



qcells



Home Energy Solutions Brochure

2022 Qcells Product Line Up

Completely Clean Energy



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About Qcells

We Value Long-term Partnership

Qcells is a renowned complete energy solutions provider in solar cells and modules, energy storage solutions, downstream project business, and distributed energy solutions. Qcells has headquarters in 2 countries Seoul, South Korea, and Thalheim, Germany with four global R&D centres and diverse international manufacturing facilities in the U.S., South Korea, Malaysia and China.

Qcells has a strong heritage that dates back to its foundation in Germany in 1999, where it became a true pioneer of advanced solar cell technology. Since then, Qcells quickly became one of the solar industry's leaders for its technology innovations.

As an affiliate of Hanwha Group, a Fortune Global 500 company and the seventh largest conglomerate in South Korea with total assets over \$197 billion, Qcells is both a trusted and bankable renewable energy partner for our customers worldwide.

In addition to our Tier 1 Bloomberg rating and recognition as a BNEF Top Tier module supplier, our module production capacity of 12.4GW make us one of the largest solar solutions providers in the world.

Facts & Figures



Total Sales*
(2020)



Operating Profits*
(2020)



Module Shipment
(2020)



Module Capacity
(December 2021)

*Financial figures of Hanwha Solutions Corporation, the mother company of Qcells
*Exchange rate: 1 USD = 1,191 KRW



Our Mission

We aim for
a **greener tomorrow**
with **completely**
clean energy solutions.

World Presence

2 Countries

Headquarters

4 Countries

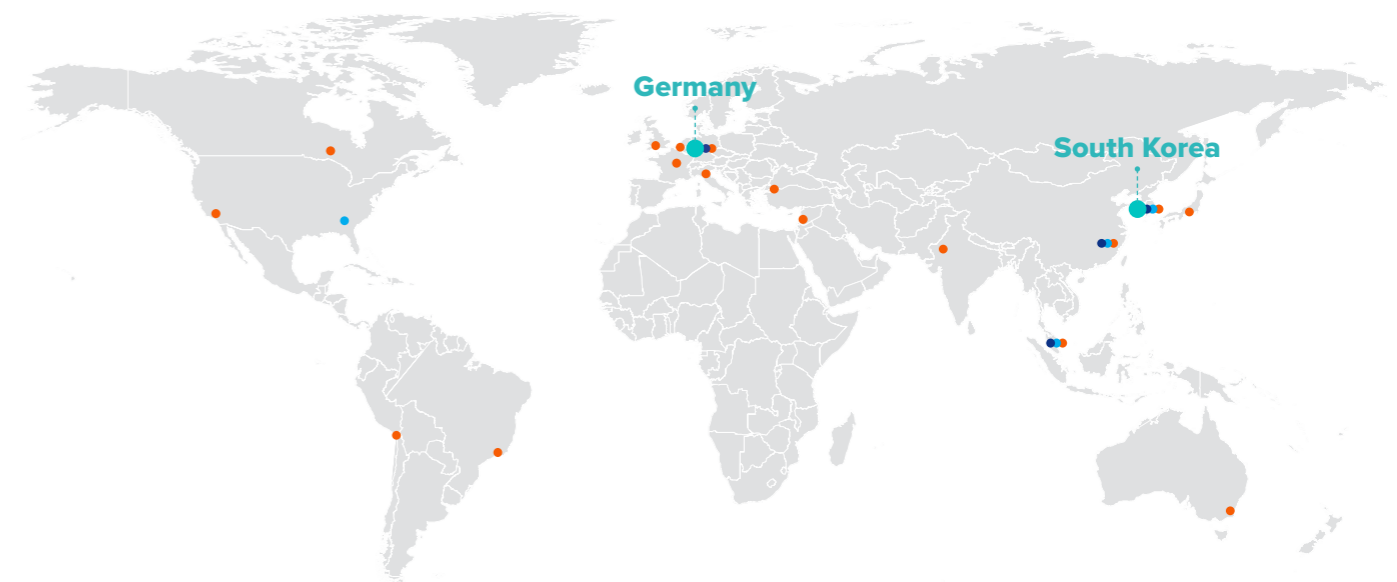
R&D Centers

4 Countries

Manufacturing
Sites

60+ Countries

Sales
Network



Reliability from Strict Quality Management

The Four Quality Levels

Considering solar modules have a lifespan of over 25 years, quality is one of the most important factors when you select the brand and the product. All Qcells' products, engineered in Germany, pass a strict quality test which consists of four levels.

Qcells' Unique Features

Level 1 Initial Certification

The Basic Requirement for Commercial Solar Modules

To guarantee the electrical safety and construction of the modules, Qcells' modules get initial certification, such as IEC and UL, from external institutes.

Level 2 Yield Security

The Most Trustful Cell Technology

Qcells Yield Security and Advanced Yield Security ensures long-term reliability of modules.



Level 3 Quality Controlled PV (QCPV)

The World's First to Pass Quality Controlled PV

Developed by TÜV Rheinland, QCPV is the strictest and most extensive testing program available in the industry. Along with that, it is the only certification in the industry to involve independent and random onsite testing as well as regular components and materials audits.

Level 4 Initial Quality Test

Uncompromising Testing Standard for the Ultimate Quality

Qcells' Internal Quality Test Program (IQT) ensures that all products meet high quality standards. As a leader in product quality, Qcells applies up to 3 times stricter testing standards than the global standard.

Validity & Reliability Quality Controlled PV TÜV Rheinland Seal

Qcells is the first solar module manufacturer in the industry to pass TÜV Rheinland's new Quality Controlled PV (QCPV) certification, the most thorough testing program in the industry.



For more information

1 Extended Stress Testing Standards

- Over 40 individual tests before production and after any changes.
- Up to 3 times stricter than IEC certification standards.

2 Onsite Production Monitoring

- Independent expert from TÜV Rheinland at Qcells sites.
- Samples randomly drawn from production line for testing.

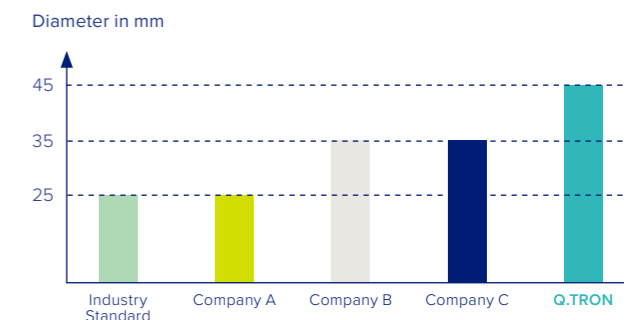
3 Components and Materials Audits

- Supplier audits and material footprint analysis regularly held.
- Before using in production, and regularly during production.



Physical Durability

The physical durability to withstand the external environment is important for any solar installation. One aspect that gives Q.TRON its premium edge is its excellent durability to resist 45 mm hail, larger than the industry standard.

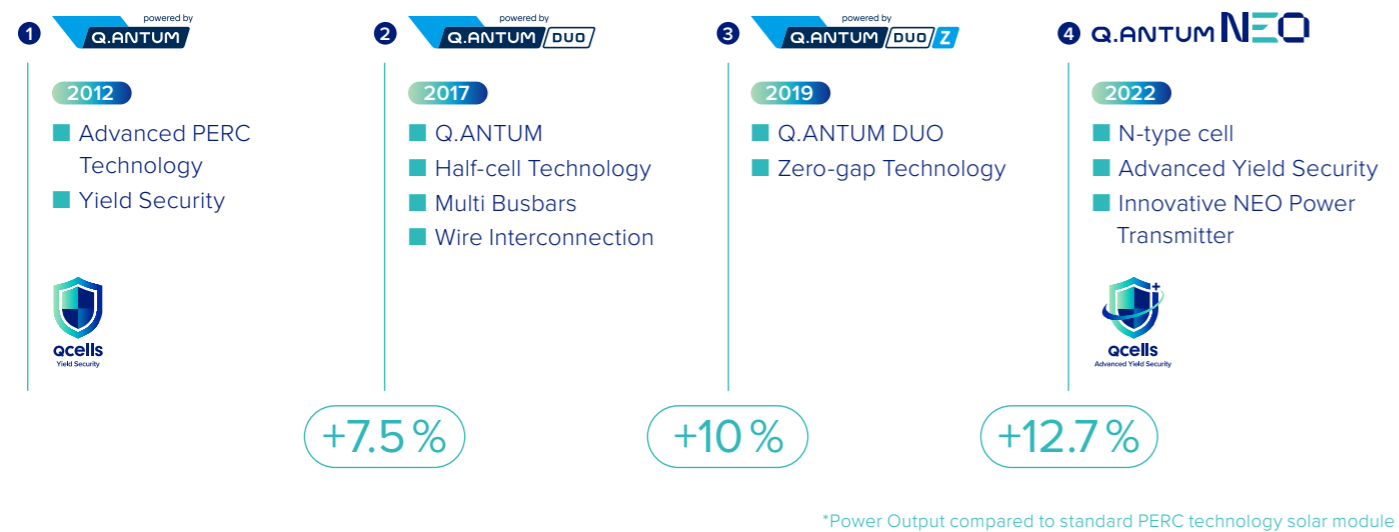


Harvesting Energy Innovation

Continuous Development of Q.ANTUM Technology

Qcells is the first company worldwide to commercialize the PERC technology, which is now used globally within the solar industry. As a pioneer of solar technology, Qcells has led the great era of PERC, developing its proprietary Q.ANTUM Technology by incorporating PERC and its unique Yield Security features. Qcells has continued its technology innovation, and Q.ANTUM has evolved into Q.ANTUM DUO with Half-cell Technology, and Q.ANTUM DUO Z with Zero-gap Technology. And now in 2022, Qcells is opening a new era of solar by introducing Q.ANTUM NEO Technology.

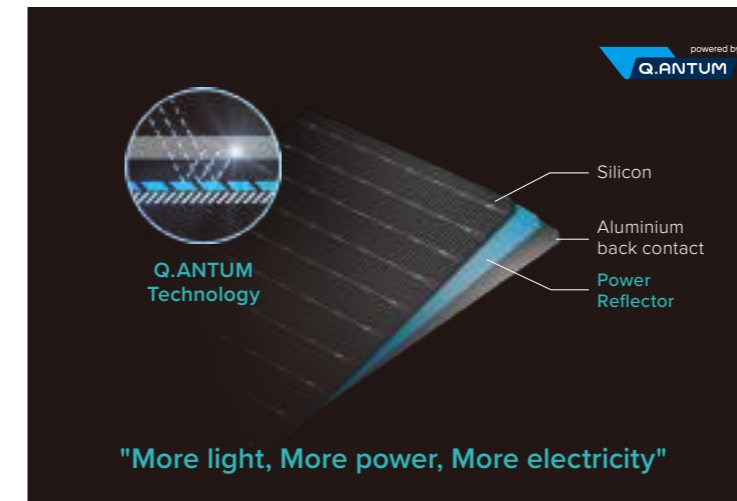
All of these technology advancements are always backed up by the world's strictest quality testing program QCPV, meeting the reliability customers need.



The Q.ANTUM Effect The foundation of Qcells Technology

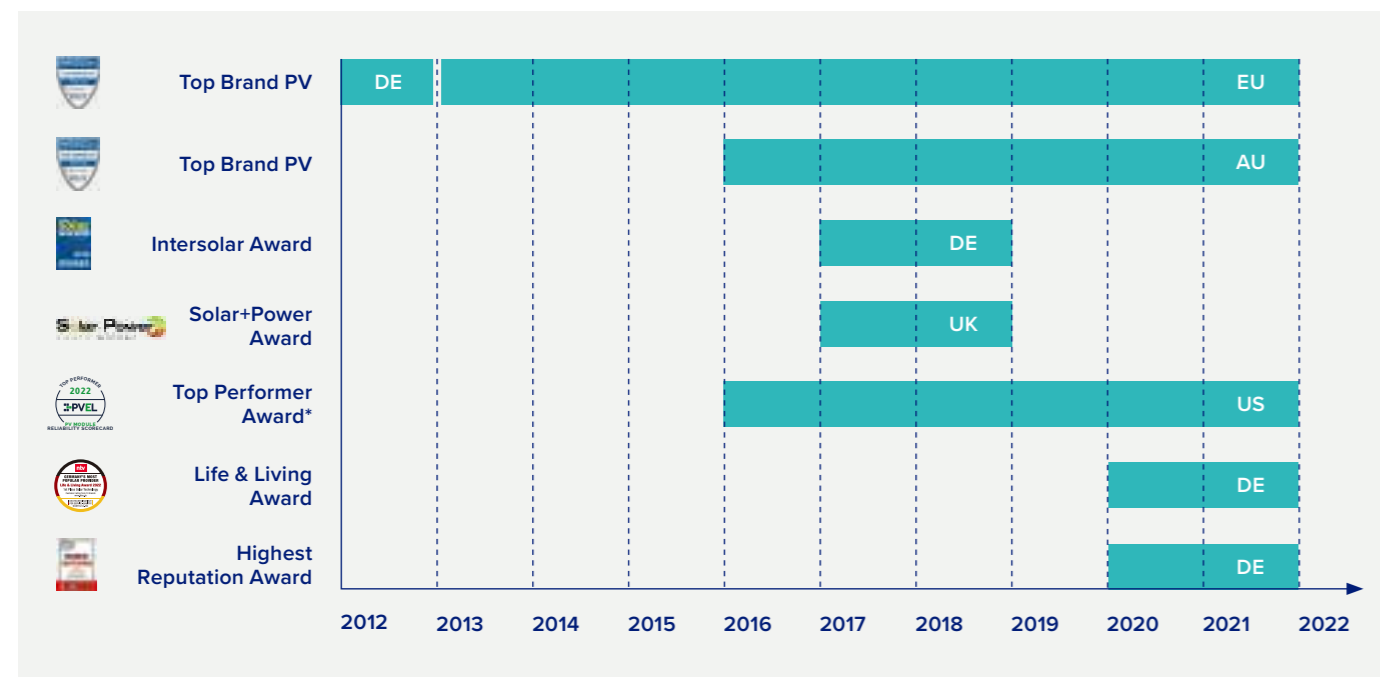
Qcells' Power Reflector

Rays of sunlight that would otherwise go to waste are mirrored by the Power Reflector 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.



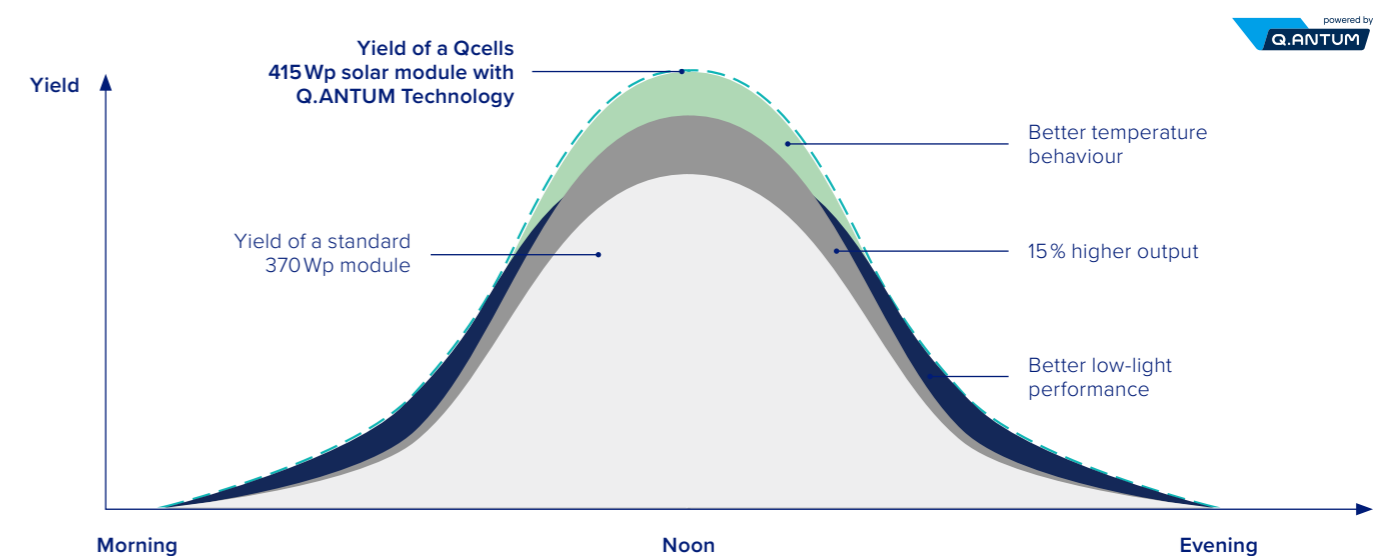
- Higher yields and lower LCOE
- Enhanced temperature coefficient
- Improved low-light behaviour
- Outstanding product reliability
- Best-in-class warranty terms

World-wide Recognition



*Applied to selected Qcells' modules. Contact your sales representatives for further information.

Q.ANTUM Ahead - More Yield, More Profit

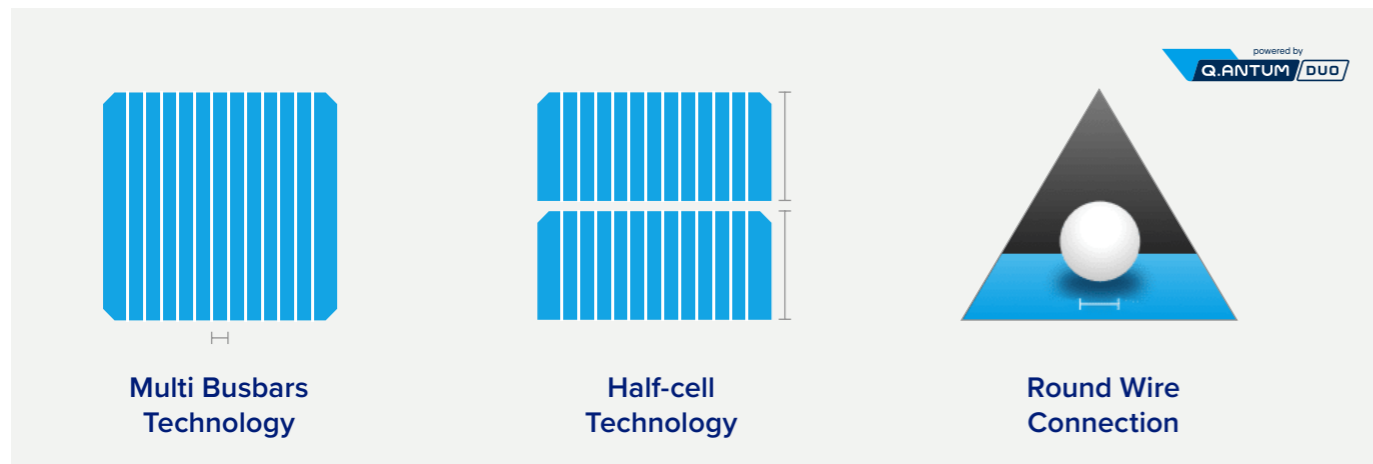


Ultimate PERC Solar Module

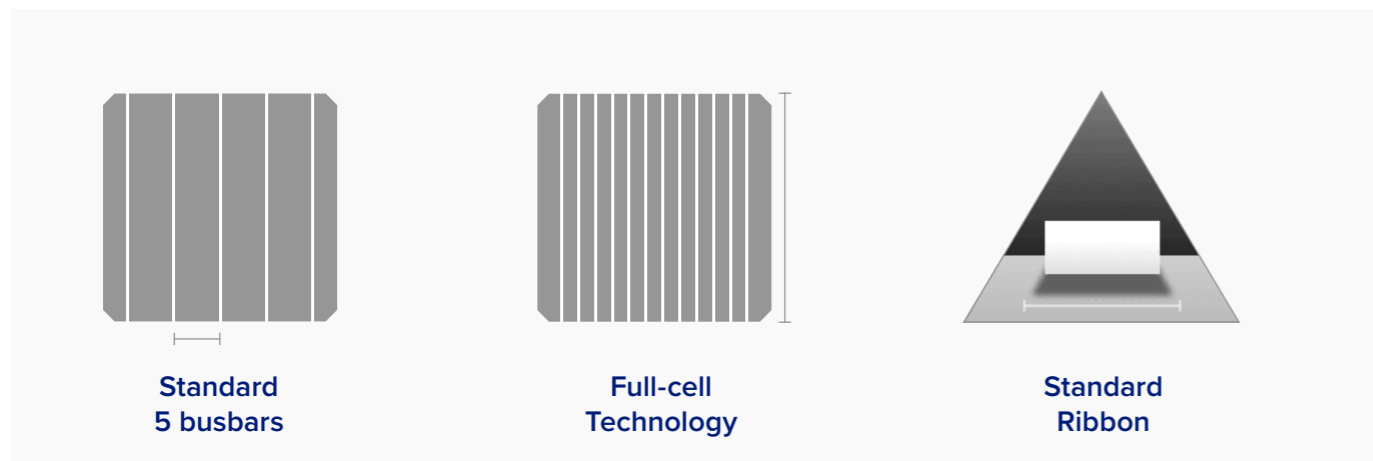
Q.ANTUM DUO Z Technology

Qcells solar modules with Q.ANTUM DUO Z Technology not only deliver impressive performance in real-world conditions, but also offer first-class performance guarantees of 98% in the first year and a full 86% after 25 years. The Q.ANTUM DUO Z Technology combines our Q.ANTUM cell with the innovative DUO cell separation method: The use of round connecting wires and zero-gap cell interconnection ensure higher power generation not only in the laboratory but also in everyday operation. Q.ANTUM DUO Z also increases the nominal power and improves the reliability of the module thanks to Qcells **Yield Security** consisting of Anti PID, Anti LID and Hot-Spot Protect. With more than 23 GW of Q.ANTUM solar cells produced, only Qcells has the experience and knowledge to drive the development of cell and module technology and launch new technologies such as Q.ANTUM DUO Z.

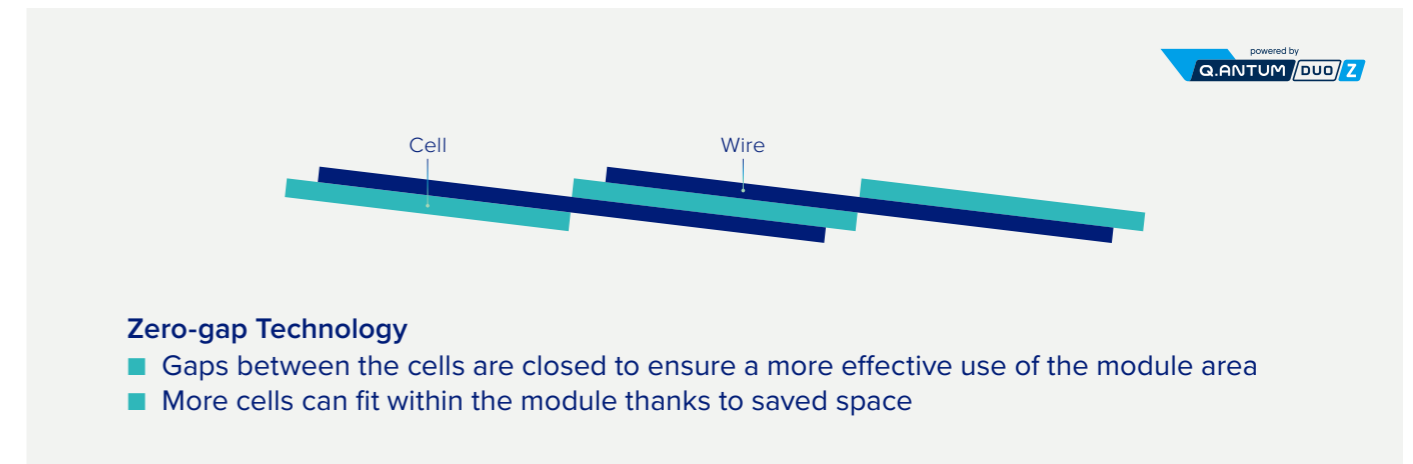
Q.ANTUM DUO Technology



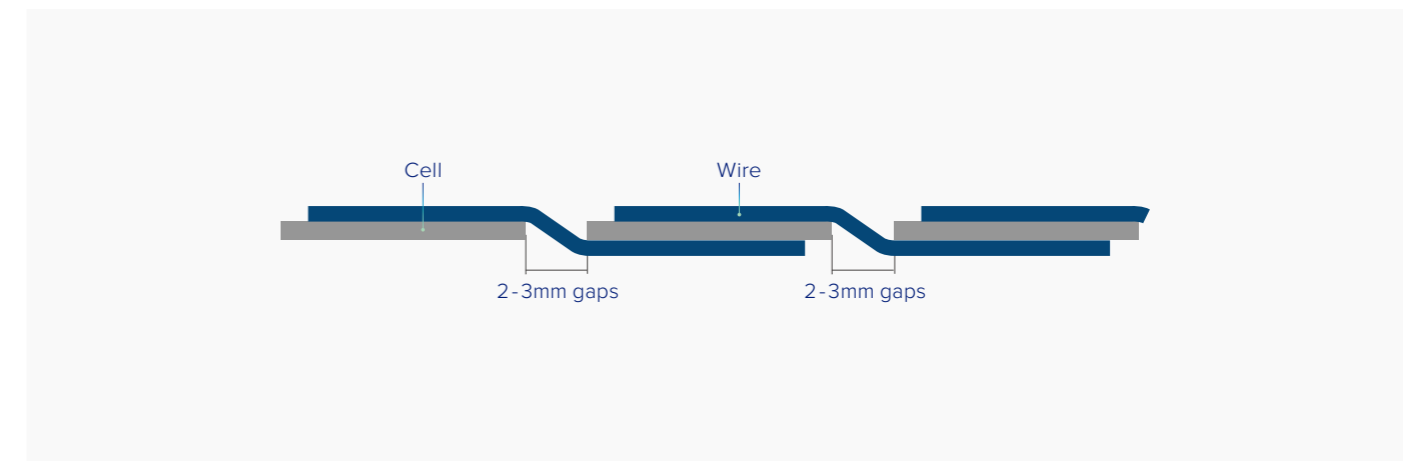
Conventional Technology



Q.ANTUM DUO Z Technology



Current Industry Standard



* Q.PEAK DUO BLK-G8 vs Q.PEAK DUO BLK ML-G9

All New N-type Cell Technology: Q.TRON Series

Q.ANTUM NEO Technology: High Power & Efficiency

The source of the highly efficient Q.ANTUM NEO solar cells lies within the NEO Power Transmitter.



Standard PERC Cells

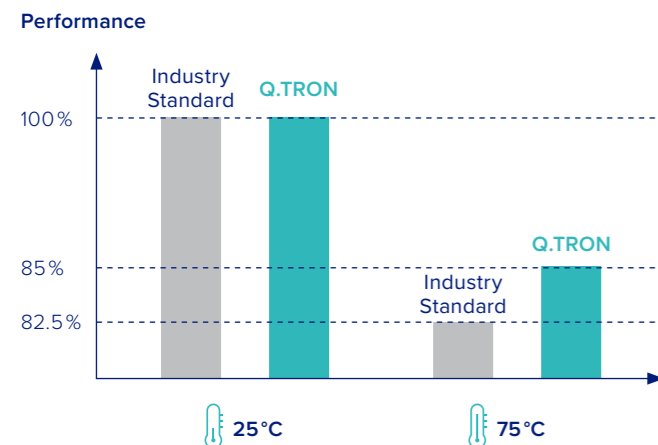
Standard PERC solar cells use a passivation layer with small holes for electrical interconnection of the cell's rear side. Passivation is reduced in the contact area which limits the maximum efficiency.

Q.ANTUM NEO Cells

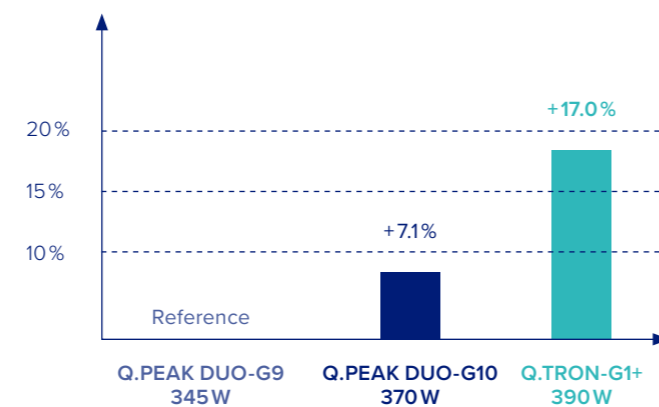
Within Q.ANTUM NEO solar cells, a passivation layer and electrical interconnection functionality are integrated in the NEO Power Transmitter. This allows full area passivation and contact at the same time, thus pushing beyond the limits of standard PERC technology.

Yield Comparison

With Q.ANTUM NEO Technology and Advanced Yield Security, Q.TRON modules can generate more energy and boost profits even under harsh conditions like high temperature and low light.



Temperature Coefficient
 Q.TRON = -0.30%/K
 Industry Standard = -0.35%/K



Simulation: 20 modules per system installed in San Francisco, USA

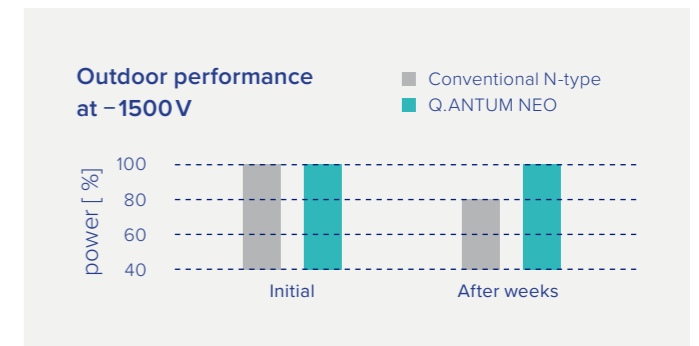
Advanced Yield Security: More Energy, More Benefits

Qcells' advanced Yield Security protects the solar cell from critical degradation effects and potential hot spots.

Advanced Anti-PID (APT)

PID can lead to significant power loss for both P-type and N-type cells. The APT of Q.ANTUM NEO effectively protects the solar cells and secures high energy yield in the long-term.

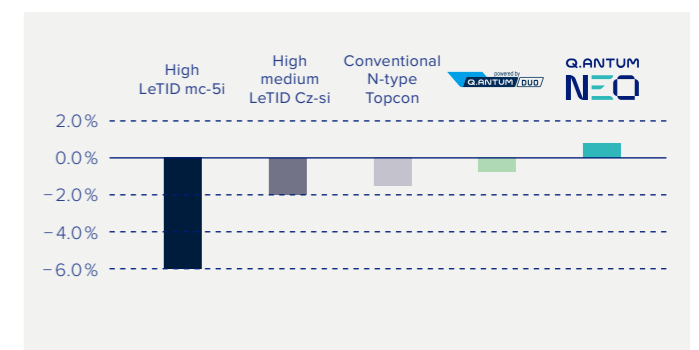
*PID: Potential Induced Degradation



Advanced Anti LeTID (ALD)

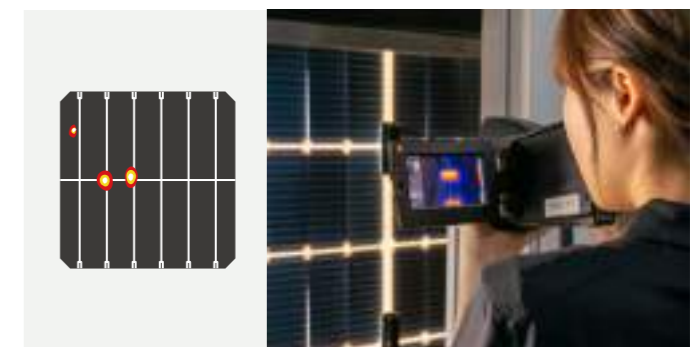
Not only in P-type, but also in N-type, the power of solar cells can significantly decrease due to effects of LeTID. As the first company to observe LeTID effects and to devise a solution to suppress LeTID in 2015, Qcells secures high reliability against LeTID.

*LeTID: Light and Elevated Temperature Induced Degradation



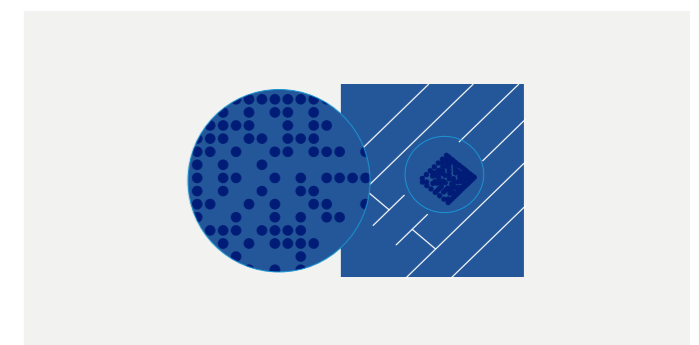
Hot-Spot Protect

In order to prevent potential hot spots in cells, we inspect 100% of the Q.ANTUM NEO cells with infrared camera scanning.

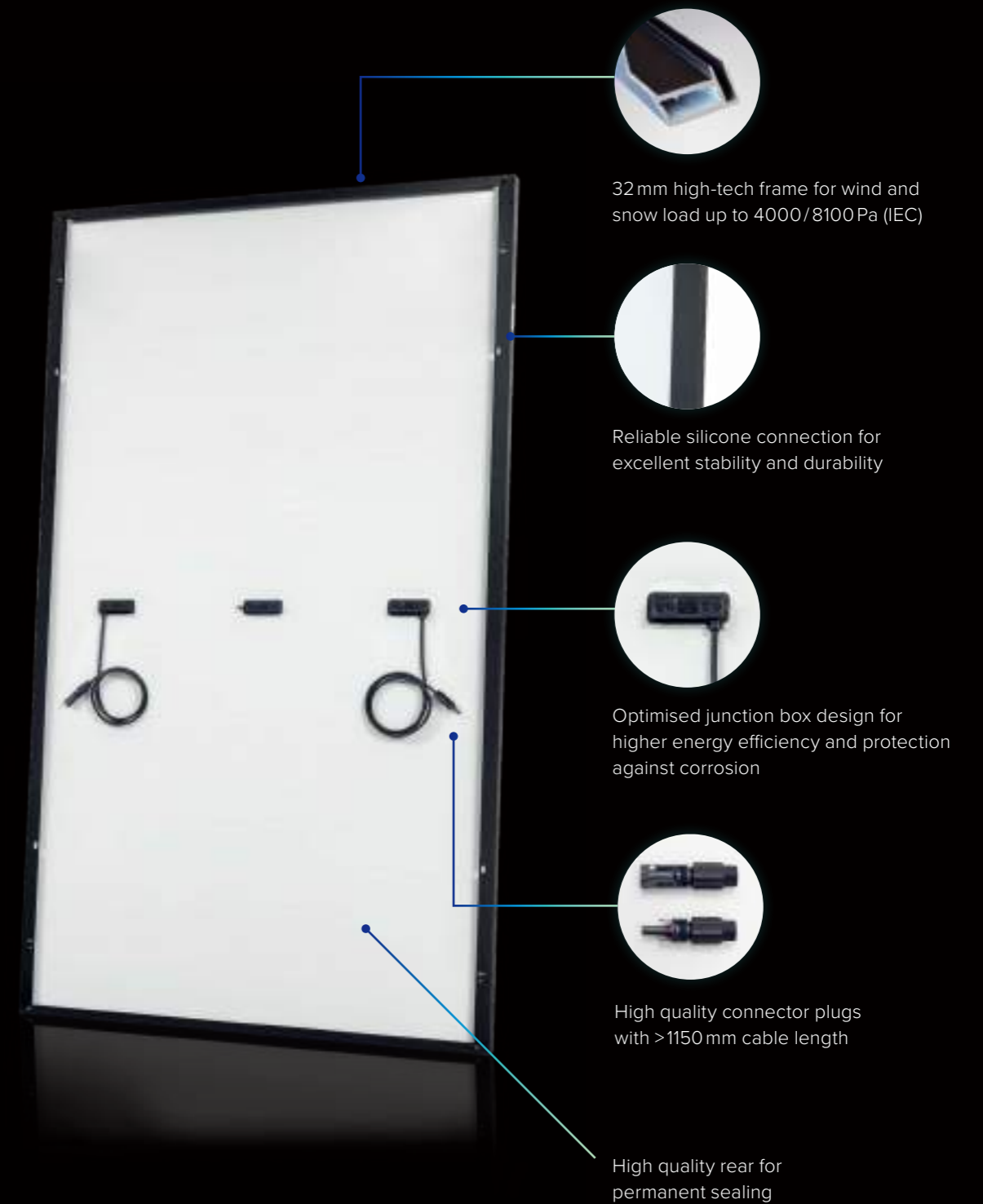
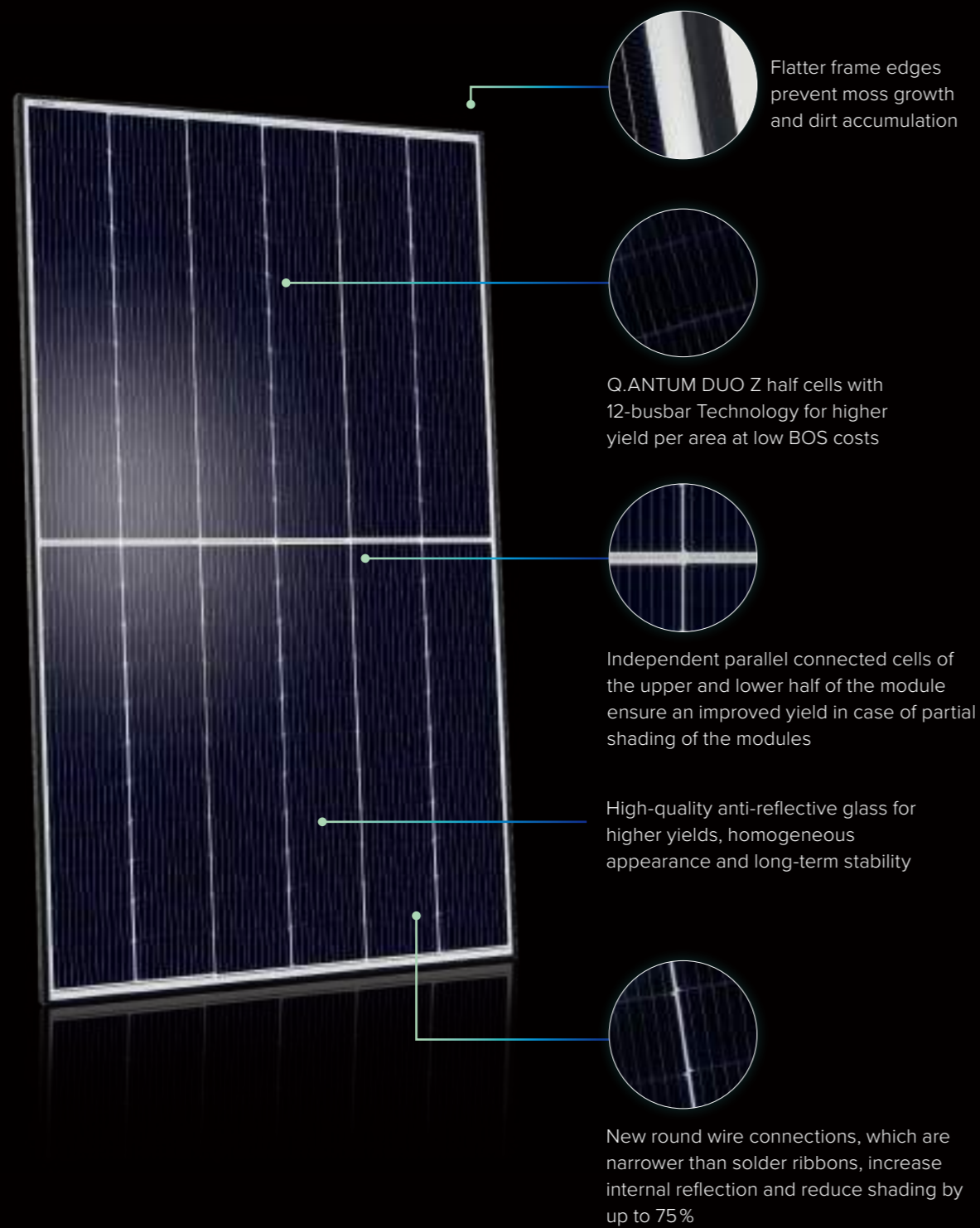


Tra.Q™

Qcells is the only solar manufacturer that conducts cell-level quality management. With Tra.Q™ laser marking, every single cell produced by Qcells is traced and monitored throughout the entire production process, enabling big data analysis and assuring high reliability and quality.



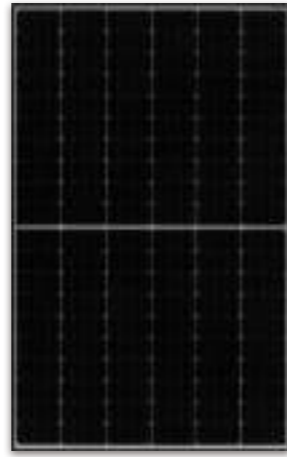
We Pay Attention to Every Detail



Product Overview



**Q.PEAK DUO
ML-G10+**




Q.PEAK DUO-G10+




Q.MAXX-G4+



Q.MAXX BLK-G4+

Power Class	405 Wp - 415 Wp	370 Wp - 380 Wp
Efficiency	20.1% - 21.1%	20.1% - 21.2%
Format (including frame)	1879 mm × 1045 mm × 32 mm	1717 mm × 1045 mm × 32 mm
Weight	22 kg	19.9 kg
Frame	Black anodized aluminum	
Cell	6 × 22 Q.ANTUM solar half cell	6 × 20 Q.ANTUM solar half cell
Junction box IP	53 - 101 mm × 32 - 60 mm × 15 - 18 mm Protection class IP67, with bypass diodes	
Temperature Coefficient of PMPP	-0.34%/K	
Snow Load	5400 Pa	8100 Pa
Wind Load	4000 Pa	
Warranty	 25 year product and performance warranty	

Power Class	400 Wp - 410 Wp	390 Wp - 400 Wp
Efficiency	20.3% - 21.4%	19.8% - 20.8%
Format (including frame)	1692 mm × 1134 mm × 32 mm	
Weight	20.9 kg	
Frame	Black anodized aluminum	
Cell	6 × 18 Q.ANTUM solar half cell	
Junction box IP	53 - 101 mm × 32 - 60 mm × 15 - 18 mm Protection class IP67, with bypass diodes	
Temperature Coefficient of PMPP	-0.34%/K	
Snow Load	8100 Pa	
Wind Load	4000 Pa	
Warranty	 25 year product and performance warranty	



Never Compromise Between Performance and Design

Modular&Scalable **Battery**

Q.SAVE

6.86 kWh Modular Battery
Scalable up to max 3 units



SAMSUNG SDI
Battery Cell

Sleek & Durable

Metallic Silver
Cover



High-performance **Inverter**

Q.VOLT

5.0 kW
Hybrid or AC-Coupled

Enhanced Warranty

15 year
Warranty

For Web Enable

Network
Connectivity

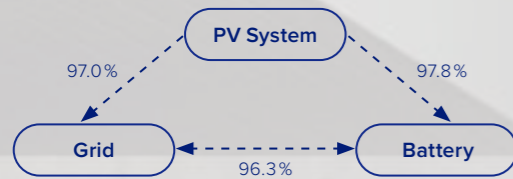
Wi-Fi/LAN/LTE

Integrated Solar Inverter and Storage



High Conversion Efficiency

Installers can check the status of multiple sites at a glance and find a particular site through search.



Extended 15 year Warranty

Enhanced product and performance warranty backed with high quality control.



Maximum Energy Generation

Q.OMMAND maximizes energy yields by incorporating real-time weather information.



Scalable Battery

Three scalable batteries up to 20.5kWh depending on your energy needs.



Samsung Battery for Safety

SAMSUNG NCA battery cells ensure maximum safety.



Emergency Backup from Blackout

Automatic transfer to battery power in blackout conditions. (ATS* Embedded)



Assembled in South Korea

Assembled in Korea for enhanced quality.



Easy and Fast Installation

Wall-mounted or floor-mounting^(optional) brackets available for convenience and easy installation.

* ATS (Automatic Transfer Switch)
A device that automatically transfers a power supply from energy grid to energy storage solutions in case of grid failure.



Q.OMMAND

Energy Management System

Q.OMMAND is Qcells' Energy Management System that consists of 3 Apps to support installation and module level monitoring. It provides real-time error feedback and performance assessment to keep the system at optimum state.



Homeowners | For your energy management
Q.OMMAND HOME



Installers | Remote System O&M
Q.OMMAND PRO

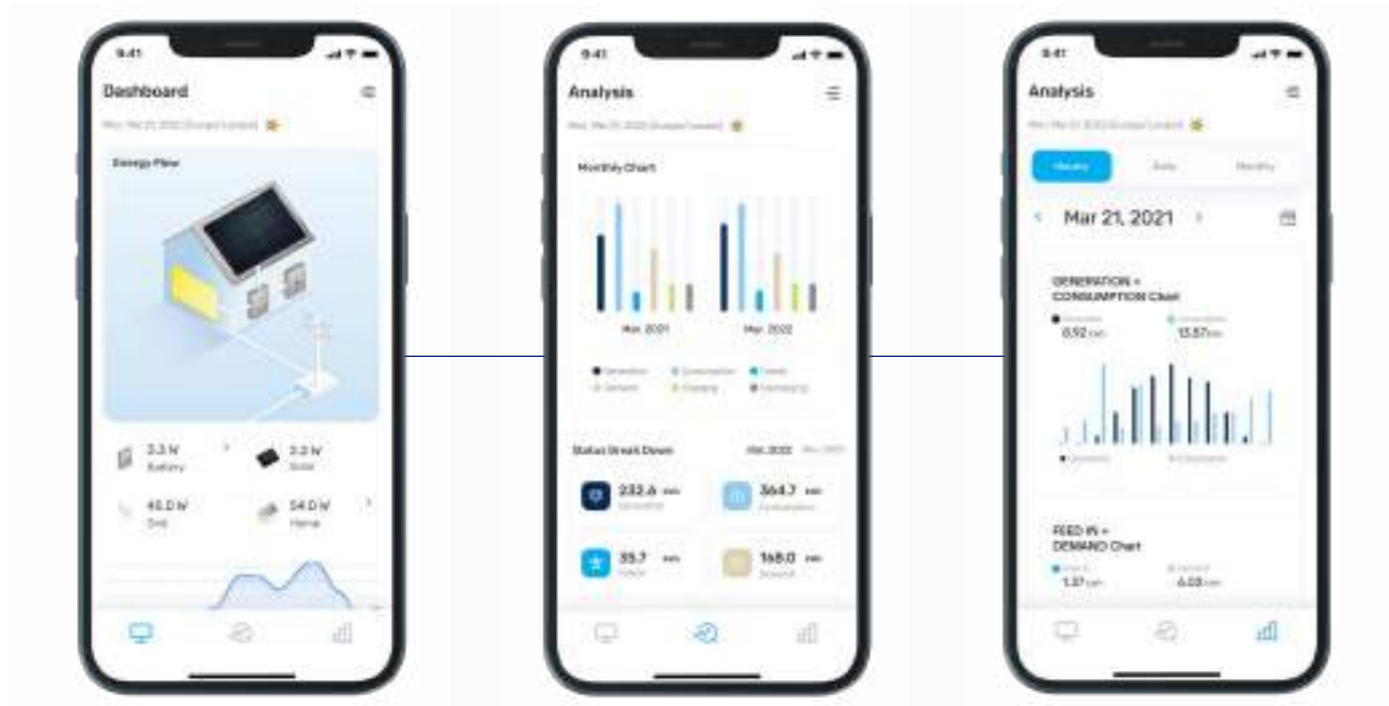


Commissioning | For easy & quick installation
Q.OMMAND GO



Q.OMMAND HOME For Homeowners

For monitoring and managing energy generation, storage, and usage anytime, anywhere.



Real-Time Energy Flow

Real-time update every three seconds.

Regular Report

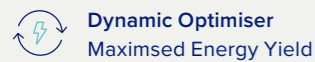
Monthly, daily, and hourly reporting available.

Notifications

Provide energy overview, battery performance, usage data, and customised alerts and more.

Smart Functions

Q.OMMAND Home provides three smart functions as below.



Dynamic Optimiser
Maximised Energy Yield

Qcells advanced AI algorithm incorporates weather information with real-time data from your solar modules and energy storage system to maximise energy usage and generation.



Energy Backup
Blackout Precaution

In case of blackout, you can set the amount of energy your Q.HOME CORE will always store.

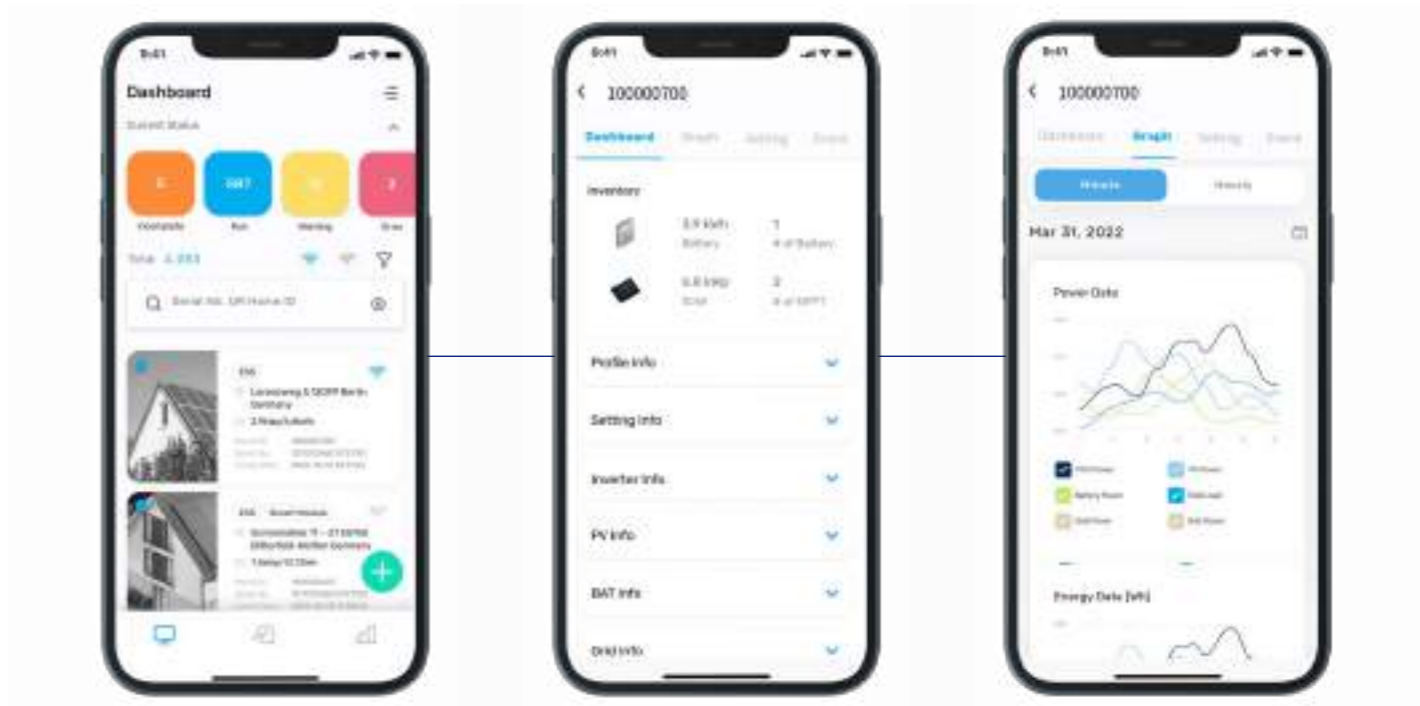


OTA (Over-The-Air)
Software Updates

Cloud-based software updates continuously adds new monitoring and management features.

Q.OMMAND PRO For Installers

For fast and easy O&M services.



Dashboard

Installers can check the status of multiple sites at a glance and able to find a particular site through search.

Notifications

Immediately notifies when service or maintenance is required.

Tracking History

Installers can track the history of each site including service history, error messages, replacements and others.

Grouping System

Installers can group the sites by region to easily modify grid code, energy policy, and more.

Q.OMMAND GO For Commissioning

For easy installation of Q.HOME CORE.

1 Network Connection

Simple connection to the network within the house.

2 One-click Update

One-click update to the latest version.

3 Date Setting

Save the date and time of the installation.

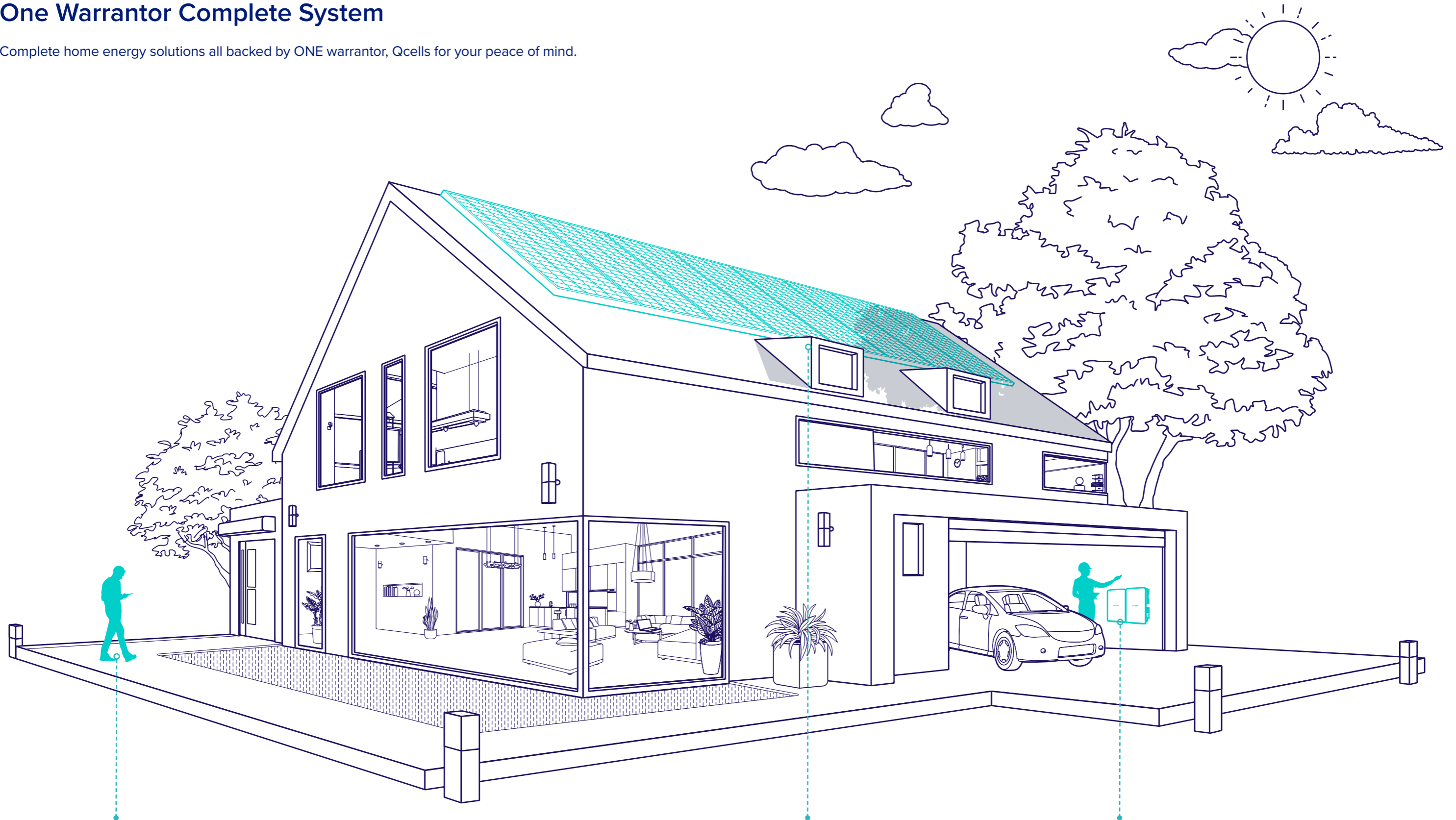
4 Device Setting

Initial settings of solar modules, batteries, and meters, including grid code, country and time zone.

Complete Home Energy Solutions

One Warrantor Complete System

Complete home energy solutions all backed by ONE warrantor, Qcells for your peace of mind.



Energy Management System

Q.OMMAND

Solar Module

Q.PEAK DUO-G10
Q.MAXX-G4 Series

Energy Storage Solution

Q.HOME CORE



Trailblazer

Bold ideas,
Bold actions.

Stewardship

Greater compassion,
Greater purpose.

Paragon

Beyond good,
Beyond excellence.

qcells