

JOLYWOOD
(TAIZHOU)
SOLAR
TECHNOLOGY
CO.,LTD.

NIWA

ALL N-TYPE

POWER

YOUR

HOME



WeChat
Official
Accounts

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Global Partner

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JOLYWOOD
[TAIZHOU]
SOLAR
TECHNOLOGY
CO.,LTD.



7.6
GW

n-TOPCon
Bifacial Cell
Production Capacity

3.0
GW

n-TOPCon
Bifacial Module
Production Capacity

150
MW

n-IBC
Cell
Production Capacity



ABOUT US

Jolywood solar was established in 2016 as a subsidiary of Jolywood group. The company's registered capital is 2.33 billion yuan, the total assets are 4.855 billion yuan and the company's credit grade is A. Jolywood as a pioneer in N-type bifacial solar industry, is the world's largest and the first chinese enterprise to focus on topcon bifacial solar cells. Jolywood was listed at the tier one brand by bloomberg new energy finance and covered by munichre reinsurance. Up to end of 2022, Jolywood has delivered more than 5.8GW n-type solar modules in more than 50 countries

INNOVATION PIONEER

As leading in the N-Type technology, Jolywood has completely independent intellectual property rights in terms of the solar cell technology, and has applied for 188 patents and authorized 86 patents, including 25 invention patents. By adopting self-developed J-TOPCon 2.0 technology, the solar cell efficiency reached more than 24.8% in mass production.

SUBSIDIARY
OF
JOLYWOOD
GROUP



ENTERPRISE ADVANTAGE

Core Equipment

The core equipment is independently researched and developed through independent cooperation, with external sales restrictions;currently 100% of the equipment localization rate can be achieved.

Core Material

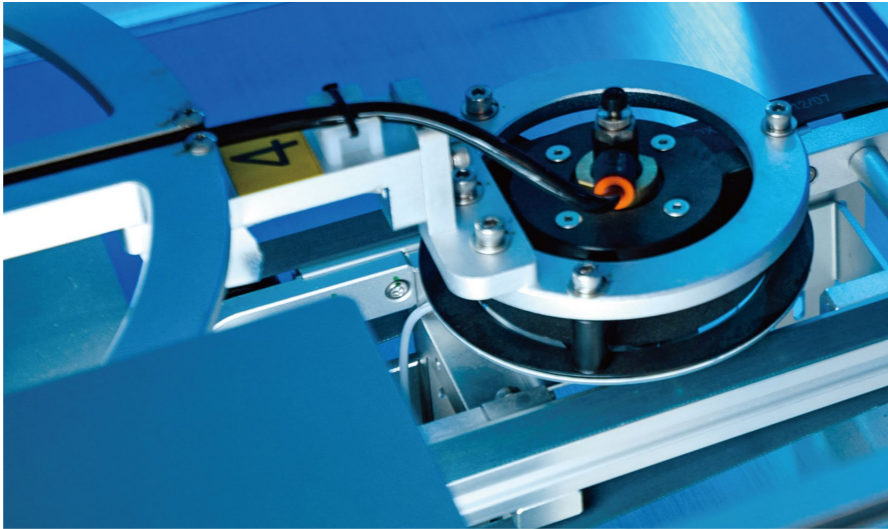
Silver paste, non-silvered metal paste, etching additives and other core raw material

Technology Accumulation And Precipitation

Jolywood has committed itself to the R&D of N-type cells and modules for years,possess good technology accumulation and technology precipitation.

R&D Investment

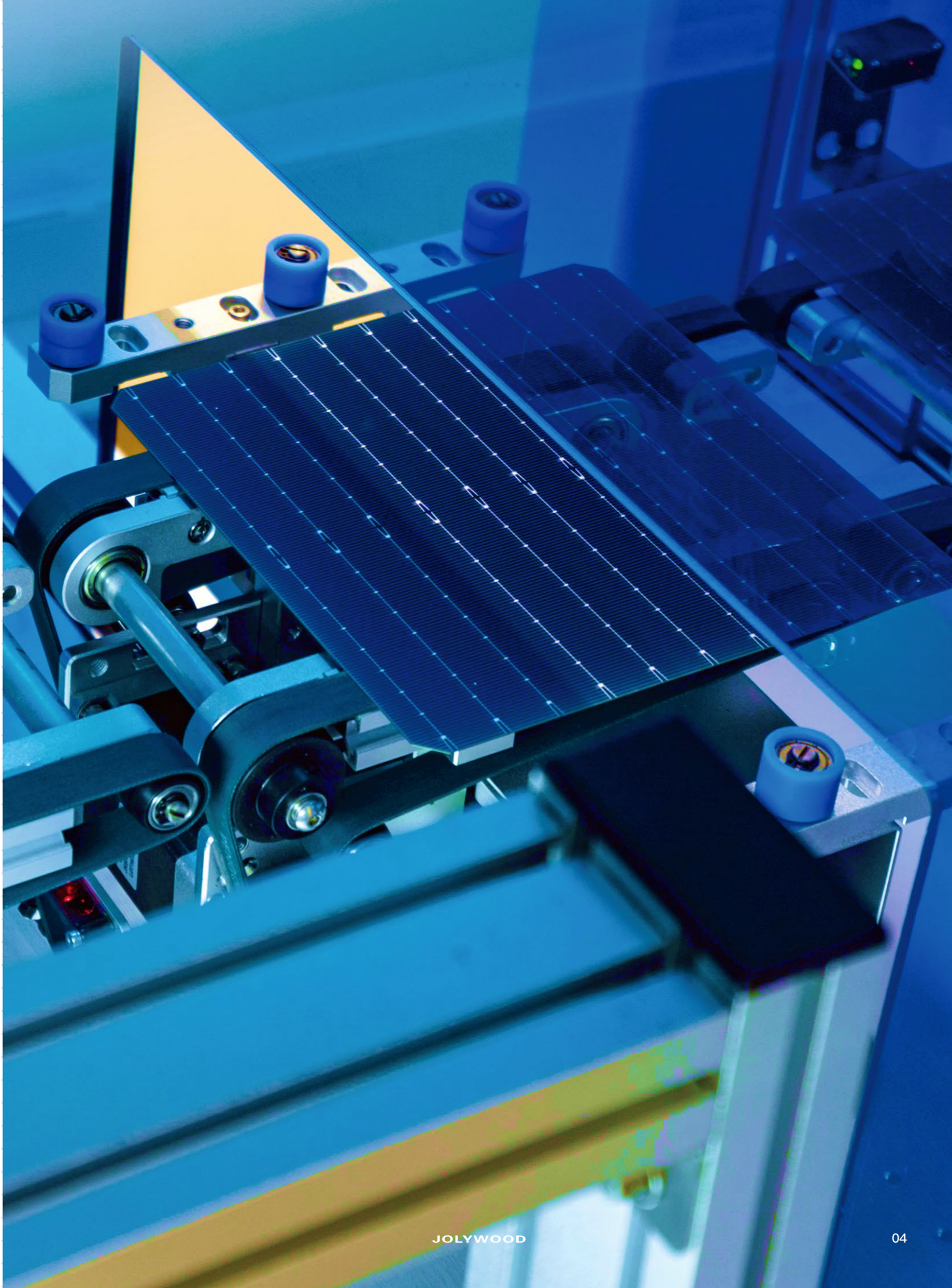
Supported by national, provincial and municipal-level scientific and technological projects; annual new investment in R&D investment exceeds 100 million yuan.



300+
Engineers

6 Employees
Hold Doctor Degrees
41 Employees
Hold Master Degrees
R & D team

188
Patents
Applications
Submitted
86 Patents Granted



QUALITY CONTROL SYSTEM

As a global leader in N-type bifacial high-efficiency innovative technology, Jolywood has an excellent quality control system, product and quality certification system.

We have won the TÜV Rheinland "Quality in China" award for the outdoor power output of bifacial photovoltaic modules. The company has been awarded the TÜV Rheinland "Quality in China" award for the outdoor power generation of bifacial photovoltaic modules, and was awarded the first N-type flexible PV module certified by TÜV North Germany.

The company was awarded the Best Photovoltaic Material Award by PV Magazine, the world's leading PV industry magazine, for two consecutive years. The PV testing centre was accredited as a CNAS accredited laboratory for its testing capabilities and management.



Quality Assurance

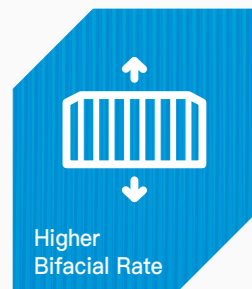
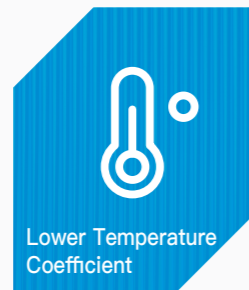
Jolywood's TOPCon modules have been certified by TÜV Rheinland, TÜV NORD Germany, CQC, JET, CSA and other domestic and foreign authoritative organizations.

All Quality Matters Award



TOPCON TECHNOLOGY

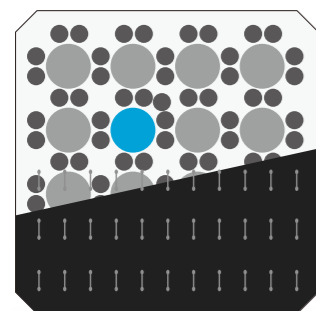
Advantages of N Type Solar Cells



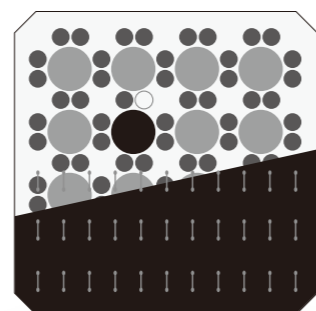
● Silicon
● Phosphorus

● Electron
● Boron

Comparing with P-type solar cells, TOPCon cells have longer lifetime, lower degradation and higher potential of efficiency enhance.



N Type Solar Cells

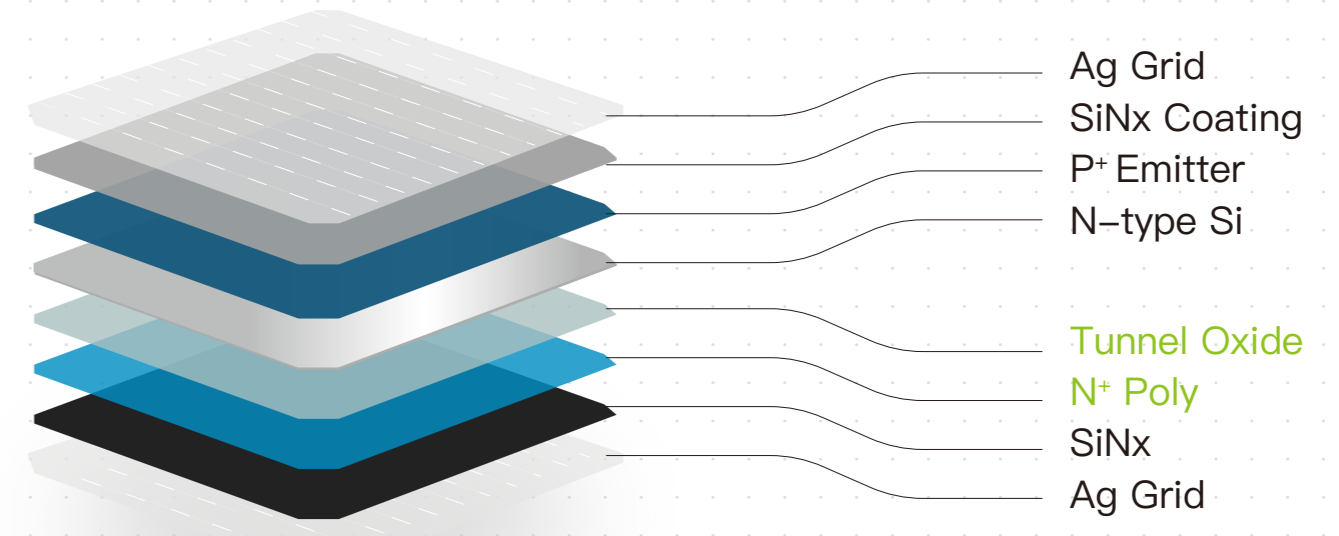


P Type Solar Cells

ADVANTAGES OF N TYPE SOLAR CELLS

Good interface passivation effect & field passivation effect
Most of the carrier selective funneling effect, rapid carriers transport between absorption and doped layer.

Passivated contact structure of J-TOPCon 2.0:



ADVANTAGES OF J-TOPCON2.0

24.8%

Efficiency
24.8%

85%

Bifacial Rate
Reaching 85%

● Higher efficiency

● Higher bifaciality

● Lower Temperature coefficient

● Lower degradation

-0.30%/°C

Temperature
Coefficient Reaching
-0.30%/°C

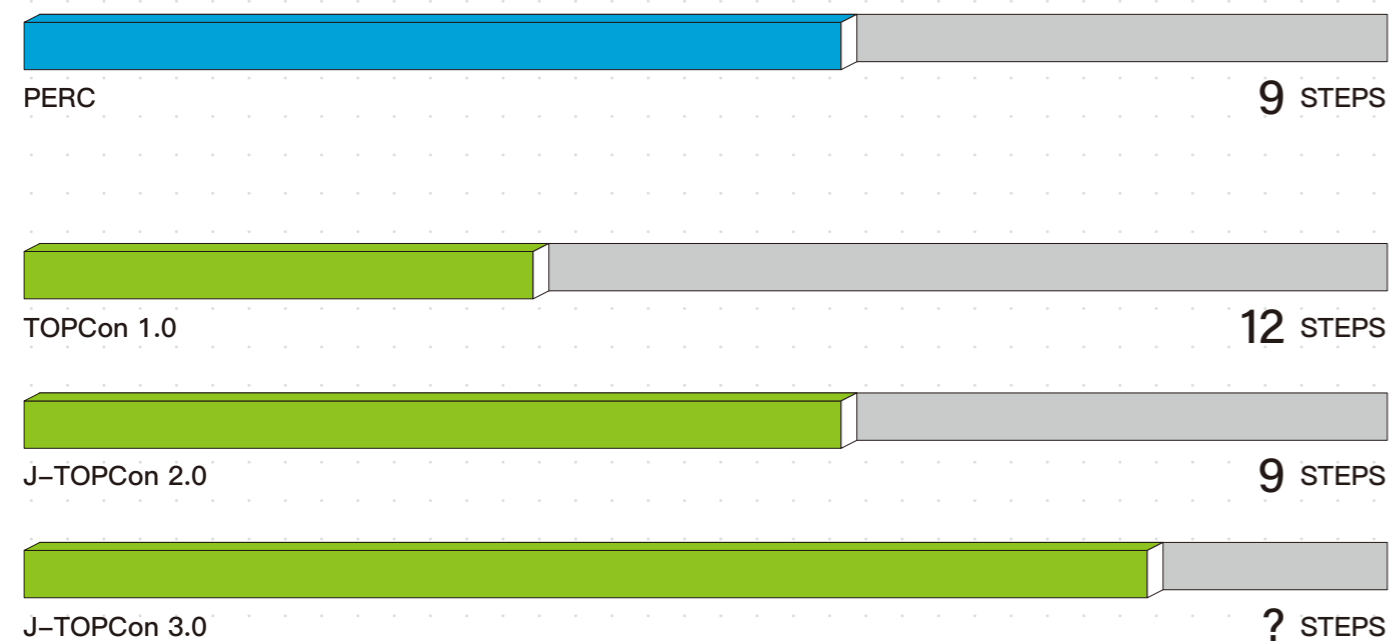
1%

Degradation
In First Year 1%

JOLYWOOD SELF-DEVELOPED CELL TECHNOLOGY POPAID

Plasma Oxidation & Plasma Assisted Insitu-doping Deposition

J-TOPCon 3.0: POPAID Gemini technology+less silver consumption+shorter process flow



POPAID Technology Core Advantages



Shorter Processes

Compared With The Existing Route, The Popaid Route Can Shorten 3 Processes, Which Greatly Reduces The Cost



Higher Efficiency

By Using Jolywood Latest Technology, The Solar Cell Efficiency Can Reach To More Than 24.8%



Higher Yield

Jolywood Popaid Technology Can Reduce The Manufacturing Process Hence To Increase The Yield

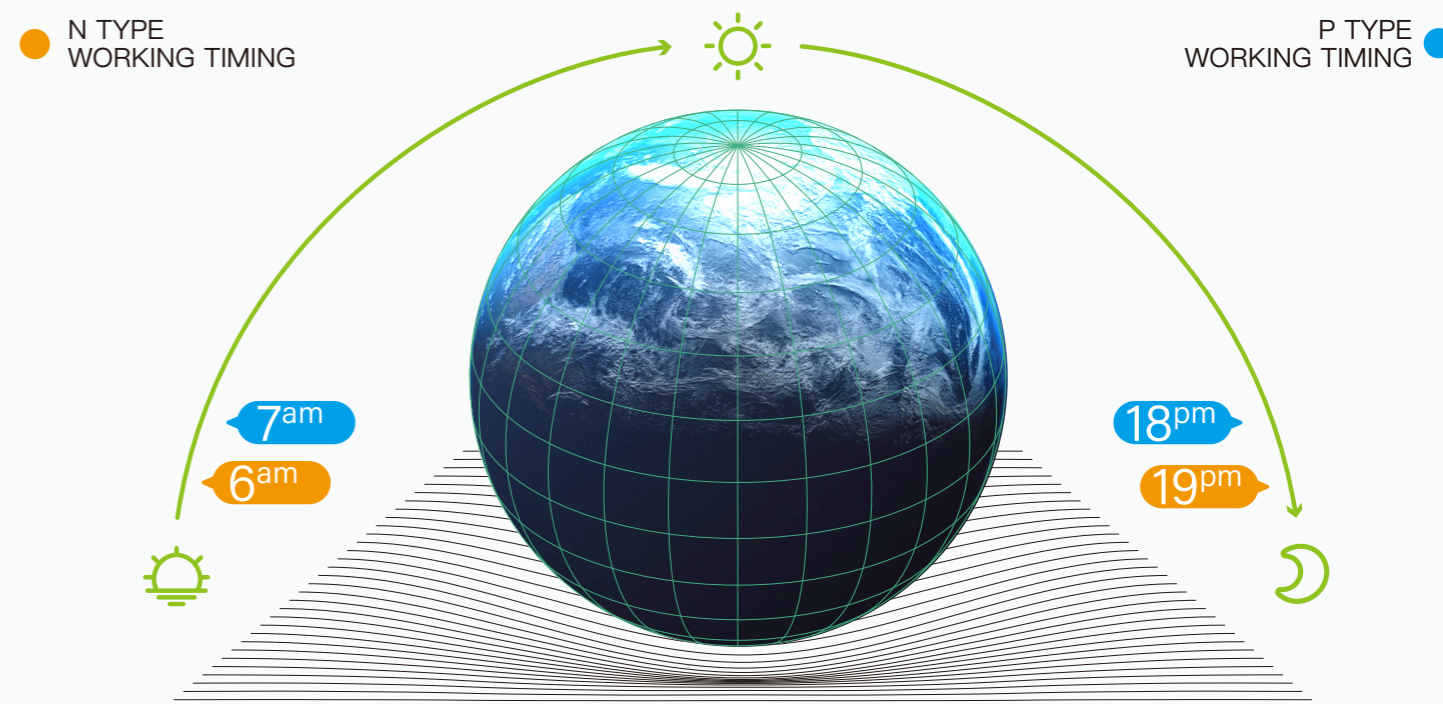


More Cost-effective

By Using 182 Size Solar Cells And POPAID Technology, the Equipment Investment Of N-topcon Is Similar As PERC For Gw Size. Make N Type More Cost-effective

ADVANTAGES OF LCOE WITH N TYPE PV PANELS

With the same solar irradiation, compare to P type PV panels
N type has a higher power generation.

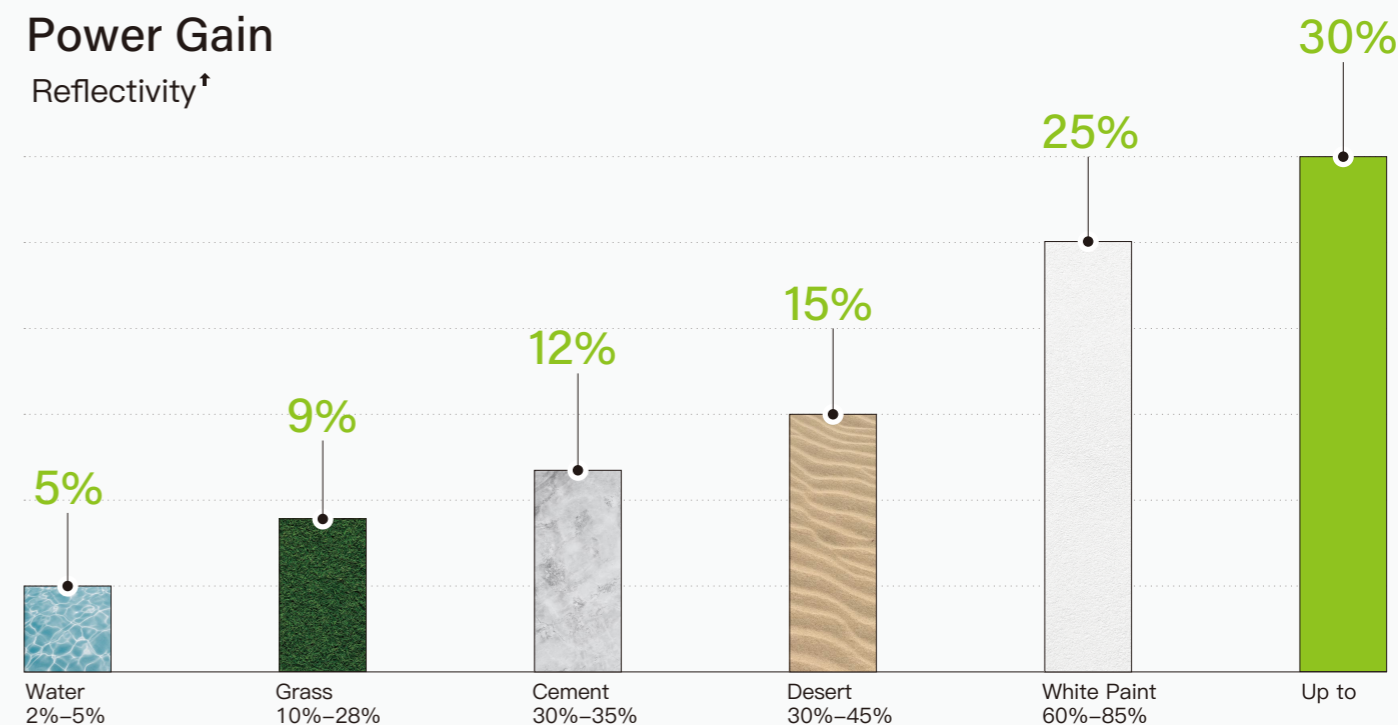


$$LCOE = \sum \text{EPC} + \sum \text{O\&M System} + \sum \text{Interest} - \sum \text{Tax} \downarrow$$

POWER GENERATION \uparrow

Power Gain

Reflectivity \uparrow

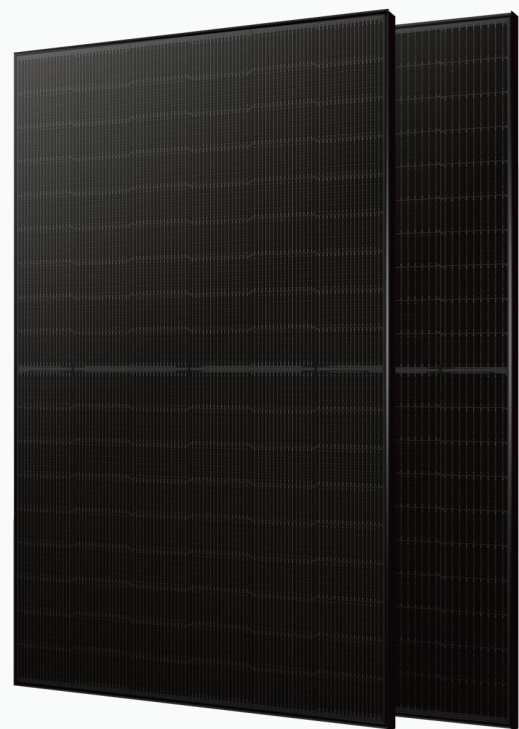




BLACK SERIES

N-type
Mono Black Module

HD108N-M10 / HD120N-M6



16 BB



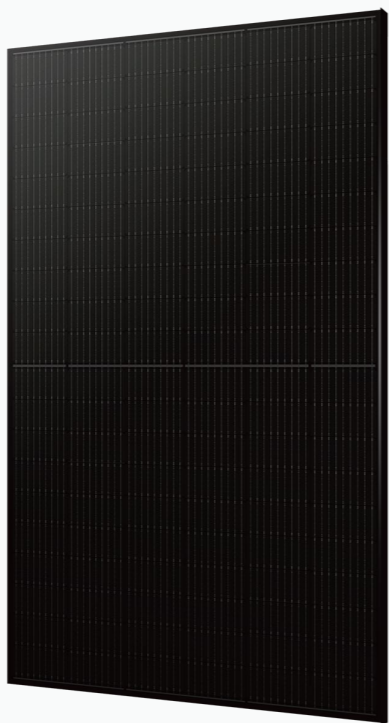
9 BB

UP TO
425 w

N-type Bifacial Mono Black Module
J-TOPCon 2.0 technology
21.76% Maximum Module Efficiency
1722mm*1134mm*30mm
24.5kg

N-type Bifacial Mono Black Module
J-TOPCon 2.0 technology
21.10% Maximum Module Efficiency
1756mm*1039mm*30mm
23kg

HT120N-M6

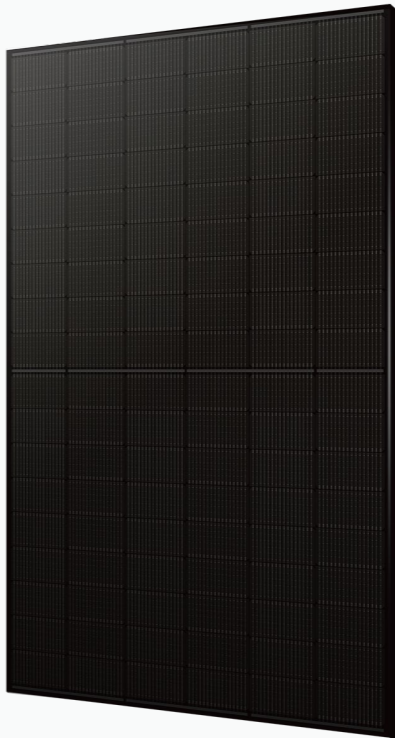


9 BB

UP TO
390 w

N-type Single Glass Mono Black Module
J-TOPCon 2.0 technology
21.38% Maximum Module Efficiency
1756mm*1039mm*30mm
20kg

HT108N-M10



16 BB

UP TO
435 w

N-type Single Glass Mono Black Module
J-TOPCon 2.0 technology
22.27% Maximum Module Efficiency
1722mm*1134mm*30mm
21.5kg

435w

Maximum Power
Output

22.27%

Maximum Module
Efficiency

- Combining Jolywood N type technology
- Designed with aesthetics
- No polysilicon wrap around, Full electrical isolation,
Zero leakage current; Much Safer for roof
- Achieving all black appearance, high efficiency,
safety and light weight

12 Year

Product Material & Workmanship

30 Year

Linear Performance Warranty

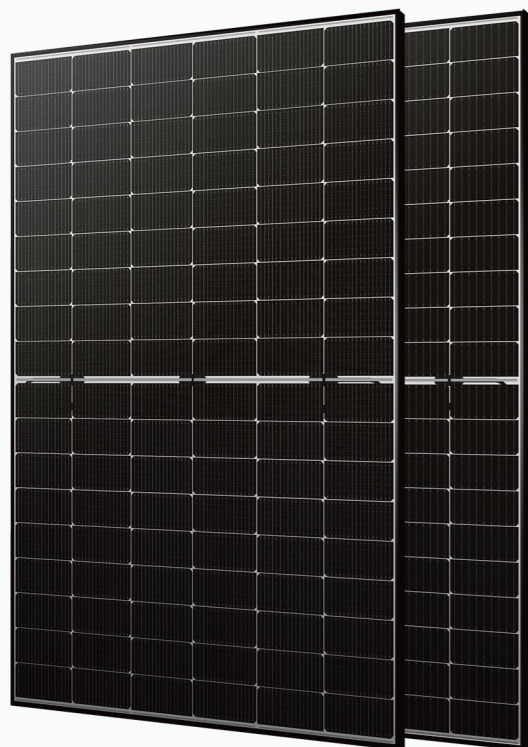




PRO SERIES

N-type Bifacial
Mono Module

HD108N-M10 / HD120N-M6



435_w

Maximum Power
Output

22.27 %

Maximum Module
Efficiency

- Combining Jolywood N type technology
- Combining high power generation output module design
- No polysilicon wrap around, Full electrical isolation, Zero leakage current; Much Safer for roof
- Achieving high reliability and power generation



16 BB



9 BB

UP TO
435 w

N-type Bifacial Mono Module
J-TOPCon 2.0 technology
22.27% Maximum
Module Efficiency
1722mm*1134mm*30mm
24.5kg

UP TO
395 w

N-type Bifacial Mono Module
J-TOPCon 2.0 technology
21.65% Maximum
Module Efficiency
1756mm*1039mm*30mm
23kg

12 Year

Product Material & Workmanship

30 Year

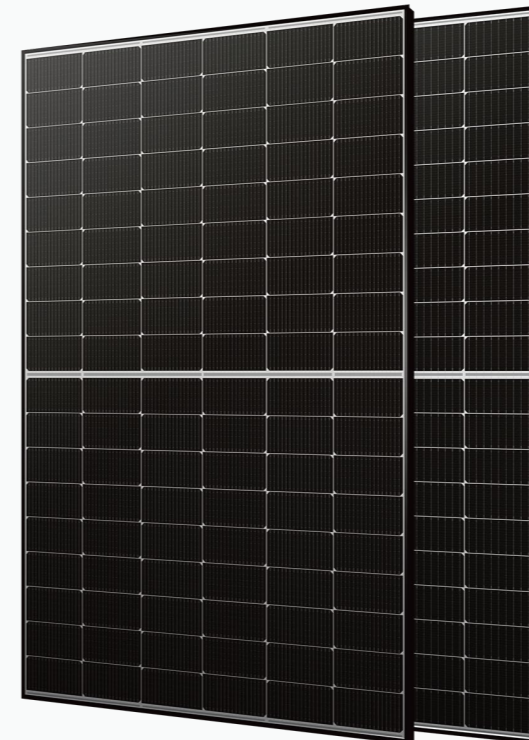
Linear Performance Warranty



LIGHT SERIES

N-type Single
Glass Mono Module

HT108N-M10 / HT120N-M6



440_w

Maximum Power
Output

22.53 %

Maximum Module
Efficiency

- Combining Jolywood N type technology
- Combining high power generation output module design
- No polysilicon wrap around, Full electrical isolation, Zero leakage current; Much Safer for roof
- Combining Jolywood high quality FFC backsheet
- Achieving ultra light weight for easy handling and installation



16 BB



9 BB

UP TO
440 w

N-type Single Glass Mono Module
J-TOPCon 2.0 technology
22.53% Maximum
Module Efficiency
1722mm*1134mm*30mm
21.5kg

UP TO
395 w

N-type Single Glass Mono Module
J-TOPCon 2.0 technology
21.65% Maximum
Module Efficiency
1756mm*1039mm*30mm
20kg

12 Year

Product Material & Workmanship

30 Year

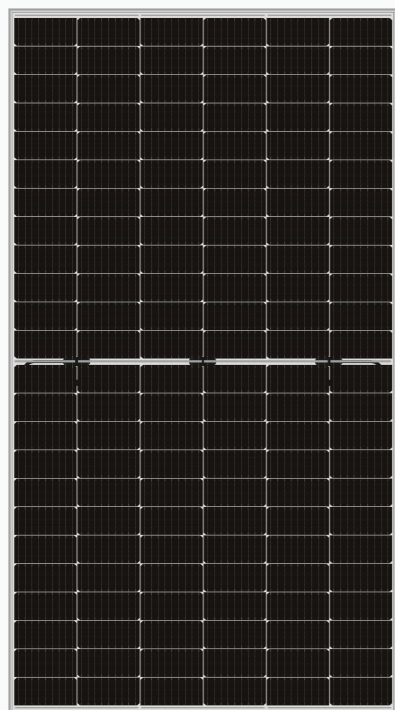
Linear Performance Warranty



JW SERIES

N-type Bifacial Mono Module

HD144N-M6



UP TO
475 w

N-type Bifacial Mono Module
J-TOPCon 2.0 technology
21.82% Maximum Module Efficiency
2095mm*1039mm*30mm
28kg

475 w

Maximum Power Output

21.82 %

Maximum Module Efficiency

- Combining Jolywood N type technology
- Combining high power generation output module design
- No polysilicon wrap around, Full electrical isolation, Zero leakage current; Much Safer for roof
- Achieving high reliability and power generation

12 Year

Product Material & Workmanship

30 Year

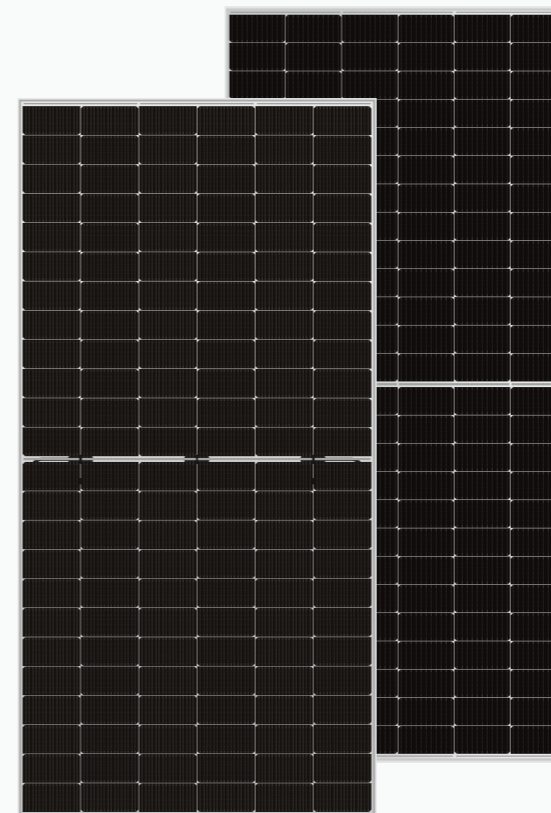
Linear Performance Warranty



JW PRO SERIES

N-type Bifacial Mono Module

HD144N -M10 / HD156N-M10



UP TO
580 w

N-type Bifacial Mono Module
J-TOPCon 2.0 technology
22.45% Maximum
Module Efficiency
2278mm*1134mm*30mm
32.5kg



UP TO
630 w

N-type Bifacial Mono Module
J-TOPCon 2.0 technology
22.53% Maximum
Module Efficiency
2465mm*1134mm*30mm
34.5kg

630w

Maximum Power Output

22.53 %

Maximum Module Efficiency

- Combining Jolywood N type technology
- Combining high power generation output module design
- No polysilicon wrap around, Full electrical isolation, Zero leakage current; Much Safer for roof
- Achieving high reliability and power generation

12 Year

Product Material & Workmanship

30 Year

Linear Performance Warranty





Till the end of 2022.6 month, Jolywood N-type product have installed 5.8 GW globally

JOLYWOOD GLOBAL PROJECT FOOTPRINT



ROOFTOP PROJECT



Vietnam
France
Poland
Germany

...



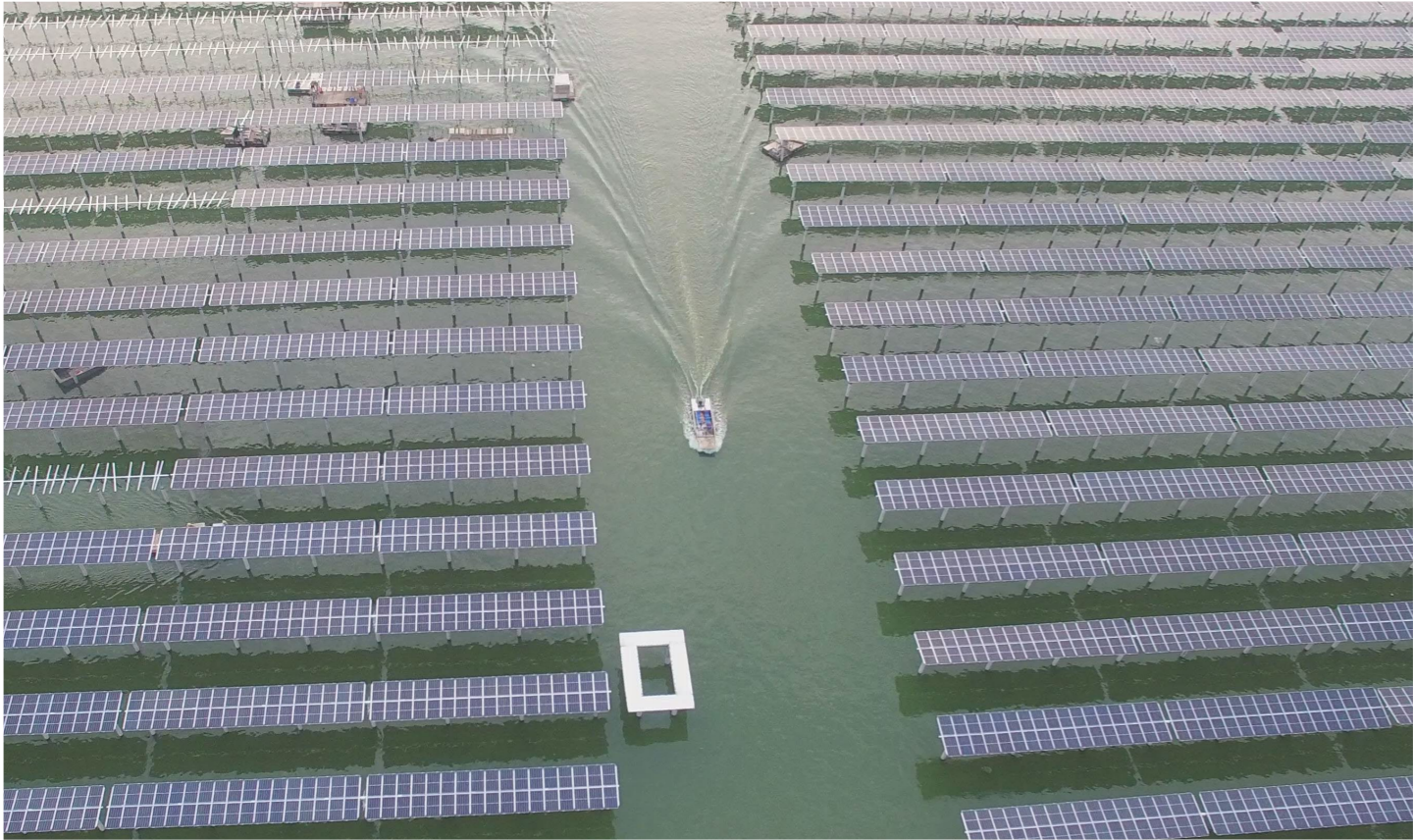


QINGHAI UHV PROJECT

2020.09

153 MW

Location	Qinghai Province, China
COD	2017/09
EPC	/
Developer/Owner	Huanghe Hydropower Development Co., Ltd
Type of Module Installed	JW-D72N
Type of Inverter Installed	HUAWEI, Sungrow
Type of Installation	Tracker



SIHONG TOP RUNNER PROJECT

2018.09
104 MW

Location
Sihong, Jiangsu, China

COD
2018/09/30

EPC
Jiangsu First Construction
Installation Co., Ltd;
Henan Sijian Group Co., Ltd

Developer/Owner
State Power Investment Co., Ltd

Type of Module Installed
JW-D60N, JW-HD120N

Type of Inverter Installed
HUAWEI

Type of Installation
Fixed structure on water



PHASE II OF SIHONG TOP RUNNER PROJECT

2020.06
110 MW



Location
Sihong, Jiangsu, China

COD
2020/06/30

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



BAICHENG TOP RUNNER

2020.03
94.42 MW



Location	Baicheng, Jilin, China
COD	2020/06/30
EPC	Zhongshui Northeast Survey, Design and Research Co. Ltd; Jilin Survey Electric Power Design
Developer/Owner	Huaneng Group Co., Ltd; Guanghe Group Co., Ltd
Type of Module Installed	JW-D72N-370
Type of Inverter Installed	HUAWEI, Sungrow
Type of Installation	Tracker



HAIXING TOP RUNNER PROJECT

2019.04
64.64 MW

Location
Cangzhou, Hebei, China

COD
2019/04/30

EPC
Hubei Engineering Construction Corporation; Northwest Power Construction No.3 Company
Developer/Owner
State Electric Power Investment Corporation
Type of Module Installed
JW-D60N
Type of Inverter Installed
Sungrow
Type of Installation
Fixed structure on water



GUIZHOU XINGYI PROJECT

2020.12
90 MW

Location
Xingyi, Guizhou, China

COD
2020/12

EPC
Power China Guizhou Electric Power Engineering Co., Ltd.
Developer/Owner
Wujiang Energy Co., Ltd
Type of Module Installed
JW-HD144N-400/405
Type of Inverter Installed
Sungrow
Type of Installation
Fixed structure



GUANGXI QINZHOU PROJECT

2020.09

60 MW



Location
Guangxi, Qinzhou, China

COD
2020/09

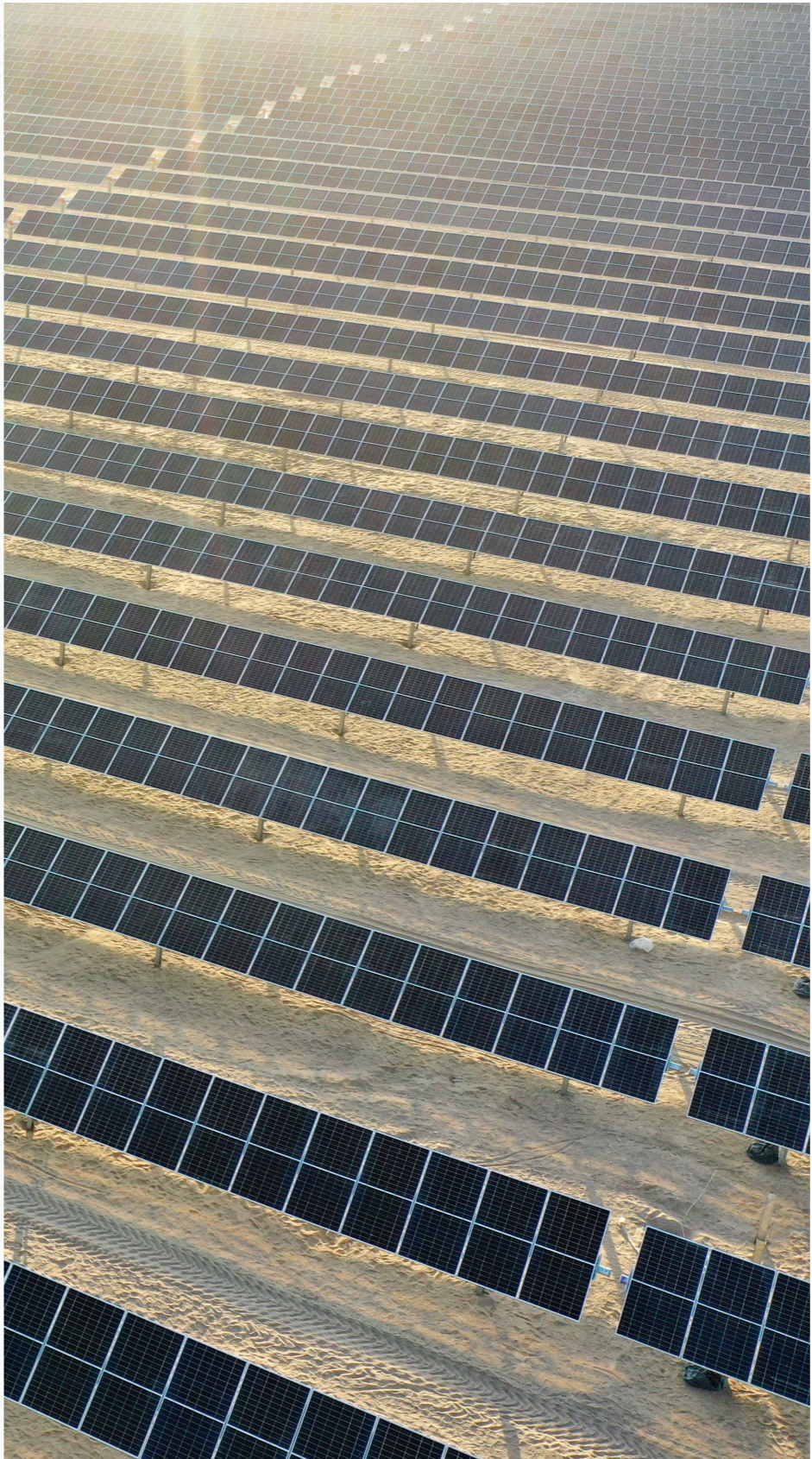
EPC
Changjiang Technology Co.,Ltd.

Developer/Owner
CITIC Group

Type of Module Installed
JW-D72N-370/375

Type of Inverter Installed
Huawei

Type of Installation
Fixed structure



IBRI II POWER STATION IN OMAN

2021.09

458 MW

Location
Ad-Dhahirah, Oman

COD
2021/09

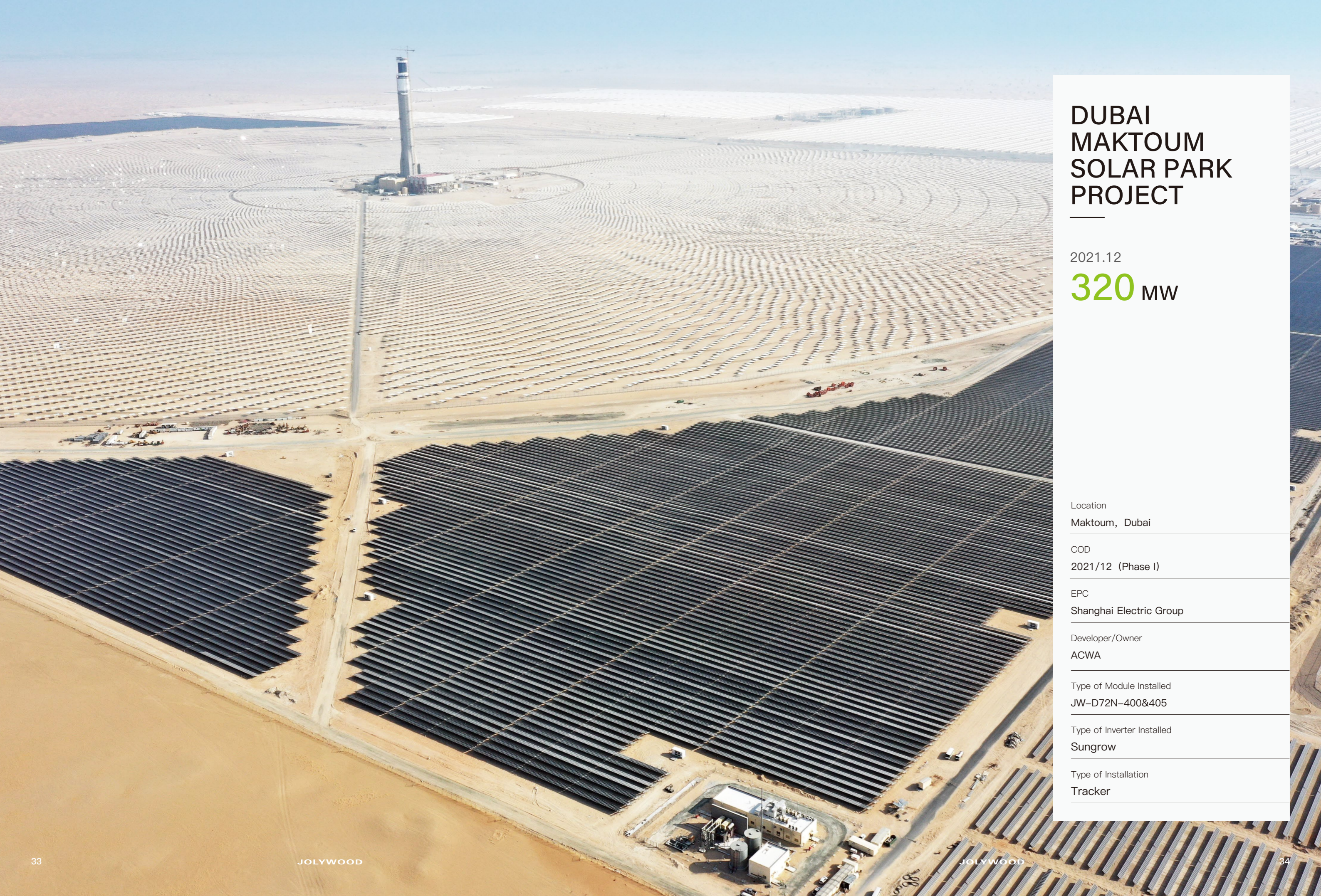
EPC
China Power Construction
Corporation East China Survey
and Design Institute Co., Ltd.

Developer/Owner
ACWA

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

Type of Inverter Installed
Sungrow

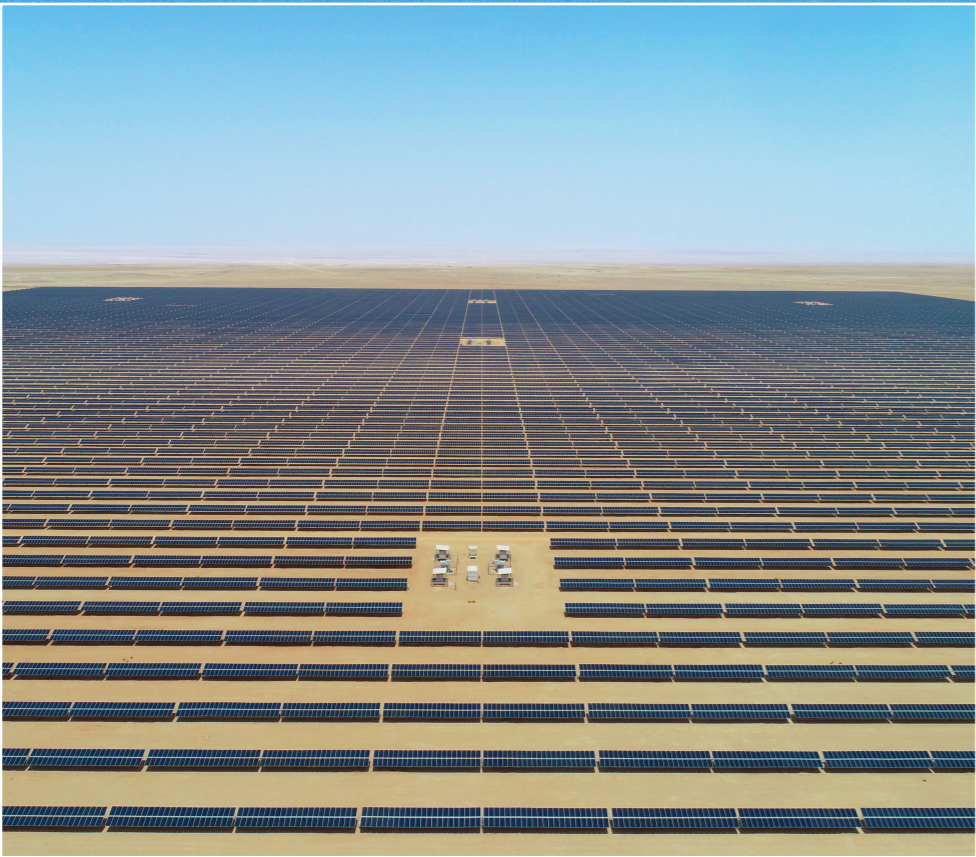
Type of Installation
Tracker



DUBAI MAKTOUM SOLAR PARK PROJECT

2021.12
320 MW

Location
Maktoum, Dubai
COD
2021/12 (Phase I)
EPC
Shanghai Electric Group
Developer/Owner
ACWA
Type of Module Installed
JW-D72N-400&405
Type of Inverter Installed
Sungrow
Type of Installation
Tracker



OMAN AMIN PROJECT

2020.02
125 MW

Location	Oman Amin
COD	2020/02
EPC	STERLING AND WILSON INTERNATIONAL
Developer/Owner	Marubeni Corporation
Type of Module Installed	JW-D72N-370&375
Type of Inverter Installed	Sungrow
Type of Installation	Tracker





NETHERLAND ZONNEPARK RILLAND PROJECT

2019.01

11.75 MW

Location	Rilland, Netherland
COD	2019/01
EPC	Zonnepark Rilland B.V.
Developer/Owner	Alternus Energy inc
Type of Module Installed	JW-D72N-370
Type of Inverter Installed	HUAWEI
Type of Installation	Fixed structure



GERMAN VERTICAL INSTALLATION SOLAR FARM PROJECT

2020.07
4.2 MW

Location
Donaueschingen–Aasen,
Baden–Württemberg

COD
2020/07

EPC
Next2Sun GmbH

Developer/Owner
Next2Sun GmbH

Type of Module Installed
JW–72N–380

Type of Inverter Installed
HUAWEI

Type of Installation
Fixed structure — vertical
installation

