AIKO

Leading Humanity into the Carbon-free Era

AIKO

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Our Mission



Energy is the foundation of human civilization. With the exception of nuclear, geothermal, and tidal energy, nearly all energy used by humanity originates from solar radiation generated by the sun's nuclear fusion.

One million years ago, humanity mastered fire using wood—which was, in essence, solar energy stored through photosynthesis at a mere 1–2% efficiency. Fire brought warmth, light, and sustenance, while later unlocking metallurgy and defense against wild beasts. It propelled us beyond primitive survival and into the agricultural era. From that moment, the gears of civilization began to turn.

Three hundred years ago, humanity began utilizing fossil fuels such as coal, oil, and natural gas — energy stored through photosynthesis over Earth's 4.5-billion-year history. Supporting infrastructure was gradually built, leading to steam engines, power grids, internal combustion engines, airplanes, automobiles, and modern industrial systems, which propelled a great leap forward in civilization. Yet in just a few hundred years, this progress has exhausted the energy reserves accumulated over the planet's long history, bringing systemic challenges to climate, ecology, health, and geopolitics.

The dawn of photovoltaics represents a profound return to our energy origins. It marks humanity's departure from dependence on "stored energy from the past" and a step forward into an era of directly harvesting and instantly using "real-time solar energy". With the continuous improvement of new infrastructure such as power grids and energy storage, industries including transportation, manufacturing, and AI are accelerating their electrification. A carbon-free civilization, powered by solar energy, is taking shape.

AIKO began with a single solar cell and has remained committed to pushing the boundaries of efficiency ever since. By continuously improving the efficiency of solar energy capture and reducing its cost, AIKO transforms technological breakthroughs into products that can be manufactured at scale and proven over time. This enables the same sunlight to generate more electricity, allowing limited rooftop and land resources to deliver sustained value for decades. As solar modules around the world greet the rising sun each day, more and more sunlight is being transformed into clean, abundant, affordable and reliable electricity—laying a solid foundation for the Carbon-Free Era and the intelligent society of the future.

AIKO takes "Leading Humanity into the Carbon-Free Era" as its corporate mission and "To be a global leader in the PV industry" as its vision, embarking on the journey of chasing light.

About AIKO

AIKO is an innovation-driven, product-leading, asset-heavy photovoltaic cell and module manufacturing enterprise. Rooted in PV cell technology, with ABC modules as its core product platform, AIKO is committed to driving a clean energy revolution through disruptive innovation. By continuously unlocking new PV value through foundational innovation and open collaboration, AIKO is steadily advancing toward its vision of becoming a global leader in the photovoltaic industry.

200GW+
Cell & Module
Cumulative Shipments

10000+
Global Employees

3
R&D Centers

6
Production Bases

20+
Global Branches

20%
R&D Staff Ratio

USD 442 million
R&D Investment
in the Past Three Years

1500+
Granted Patents



Challenging the Limit

From breakthroughs in tubular PERC and large-format wafer technologies in the P-type era, to establishing ABC as the ultimate technology pathway for monocrystalline silicon in the N-type era, and onward to frontier innovations such as tandem cells and photon multiplication, AIKO continues to push the boundaries of solar energy harvesting efficiency and cost. Through this commitment, AIKO is advancing photovoltaics from a viable energy source into one that is ultra-efficient and universally accessible, laying a stronger technological foundation for the carbon-free era.

2016

Invented tubular PERC technology

Invented tubular bifacial PERC technology

Independently developed the SeparaTech ABC technology

2018

No.1 global market share in bifacial cell shipments

No.1 global market share in PERC cell shipments

Mass production efficiency of PERC cells reached 22%

2019

Invented and mass produced 166mm cell

Invented and mass produced 210mm large-size cell

2021

Invented ABC cell with efficiency exceeding 26%

2022

Took the lead in achieving GW-scale mass production of BC modules

Gen 1 ABC module efficiency reached 23.5%

2023

Launched Stellar Series ABC modules for utility-scale applications

Gen 2 ABC module efficiency reached 24%

2024

Launched Gen 3 INFINITE ABC module with efficiency exceeding 25%

2025

INFINITE ABC module officially entered mass production and delivery

Launched “Navigator” Intelligent Module

2026

Launched Gen 4 INFINITE ULTRA ABC module with conversion efficiency reaching 26%

Launch of the Z Series and Anti-Fire Module Series

Future

Based on ABC technology, continuously improve photoelectric conversion efficiency through tandem cells, photon recycling, photon multiplication, upconversion, multi-junction tandem and other technologies, gradually approaching the 95% Carnot Limit

Pioneering and Leading the BC Mass Production Era

1975

In 1975, Purdue University first proposed the concept of Back Contact (BC) solar cells. This revolutionary design, which transfers all electrodes to the rear side of the cell, is widely regarded as the technology route closest to the theoretical efficiency limit of crystalline silicon cells. However, constrained by extremely demanding manufacturing processes and high production costs, BC technology remained unable to bridge the gap from laboratory to industrial mass production for nearly half a century.

2016

In 2016, AIKO embarked on a path to break the deadlock by inventing SeparaTech ABC technology. This broke away from the industry's conventional one-step approach — which prepares both the P- and N-zones on the same tunnel oxide layer, limiting efficiency due to incompatible parameter requirements. AIKO's SeparaTech, in contrast, addresses the differing needs of the P- and N-zones for the tunnel oxide layer by separately fabricating passivated tunnel contact structures with optimal thickness for each, allowing carrier collection efficiency for both positive and negative poles to simultaneously approach physical limits. This conceptual innovation propelled BC technology, which had lain dormant for 50 years, into a new era of large-scale mass production.

2022

In 2022, ABC modules were officially launched, and AIKO became the first to achieve GW-scale mass production of N-type BC technology, successfully capturing this "jewel in the crown" of PV technologies. Through end-to-end innovation spanning silicon wafers, cells, and modules, AIKO has fully unleashed the efficiency potential of BC technology. Since March 2023, ABC modules have ranked first in TaiyangNews' global commercial module efficiency ranking for three consecutive years, setting a new benchmark for the PV industry with sustained leading conversion efficiency.

Wafer

- **Ultra-high-resistivity, low-oxygen silicon wafers**
  >500 Ω.cm, oxygen impurity concentration <10 ppma, high minority carrier lifetime (>10,000 μs). These wafers meet the stringent quality requirements of BC cells, enabling BC cell mass production efficiency to exceed 27%

Cell

- **Cell structure**
  full-area light reception, all-silicon power generation, full-area passivation, and all-back contact — providing the essential conditions for approaching the ultimate efficiency limit of 29.4%
- **Ultra-fast laser patterning**
  By developing femtosecond, picosecond, and sub-picosecond ultra-fast lasers, AIKO achieves semiconductor chip-level circuit design

Module

- **Infinite module technology**
  By concealing busbars and reducing cell spacing, as well as shortening the creepage distance, the front-side light-receiving area of the module is significantly increased, further raising the efficiency ceiling of ABC modules
- **Highly reliable 0BB structure design and laser stringing**
  Achieving high reliability, flexibility, and streamlined module manufacturing processes



ABC Disruptive Innovation

Disruption runs through AIKO's entire journey of innovation. Beyond leading in efficiency, AIKO has achieved comprehensive improvements in the power generation performance, reliability, and environmental adaptability of ABC modules through multiple key technological innovations, redefining the performance standards of high-efficiency modules.

Copper Interconnection Technology:

AIKO has innovatively developed a copper electroplating metallization solution to replace conventional silver paste grid lines. The low-temperature processing eliminates the damage to silicon wafers caused by high-temperature sintering. By replacing silver paste with copper, AIKO achieves comprehensive improvements in electrical conductivity, tensile strength, and impact resistance, while paving the way for the PV industry to break free from silver dependence and pursue healthy, sustainable development.

Partial Shading Optimisation:

AIKO ABC adopts a bypass-diode-like special design, which significantly reduces the power impact of shading on the entire module when a single cell is completely shaded.

High Temperature Restriction:

The copper interconnection technology enhances the micro-crack resistance of AIKO ABC modules, greatly reducing the probability of hot spots caused by micro-cracks. When a hot spot occurs, the bypass-diode-like structure can keep the module operating temperature below 100°C, safeguarding the safety of power plant assets.

Better Temperature Coefficient:

The structure and process characteristics of AIKO ABC cells — including a shadow-free front side, all-back contact, and bipolar passivation — increase the open-circuit voltage, achieving a temperature coefficient as low as -0.26%/°C, reducing power loss caused by rising module operating temperatures and increasing power generation.

Lower Degradation:

AIKO's high-resistivity, low-oxygen silicon wafers improve minority carrier lifetime. The SeparaTech bipolar passivation reduces surface recombination. Copper interconnection significantly lowers the possibility of micro-cracks. Together, these technologies reduce power degradation over long-term operation, ensuring greater lifetime power generation of AIKO ABC modules.



High-Quality Intelligent Manufacturing

Innovation does not stop at the laboratory. AIKO continues to innovate in engineering and manufacturing capabilities, improving production line efficiency and yield through process enhancements, and continuously optimizing production line design and management to reduce manufacturing costs. With PV products that lead in efficiency and quality, AIKO consistently delivers higher value to customers around the world.

As early as 2017, AIKO built the world's first 5GW-scale automated factory in Zhuhai. It pioneered the use of AGVs to connect process stations, initiating flexible production in the PV industry, and invented AI automatic quality inspection technology to improve product quality.

With the launch of ABC modules, AIKO introduced semiconductor industry management expertise to achieve a leap forward in manufacturing capabilities, enabling large-scale, high-yield, and low-cost production of ABC modules.

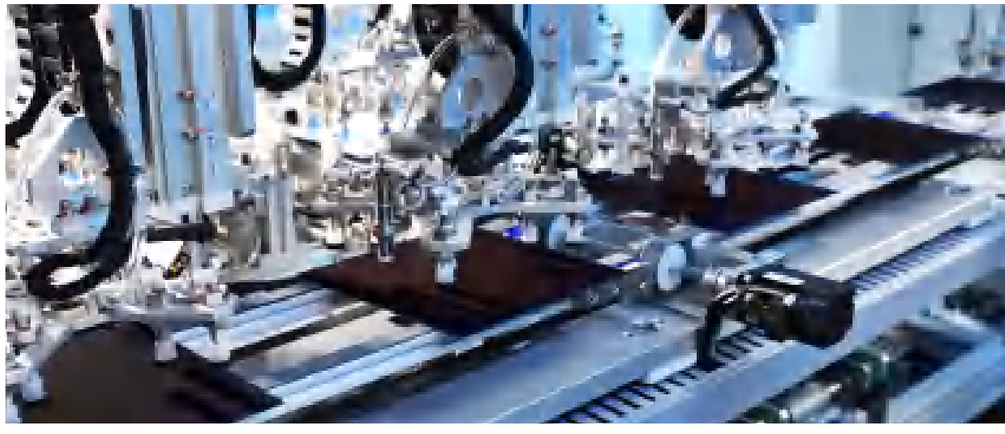
The Zhuhai base became the world's first 10GW integrated cell and module intelligent factory, enabling the application of advanced processes such as copper interconnection and Infinite technology.

The Yiwu base replaced AGVs with an overhead transportation line, further improving production line efficiency.

The Jinan base built an intelligent zero-carbon green factory, using 100% green electricity, achieving 90% wastewater recovery and 30% waste heat recovery, creating a digitalized and intelligent PV manufacturing facility, setting a new benchmark for green manufacturing in the PV industry.







High Value
Born for the Customer

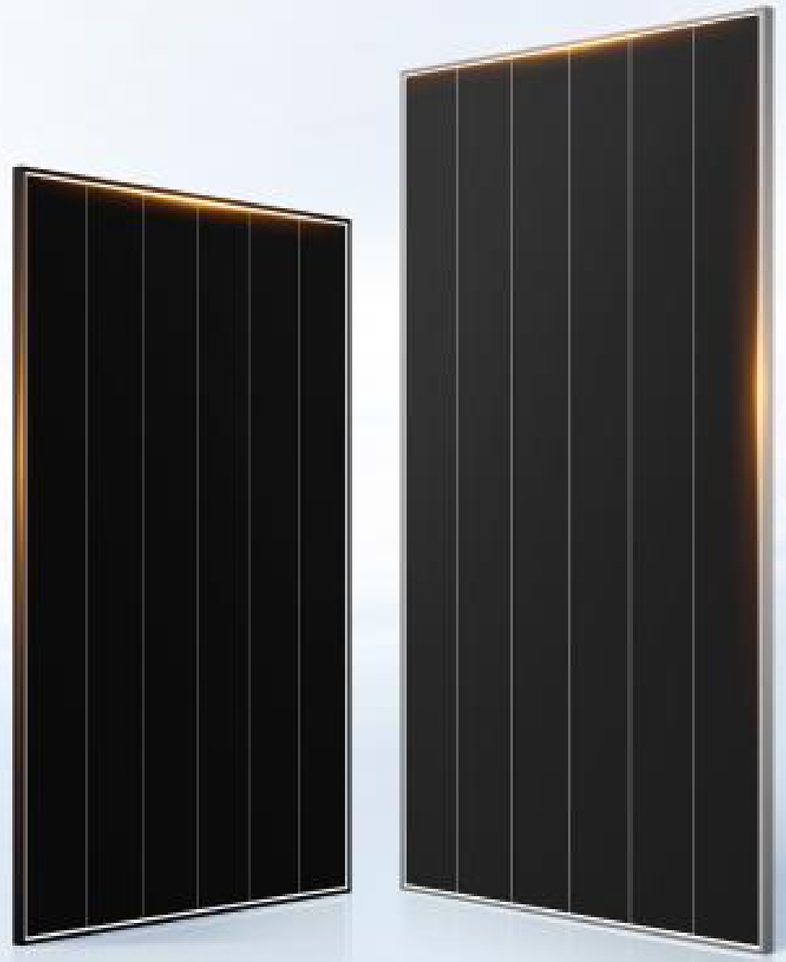
Driven by industry-leading original inventions, patented breakthroughs and proprietary cutting-edge technologies, AIKO ABC continues to redefine the limits of solar energy capture and utilisation—unlocking more reliable clean power and greater long-term value from every unit of land, space, material and investment. In doing so, AIKO is accelerating solar energy towards becoming a foundational energy source for the zero-carbon era.

Higher Power

6%–10% higher power than conventional modules under the same area

Higher Return

Lower degradation, strong weather resistance, and intelligent chip technology ensure lifetime returns



Higher Safety

Under extreme conditions such as windblown sand, salt spray, high temperature, and polar environments, ABC modules deliver more reliable operation with fire resistance, micro-crack resistance, and corrosion resistance

Superior Aesthetics

Ultimate pure black, delivering an unprecedented photovoltaic aesthetic experience to users

Higher Power

Ultimate Efficiency, Higher Installed Capacity

Since March 2023, AIKO ABC modules have consistently ranked first in the TaiyangNews global commercial module efficiency ranking.

Leveraging its leading photoelectric conversion efficiency, AIKO ABC modules deliver higher power within the same dimensions.

Same Footprint. Higher Capacity.

ABC: 6.6% Higher Installed Capacity for the Same Footprint





Same Capacity. Smaller Footprint.

ABC: 6.2% Footprint Reduction for the Same Capacity





Higher Return

Leadership goes beyond paper data. Building on its high power, AIKO ABC integrates a series of functional features to enhance module power generation performance in real-world operation, effectively increasing customer project returns.

Better Temperature Coefficient & Lower Degradation Ensure Higher Lifetime Energy Yield

AIKO ABC modules feature a better temperature coefficient and a lower degradation rate, enabling higher power output in actual operation.

AIKO ABC's temperature coefficient outperforms conventional modules

-0.26%/℃ VS **-0.29%/℃**

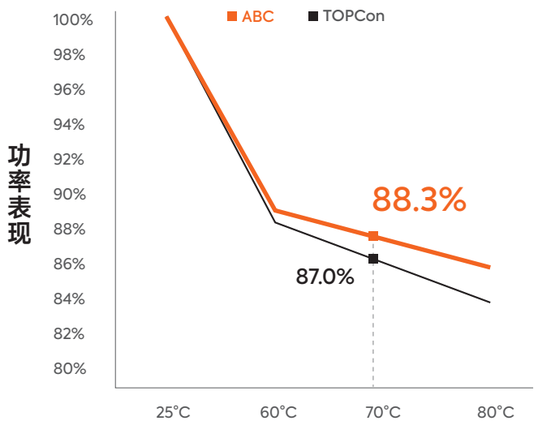
When the module's operating surface temperature reaches 70°C, the power output of AIKO ABC modules will be 1.3% higher

AIKO ABC modules have a better annual degradation rate than conventional modules

0.35% VS **0.4%**

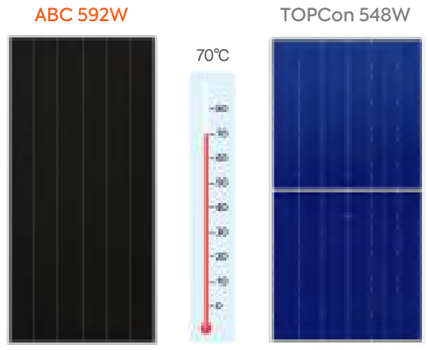
Over a 25-year life cycle, the power output of the power station is 1.2% higher, improving overall project returns

Power output difference at different temperatures



Power output difference at 70°C

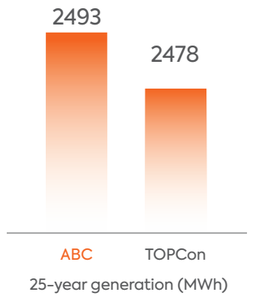
+44W



Standard power: ABC 670W TOPCon 630W

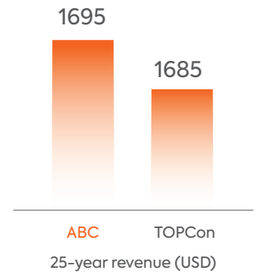
Additional generation over 25 years due to lower degradation

150 MWh



Additional revenue over 25 years due to lower degradation

+$14,000



Same installed capacity: 1MW Power consumption mode: 85% self-consumption, 15% surplus to grid
Self-consumption electricity price: $0.094/kWh Module size: 2382x1134mm

Higher Return

Partial Shading Optimisation

Partial shading from trees, buildings, and other natural surroundings can cause significant power loss in conventional PV modules.

AIKO ABC features a unique partial shading Optimisation function, enabled by a bypass diode-like design. When a single cell is fully shaded, AIKO ABC delivers 30%+ higher power output than conventional modules, significantly reducing the impact of shading on overall module performance.

Smart Management & Precision O&M

As the PV industry enters an era of value-driven competition, the demand for refined and intelligent power plant operations continues to grow. AIKO has launched the "Navigator" Intelligent Module, which combines module-level monitoring with refined O&M to further unlock the performance advantages of ABC modules and maximize long-term operational value.

Automated monitoring and remote management reduce the frequency and cost of manual inspections, lowering O&M expenses by 5%–10%

Module-level monitoring and diagnostics reduce module failures and associated power losses, helping increase annual energy yield by 3%–5%

One-click acceptance with full-span visibility enables a full inspection of a 10MW power station within one hour, turning acceptance from a high-cost process into a value-creating activity.



Higher Safety

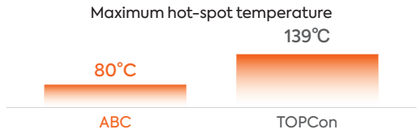
World's First Anti-Ignition Hazard Certified Module – Ensuring the Safety of Power Plant Assets

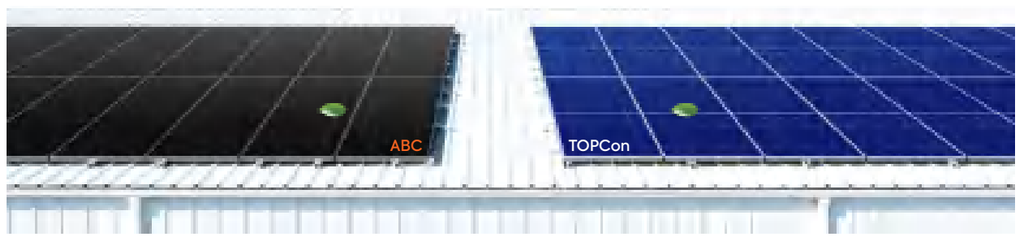
Fire is the sword of Damocles hanging over every PV power plant. Whether caused by external fire sources or self-ignition from local high temperatures within modules, fire risk remains the number one threat to the safety of PV assets.

AIKO ABC features a unique Bypass-diode-like structural design, giving the module a High Temperature Restriction function. Even when hot spots occur, the temperature is controlled below 100°C, effectively eliminating fire risk.

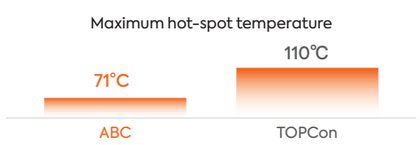
ABC modules operate at lower temperatures under real-world conditions

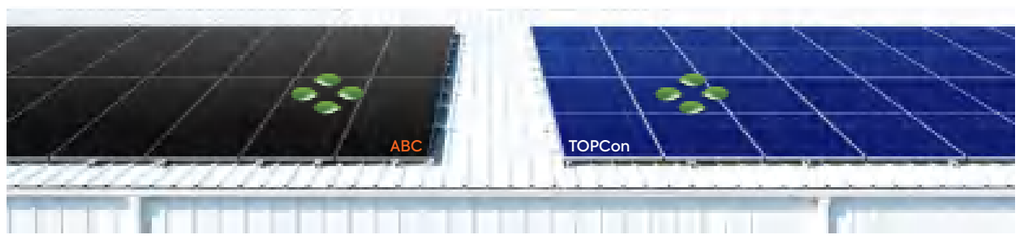
42% lower
under single-cell shading





35% lower
under large-area shading





Awarded the world's first TÜV Rheinland Module-Level Anti-Ignition Hazard certification

Stricter hot spot temperature test: Hot spot temperature is more than 35% lower than that of TOPCon modules

Stricter reverse current overload test: Reverse overload temperature is 15% lower than that of TOPCon modules

Stricter diode thermal performance test: Diode temperature is 14% lower than that of TOPCon modules



IEC flame and fire standard: 760°C flame for 10 minutes

ABC		TOPCon
Class A	VS	Class C
Highest Safety Level Flame Does not Spread		Lowest Safety Level Flame Spreads



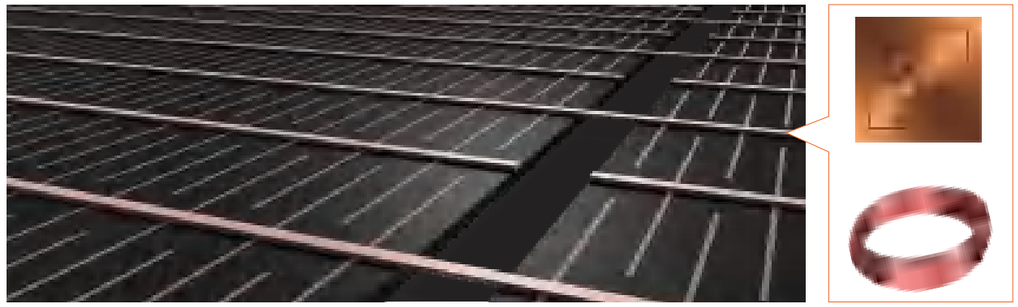
Higher Safety

World's only mass-produced Copper Interconnection technology – ultimate micro-crack resistance

From extreme weather like hailstorms and ambient thermal stress, to mechanical impacts and foot traffic during transportation, installation, and O&M—modules are constantly vulnerable to micro-cracks. These hidden flaws ultimately trigger power degradation, shortened lifespans, and even hotspot-induced fire hazards.

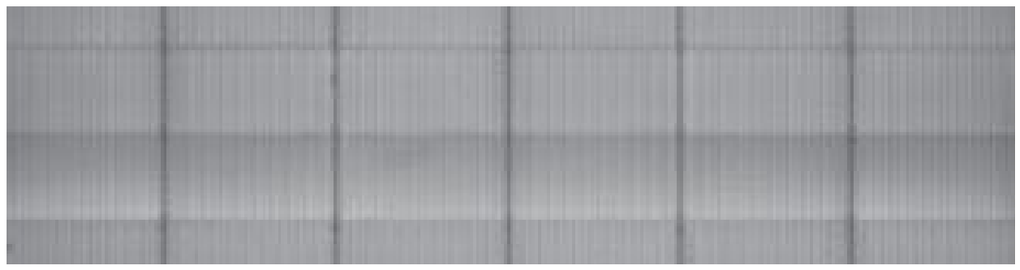
AIKO ABC modules, with breakthroughs in both materials and processes, innovatively apply Copper Interconnection technology, providing the modules with exceptional micro-crack resistance.

ABC



Single-sided soldering, no ribbon bending

Grid line material:	Material combination:	Metallization process:	Soldering process:
Copper	Copper grid lines + copper ribbons	Low temperature	Single-sided soldering



No micro-cracks *

VS

Advantages of ABC Copper Interconnection solution

Pure copper is denser than silver paste, offers better ductility, and delivers stronger pull-strength performance

Low-temperature processing does not damage the silicon wafer

Copper grid lines + copper ribbons form a more robust bond

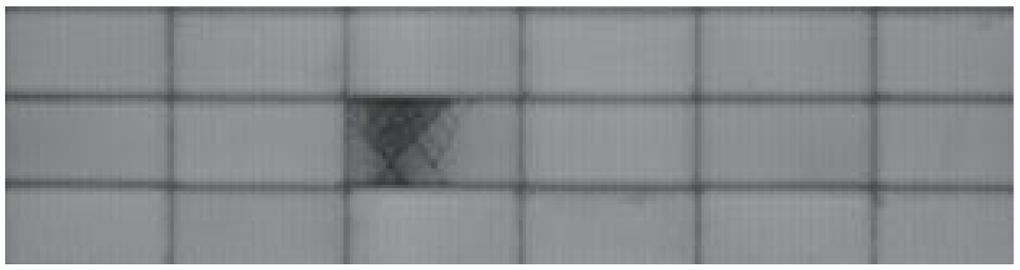
Single-sided soldering reduces stress

TOPCon



Ribbon bending causes cells to become stressed and prone to micro-cracks

Grid line material:	Material combination:	Metallization process:	Soldering process:
Silver	Silver grid lines + copper ribbons	High temperature	Double-sided soldering



Micro-cracks present *

Simulated installation and O&M stepping/squeezing scenario: A pressure of 230 kg over a 100 cm^2 force-bearing area is applied to verify the module's micro-crack resistance

Superior Aesthetics

When photovoltaics become a way of life, the fusion of advanced technology and architectural beauty brings an unprecedented experience.

With a Gridline-free front side, eliminated Cell-to-cell gaps, and hidden busbars, the clean, pure front surface not only delivers Industry-leading efficiency, but also grants industrial products an unprecedented aesthetic appeal. The AIKO ABC INFINITE module, with its Ultimate pure black design, blends seamlessly with architectural aesthetics, creating a distinctive visual statement.



ABC Modules – Value Fit for Every Scenario

As competition in the PV industry increasingly shifts toward value, accurately identifying customer needs and delivering targeted solutions has become a key priority for companies seeking incremental growth.

AIKO is the first in the PV industry to introduce the concept of scenario-based solutions. Addressing the distinct needs of C&I, utility-scale, and residential scenarios, AIKO has launched product series with diverse functions, fully embodying its customer-centric commitment.

C&I Power Stations

More green power from limited roof area

Module-level anti-ignition hazard protection

Double assurance: higher returns & enhanced safety

Utility-Scale Power Stations

High power + high bifaciality

Strong weather resistance, significantly lower LCOE

Shortened payback period

Residential Power Stations

Higher power from the same roof area

Partial shading optimisation – no fear of obstruction

Ultimate full-black design, premium aesthetic appeal



C&I Scenario

In recent years, a growing number of C&I building owners have begun installing PV power stations on idle rooftops to reduce electricity costs and meet green power compliance targets. While pursuing economic benefits, eliminating safety risks has become a mandatory standard that C&I owners must follow.

AIKO ABC modules deliver higher power output from a limited roof area, making full use of every square metre of rooftop resource. Enhanced fire safety certifications ensure safe, fire-free operation. The application of Copper Interconnection technology makes the modules inherently strong and resistant to micro-cracks. With industry-leading efficiency built on a solid safety foundation, AIKO ABC creates higher green returns for C&I owners.



Reduce High Electricity Costs, Empower Commercial Complexes



For PV power stations installed on commercial complexes and office buildings with high pedestrian traffic, safety is critically important alongside reducing high electricity costs. AIKO ABC modules feature module-level anti-ignition hazard quality, with hotspot temperature kept below 100°C, eliminating fire risk at the source. Under the premise of guaranteed safety, high power output creates green power revenue for C&I users.

Example: A commercial plaza project in southern China

- Limited land in high density areas– 6.4% higher installed capacity on the same roof area
- Investor IRR increases by 1.5%, payback period shortened by 2 months
- Safety first – Minimizing fire risk ensures the protection of people and property

Note:
ABC 660Wp vs. TOPCon 620Wp 1,800 modules self-consumption electricity price: USD 0.126/kWh
feed-in tariff: USD 0.053/kWh self-consumption ratio: 98%

Lightweight and Dust-Resistant, Unlock the Green Potential of Factory Rooftops



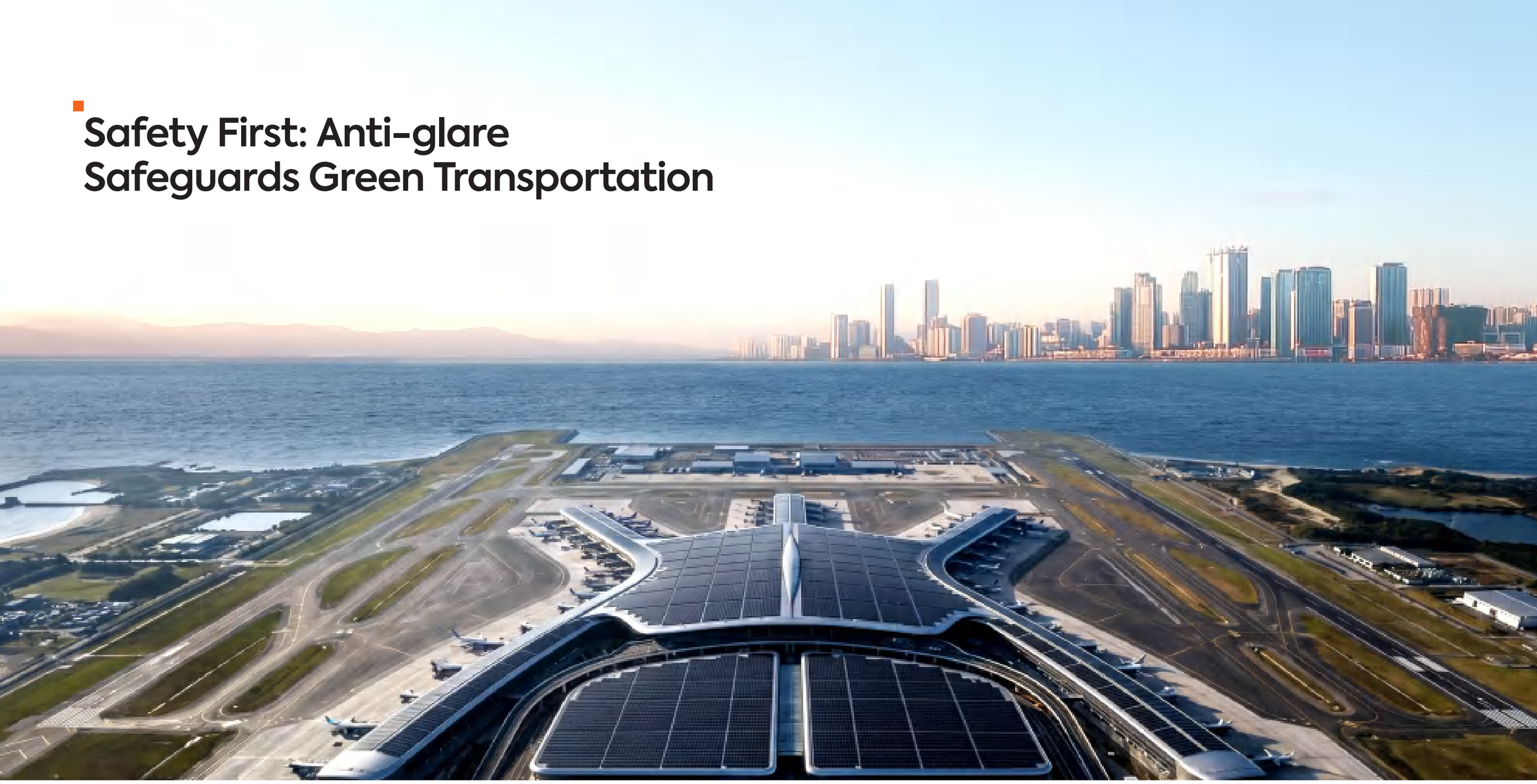
Installing solar power stations on idle factory rooftops has become a key strategy for traditional industries to reduce costs and improve efficiency. However, issues such as limited roof load-bearing capacity and dust accumulation affecting power output have hindered the green transition of many factories. AIKO ABC modules deliver higher installed capacity from the same roof area. The mono-glass modules reduce roof load, while the patented anti-dust accumulation design minimizes dust buildup while maintaining sealing performance and reliability. Abundant green power supports the clean transformation of factories.

Example: A factory rooftop project in Guangzhou, China

- Same factory roof area – installed capacity increased by 8%, developer profit increased by 2.76%
- Electricity costs significantly reduced, green electricity revenue increased by 9.7%, investor LCOE reduced by 1%
- High reliability opens up high-value markets and helps enterprises meet green power compliance targets

Note:
Same area: TOPCon 0.993MW, ABC 1.072MW Self consumption rate: 85% surplus to grid: 15%
Self consumption electricity price: USD 0.118/kWh Module size: 2382×1134mm Investment per watt: USD 0.370/W

Safety First: Anti-glare Safeguards Green Transportation



Highways, traffic service areas, airports – the extensive development of transportation infrastructure has created new scenarios for PV applications and represents an important step towards green transformation in the municipal infrastructure sector. While ensuring high power generation efficiency and module safety, AIKO ABC has specifically developed an anti-glare function that significantly reduces surface reflection of PV modules, meeting the safety protection requirements of highways, airports and other facilities, and safeguarding green transportation.

Example: A service area PV-storage-charging carport

- Same carport area – installed capacity increased by 8%
- BOS reduced by 5.9%, power generation revenue increased by 8.7%, IRR improved by 2.28%
- Dual upgrade of glass and ribbon – reflectance at 68° incidence angle is only 5.21%, far lower than the 40% of conventional modules, delivering strong anti-glare performance

Note:
Investment cost: USD 0.444/W ABC 670Wp vs. TOPCon 630Wp Weighted average electricity price: USD 0.074/kWh

Utility-Scale Scenario

From mountains and plains to deserts and oceans, utility-scale power stations are deployed across a wide range of environments for large-scale PV projects. LCOE is the direct metric for evaluating project economics. Every utility-scale project is a comprehensive test of module power generation capability, reliability, and weather resistance.

AIKO ABC modules offer the highest conversion efficiency, with bifaciality increased to over 85%, delivering industry-leading combined power output. Micro-crack resistance, Partial Shading Optimisation & High Temperature Restriction provide comprehensive operational stability in complex conditions. High-water-barrier encapsulation & corrosion resistance withstand ocean waves and sea winds. Lower degradation rate maintains high power performance throughout the full lifecycle, improving project economics.

In Deserts: High Efficiency Unlocks Profitability



In vast desert regions, solar resources are abundant. However, with the full market-based integration of renewable energy, desert/Gobi/wilderness projects face increasingly prominent challenges of poor power absorption and low electricity prices. Harsh conditions such as blowing sand and dust, as well as extreme day-night temperature differences, also test module weather resistance. AIKO ABC delivers higher power generation with high power output, while Partial Shading Optimisation and a superior temperature coefficient safeguard power generation returns from every square meter of land.

Example: A ground-mount power station in Inner Mongolia, China

- Same land area – installed capacity increased by 4.76%
- Power generation increased by 6.62%, LCOE reduced by 2.04%, IRR improved by 2.13%
- Industry-leading combined power output achieves optimal LCOE and secures power station returns

Note:
Product comparison: ABC 660Wp vs. TOPCon 630Wp Electricity price: USD 0.042/kWh

In Mountains and Hills: Full Lifecycle Cost Reduction and Efficiency Improvement



As conversion efficiency continues to improve, photovoltaic power generation is gradually expanding into areas traditionally considered difficult to develop, such as mountains and hills. The undulating terrain and shading from mountains and trees significantly increase the difficulty and cost of site selection, installation, and O&M. AIKO ABC, with its high power output and high returns, reduces upfront construction costs, while micro-crack resistance and low degradation lower O&M expenses, ensuring greater long-term returns.

Example: a 1,200-acre mountain PV power station in Guizhou, China

- Same land area – installed capacity increased by 4.76%, total power generation cost reduced by more than 0.08 CNY/W
- Power generation increased by 6.91%, LCOE reduced by 1.86%, O&M cost reduced by 10%
- Multiple functional features work together to reduce failures and power loss throughout the full lifecycle

Note:
Product comparison: ABC 660Wp vs. TOPCon 630Wp Electricity price: USD 0.052/kWh
Benchmark price: TOPCon USD 0.103/W, ABC USD 0.110/W

Offshore: Superior Weather Resistance Against Harsh Marine Conditions



As PV technology continues to advance, water surfaces covering more than 70% of the Earth's surface have emerged as a new blue ocean for photovoltaics. However, the unique complex operating conditions of water surfaces—such as wave impact, shading from bird droppings, and salt-spray corrosion—are testing the reliability of PV modules.

AIKO ABC modules feature high water-barrier encapsulation to withstand high temperature and high humidity. The Copper Interconnection solution resists micro-cracks, maintaining high power generation efficiency under wave impact. Higher power output increases power station revenue, while lower failure rates reduce O&M pressure, supporting the continued expansion of the PV industry.

Example: A 100MW offshore PV project in Shandong, China

- Same water surface area – installed capacity increased by 4.76%
- Cost per watt saved by 0.1635 CNY, LCOE reduced by 4%, IRR improved by 10.14%
- Strong weather resistance withstands wave impact and bird droppings on modules, significantly improving project economics

Note:
ABC 660Wp vs. TOPCon 630Wp Feed-in tariff: USD 0.058/kWh

Premium Residences:
PV Aesthetics for Quality Living

Maximizing capacity within a limited rooftop footprint is the ultimate goal for residential solar. Concurrently, as homeowners elevate their living standards, visual aesthetics and seamless architectural integration have emerged as vital new expectations.



The AIKO ABC INFINITE module features a gridline-free front side, hidden busbars, and eliminated cell-to-cell gaps. While improving conversion efficiency, it also offers a unique full-black appearance that is exceptionally clean and elegant. From now on, PV modules are no longer simply conventional industrial products but are integrated into the architecture, delivering an unprecedented aesthetic experience to PV users.

Example: A premium villa in Germany

- Same roof area – installed capacity increased by 6.5%
- Full-lifecycle power generation revenue increased by 14.5%
- Combines high efficiency, safety, and aesthetics in one product

Note:
Germany, 54-cell format, 20 modules gable roof ABC 490Wp vs. TOPCon 460Wp

Residential PV Leasing:
High Power Secures High Returns



AIKO ABC delivers higher power from the same area. The 78-cell large-format product is specifically designed for residential leasing scenarios, offering higher power and greater returns. Partial Shading Optimisation provides more site selection flexibility, while High Temperature Restriction eliminates fire hazards, making it the value choice for residential scenarios.

Example: A residential project in Guangdong, China

- Same number of households – installed capacity increased by 8.3%
- Rent per watt reduced by 7.5%, IRR improved by 4.1%
- Micro-crack resistance and fire prevention ensure safety and shared value

Note:
Same number of households (10MW, 350 households, 40 modules per household) Investment per watt: USD 0.400/W
Feed in tariff: USD 0.053/kWh Rent: USD 3.70/module/year ABC 780Wp vs. TOPCon 730Wp

A Blueprint for a Carbon-Free Future

While creating incremental benefits for customers across all scenarios, AIKO continues to explore cutting-edge PV applications with high-efficiency photovoltaics at the core. Closely aligned with the 'dual carbon' strategic goals (carbon peaking and carbon neutrality), AIKO is guided by seven core business pillars: New Power Systems, New Energy & Carbon-Negative High-Efficiency Facility Agriculture, New Energy & Low-Carbon/Zero-Carbon Buildings, New Energy & Green Chemicals, New Energy & Transportation Infrastructure, New Energy & AI Infrastructure, and New Energy & Ecological Environment Protection. AIKO has successfully promoted the implementation of and breakthroughs in a series of strategically significant projects, relentlessly pursuing the vision of a zero-carbon lifestyle.



New Power Systems

- Virtual Power Plant (VPP)
- Source Grid Load Storage
- Microgrid Operation

New Energy & Transportation Infrastructure

- PV Guardrails
- En-route Charging
- Local Power Supply

New Energy & AI Infrastructure

- Hydrogen-Electricity Co-production
- PEDF (Photovoltaics, Energy Storage, Direct Current and Flexibility)
- AI-enabled Energy Efficiency Management

New Energy & Carbon Negative High Efficiency

- Photovoltaic and Energy Storage
- Hydro-Solar Complementary
- Abandoned Solar Energy Integrated with Cold and Heat Storage

New Energy & Green Chemicals

- Integrated Energy
- PV-to-Hydrogen Management
- PV-to-Hydrogen-to-Methanol
- PV-to-Hydrogen-to-Ammonia

New Energy & Low-Carbon/ Carbon-Free Buildings

- Advanced Building Materials
- BIPV/BAPV
- Energy Substitution

New Energy & Ecological Environment Protection

- Direct-to-Grid Storage
- Saline-Alkali Desalination
- Desertification Control

PV-Driven Zero-Carbon Mobility

At World Solar Challenge 2025, the Dutch Brunel Solar Team and Solar Team Twente, equipped with ABC photovoltaic modules exclusively provided by AIKO, secured first and second places, respectively.

The participating vehicles needed to complete a long-distance race of 3,000 kilometres in Australia's variable winter climate, fully demonstrating the ABC modules' high-efficiency power generation and stable, reliable performance under complex conditions. This serves as a powerful testament to AIKO's exploration of photovoltaic applications for the future of transportation.

We are the Champions



PV-Driven Zero-Carbon Agriculture

Within the zero-carbon agriculture sector, AIKO partners extensively with leading universities, research institutions, and enterprises worldwide. Bridging technology with market demands, we deploy innovative integrated energy systems that combine high-efficiency PV with water-saving solutions. By tailoring the precise microclimates essential for plant growth, AIKO is delivering a truly cohesive, modern Controlled-Environment agriculture system.



PV-Driven Zero-Carbon Islands



Situated 73 kilometres southeast of Xiangzhou, Zhuhai, Dangan Island is the largest and most remote island within the Wanshan Archipelago. Home to a permanent population of over 200, the island has an annual electricity demand of approximately 198,000 kWh. Previously, the local grid relied solely on diesel generators, resulting in exorbitant power costs, low generation efficiency, heavy exhaust emissions, and severe noise pollution.

To pioneer a sustainable solution, AIKO deployed a fully integrated, synergistic green microgrid. By seamlessly unifying PV, wind power, energy storage, charging infrastructure, and smart energy management, this system completely supplants the legacy diesel units—achieving 100% zero-carbon energy autonomy across the island and driving a green lifestyle transition for the local community.

Leading Humanity into the Carbon-free Era



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