

BEYOND EFFICIENCY



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01

Company Profile

Mission

Innovating solar technology,
empowering a greener future

Vision

To lead as a world-class
solar technology company

Core Values

Sustainability · Innovation
Integrity · Commitment

About SPIC



Total Asset

us\$ **290 Billion**



Employees

130,000



Fortune Global 500

265th



Share of
Clean Energy

74.22%



Total
Installed Capacity

288 GW



Countries &
Regions

47



State Power Investment Corporation (SPIC) is a centrally managed, large-scale state-owned enterprise that plays a pivotal role in ensuring China's energy security while leading the global transition to clean energy.

As China's first energy company with a full-spectrum generation portfolio — covering solar, wind, nuclear, hydro, coal, gas, and biomass — SPIC stands today as the world's largest photovoltaic, renewable, and clean energy company.

About Dinto Solar



Dinto Solar Co., Ltd. (Dinto Solar) is a China National-Level High-Tech Enterprise specializing in the R&D, production, and commercialization of ultra-high-efficiency n-type heterojunction (HJT) solar cells and modules.

Established in 2017 as a subsidiary of SPIC's Central Research Institute, Dinto Solar is dedicated to accelerating the industrialization of HJT technology and driving innovation across the global solar industry.

“
**We must build a strong
and successful PV industry**”

Chinese President Xi Jinping gave the important instruction during his visit to SPIC on August 23, 2016.

5 GW Longgang Manufacturing Facility

The company's first mass-production facility rolled out its first module in September 2023. The 5 GW facility, built on the Nanchang R&D Center, produces HJT solar cells and modules, leveraging advanced process technologies for stable, high-quality output.

22.7 ha

Planned Site Area

US\$880M

Total Investment (Estimated)

US\$880M

Annual Output Value (Estimated)

Key Strategic Project

Zhejiang Province, 2023



10 GW Suining Manufacturing Facility

The 10 GW HJT solar cell and module project officially commenced construction on February 13, 2025. Built on the company's R&D achievements, the facility leverages mature production processes and the quality management system from Longgang, focusing on large-scale manufacturing of next-generation high-efficiency HJT modules.

32 ha

Planned Site Area

US\$1,460M

Total Investment (Estimated)

US\$1,020M

Annual Output Value (Estimated)

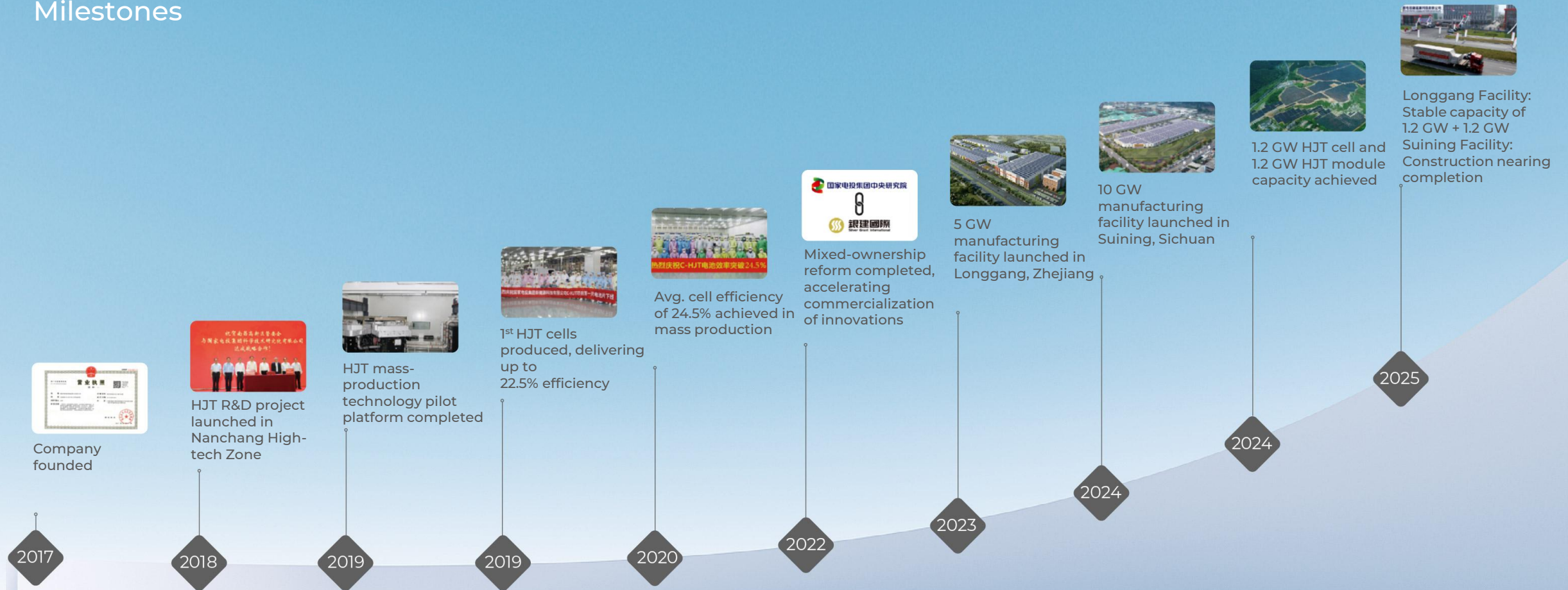
1,000

Jobs Created



About Dinto Solar

Milestones



About Dinto Solar

15 GW

Planned HJT Capacity



R&D Capability

60+ million (US\$)

Cumulative HJT R&D investment
(as of End-2025)

25%+

R&D investment
(% of revenue)

15+ years

Team members' average
experience in top solar companies

200+

Talents in HJT field

100+

PhDs and MSs

9

5 industrial scientists
4 nationally recognized experts

R&D Achievements

100+ high-quality invention patents (filed and granted) and 30+ proprietary technologies, with several recognized as internationally leading innovations.



Industry Recognitions

Ultra-High-Efficiency PV Module Award

Widely regarded as the “Oscar” of China’s PV industry, this is one of the sector’s most prestigious and influential honors. Dinto Solar received this award in two consecutive years.

Influential Green & Low-Carbon Pioneer Award

Recognizes the outstanding low-carbon advantages of Dinto Solar’s HJT technology, supporting the global PV industry’s transition toward higher efficiency, lower energy consumption, and reduced carbon emissions.

Global New Energy Brand TOP 10 (Modules & Systems)

Jointly initiated by leading industry organizations including GGIEC, NEIAAP, and APVIA. This recognition marks Dinto Solar as a globally leading new energy brand.

Influential Emerging PV Company

Recognizes Dinto Solar’s rapid growth and emergence as an influential PV brand, driven by sustained R&D investment and continuous technological breakthroughs.

2023 China New Energy & Carbon Neutrality – Most Commercially Promising Company

Presented by JAZZYEAR, a leading technology industry think tank. Recognizes exceptional commercial potential among China’s top new energy and carbon-neutrality companies.



Global Partners

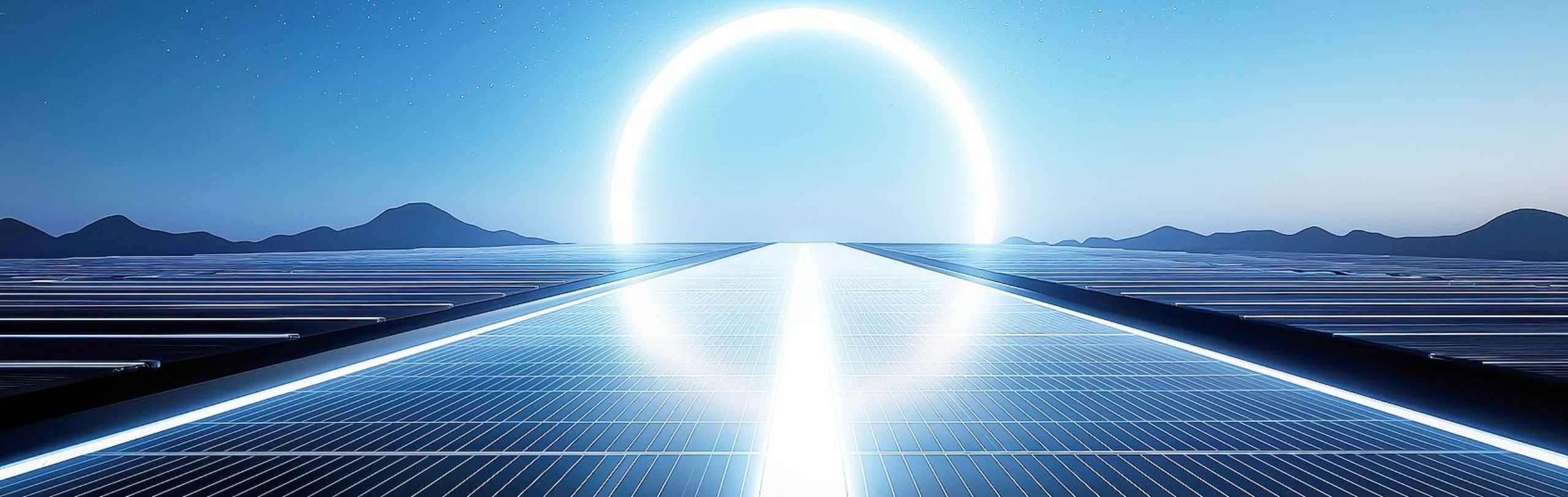


*Selected partners of Dinto Solar, listed in no specific order

02

HJT Technology

HJT is emerging as the next mainstream technology in the new era of photovoltaics, setting the benchmark for the future of solar energy.



HJT Technology

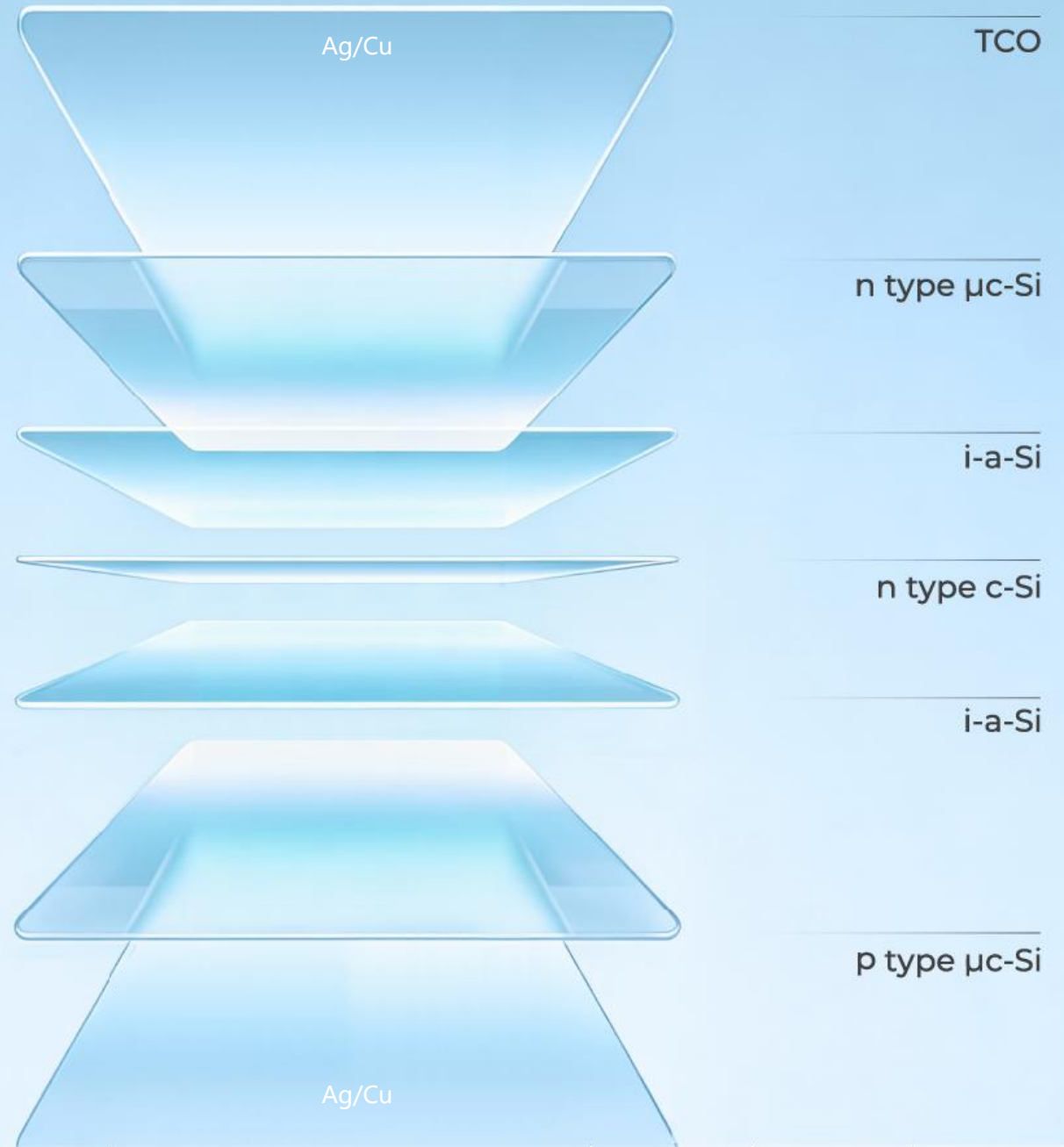
HJT Cell Structure

Next-generation Mainstream PV Cell Platform Technology

Intrinsic thin-film heterojunction (HJT) cells feature a symmetrical structure with an N-type crystalline silicon wafer at the center. The rear side has intrinsic and p-type amorphous silicon layers forming a P-N junction, while the front side has intrinsic and n-type amorphous silicon layers forming a back surface field.

Transparent conductive oxide (TCO) layers are deposited on both sides, followed by double-sided electrodes via screen printing and copper electroplating. These HJT cells deliver high power output and reliability, representing the next-generation mainstream PV cell platform technology.

* HJT cells feature a naturally symmetrical structure.

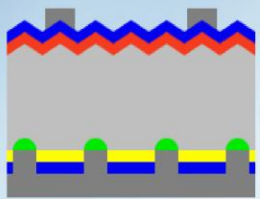


Why Choose HJT?

P-type

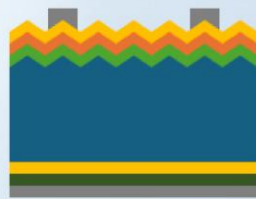
N-type (Mono-Si)

PERC



21~23%

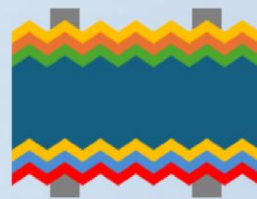
TOPCon



24.5~26.0%

- 10+ manufacturing steps
- 800°C+ processing temperature
- High carbon footprint

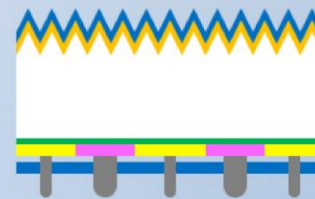
HJT



25.5~27%

- Only 4 manufacturing steps
- 200°C processing temperature
- Lower carbon footprint

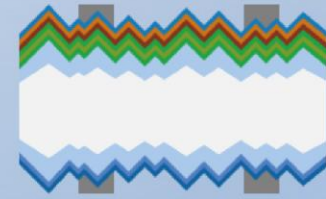
BC



25.5~27.5%

- More complex manufacturing steps
- 800°C+ processing temp.
- High carbon footprint
- Low yield rate

HJT + Perovskite Tandem



28~43%

- HJT: the optimal platform for perovskite tandem integration
- Ultra-high efficiency
- Low-temp. processing

Mainstream PV Cell Technologies

Future

Dinto Solar Technology Roadmap

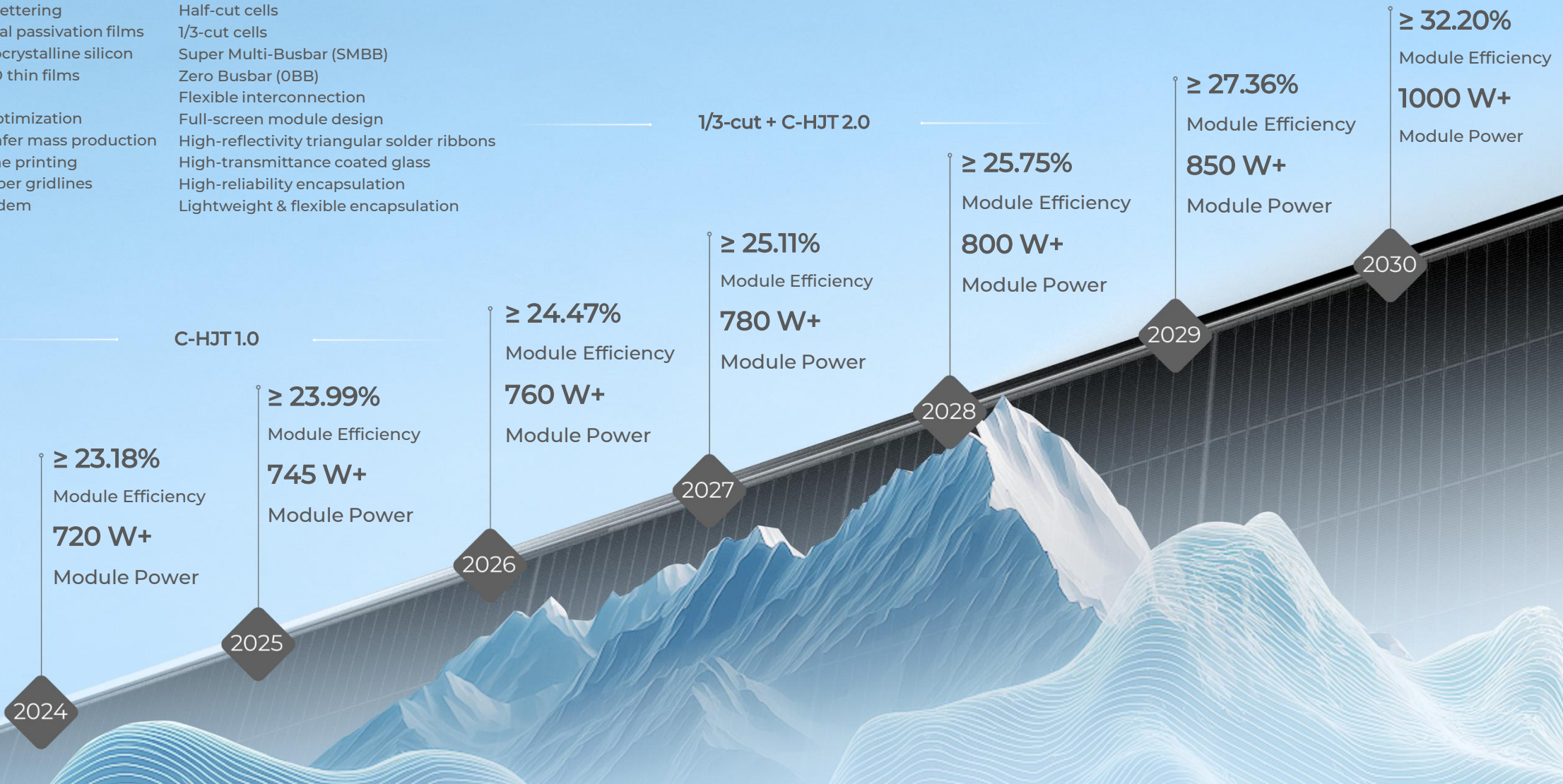
HJT Cell Tech

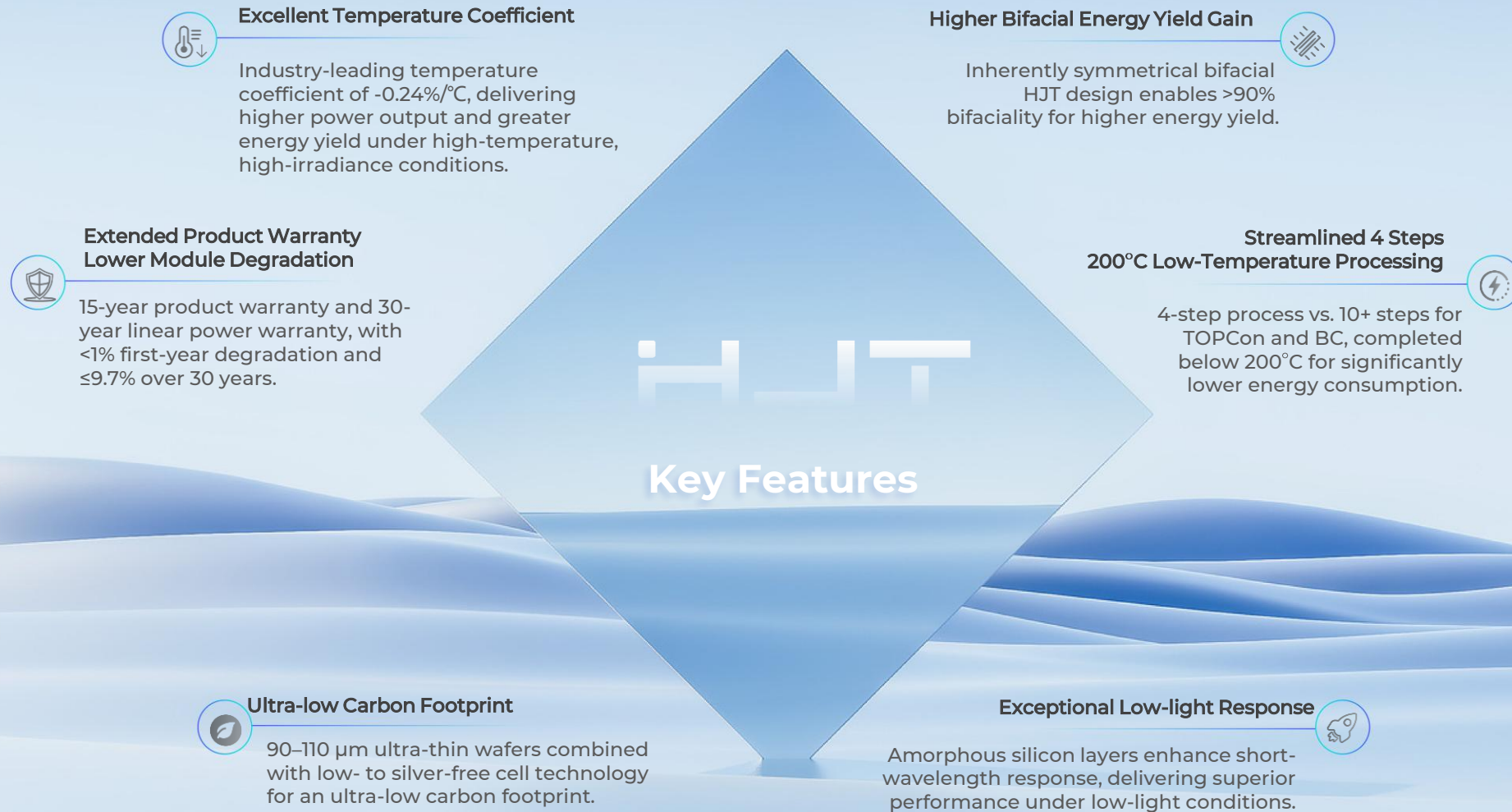
Low-temperature gettering
Multi-layer interfacial passivation films
Double-sided microcrystalline silicon
High-efficiency TCO thin films
Rear-side polishing
Edge passivation optimization
110 μm ultra-thin wafer mass production
Ultra-narrow gridline printing
High-precision copper gridlines
HJT-perovskite tandem

HJT Module Tech

Half-cut cells
1/3-cut cells
Super Multi-Busbar (SMBB)
Zero Busbar (0BB)
Flexible interconnection
Full-screen module design
High-reflectivity triangular solder ribbons
High-transmittance coated glass
High-reliability encapsulation
Lightweight & flexible encapsulation

HJT-perovskite Tandem

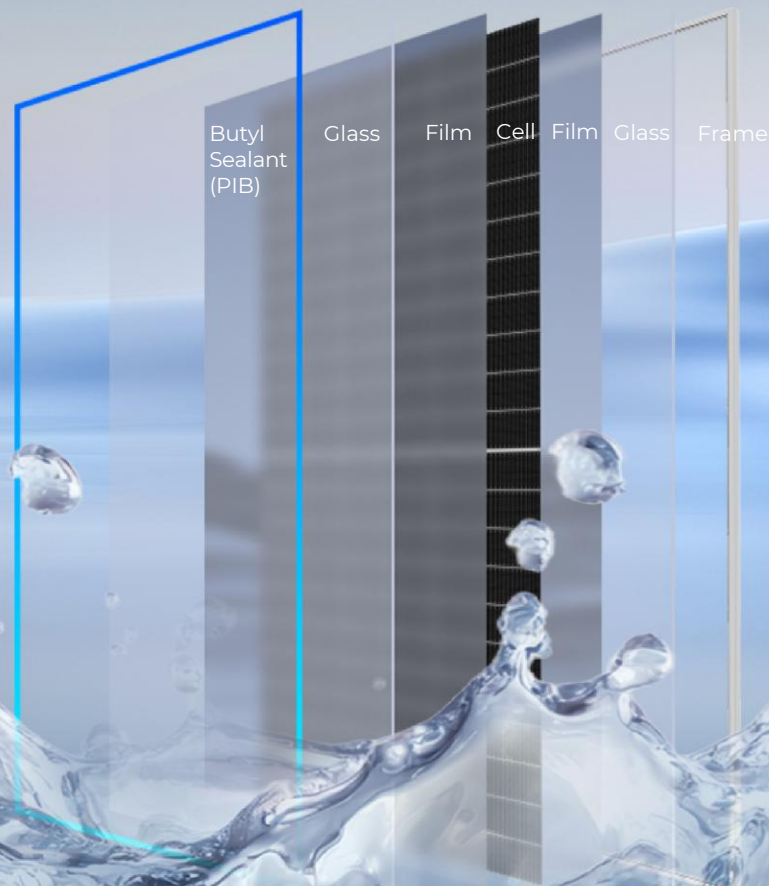




Higher Reliability

Butyl Sealant (PIB) + Dual-glass

Innovative butyl sealant and double-sided coated glass enhance module sealing, ensuring exceptional moisture resistance.



< 4%

DH3000 Degradation



Higher Reliability

Light Conversion Film

The HJT module is encapsulated with light conversion film that converts UV light (<380 nm) to blue light (~400-550 nm).

This feature significantly enhances the module's UV resistance.

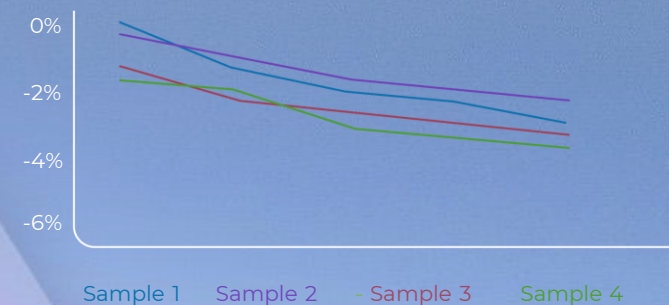
IR

UV

Light Conversion Film

Solar Cells

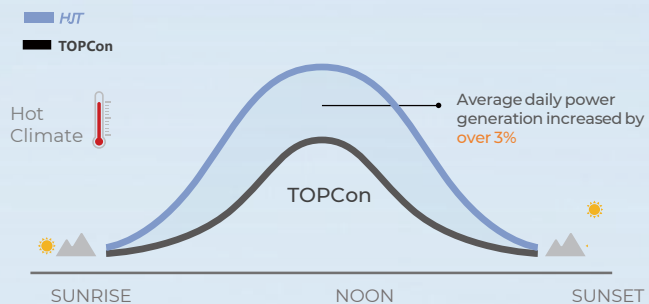
UV180 < 3%



More Power Generation

$-0.24\%/^{\circ}\text{C}$

Industry Leading Temperature Coefficient



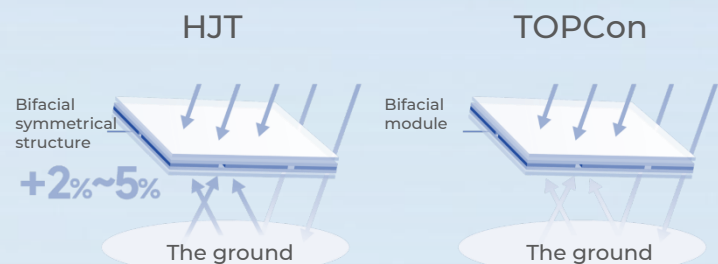
HJT - $-0.24\%/^{\circ}\text{C}$

Temperature Coefficient

TOPCon - $-0.29\%/^{\circ}\text{C}$

$+2\sim5\%$

Higher Bifacial Energy Yield



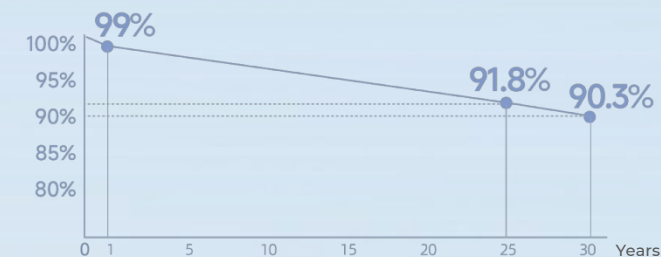
HJT up to $90\%\pm5\%$

Bifaciality

TOPCon 80%

$\leq 9.7\%$

Lower Lifetime Degradation



$\leq 1\%$ degradation in the first year

$\geq 90.3\%$ of power maintained after 30 yrs

Lower Carbon Footprint

Low-Carbon Pathway

HJT/C-HJT	90-110μm
TOPCon	130μm
XBC	130-150μm

- HJT solar cells can be produced with 90 μm wafers in the future.
- Through the mass production of low-silver HJT solar cells, achieving an ultra-low carbon footprint.
- Low-temperature (<200°C) processing reduces thermal damage and high-temperature diffusion, while decreasing the carbon footprint.



HJT Market Value

HJT modules perfectly meet today's demand for high efficiency and low carbon, making them one of the most competitive PV products.

Low Silver Consumption

Low carbon footprint

Streamlined process
Low-temperature manufacturing

Low silver consumption

OBB technology
Copper plating/
Pure copper paste

High Power Generation

High efficiency

Effective passivation
Low shading area
Low resistivity

High bifaciality

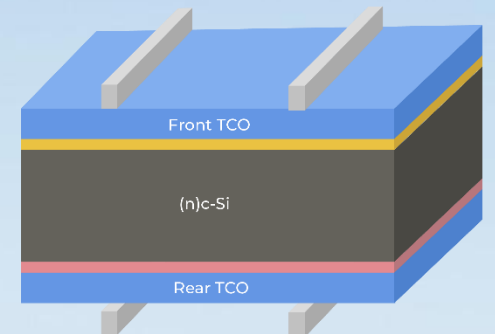
Mirror-symmetrical structure

High Reliability

Moisture resistance

Crack resistance

Strong gridline adhesion

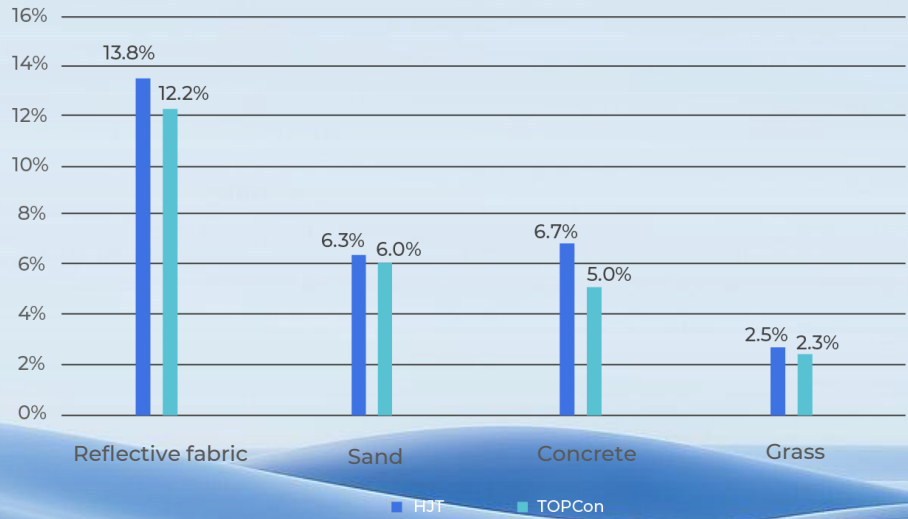


More Power Generation

Field Demonstration of HJT Modules



Energy yield per watt compared across different surface conditions

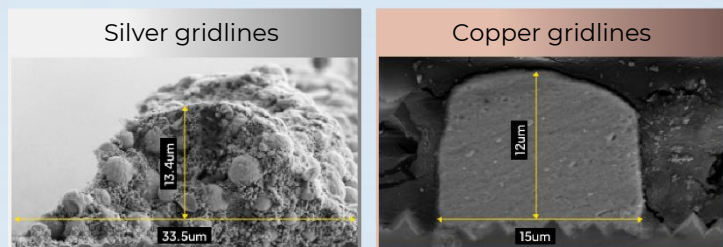


HJT modules achieved up to 1.6% higher energy yield per watt than TOPCon modules across all scenarios.

Copper-metallized HJT (C-HJT)

30%

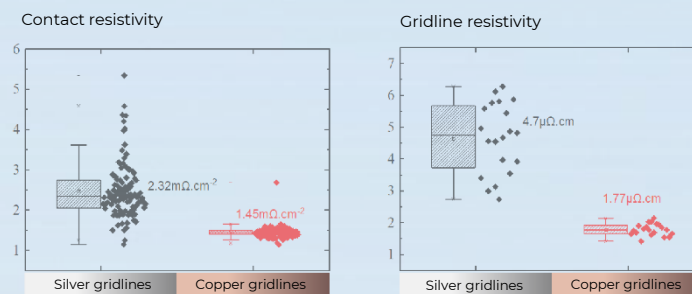
Shading Area Reduced



Shading area reduced 30%

30%+

Conductivity improved

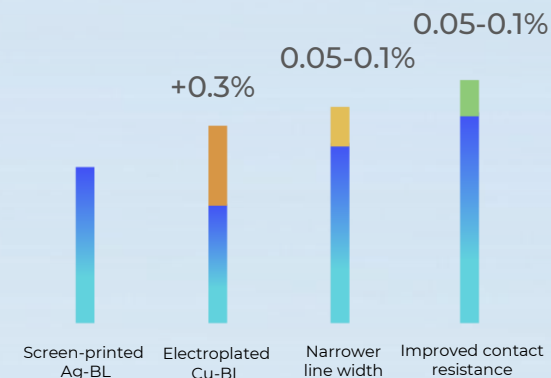


Contact resistance decreased 37.5%

Resistivity decreased 62.3%

≥10 W

Power increased



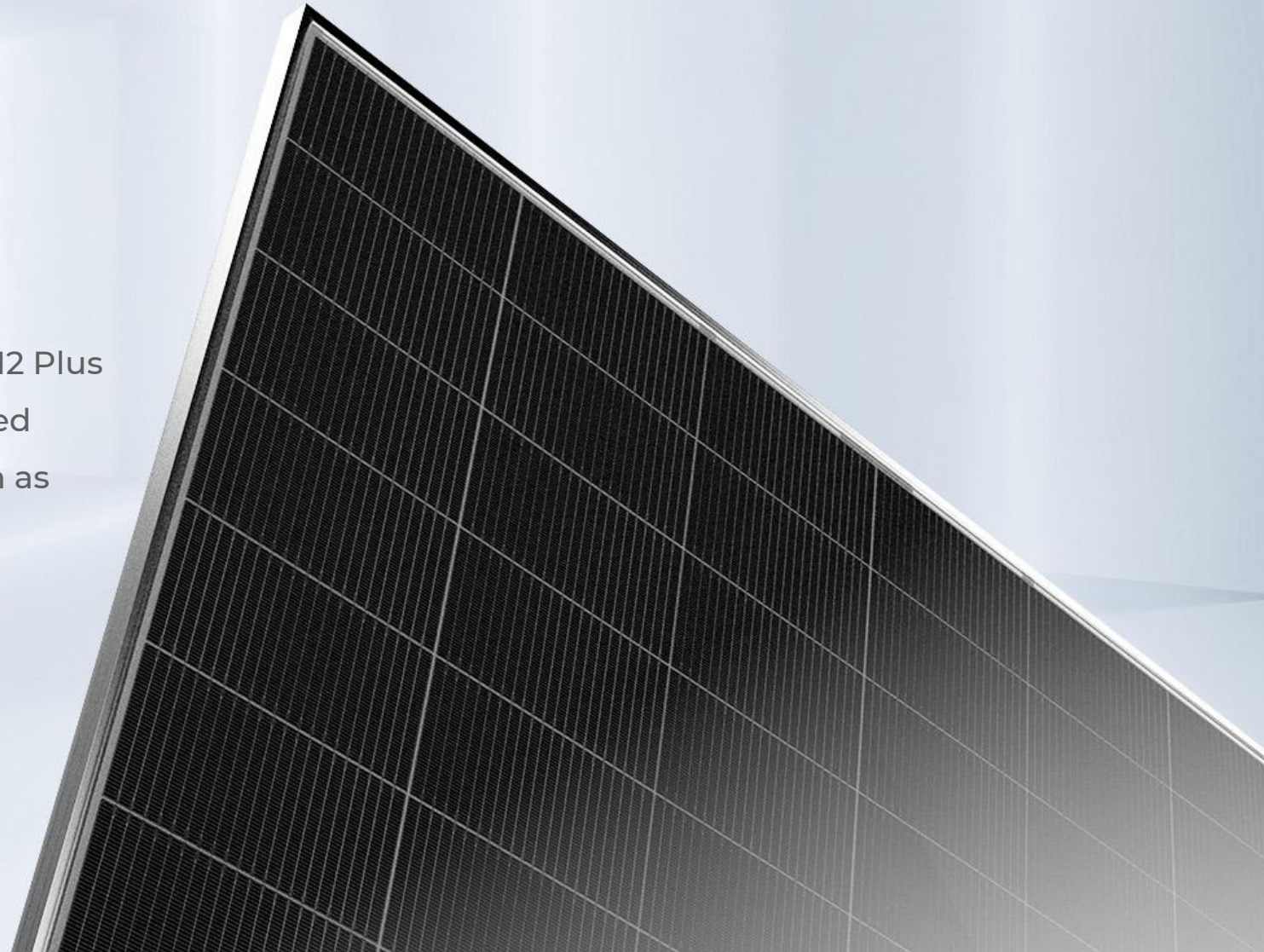
C-HJT cell gain 0.5%

Module power gain 10 W

03

HJT Modules

Offering high-efficiency HJT G12 & G12 Plus series modules, along with specialized designs for unique applications such as offshore and vertical PV.

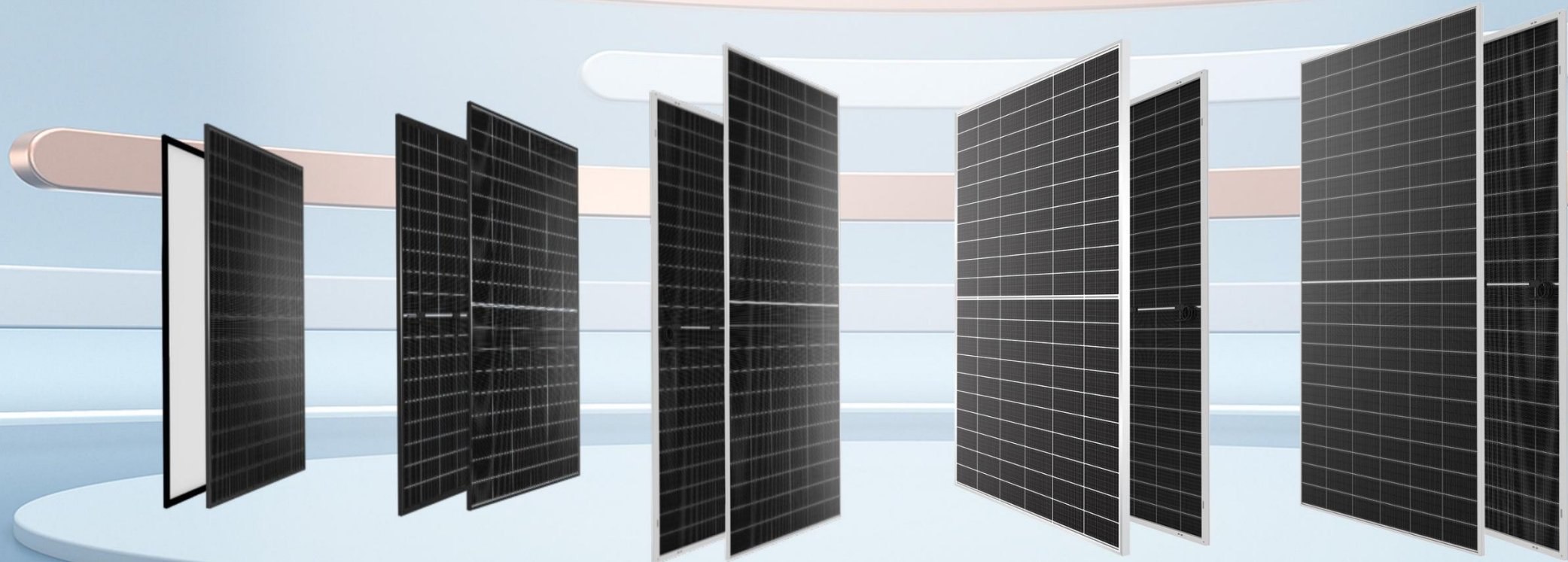


HJT G12 Series & G12 Plus Series

Half-cut cells / 1/3-cut cells

Silver gridlines

Copper gridlines



Residential

Commercial & Industrial

Utility-scale

Others

Features G12 and G12 Plus series high-efficiency HJT modules, delivering full-scenario solutions for offshore PV, vertical installations, and beyond.

G12 Series

Cu/Ag grid HJT technology
N-type 210mm cells
Half-cell damage-free process
OBB technology
Up to 90% bifaciality

G12 Series HJT Modules:

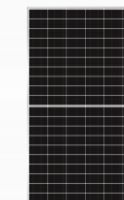


G12-132

Silver gridlines

Copper gridlines

Max Power: 750 W
Max Efficiency: 24.14%
Dimension: 2384 * 1303 * 33 mm
Weight: 37.5 kg



G12-120

Max Power: 675 W
Max Efficiency: 23.85%
Dimension: 2172 * 1303 * 33 mm
Weight: 35 kg

750W

24.14%

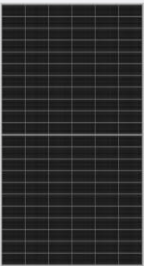


Designed for Offshore PV



- Corrosion-resistant dual-glass design
- Butyl sealant with high airtightness
- High-efficiency HJT technology
- N-type 210mm cells
- Half-cell damage-free process
- OBB technology
- Up to 90% module bifaciality

HJT G12 Offshore PV Module:



- G12-132
- Max Power: 750 W
- Max Efficiency: 24.14%
- Dimension: 2384 * 1303 * 33 mm
- Weight: 37.5 kg



HJT Modules

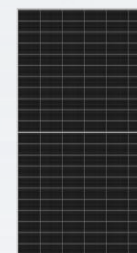
Designed for Vertical-PV



Up to **98% ultra-high bifaciality**
High-efficiency HJT technology
N-type 210mm cells
Half-cell damage-free process
0BB technology
Dual-peak generation perfectly matches
market-based electricity pricing

740W 23.82%

HJT G12 Vertical PV Module:



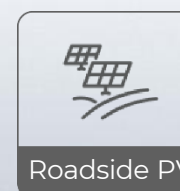
G12-132

Max Power: 740 W

Max Efficiency: 23.82%

Dimension: 2384 * 1303 * 30 mm

Weight: 39.4 kg

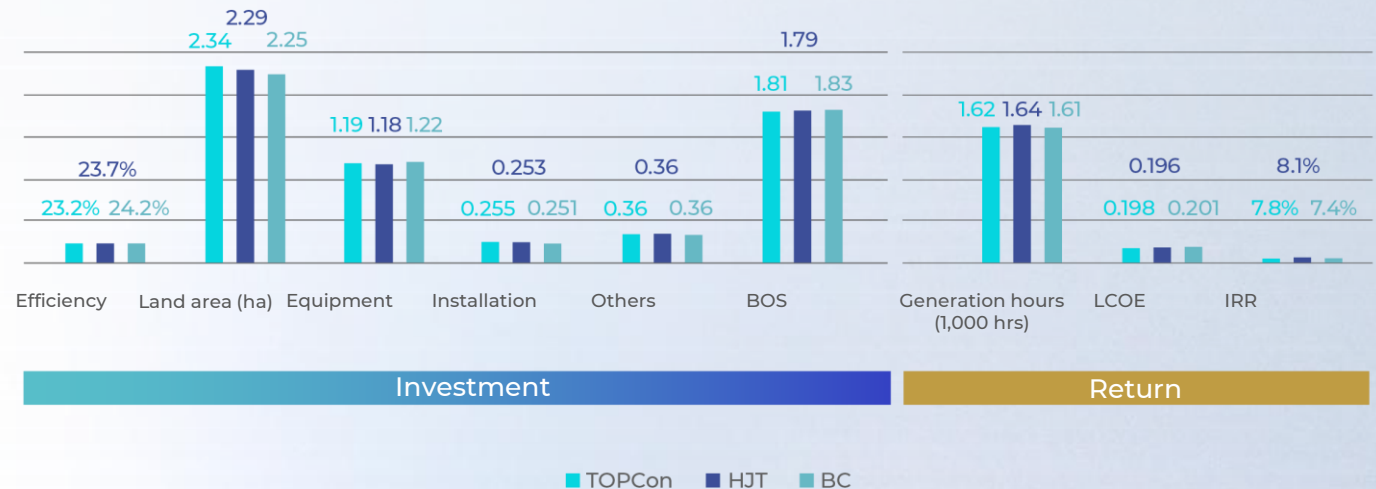


HJT Solutions – Utility-scale PV

100 MW Project in Turpan, Xinjiang, West China

Type	TOPCon 720 W	HJT 735 W	BC 655 W	HJT Advantages
Module power (Wp)	720	735	655	15 W higher than TOPCon 80 W higher than BC
Module dimension (mm)	2384*1303*33		2382*1134*30	/
Annual linear degradation	0.4%	0.3%	0.35%	0.1% lower than TOPCon 0.05% lower than BC
Bifaciality	80%	90%	75%	10% higher than TOPCon 15% higher than BC
Numebr of strings	5,358	5,244	5,880	114 less than TOPCon 636 less than BC
Number of modules	139,308	136,344	152,880	2,964 less than TOPCon 16,536 less than BC
AC system capacity (MW)	100.30	100.21	100.14	
Land area (ha)	156.3	153.0	150.2	3.3 ha less than TOPCon 2.7 ha more than BC

Investment vs. Return



HJT 735 W vs. TOPCon 720 W

- Total land area reduced by **2.13%**
- BOS cost reduced by RMB 0.0131/W, saving **~2.03%**
- First-year generation hours increased by **1.48%**
- Power plant IRR improved by **0.33%**

HJT 735 W vs. BC 655 W

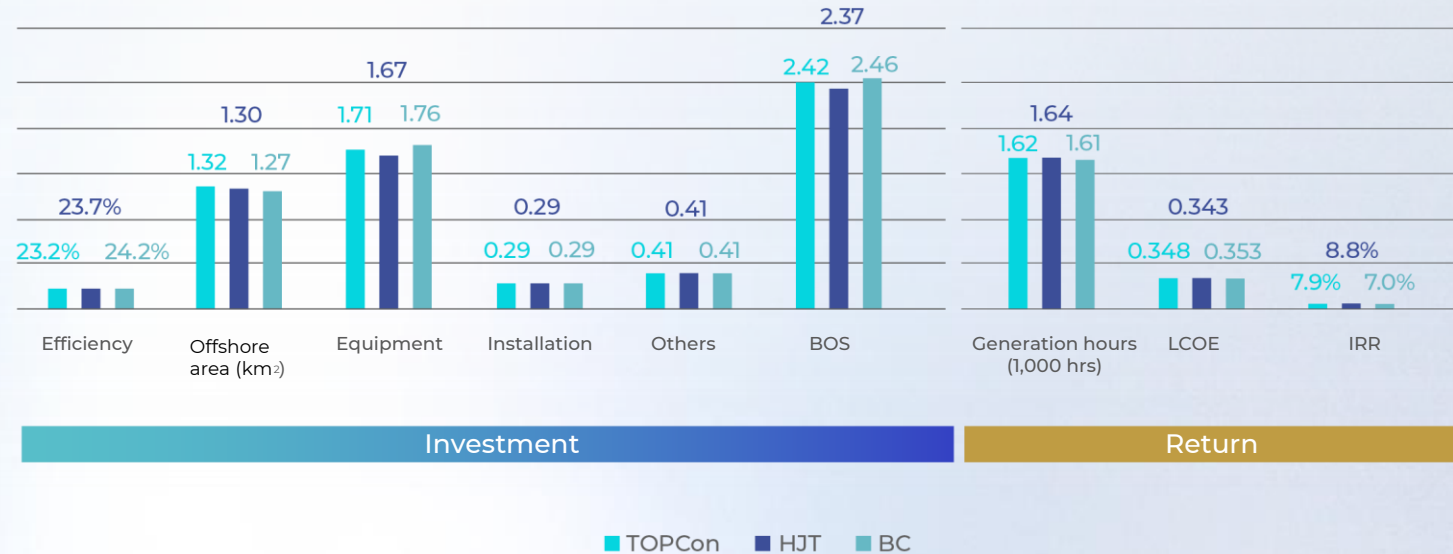
- Total land area slightly larger
- BOS cost reduced by RMB 0.0372/W, saving **~0.73%**
- First-year generation hours increased by **1.86%**
- Power plant IRR improved by **0.74%**

HJT Solutions – Offshore PV

100 MW Project in Yancheng, Jiangsu, East China

Module Type	TOPCon 720 W	HJT 735 W	BC 655 W
Installation	Pile-mounted		
Specialized process	Coated dual-glass + Corrosion-resistant frame		
Reflectance	0.06		
GHI	1,229 kWh/m ²		
System capacity	100 MW		

Investment vs. Return



HJT 735 W vs. TOPCon 720 W

- BOS cost reduced by RMB 0.0447/W, saving **~1.85%**
- First-year generation hours increased by **0.67%**
- Power plant IRR improved by **0.86%**

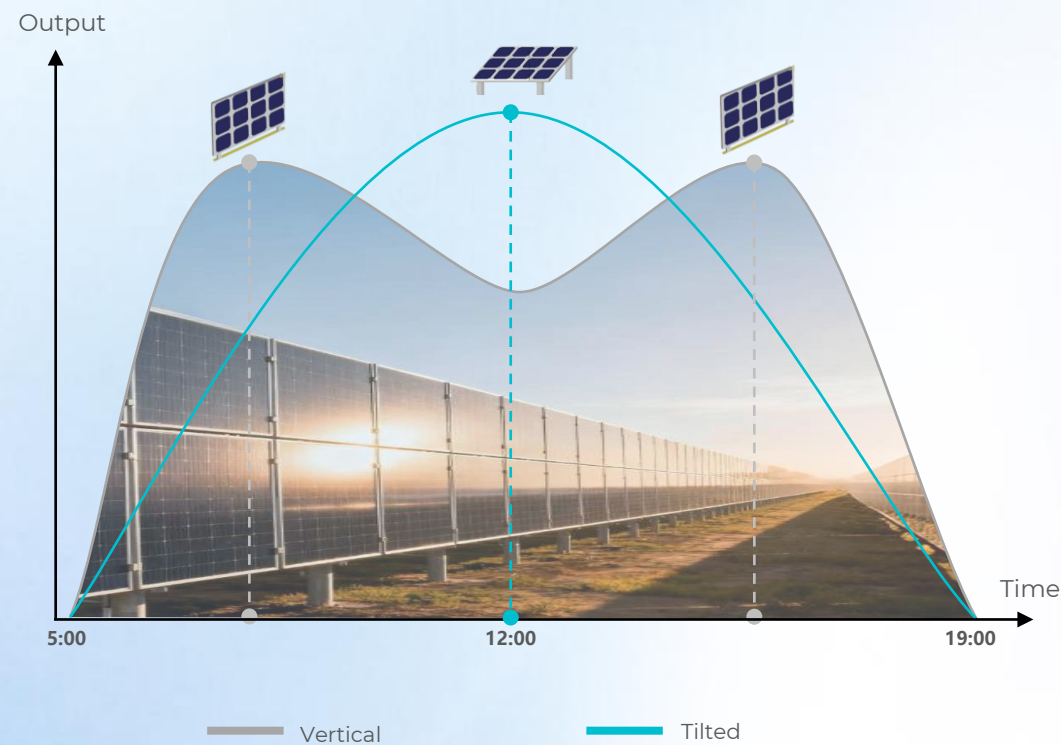
HJT 735 W vs. BC 655 W

- BOS cost reduced by RMB 0.0928/W, saving **~3.77%**
- First-year generation hours increased by **1.7%**
- Power plant IRR improved by **1.84%**

HJT Solutions – Vertical PV

50 MW Project in Gansu, Northwest China

Power Output Curve: Vertical vs. Tilted Installations



Vertical installation of PV modules enables **dual-peak generation**, ideal for the market-based peak-valley electricity pricing model.

HJT vertical vs. TOPCon tilted: **2.13%** less land use, RMB 0.0181/W lower BOS (**≈0.95%** savings), **7.88%** more first-year generation hours, **1.41%** higher IRR.

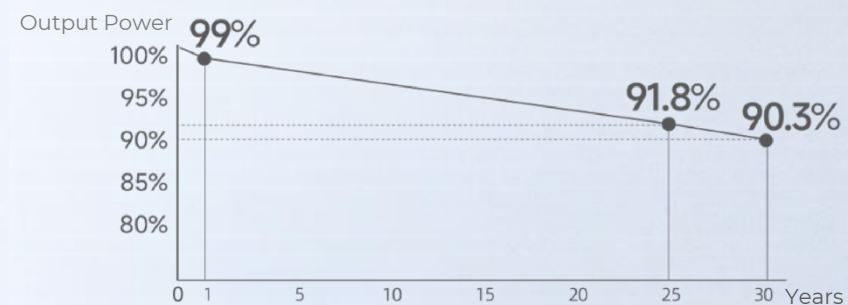
Product Warranty



30-year residential rooftop product warranty available in select markets, including Europe, Australia, Japan and South Korea.



Linear Power Degradation



* $\leq 1\%$ degradation in the 1st year
 $\leq 0.3\%$ annual degradation during the 2nd-30th years
 $\geq 90.3\%$ of rated power maintained after 30 years

04

Powering the World

Backed by extensive project expertise and a specialized technical & support team, we deliver timely, precise and efficient solutions for both utility-scale and distributed solar projects worldwide.





300 MW Yancheng Fishery-Solar Hybrid Project

Capacity: 300 MW

Location: Yancheng, Jiangsu, China

Annual Generation: 349 million kWh

Coal Saved: ~106,000 tons / year

CO₂ Reduced: ~287,000 tons / year

Project References



264 MW Lishui Mountain PV Project

Capacity: 264 MW

Location: Lishui, Zhejiang, China

Annual Generation: 280 million kWh

Coal Saved: ~80,000 tons / year

CO₂ Reduced: ~220,000 tons / year

Project References



Jiangxi Xinyu 140 MW Mountain PV Project

Location: Xinyu, Jiangxi, China

Annul Generation: 140 million kwh

Coal Saved: ~45,000 tons / year

CO₂ Reduced: ~112,000 tons / year



Zhejiang Wuyi 60 MW Mountain PV Project

Location: Wuyi, Zhejiang, China

Annul Generation: 63 million kwh

Coal Saved: ~19,000 tons / year

CO₂ Reduced: ~63,000 tons / year

Project References



Xinjiang Shuanghe 250 MW Wind-Solar-Storage Hybrid Project

Location: Shuanghe, Xinjiang, China

Annul Generation: 375 million kWh

Coal Saved: ~114,000 tons / year

CO₂ Reduced: ~374,000 tons / year



Denglong 100 MW Mountain PV Project

Location: Denglong, Jiangxi, China

Annul Generation: 105 million kwh

Coal Saved: ~32,000 tons / year

CO₂ Reduced: ~105,000 tons / year

Project References



18.24 MW Shandong Huadian Zaozhuang
Yinshan Phase II PV Project



10 MW Da'an Wind & Solar Green
Hydrogen & Ammonia Project



7.4 MW Yangzhou Huiteng Power
Distributed PV Project



4.58 MW Suzhou CSCEC Proterial
C&I Rooftop PV Project

Global Network



 From manufacturing facilities to the world: Dinto Solar's high-efficiency HJT modules are powering solar projects across the globe.

BEYOND EFFICIENCY



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Follow "Dinto Solar" on social media



Headquarters

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Beijing, China



R&D Center

Park 2, Optoelectronics Industrial Zone, Yaohu West Ave.,
High-tech Zone, Nanchang, Jiangxi, China



Manufacturing Facilities

1181 Shugang Ave., Longgang City, Wenzhou, Zhejiang, China
2 Yuye Rd., High-tech Zone, Suining, Sichuan, China