sales support
- Attract new customers
- Straightforward delivery terms
- Minimum quantity delivery
- Local technical service support
- Product training
- Speedy and direct product requests
- Individual sales training

#### KEEP IN TOUCH

**Interested?**  
Contact us.

Tel. +49 (0) 3494 66 99 - 23 222  
partner@q-cells.com

#### We can visit you!

Our sales representative will visit your company and complete a partnership agreement with you.

# REFERENCE PROJECTS



## ROTTERDAM, NETHERLANDS 822 kWp

The largest solar system in Rotterdam was built on the frozen goods warehouse of FrigoCare in Waalhaven. 3,100 Q.PRO BFR-G4.1 solar modules were installed on a roof area of 7,500 m<sup>2</sup> (the size of a soccer field), thereby ensuring 750,000 kW of annual electricity generation.



## BAROSSA VALLEY SA, AUSTRALIA 90 kWp

Barossa Vintners doesn't just use the sun to mature its popular wines. In addition, the 90 kWp solar system equipped with Q CELLS modules will reduce the winery's CO<sub>2</sub> emissions by 22% and its electricity and maintenance costs by around EUR 19,000 per year.



## CANHA, PORTUGAL 13.3 MWp

This solar park in Canha, Portugal, has a capacity of 13.3 MWp and includes 50,876 Q.PRO-G3 solar modules. Our Q.MEGA system was installed in 1.4 MWp DC blocks. The construction time for this project, for which Hanwha Q CELLS also manages the operation and maintenance under an O&M contract, was only 6 weeks.



## STOWBRIDGE, UNITED KINGDOM 24.3 MWp

The Stowbridge solar park in the south-west of the UK was built in just 12 weeks in early 2014 and is based on our Q.MEGA system. Q.PRO-G3 solar modules in the 255 to 265 Wp power classes were installed — the successor to our polycrystalline solar module that was crowned the winner of Photon magazine's 2014 yield test.



## DAVOS, SWITZERLAND 340 kWp

This rooftop array helps the World Economic Forum to reduce the environmental impact of its annual conference in Davos. "It generates enough energy to reduce CO<sub>2</sub> emissions by more than ten tonnes per year — another step towards a climate-neutral future," explains Alois Zwinggi, Managing Director of the World Economic Forum.



## TICINO, SWITZERLAND 450 kWp

The largest commercial solar system in the canton of Ticino produces clean solar energy using 1,800 of our Q.PRO-G3 solar modules. The system was installed in just six weeks and powers 110 homes using the successor model to our solar module that triumphed in Photon magazine's yield test.



## GUAYAMA, PUERTO RICO 30.0 kWp

This solar system is based on 120 Q.PRO BFR-G3 250Wp solar modules and supplies electricity to the Church of San Antonio de Padua in Guayama. The installer, Juapi Project Services LLC, put special emphasis on durability and high yields in hot conditions when choosing the modules. Although the level of irradiation is particularly high thanks to the Caribbean sun, the solar modules must also be able to withstand the region's strong tropical storms.



## COPENHAGEN, DENMARK 3.78 kWp

Q CELLS donated Q.PLUS BFR-G4.1 solar modules to equip URBAN RIGGER, the world's first floating student apartments. Built at the harbour in Copenhagen, the URBAN RIGGER concept showcases low-cost, mobile, floating and CO<sub>2</sub>-neutral apartments, which were designed by Danish star architect Bjarke Ingels and presented at the Biennale Architettura exhibition in Venice in 2016.

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