Maximizing Solar Installation Efficiency with Advanced JA Solar Solutions for the Saudi Market

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JA Solar - Overview

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Strength in Numbers

Annual shipment of PV modules reached **70GW** in 2024

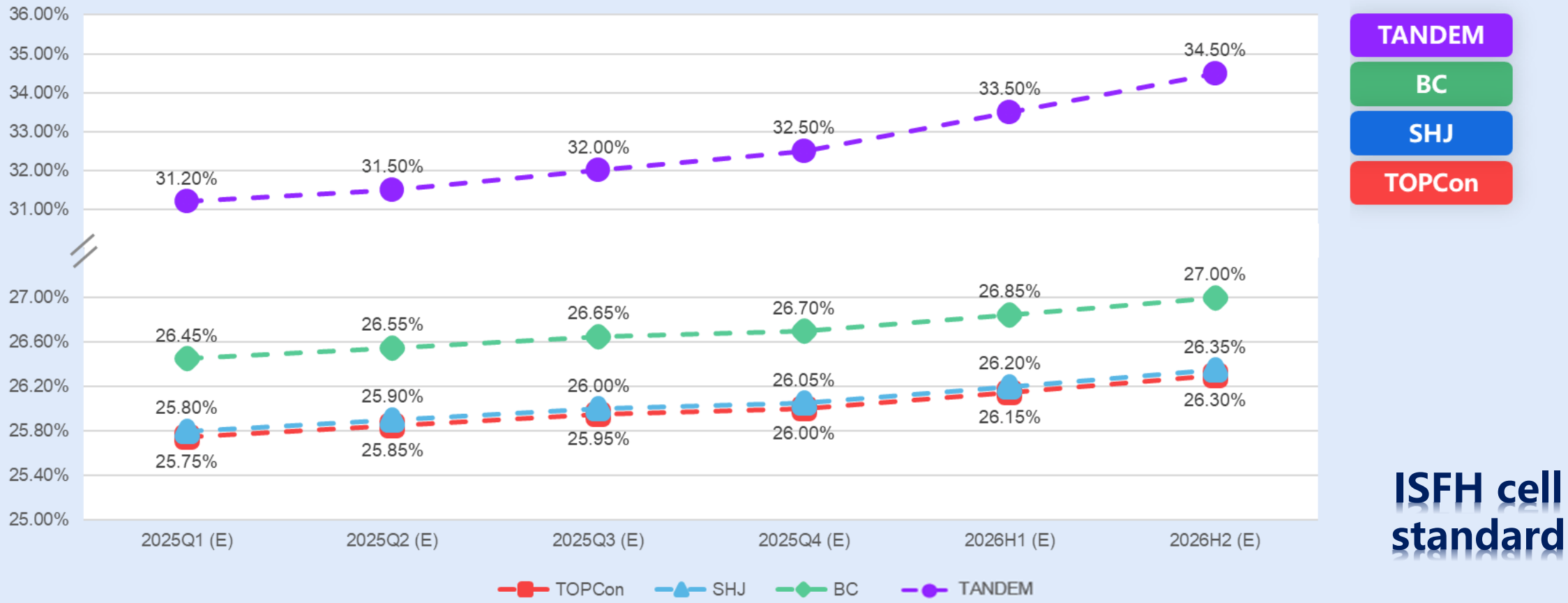
As of the end of 2024 Q3, the cumulative shipment of PV modules exceeded **246GW**

Product sales and service network spans **178** countries and regions

As of the end of 2024, **1,899** **valid** patents, including **1,032** invention patents

JA Cell Technology Roadmap

Harvest the Sunshine 收获更多阳光



- The efficiency of n-type cells holds significant potential for development in the future, and the current JA's main route is TOPCon while continuously exploring other new technology cells

Deep Empowerment of vertical Integration

JA Solar has Vertical Integration in Module Manufacture

- Ingots 100GW+
- Wafers 100GW+
- Cells 100GW+
- Modules 100GW+
- Power Plants

Profound knowledge of

- PV Technology
- Raw materials
- Wafer and cells
- Modules and the entire system

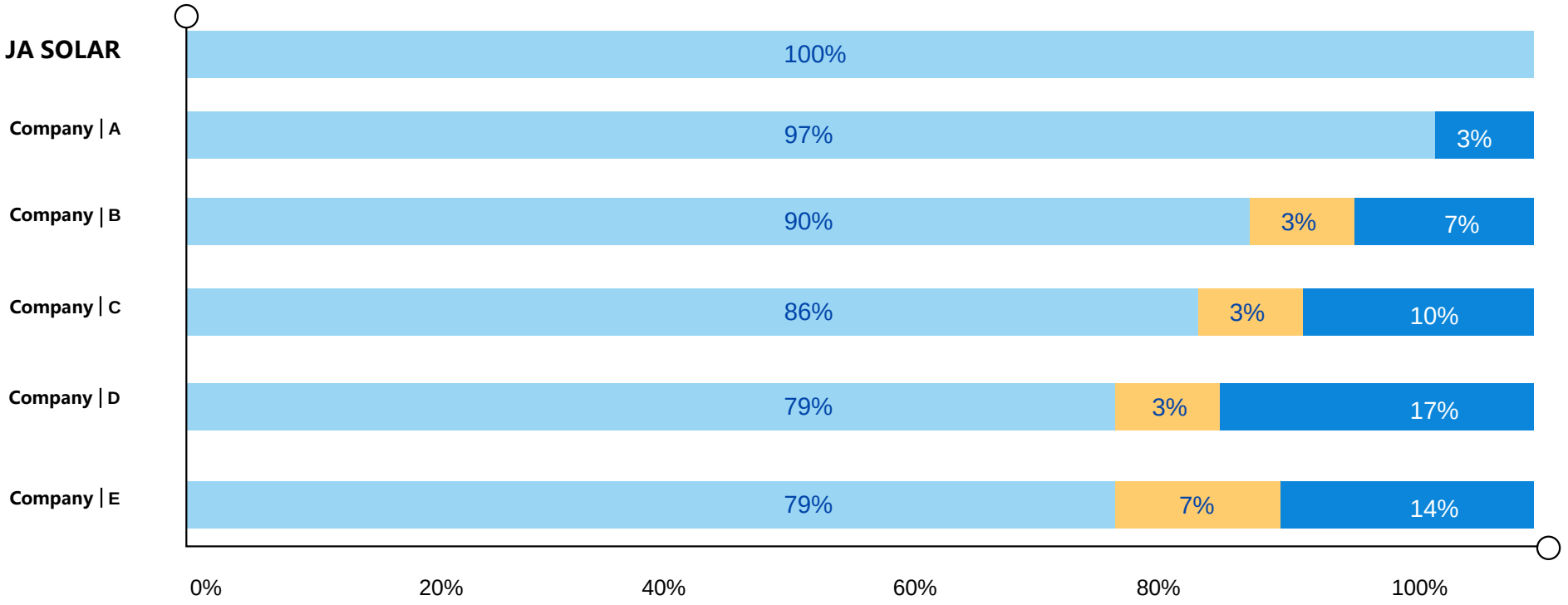
Controlling of

- The product quality
- The deliveries
- The production capacity

Worldwide Manufacturing

- China
- Vietnam
- United States
- Oman

100% Bankability Recognized by BNEF



(Source: BNEF, 2023)

Sustainable Development Strategy

The first to register as a TNFD Adopter in the PV industry

JA Solar published its Biodiversity Policy in Aug 2024

Creating full life cycle green products

Diverse, equal and inclusive management system

Supporting sustainable investment and financing

Industry-Academia-Research Institution Collaboration

JA Solar has established collaborations with renowned research institutions worldwide, including the creation of a joint laboratory with the University of New South Wales (UNSW) in September 2024.

《Solar cell efficiency tables》 (64v)

"Large-Size Silicon-Based Cell Efficiency": JA TOPCon Cell: **330cm²**

Cell efficiency	Voc
25.6%	746mV

Measured by ISFH

- TOPCon mass-produced large-size cell efficiency ranked first
- Largest silicon-based cell in the ranking

Continuous Advancements in JA Solar's Development and Innovation

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PART

JA SOLAR

DEEP BLUE 5.0

Intelligent · Quality · Evolution

Module power up to 670W | Module efficiency up to 24.8%

Intelligent • Quality • Evolution

DEEP BLUE 5.0

Module power up to 670W Module efficiency up to 24.8%

Stable Low Degradation Power

- First-year degradation ≤ **1%**
- Annual linear degradation ≤ **0.4%**
- **1.8%** power generation increase over **30 years**

High Temperature Power Boost

- **-0.27%/°C** Power temperature coefficient
- **2.5% to 3%** power generation increase at 55°C

Bifacial High Efficiency

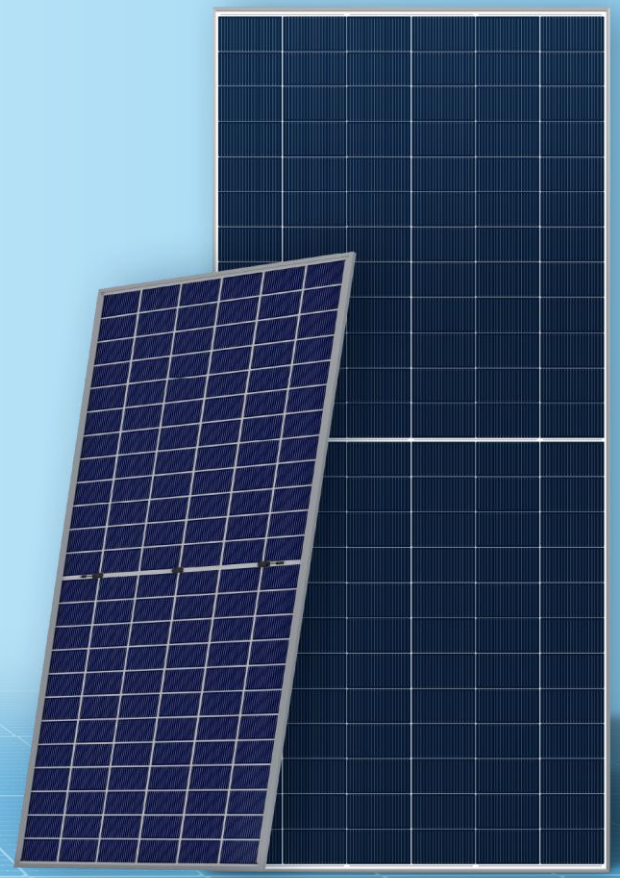
- **85%** bifaciality
- **1% to 1.5%** power generation gain

Low Light Power Harvesting

- **0.25%** power generation increase in low-light environments

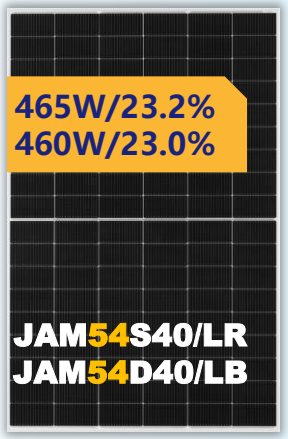
All-weather Protection

- Uniform diffuse reflection enhancement
- **0.3%** power generation increase



DEEP BLUE 4.0 Pro Series

54c TOPCon



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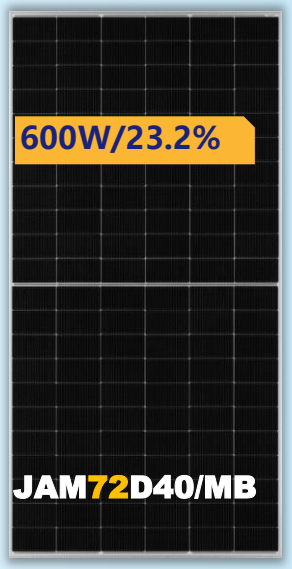
72c TOPCon



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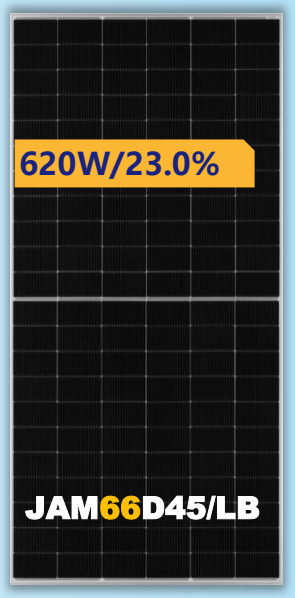
66c TOPCon



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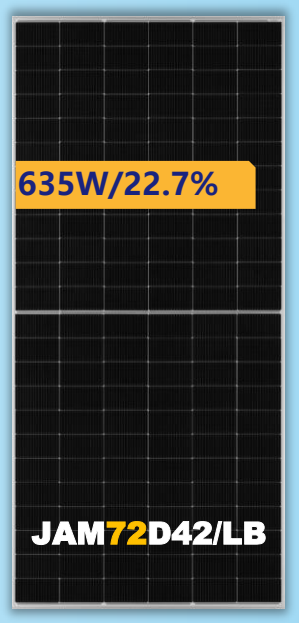
72c TOPCon



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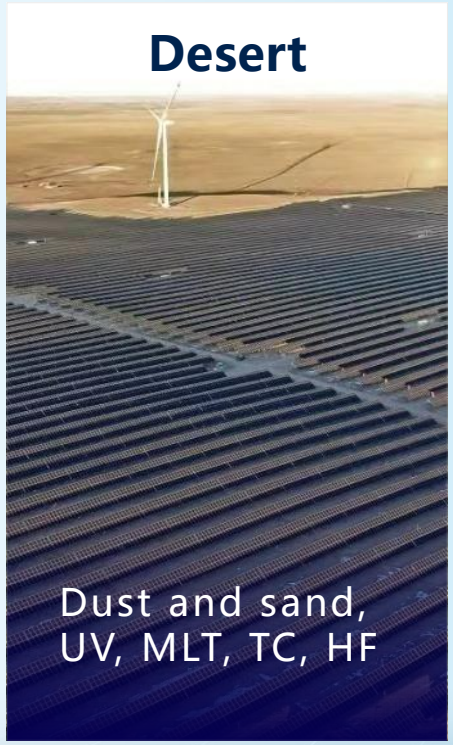
Residential

Residential、Commercial & Industrial, Utility-Scale

Industry Trend：Reliable Performance Across All Climates

Customized modules for reliable performance under various climate conditions



Anti-Dust——Short-side drain hole

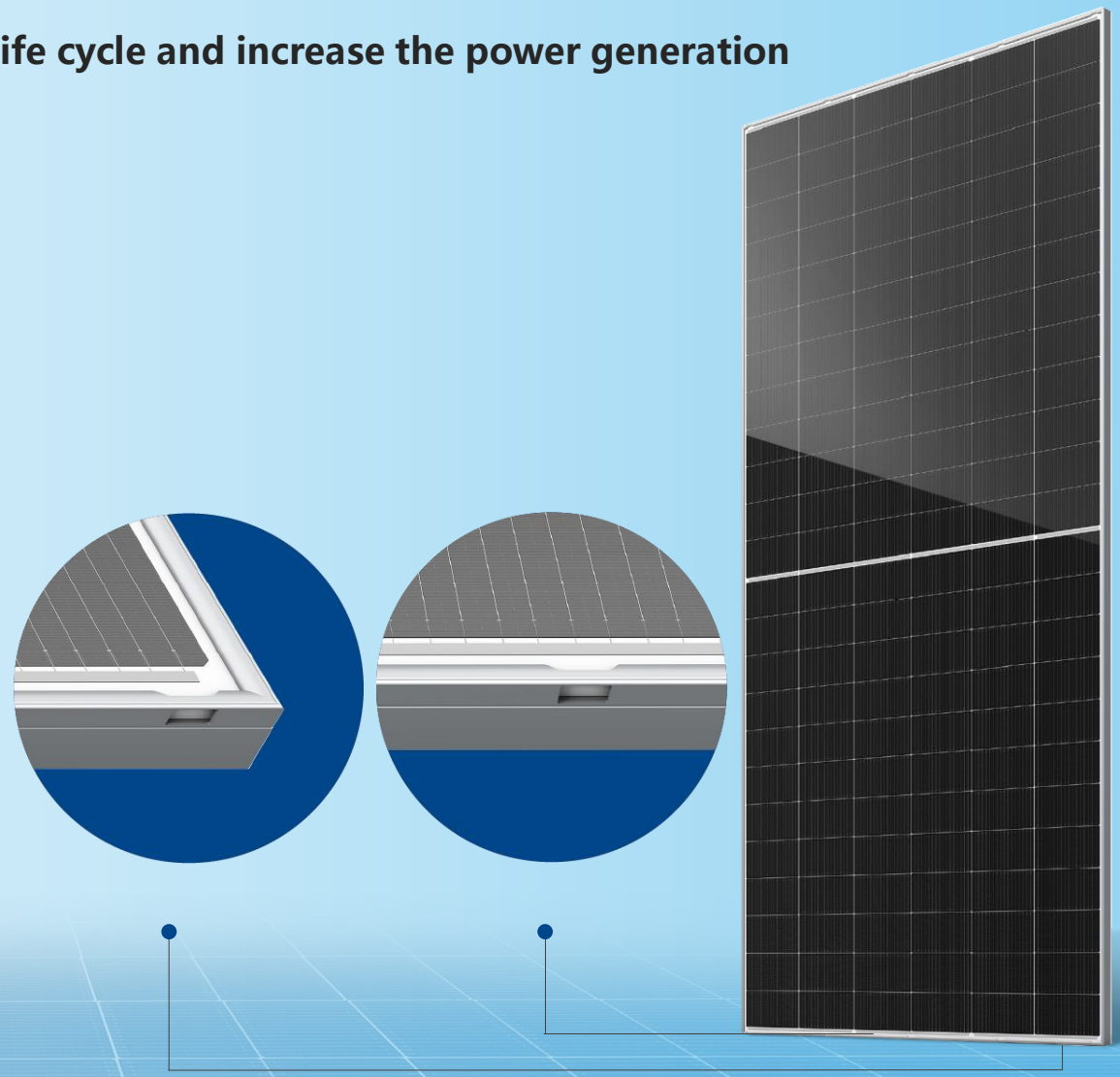
Reduce the operation and maintenance costs of the power plant life cycle and increase the power generation

Easy to discharge
Water guide hole design, no steps

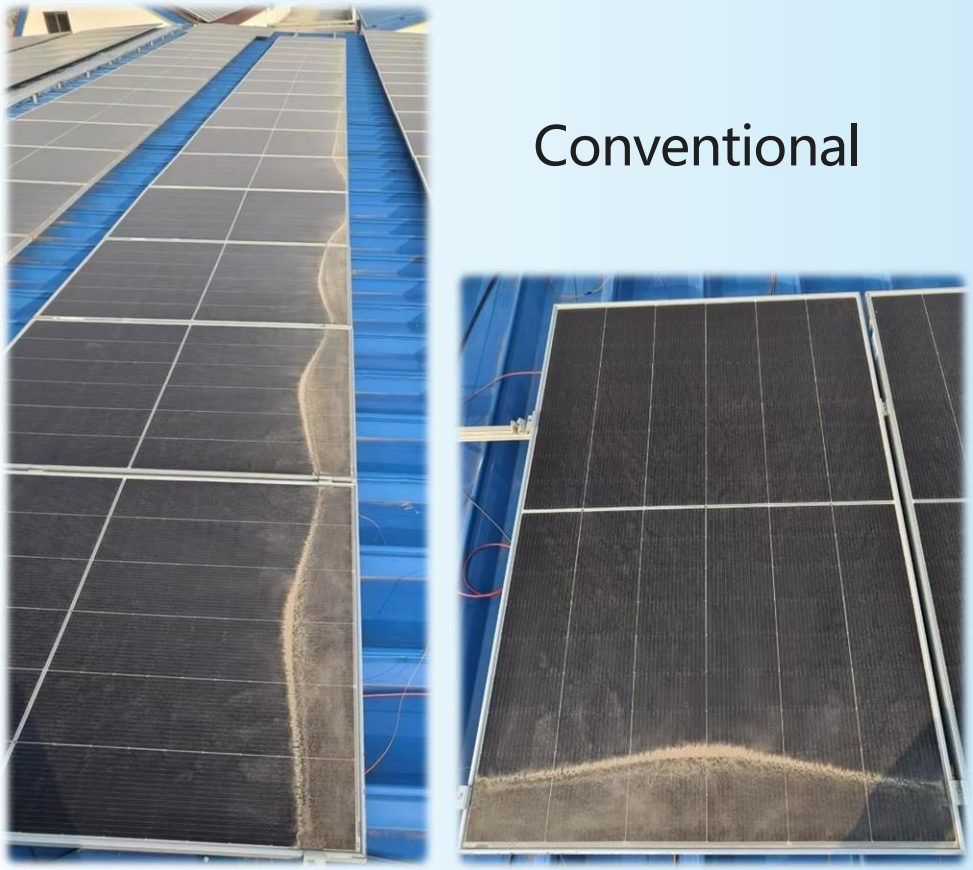
High reliability
High load strength and good anti-aging performance

Good processing
Stamping process, easy processing

More compatible
There is no change in the framing process, which is more time-saving



Excellent Anti-Dust Effect



- The dust accumulation in this photo shows that the power generation gain per watt of the anti-dust module is higher than that of conventional modules.
- The drainage performance of the anti-dust module is also effective, with dust evenly distributed across the module's surface and the drainage holes remaining unobstructed.

DEEP BLUE 4.0 Pro SKYBLUE — Pile Mounted

Front glass	**Double-Layer Coated Glass** Moisture Resistance\ Salt mist Resistance
Encapsulation	**Moisture-resistance encapsulant** High Water Resistance \UV Resistance\High Weather Resistance
Connector	**MC4+waterproof plug** Strong Waterproof/ Anti-aging
Frame	**High-Thickness Oxide Film Frame** High Weather Resistance\High Strength\Corrosion Resistance

DEEP BLUE 4.0 Pro OCEANBLUE — Floating

Glass	**Highly Weather-Resistant Double-Layer Coated Glass** High light transmission\Moisture Resistance\Salt mist Resistance
Frame	**Polyurethane Frame** High Weather Resistance\High Strength\High insulation
Junction box Connector	**Junction Box, Connecter Protection** Strong Waterproofing/ Anti-aging
Sealant	**High water-resistance sealant** High Water Resistance\High Strength\UV Resistance

DeepBlue 4.0 Pro has been awarded by various authoritative third-party organizations

- 9th PVEL TOP PERFORMER
- 5th RETC HIGHEST ACHIEVER
- 2nd prize BRICS Industrial Innovation contest
- TOPCon Bifacial Outdoor Energy Yield AQM
- PV magazine five-star " VERY GOOD"
- Best Quality in Outdoor Award
- Leader+ Cold Climate A+ class
- Extreme Cold Performance Award
- No.1 Taiyangnews July-November TOPCon Highest efficient commercial module
- [Light · Storage] Quality Efficiency Award

Industry Trend In C & I

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PART

JA SOLAR

Optimal Energy Mix

- The Kingdom has committed to have 50% of its Power generated from Renewable Energy by 2030.
- By the close of 2024 ,Saudi Arabia’ s Renewable Energy projects are projected to generate 43,698GWh annually with Solar comprising 12,313MW. According to MESIA Report
- The major regions in the market are Makkah, Riyadh, Madinah, Qassim, and Eastern Province, among others.

Main Factors Driving the Solar Power Market in Saudi Arabia

- Saudi Arabia’ s key advantage in the solar energy sector is its abundant natural sunlight. With over 3,000 hours of sunshine annually, the country ranks among the sunniest places on Earth.
- The Saudi government has been actively promoting solar energy development through various policies.
- Saudi Arabia has pledged significant investments in renewable energy infrastructure.

Despite the immense potential and government support, there are several challenges in the Saudi solar power market.

➢ As part of Saudi Arabia's **Vision 2030** initiative, the C&I sector is rapidly adopting renewable energy solutions.

What are the key benefits of bifacial Modules in C&I Projects?

- Higher Energy Yield
- Lower LCOE
- Better Performance in Harsh Conditions
- Accelerate ROI

What role can bifacial solar play in achieving sustainability goals?

- Reduce Carbon Emissions
- Supporting circular economy & Longevity

Nadec Project -30MW
Location :Saudi Arabia

Laila Project
location :Saudi Arabia.
Project : Ground-Mount
13 MWp

NEOM CITY - SATCO PROJECT / NEOM CONSTRUCTION VILLAGE

NEOM CITY - TAMIMI ENERCO PROJECT / NEOM CONSTRUCTION VILLAGE

KFB Project (4.5MW + 5.5MW)
location :Saudi Arabia
Project Capacity : 10MW

ACCIONA Project
location :Saudi Arabia-Jubail
Project Capacity : 65MW

Location : Riyadh- Saudi Arabia
Capacity :368KWp
Time :2023
Model Name :JAM72D40 580 /MB

To Conclude : Benefits of JA Solar Bifacial Modules

JA Solar initially developed bifacial N-type modules based on testing results that demonstrated their high reliability and durability across various test chambers. These modules have proven to perform excellent under harsh environmental conditions.

JA Solar's R&D Dept is continuously working to enhance cell efficiency and module design to achieve higher power output and introduce the latest innovations

Deep Blue 4 Pro in Saudi Arabia Market.

JA Solar cells have been measured by ISFH, a globally recognized testing laboratory

With a strong track record and numerous references in the C&I sector in Saudi Arabia

Harvest the Sunshine

Premium Cells, Premium Modules

www.jasolar.com