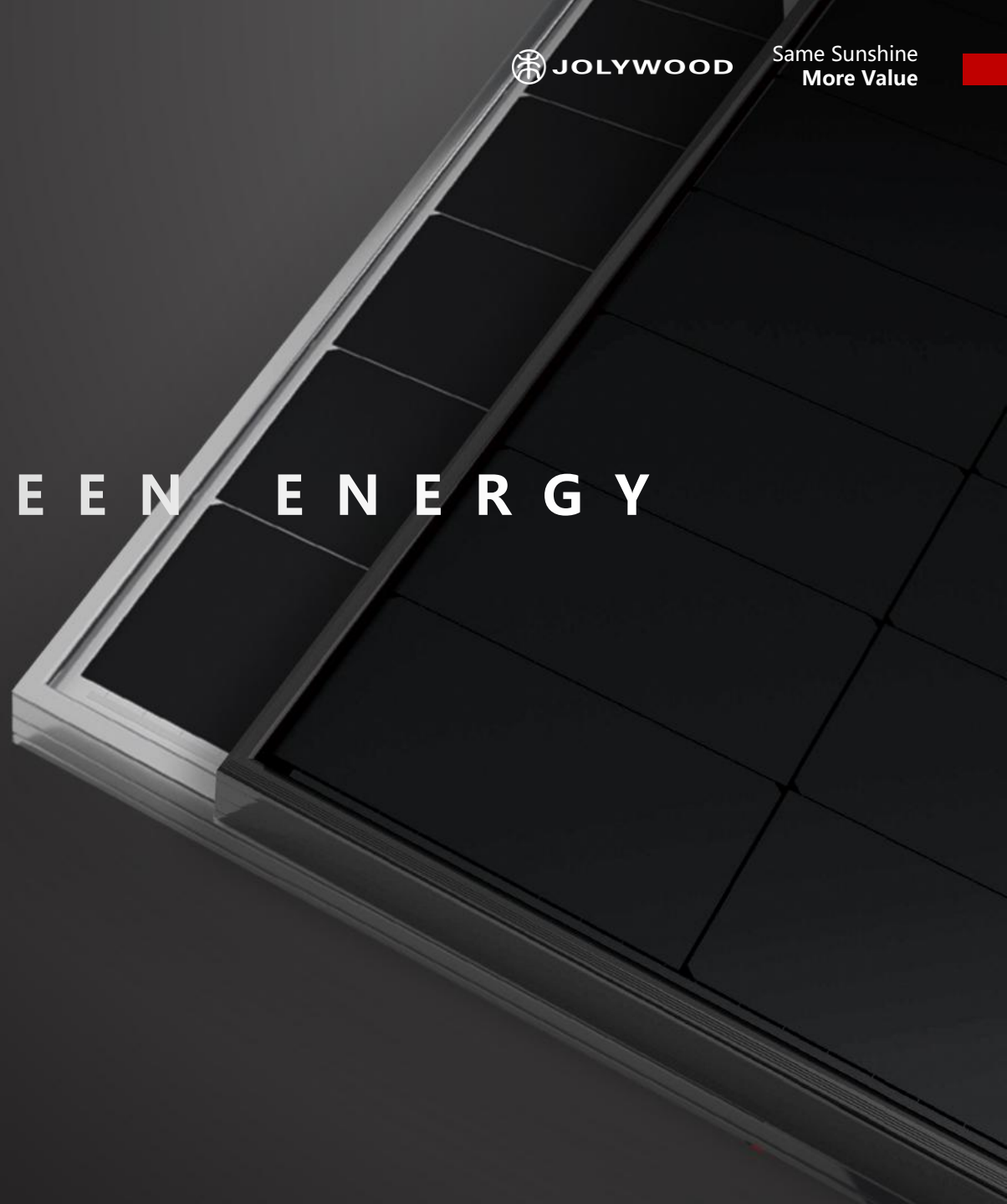
JOLYWOOD

Same Sunshine
More Value

CULTIVATOR OF GREEN ENERGY



Global Leader in N-Type PV Products

Founded in 2008 and publicly listed in 2014 (Stock code SZ300393), Jolywood (Suzhou) Sunwatt Co., Ltd. is a state-level high-tech enterprise specializing in the R&D and manufacture of PV products. In 2022, Jolywood became a subsidiary of Zheneng Electric Power.

Jolywood Operates Across Three Major Business Units

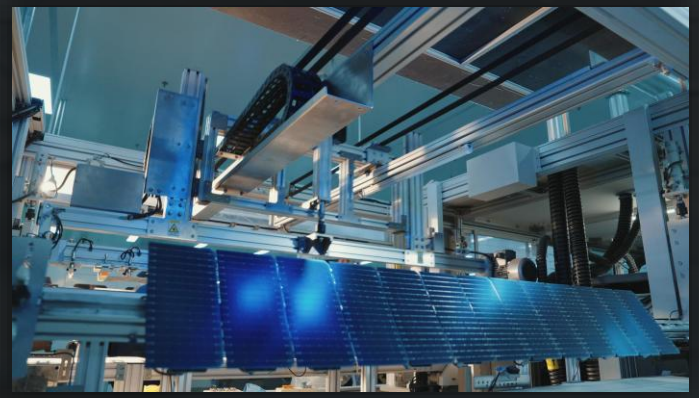
PV Materials

No. 1 in PV Backsheet Shipments for Five Consecutive Years Globally



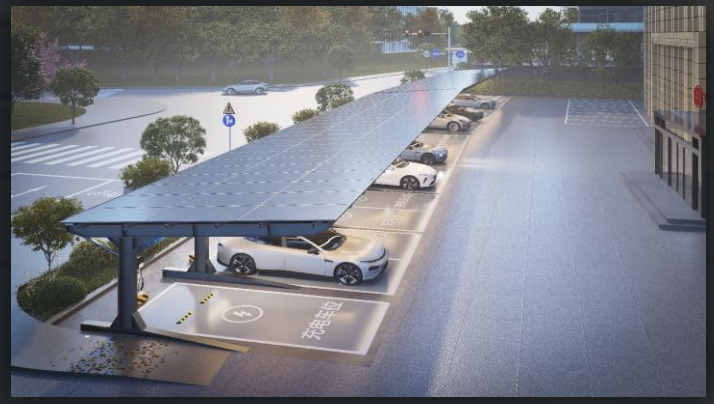
PV Cells & Modules

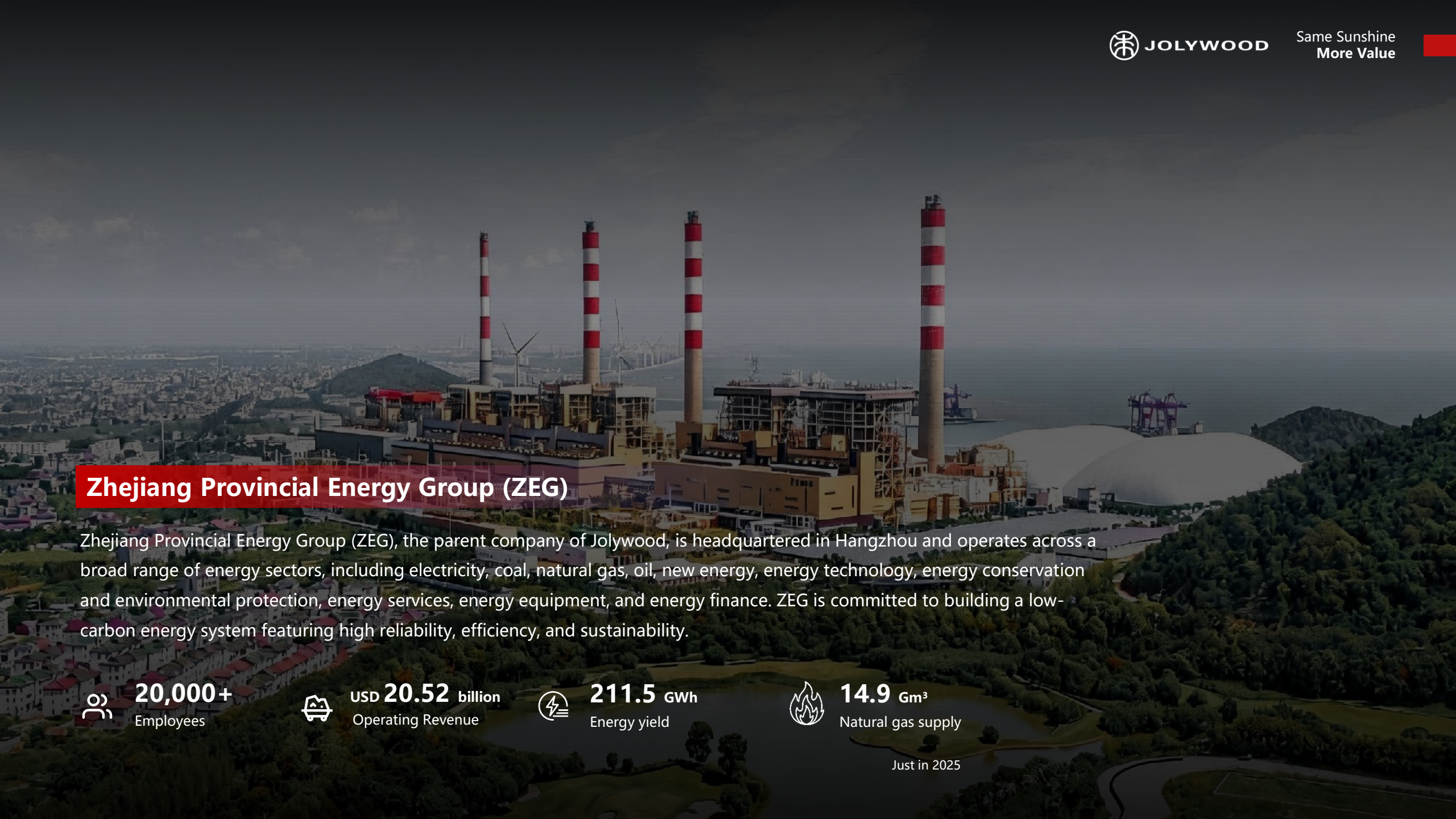
The **First** to Achieve GW-Scale Mass Production of N-Type PV Technology



PV System

Specializing in PV projects across **diverse scenarios**, including residential, C&I, utility-scale power plants





Zhejiang Provincial Energy Group (ZEG)

Zhejiang Provincial Energy Group (ZEG), the parent company of Jolywood, is headquartered in Hangzhou and operates across a broad range of energy sectors, including electricity, coal, natural gas, oil, new energy, energy technology, energy conservation and environmental protection, energy services, energy equipment, and energy finance. ZEG is committed to building a low-carbon energy system featuring high reliability, efficiency, and sustainability.

20,000+
Employees

USD 20.52 billion
Operating Revenue

211.5 GWh
Energy yield

14.9 Gm^3
Natural gas supply

Just in 2025

Strong Manufacturing Capacity for Stable Supply

10GW+
PV Module Production Capacity

16GW+
PV Cell Production Capacity

Corporate Recognition & Capabilities

- National High-tech Enterprise
- National Specialized, Refined and Innovative "Little Giant" Enterprise
- Selected into the 2023 National 5G Factory Directory
- The first enterprise in the industry to be awarded both "National Green Factory" and "National Green Supply Chain Management Demonstration Enterprise"
- Equipped with a CNAS-accredited Photovoltaic Testing Center
- Provincial Intelligent Manufacturing Demonstration Plant
- Two Provincial Intelligent Manufacturing Demonstration Workshops
- Provincial Enterprise Technology Center and Provincial Engineering Technology Research Center

Trusted Worldwide, Growing Together



Recognized for Excellence, Committed to Sustainability

ISO 50001

BNEF Tier1
PV Module Manufacturer (2019-2025)

SA8000

EUPD Research
The Most Popular Module Award in Germany

PPE2

TÜV SÜD
World's First IEC Certification for n-TOPCon Mono-glass Bifacial Module with Transparent Backsheet

TÜV SÜD
Best Carbon Neutrality Practices Award

TÜV NORD
Enhanced Reliability Certification for n-TOPCon single-glass Bifacial PV Modules

CPVT
All-Scenario Weather Resistance Test Certificate

PVEL
Top Performer

ESG Strategy Goals

Environmental Harmony

We are committed to advancing green technologies and clean energy, minimizing the environmental impact of our operations, and fostering harmony between humanity and nature.

Social Co-development

We strive to build a diverse and inclusive workplace with comprehensive compensation, benefits, and career development systems to ensure employee health and safety. We actively fulfill our social responsibilities by supporting rural revitalization and contributing to a harmonious society.

Corporate Governance

We are committed to building a robust corporate governance system, promoting transparent and efficient decision-making, upholding high standards of business ethics, and fostering a healthy business environment that contributes to high-quality socio-economic growth.

Industrial Prosperity

We strive to drive sustainable development across the industry value chain by collaborating with upstream and downstream partners. Through the design and production of sustainable products, we aim to reduce environmental impact and jointly advance clean energy solutions.

R&D Strength & Certifications

R&D Team

550+

Employees

2000+

Granted Patents

423

Environmental Product Declaration

Certificate of n-TOPCon Single Glass Bifacial PV Module Enhanced Reliabilty

First IEC certification of new standard for n-TOPCon Bifacial PV modules with transparent backsheet

Waste Electrical and Electronic Equipment

"NATIONAL PRODUCT SELECTION" TESTING CERTIFICATE FOR WEATHERING RESISTANCE IN ALL APPLICATION SCENARIOS

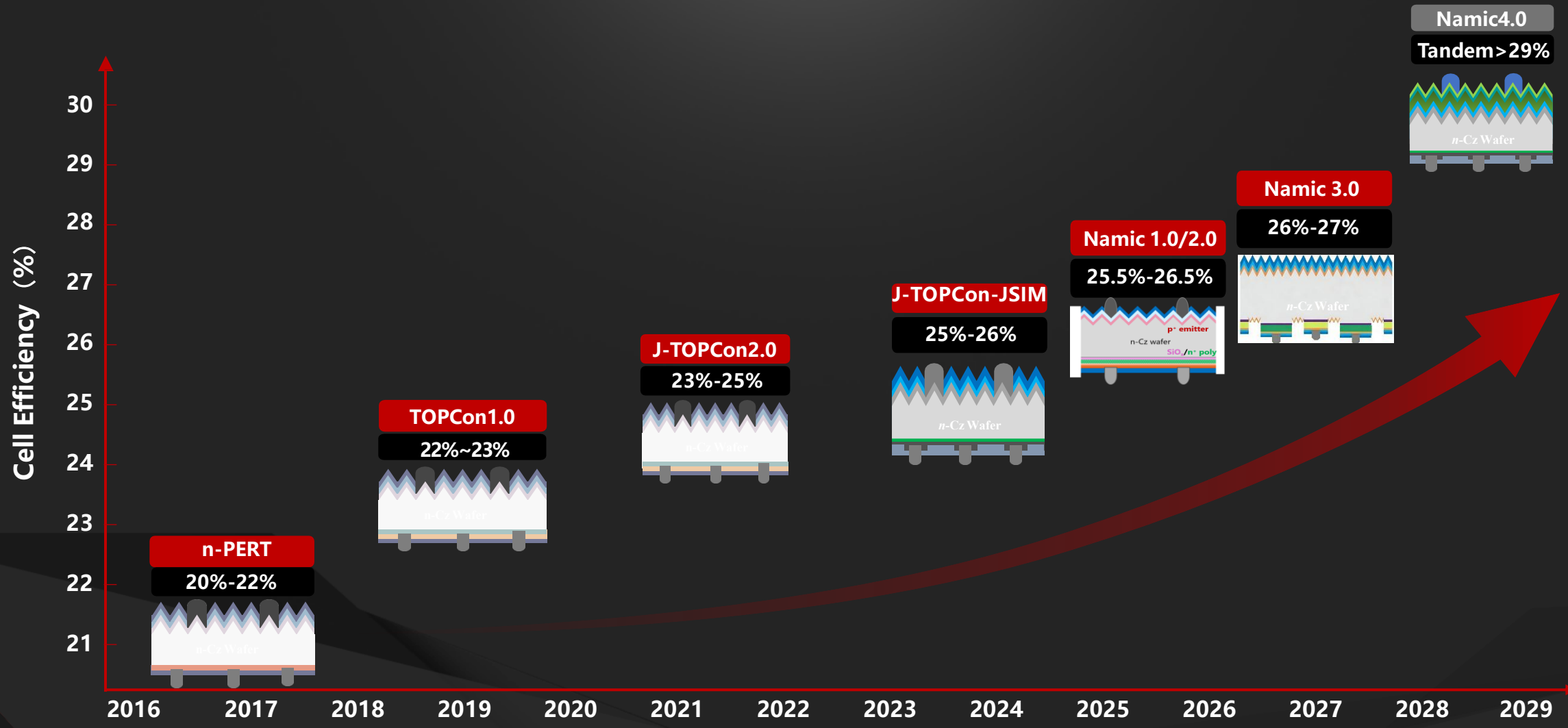
Supported by Munich Re
Trusted protection worldwide



French Carbon Footprint
PPE2 Certification

Never Stop Advancing

Roadmap for Jolywood's *n*-Type High-Efficiency Cell Technology

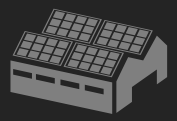


Jolywood Main Products-JW&NIWA

JW Series

Designed for C&I and Utility-Scale PV Systems

High Reliability | High Efficiency | Low LCOE



C&I



Utility-scale PV plant

- **Higher energy yield**
  JW-TOPCon modules leverage J-TOPCon New process technology to deliver higher module power output.
- **Higher reliability**
  Naturally with no LID. Passed various enhanced module tests.
- **Superior safety performance**
  Static loads of 5400Pa (front side) and 2400Pa (rear side)
  The windproof module has passed static load tests up to +8100 Pa/ -3000 Pa.

JW HD

Module Type	Power(w)	Efficiency	Cell Size(mm)	Dimension(mm)	Weight(kg)
HD132N-210N	715-740	23.8%	210*210	2384*1303*33	37.5
HD132N-R2	625-650	24.1%	182.3*210	2382*1134*30	32.6
HD132N-R2 WINDPROOF	625-650	24.1%	182.3*210	2382*1134*30	34.8

JW HT

Module Type	Power(w)	Efficiency	Cell Size(mm)	Dimension(mm)	Weight(kg)
HT132N-R2	625-650	24.1%	182.3*210	2382*1134*30	28.7
HT132N-R2 WINDPROOF	625-650	24.1%	182.3*210	2382*1134*29	28.2

Jolywood Main Products-JW&NIWA

NIWA Black：Smarter Choice for Every Rooftop

All black | Aesthetic design | Light weight



Residential rooftops



C&I

- **Higher energy yield**
  Niwa-TOPCon modules leverage J-TOPCon New process technology to deliver higher module power output.
- **Ultra-Black Aesthetic Design**
  Sleek All-Black Design
- **Lightweight**
  The minimum weight of Niwa series is 21.7kg, engineered for easy handling and installation.

NIWA Black /Pro HD

Module Type	Power(w)	Efficiency	Cell Size (mm)	Dimension(mm)	Weight(kg)
HD108N-R2	500-525	23.6%	182.3*210	1960*1134*30	27.1
HD96N-R2	445-470	23.5%	182.3*210	1762*1134*30	24.4

NIWA Black /Light HT

Module Type	Power(w)	Efficiency	Cell Size (mm)	Dimension(mm)	Weight(kg)
HT108N-R2	500-525	23.6%	182.3*210	1960*1134*30	24.1
HT96N-R2	445-470	23.5%	182.3*210	1762*1134*30	21.7

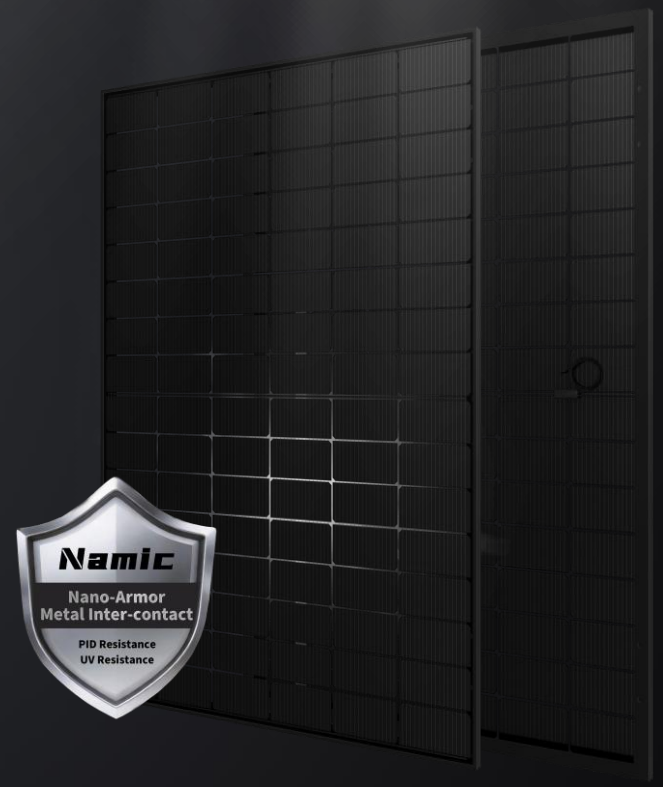
Aerospace Innovation, Engineered for Solar

Namic Cell Technology (Nano Armor Metal Inter-contact)

Powered by the proprietary **Nano Armor Layer**, **an aerospace-grade material purpose-built for solar**, Namic rewrites the metallization playbook. This technology has been validated by TÜV, an internationally recognized third-party certification body, and delivers **high reliability, high efficiency, and broad adaptability** to create greater long-term value for clients.

6 core performance advantages

- Prevents aluminum diffusion into polysilicon
- Good vertical conductivity
- Extremely low lateral conductivity
- High transmittance with low optical loss
- High-temperature resistance and good compatibility with conventional cells
- Aerospace-grade material resistant to UV and high-energy particles



Aerospace Innovation, Engineered for Solar

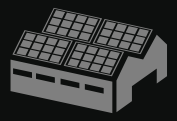
Namic 1.0 Series: Adaptable to all scenarios

Designed for Utility-Scale PV Systems, C&I and Residential rooftop

High Reliability | High Efficiency | Low LCOE



Utility-scale PV plant



C&I



Residential rooftops

- **Higher reliability**

NAMIC series from Jolyood features an innovative nano-armor protective layer design, offering superior resistance to PID and UVID.

- **Superior safety performance**

Compatible with double-beam alloy steel frames, The windproof module has passed static load tests up to +8100 Pa/-3000 Pa.

JW Series

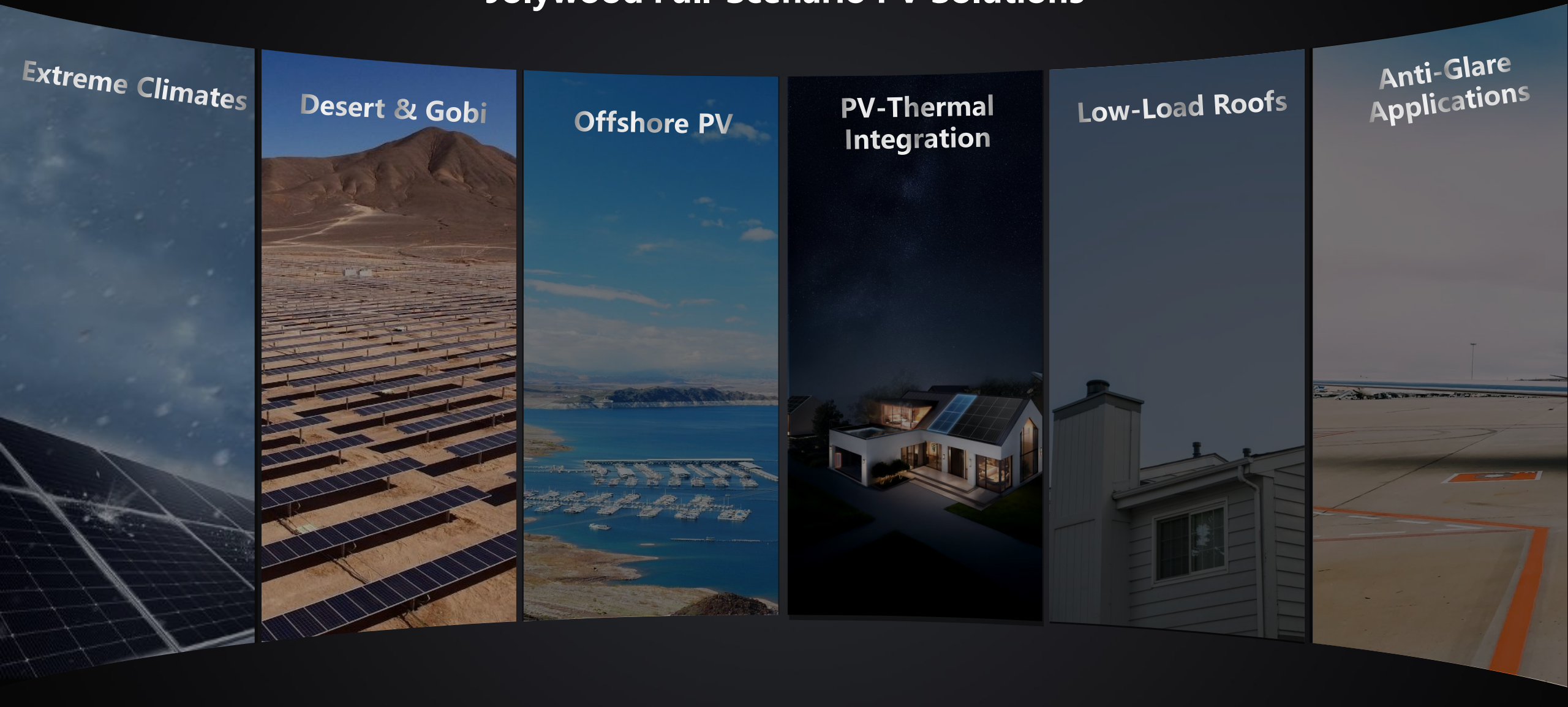
Module Type	Power(w)	Efficiency	Cell Size(mm)	Dimension(mm)	Weight(kg)
WINDPROOF HD132N2-R2	615-640	23.7%	182.3*210	2382*1134*30	34.8
HD132N2-R2	615-640	23.7%	182.3*210	2382*1134*30	32.6
WINDPROOF HT132N2-R2	615-640	23.7%	182.3*210	2382*1134*29	28.2
HT132N2-R2	615-640	23.7%	182.3*210	2382*1134*30	28.7

NIWA Series

ModuleType	Power(w)	Efficiency	Cell Size(mm)	Dimension(mm)	Weight(kg)
HD108N2-R2	495-520	23.4%	182.3*210	1960*1134*30	27.1
HT108N2-R2	495-520	23.4%	182.3*210	1960*1134*30	24.1
HD96N2-R2	440-465	23.3%	182.3*210	1762*1134*30	24.4
HT96N2-R2	440-465	23.3%	182.3*210	1762*1134*30	21.7

Every Scenario Matters

Jolywood Full-Scenario PV Solutions



Jolywood Windproof Module — The Optimal Choice for Extreme Weather Conditions

Extreme Climate Environment Solutions



55mm
Hail Test

60m/s
Wind Tunnel Test
*** Withstand level 17 hurricane**

+8100Pa/-3000Pa
Static Load Test

±1000Pa
10000cycles
Dynamic Load Test

Jolywood Windproof Module — The Optimal Choice for Extreme Weather Conditions

WINDPROOF Module

Best for Extreme Weather Conditions

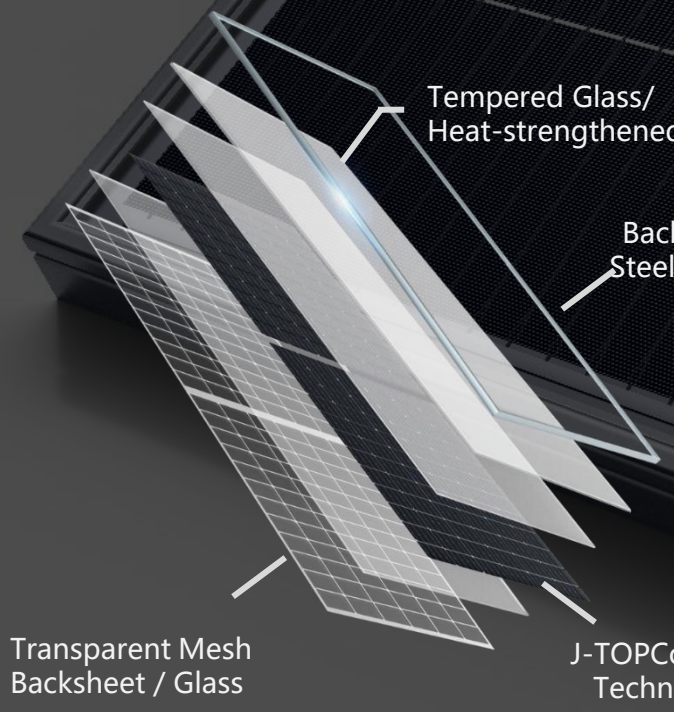
- Passed 55mm hail test
- Stonger front side with burstproof protection
- Higher energy yield powered by transparent mesh backsheet

- DH problem in single-glass modules solved by JSIM technology
- Module carbon emissions are reduced by 10.19%
- Passed 60m/s wind tunnel tested (equal to Level.17 Typhoon))

- +8100Pa/-3000Pa static load certified
- Passed ±1000Pa dynamic load test x 10,000 cycles
- Backbone steel frame for excellent tear resistance

Windproof Single Glass Module

2.8mm Tempered Glass | Backbone Steel Frame | Transparent Mesh Backsheet



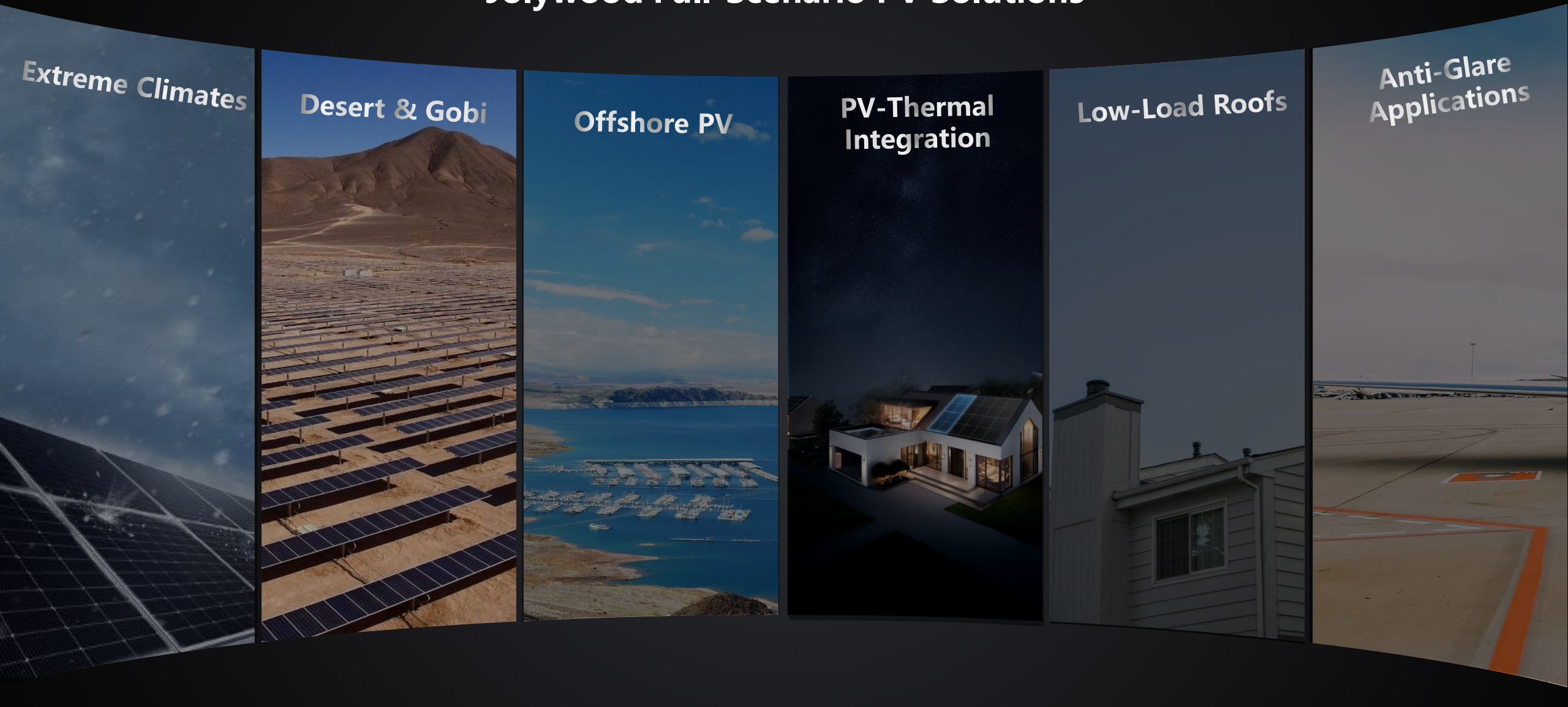
Windproof Dual Glass Module

2.0mm Heat-strengthened Glass | Backbone Steel Frame | 2.0mm Heat-strengthened Glass

Hail Resistance | Hurricane Resistance | Snowstorm Resistance | Burst Resistance

Every Scenario Matters

Jolywood Full-Scenario PV Solutions



Utility Projects



1GW | UZBEKISTAN SOLAR PARK



320MW | DUBAI MAKTOUM Solar Park



490MW | Power Station in OMAN



29MW | Panda Solar Project in CHINA



4.2MW | GERMANY Vertical Installation

Proven Worldwide, Powered by Jolywood


Ground-mounted PV Project in Germany


Silesian Museum Solar Project in Poland


Zonnepark Rilland N-type bifacial PV plant in the netherlands


Mirande Rooftop project in France


OMAN PROJECT

- 11.75 MW Netherland Zonnepark Rilland Project
- 37 MW The netherlands Solar energy park
- 8 MW Arnhem project in the netherlands
- 5.43 MW Ground-mounted PV Project in Germany
- 7 kw Aveyron Project in Germany
- 11.5 MW Bremen port Project in Germany
- 4.15 MW Donaueschingen Project in Germany
- 5.6 MW STAROSYNYAVS' KY Ukraine Stara Synyava n-type bifacial plant
- 4.2 MW Ukraine Fruzynvka n-type bifacial plant
- 75 kw Silesian Museum Solar Project in Poland
- 273 kw Aveyron project in France
- 163.5 kw Mirande project in France
- 216 kw Nord project in France
- 120 kw commercial rooftop in Poland

Global

Cumulative Shipments

17GW+

- 1 GW Uzbekistan Project


Jizzakh Samarkand Sherabad,Uzbekistan

- 125 MW Oman Amin Project
- 490 MW IBRI II Power Station in Oman
- 320 MW Dubai Maktoum Solar Park Project

- 119.82 MW SHANXI Qingshui County PV Project
- 153 MW QINGHAI UHV PV Plant project
- 30 MW Yangquan,Shanxi Top Runner Project
- 29 MW Panda Solar Project


ZHEJIANG Green Energy Agri-PV Project

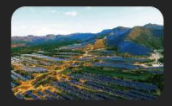

SHANXI Qingshui County PV Project


Yunnan Band PV Project


SHANXI Panda Solar Project

- 94.42 MW JILIN Top Runner Project
- 44 MW Poverty-relief Project in Hebei
- 74.52 MW N-TYPE bifacial PV Plant in Hebei
- 64.64 MW Haixing,Hebei Top Runner Project


HAIXING,HEBEI Top Runner Project


YANGQUAN, SHANXI Top Runner Project


QINGHAI UHV PV Plant Project


SIHONG Top Runner Project II

- 110 MW SIHONG Top runner Project II
- 104 MW SIHONG Top runner Project I
- 90 MW Guizhou n-type Bifacial PV Plant
- 60 MW Guangxi n-type Bifacial PV Plant
- 98.81 MW Yunnan Band PV Project

PV Cell & Module

UZBEKISTAN SOLAR PARK

2024.09
1GW

Location
Samarkand/Jizzakh/Sherabad, Uzbekistan

COD
2024/09

EPC
Dongfang Electric International Corporation.
China Machinery Engineering Corporation.

Developer/Owner
Source Trading Company Limited.

Type of Module Installed
JW-HD144N-565W/570W

Type of Inverter Installed
Sungrow

Type of Installation
Tracker



PV Cell & Module

DUBAI MAKTOUM SOLAR PARK PROJECT

2021.12

320MW

Location
Mohammed Bin Rashid Al Maktoum Solar Park, Dubai, United Arab Emirates (UAE)

COD
2021/12 (Phase I)

EPC
Shanghai Electric Group

Developer/Owner
ACWA Power

Type of Module Installed
JW-D72N-400W&405W

Type of Inverter Installed
Sungrow

Type of Installation
Tracker



Baicheng
Top Runner

2020.03
94.42MW

Location
Baicheng, Jilin, China

COD
2020/03

EPC
Zhongshui Northeast Survey, Design and Research Co. Ltd;
POWERCHINA JiLin Electric Power Engineering Co.，Ltd.

Developer/Owner
Huaneng Group Co., Ltd
Guanghe Group Co., Ltd

Type of Module Installed
JW-D72N-410

Type of Inverter Installed
HUAWEI、Sungrow

Type of Installation
Tracker

Baicheng Top Runner Project is listed among the third batch of Top Runner Projects approved by the Chinese government. With the total capacity of 500 MW, the project is divided into 5 sub-projects, 100 MW for each sub-project. Jolywood has supplied 21.51 MW and 72.91 MW modules to Huaneng Group and Guanghe Group respectively.



IBRI II
POWER STATION IN OMAN

2021.08
490MW

Location
Ad-Dhahirah, Oman

COD
2021/08

EPC
POWERCHINA Huadong Engineering Corporation Limited

Developer/Owner
ACWA Power

Type of Module Installed
JW-HD144N-405W/410W/415W

Type of Inverter Installed
Sungrow

Type of Installation
Tracker



SHANDONG
TAIAN RONGXIN
Project

2023

50MW



Location
TAIAN,SHANDONG,CHINA

COD
2023

EPC
POWERCHINA SEPCO1 Electric POWER Construction Co., Ltd.

Developer/Owner
RXHN Energy (Dongping) Co., Ltd.

Type of Module Installed
JW-HD144N-565

PV Cell & Module

PHASE II OF SIHONG TOP RUNNER PROJECT

2020.06

110MW

Location
Sihong, Jiangsu, China

COD
2020/06

EPC
Henan Sijian Group Co., Ltd;
Jiangsu Electric Power Design Institute

Developer/Owner
State Power Investment Co., Ltd;
China Huaneng Group Co., Ltd

Type of Module Installed
JW-D60N, JW-HD120N

Type of Inverter Installed
HUAWEI

Type of Installation
Fixed structure on water





PV Cell & Module

Huaneng Zhonglai Qingshui County PV Project

2025.11

119.82MW



Location
Yangzhuang Village, Shizhuang Town, Qingshui County, Jincheng City, Shanxi Province

COD
2025/11

EPC
POWERCHINA Guiyang Engineering Corporation Limited

Developer/Owner
Huaneng Zhonglai Qingshui New Energy Co., Ltd.

Type of Module Installed
JW-HT144N-R0-595S WINDPROOF

Type of Installation
Fixed-Tilt

PV Cell & Module

Yunnan Band PV Project

2026.01

98.81MW



Location
Dalongtan Township, Eshan Yi Autonomous County, Yuxi City, Yunnan Province

COD
2026/01

Developer/Owner
PowerChina (Eshan) New Energy Co., Ltd.

Type of Module Installed
JW-HD156N-R0-645S WINDPROOF

Type of Installation
Fixed-Tilt + Flexible Mounting System

Thank you!

www.Jolywood.com







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