





BloombergNEF

3Q 2023 Global PV Market Outlool

Table 3: Photovoltaic module manufacturers meeting BloombergNEF's Tier 1 criteria as of 3Q 2023

Firm/ brand	Annual module capacity, MW/year	Firm/ brand	Annual module capacity, MW/year
ZNShine	10,000	Jinneng/ Jinergy	4,000
Yingli*†	11,650	Jinko*†	90,000
Waaree*	12,000	Jetion	2,500
VSUN Solar*	3,800	JA Solar*†	65,000
Ulica Solar	3,000	HT-SAAE*	5,000
Trina*†	75,000	Heliene†	950
Tongwei	55,000	Hanwha Q-Cells*†	12,400
Suntech*	16,500	Hansol Technics	600
Sunpro Power / YH Sunpro	2,000	Hanersun	1,000
Sunova Solar/ Thornova*	4,200	Haitai Solar	10,000
Sumec/ Phono Solar*	4,000	First Solar†	11,300
Solarspace*†	6,000	Exiom Group	2,000
Sharp	210	ET Solar Inc / Elite Solar*	3,500
Seraphim†	7,750	Eging*	10,000
SEG Solar*†	2,650	DMEGC*	12,000
Risen Energy*	25,000	DAS Solar*	20,000
Renesola	3,000	Chint/ Astronergy*†	40,000
Recom	3,200	Canadian Solar	36,200
Neo Solar Power/ URE	1,800	Boviet Solar*	2,500
Maxeon*	10,100	Anhui Huasun*	10,000
Luxen Solar	2,300	Anhui Daheng (DAH Solar)	2,000
Longi Green*†	95,000	Akcome*	12,600
Leapton Energy	3,000	AE Solar*	2,000
Jolywood*	3,000	Total	715,710

Source: BloombergNEF Note: Methodology here. * denotes a company for which technical due diligence reports are available from PV Evolution Labs, PVEL. Contact Tristan.erion-lorico@pvel.com. † denotes manufacturers upon which RETC has recently conducted or is conducting technical due diligence. Contact info@retc-ca.com for details. Brands are shown in reverse alphabetical order to avoid giving the impression that position in the list is significant. Companies can download the dataset of financings <a href="mailto:here.com/here







DAS SOLAR RANKS 9TH

ON BNEF'S LIST OF SOLAR MODULE SHIPMENT IN 1H 2023

• **OUR** On <u>#BloombergNEF</u>'s list of 1H 2023 Solar Module Shipments, <u>DAS SOLAR</u> claimed the ninth position. By utilizing cutting-edge N-type technology, we are not only staying up but also breaking records!**SHAREHOLDERS**

• OUR On #BloombergNEF's list of 1H 2023 Solar Module Shipments, DAS SOLAR claimed the ninth position. By utilizing cutting-edge N-type technology, we are not only staying up but also breaking records!SHAREHOLDERS





Insurance Warranty by



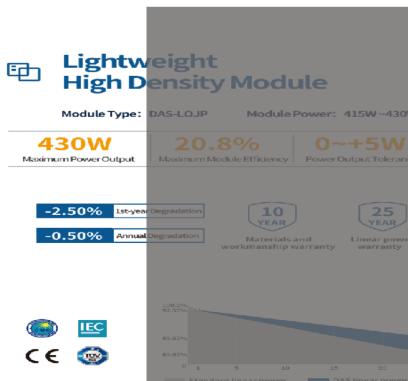




Product and Quality Certifications

EC 51215, IEC 51730

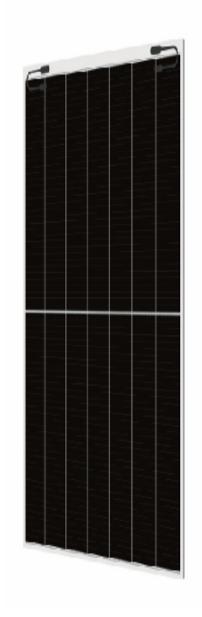
ISO 9001: 2015 Quality Management System
ISO 14001: 2015 Environment Management System











Lightweight High Density Module

Module Type: DAS-LOJP Module Power: 415W~430W

20.8% 430W

Maximum Power Output | Maximum Module Efficiency | Power Output Tolerance

-2.50% 1st-year Degradation

10 YEAR



Linear power

-0.50% Annual Degradation

Materials and workmanship warranty -2.50%

1st-year Degradation

Performance Warranty

85.5% 25 Years

-0.50% **Annual Degradation**



Materials and workmanship warranty



Linear power warranty

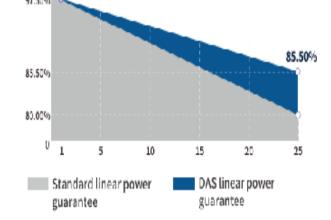
Product and Quality Certifications

IEC 61215, IEC 61730

ISO 9001: 2015 Quality Management System

ISO 14001: 2015 Environment Management System



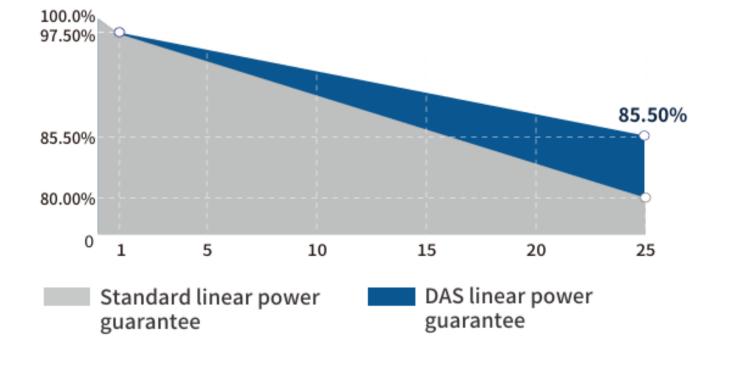




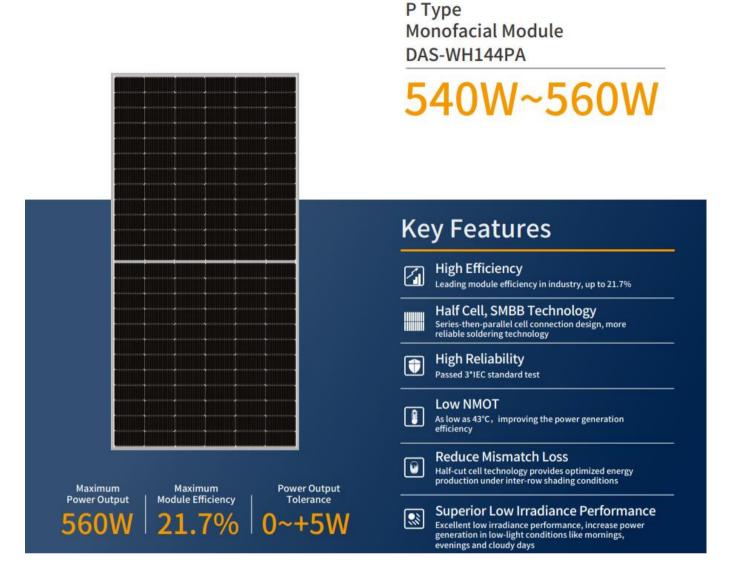














86% 25 Years **Performance Warranty**

Product and Quality Certifications

IEC 61215, IEC 61730

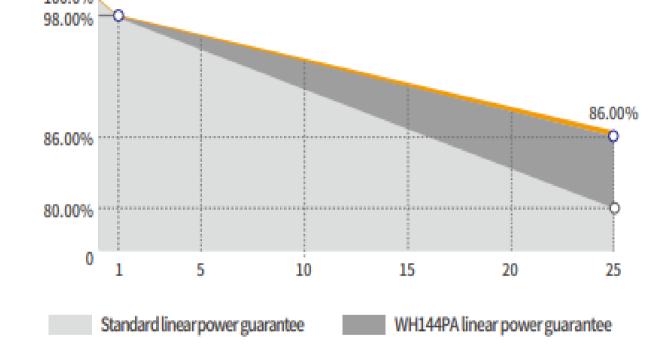
ISO 9001: Quality Management System

ISO 14001: Environment Management System

ISO 45001: Occupational Health and Safety Management System

IEC 62716, IEC 61701: Ammonia, Salt mist corrosion test

IEC TS 62804-1, IEC 60068-2-68: PID test, Dust and Sand test









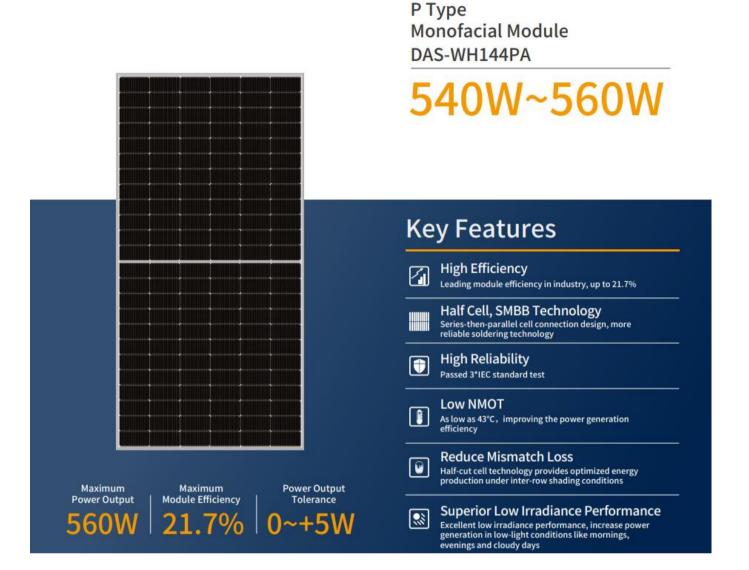




Leading product and power warranty

-2.00%1st-year Degradation -0.50%Annual Degradation 12Materials and workmanship warranty 25Linear power warranty





Temperature Coefficients

Short Circuit Current(Isc)	+0.048%/°C
Open Circuit Voltage(Voc)	-0.26%/°C
Nominal Max. Power(Pmax)	-0.340%/°C
NMOT	43±2°C



Maximum 21.7% Efficiency

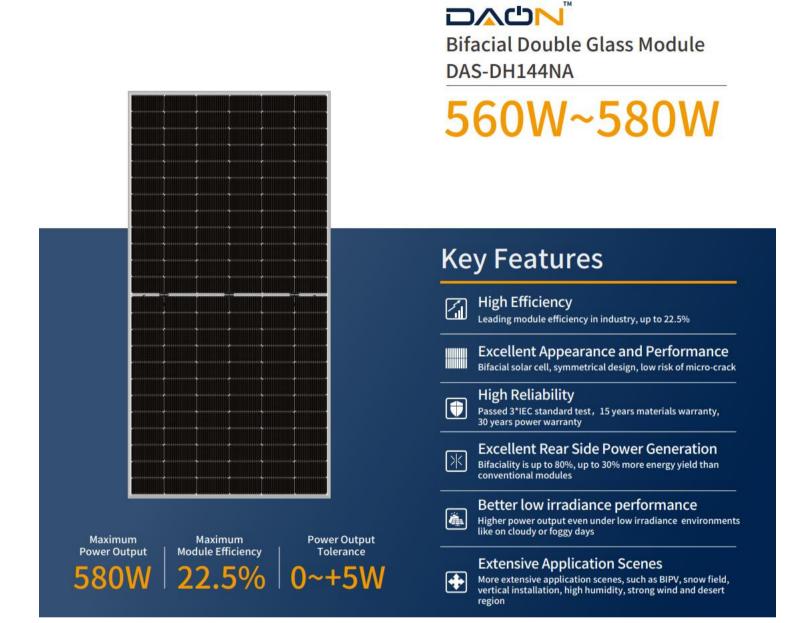
Electrical Parameters (STC *)

Nominal Max. Power(Pmax/W) 540	545	550	555	560
Open Circuit Voltage(Voc/V)	49.52	49.68	49.84	50.03	50.15
Short Circuit Current(Isc/A)	13.84	13.91	13.98	14.04	14.12
Operating Voltage(Vmp/V)	41.67	41.83	41.99	42.18	42.30
Operating Current(Imp/A)	12.96	13.03	13.10	13.16	13.24
Efficiency(%)	20.9	21.1	21.3	21.5	21.7

STC *: Irradiance = 1000 W/m2, Cell Temperature = 25°C, AM = 1.5

Test condition is based on the front side





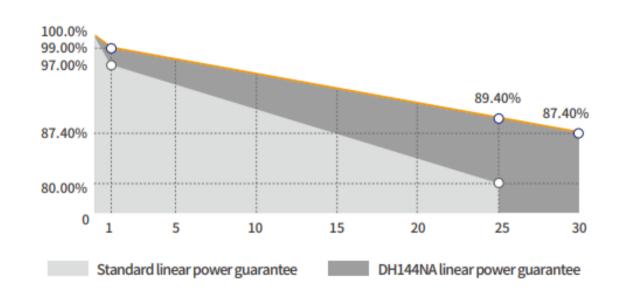


87.40% 30 Years **Performance Warranty**

15 Years Product Warranty

Product and Quality Certifications

IEC 61215, IEC 61730 ISO 9001: Quality Management System ISO 14001: Environment Management System ISO 45001: Occupational Health and Safety Management System IEC 62716, IEC 61701: Ammonia, Salt mist corrosion test IEC TS 62804-1, IEC 60068-2-68: PID test, Dust and Sand test











Leading product and power warranty

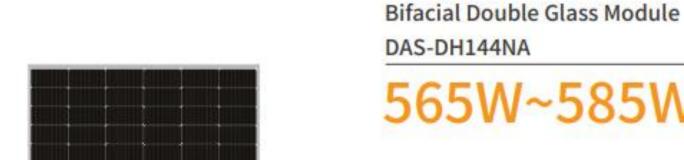
-1.00%1st-year Degradation -0.40%Annual Degradation 15Materials and workmanship warranty 30Linear power warranty







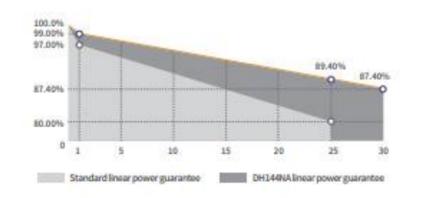




565W~585W **Key Features** High Efficiency Leading module efficiency in industry, up to 22.6% Excellent Appearance and Performance Bifacial solar cell, symmetrical design, low risk of micro-crack **High Reliability** Passed 3*IEC standard test, 15 years materials warranty **Excellent Rear Side Power Generation** Bifaciality is up to 80%, up to 30% more energy yield than Better low irradiance performance Higher power output even under low irradiance environments like on cloudy or foggy days **Power Output** Extensive Application Scenes

Product and Quality Certifications

IEC 61215, I	EC 61730
150 9001: (Quality Management System
150 14001:	Environment Management System
150 45001:	Occupational Health and Safety Management System
IEC 62716, I	EC 61701: Ammonia, Salt mist corrosion test
IEC TS 6280	4-1, IEC 60068-2-68: PID test, Dust and Sand test



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Leading product and power warranty

-1.00% 1st-year Degradation -0.40% Annual Degradation 15 Years materials and workmanship warranty 30 Years linear power warranty

Maximum 22.6% Efficiency

| Electrical Parameters (STC *)

Nominal Max. Power(Pmax/W)	565	570	575	580	585
Open Circuit Voltage(Voc/V)	51.39	51.60	51.80	52.00	52.20
Short Circuit Current(Isc/A)	13.79	14.25	14.30	14.37	14.43
Operating Voltage(Vmp/V)	43.00	42.32	42.50	42.69	42.87
Operating Current(Imp/A)	13.14	13.47	13.53	13.59	13.65
Efficiency(%)	21.9	22.1	22.3	22.5	22.6

STC *: Irradiance = 1000 W/m², Cell Temperature = 25°C, AM = 1.5 Test condition is based on the front side

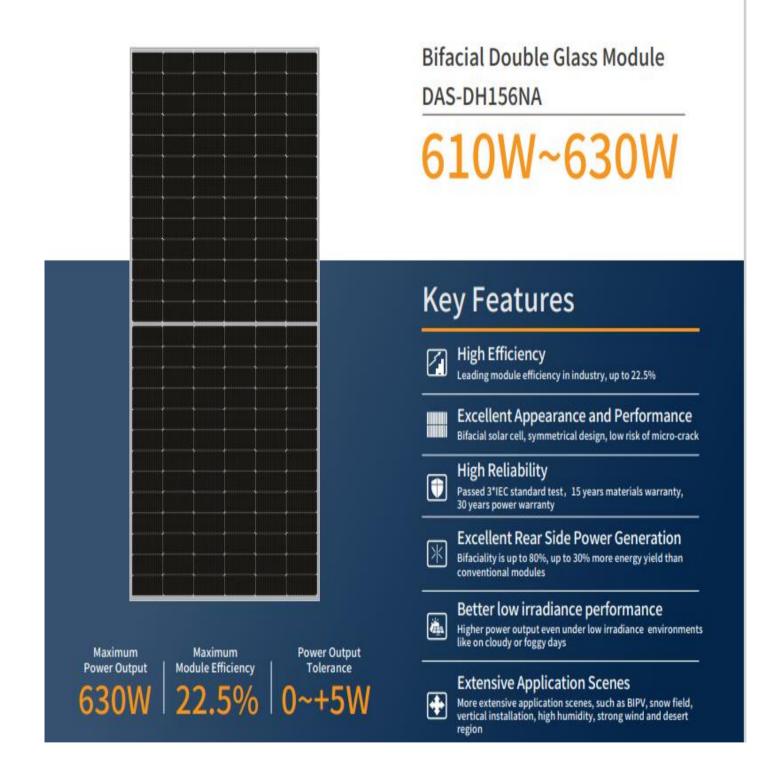
Mechanical Parameters

Cell Type	N Type		
Module Size	2278×1134×30mm		
Glass Thickness	2.0mm		
Module Weight	31.3Kg		
Output Cable	4mm², cable length 300mm (can be customized)		
Connector	MC4 compatible		
Junction Box	IP68, 3 bypass diodes		
Frame	Anodized aluminium alloy		





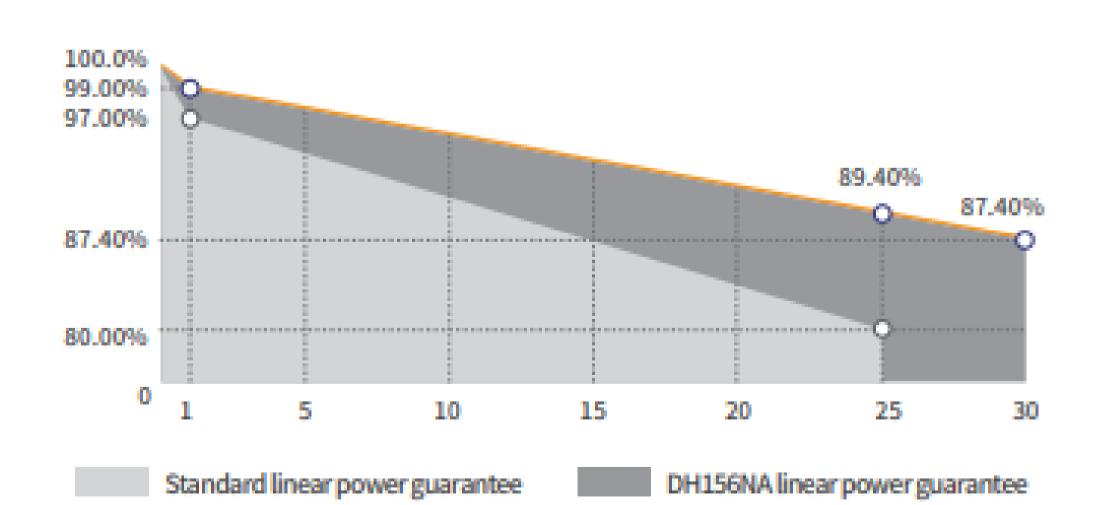






87.40% 30 Years Performance Warranty

15 Years Product Warranty

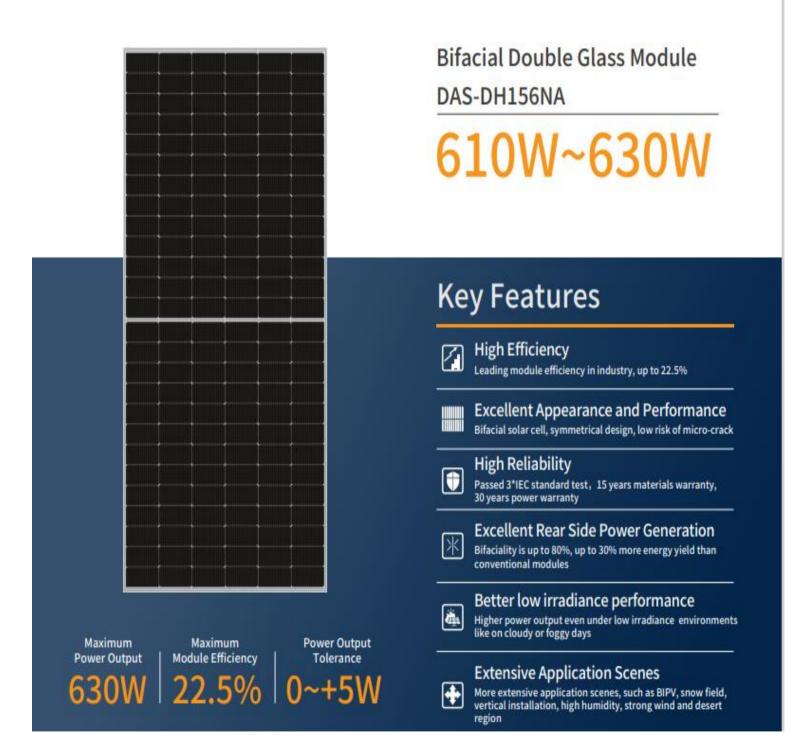












Maximum 22.5% Efficiency

Electrical Parameters (STC *)

Nominal Max. Power(Pmax/W)	610	615	620	625	630
Open Circuit Voltage(Voc/V)	55.32	55.46	55.60	55.74	55.88
Short Circuit Current(Isc/A)	14.03	14.11	14.19	14.27	14.35
Operating Voltage(Vmp/V)	45.59	45.76	45.93	46.09	46.26
Operating Current(Imp/A)	13.38	13.44	13.50	13.56	13.62
Efficiency(%)	21.8	22.0	22.2	22.4	22.5

STC *: Irradiance = 1000 W/m², Cell Temperature = 25°C, AM = 1.5 Test condition is based on the front side

Mechanical Parameters

Cell Type	N Type
Module Size	2465×1134×35mm
Glass Thickness	2.0mm
Module Weight	34.3Kg
Output Cable	4mm², cable length 300mm (can be customized)
Connector	MC4 compatible
Junction Box	IP68, 3 bypass diodes
Frame	Anodized aluminium alloy



CONTENTS













O4 GLOBAL PARTNERS







ABOUT DAS SOLAR







China Three Gorges Corporation (CTGC)

The China Three Gorges Corporation was founded in Sept, 1993 with the approval of the State Council. CTGC positions itself as a clean energy group focusing on large-scale hydropower development and operation. After more than 20 years of rapid growth, CTGC has become the largest hydro-power development enterprise worldwide and the biggest clean energy group in China.

Total assets

159

Billion USD

2021 Cumulative Installed Solar Capacity

8.4

GW

Clean energy installed capacity

100+

GW

Cumulative installed capacity forecast by 2025

23+

GW



China Huaneng Group



2021 Cumulative Installed Solar Capacity

9.1

GW

Cumulative installed capacity forecast by 2025

26+

GW

Total asset

185
Billion USD

China Merchants Group (CMG)



Sales Revenue

128
Billion USD

Phase 1 fund management scale

6.9

Billion USD

Total asset by the end of 2021

1584

Billion USD

DASOLAR

New Top-tier brand

Total staff

500+

Patent 150+ 5% total revenue invested to R&D

R&D staffs

20%

Ph.D

6

Patents

150+



CAPACITY LAYOUT



2022 TOTAL PRODUCTION CAPACITY

20 GW module

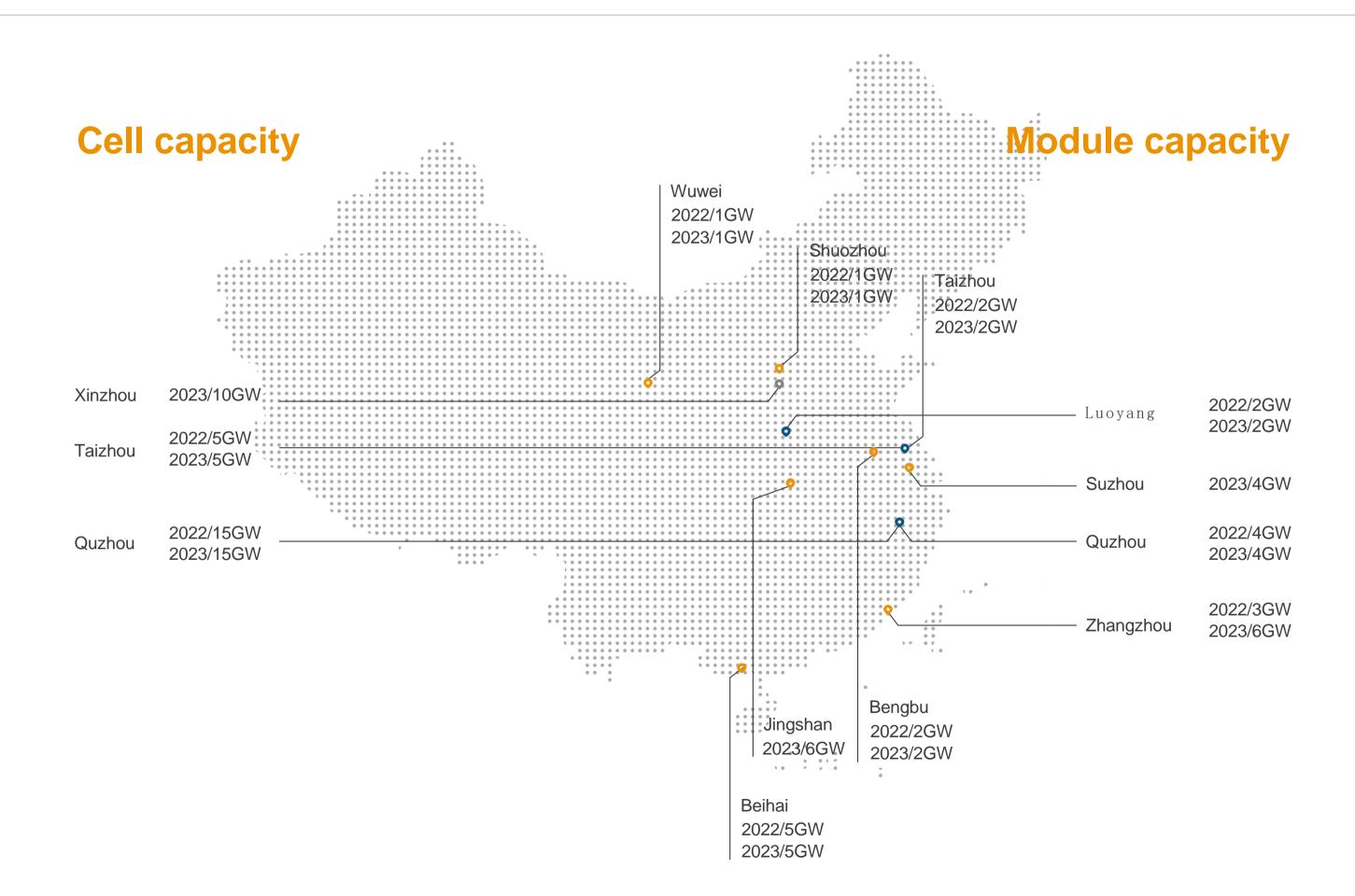
20 GW cell

2023 NEWLY BUILT CAPACITY

10+ GW module

10 GW cell

- Module capacity
- Cell+Module capacity
- Cell capacity



CAPACITY LAYOUT



Module producer DAS Solar put its 3 GW n-type module manufacturing facility into production in Dongshan, a county in China's coastal province Fujian.



DAS Solar factory in Dongshan County

The facility is the phase one of a 6.6 GW project. The construction of the second phase will be completed in 2023. The phase two project will reach an annual production capacity of 3.6 GW when put into operation.

Liu Yong, Chairman and CEO, DAS Solar said that the company will build China's first zero-carbon factory in Dongshan County. The factory will be powered by renewable energy systems, including an offshore wind power plant, a rooftop solar PV system, and a storage system.

The factory aims to become a demonstration project to explore the possibilities of renewable energy generation and consumption in coastal cities with scarce land resources, said Liu.

By the end of 2022, DAS Solar will have 20 GW accumulated production capacity for high-efficiency n-type solar cells and 20 GW for n-type modules.

In May, the company has completed another round of financing. With the funds raised, the company wil<u>l expand its production capacity of solar cells and modules</u> to 60 GW in the next three years.



2018

2018

 DAS Solar was founded

2018/7

- Phase 1 in QuzhouCell Capacity: 1.2GW/year
- Module Capacity : 900MW/year

2019

2019/11

China
 Three Gorges Corporation
 (CTGC)
 was introduced in
 Round A financing

2020

2020/10

- Phase 1 in Taizhou
- Cell Capacity:5GW/year
- Module Capacity:5GW/year

2021

2021/5

- Phase 2 in QuzhouCell Capacity :5GW/year
- Module Capacity:3GW/year

2021/7

- Factory in Shuozhou, Jiangsu
- Module Capacity: 5GW

2021/7

China

Three Gorges Corporation (CTGC) added investment; China Merchants Venture was introduced in Round B financing

2021/8

• Factory in Wuwei, Gansu

Module Capacity: 1GW

2021/11

- Agreement: Factory in Anhui
- Module Capacity: 1GW

2021/11

- Factory in Zhangzhou, Fujian
- Module Capacity 5GW

2021/12

- •Factory in Suzhou Resort (Yangcheng Lake Town)
- Module Capacity 4GW

2021/12

Introduced strategic investors: Yongfu

2022

2022/6

- Factory in Beihai
- Module Capacity: 10GW

2022/8

- Factory in Xinzhou, Shanxi
- Cell Capacity: 10GW

2024

Planned IPO listing

GLOBAL FOOTPRINTS



Cumulative Installed Capacity

15GW+

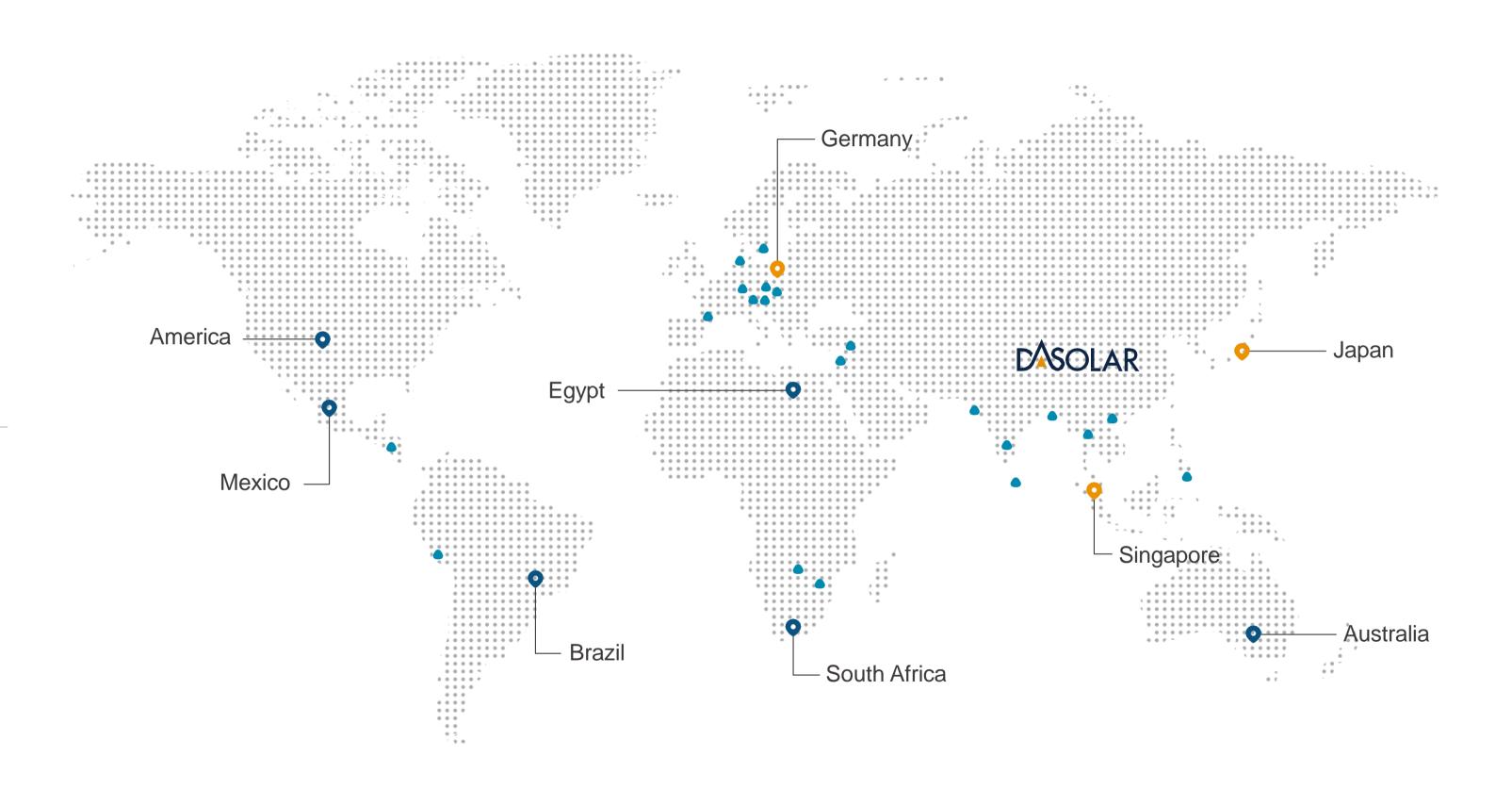
Across

60+

countries and regions

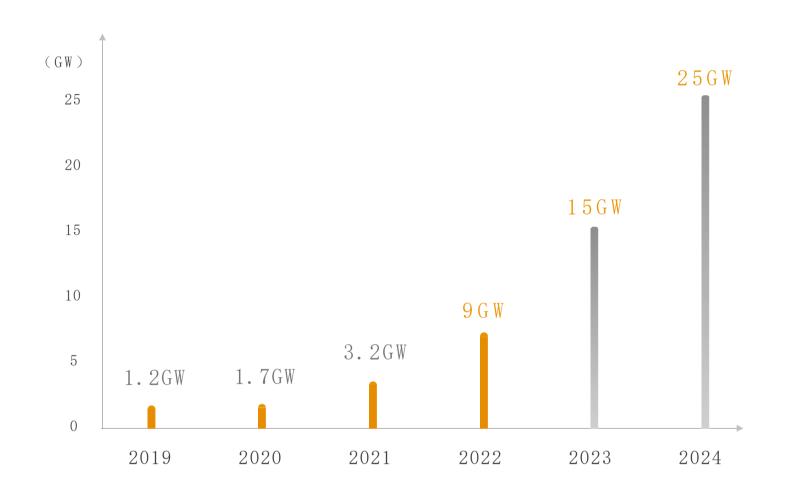
DAS Solar Headquarter

- Subsidiaries
 (Warehouse & Logistics site)
- Subsidiaries to set up
 (Warehouse & Logistics site)
- Business footprint

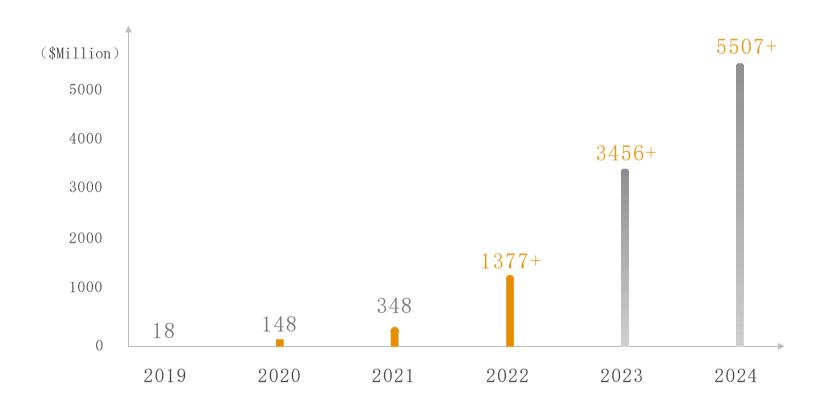




Shipment Installation



Strong financial performance



Sales Revenue Growth Rate







HONOR AND CERTIFICATION

- 1. Eighth China's TOP 10 BIPV BRAND
- 2. The MIIT "Photovoltaic Manufacturing Industry Specification Conditions" Enterprise
- 3. National high-tech enterprise
- 4. Technologically Advanced Enterprise











Strategic partners

Cumulative tender awarded

10GW+

Cumulative clients up to 2022.10

100+

800MW/year

DAS Solar signed a gigawatt-class module order with China Railway ChenBang Investment Management Group

 780_{MW}

DAS Solar won a bid to supply 780 MW N-type modules to China Datang Corporation

\$690_{Million}

DAS Solar signed a strategic corporation agreement with Luoyang Glass Company

\$1.4_{Billion}

DAS Solar signed new strategy agreement with ShangJi Automation

182_{MW}

DAS Solar won the bid of the biggest N-type PV project of Shanxi Huangneng





The third party Insurance service provider offer the insurance services covering the product workmanship and linear power output for all DAS Solar products.

CORPORATE BUSINESS



BUSINESS SCOPE

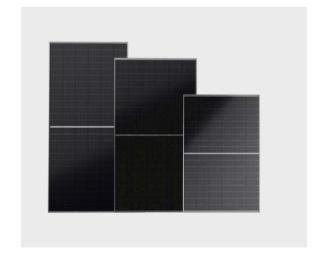


O

High Efficiency PV cell

02

High Efficiency PV module



03

PV practical application products



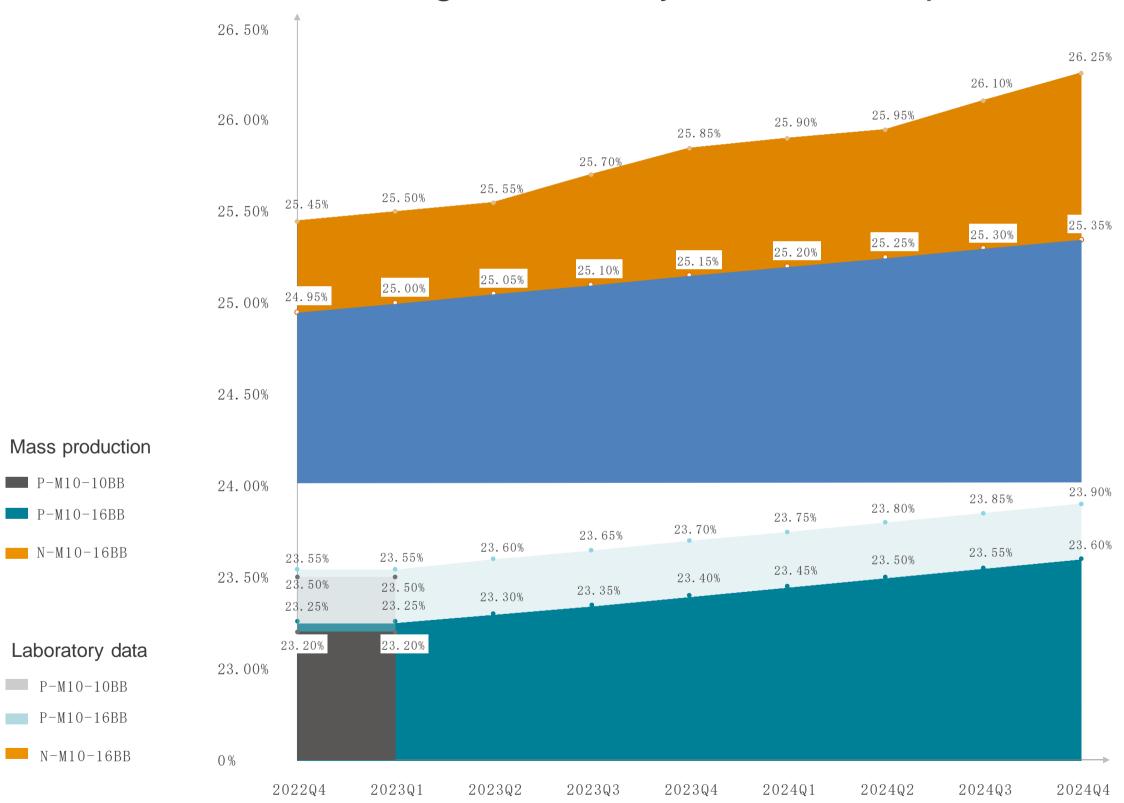
04

PV system solutions









P-Type Mono PERC cell

Conversion efficiency

>23.55%

- MBB/shingling technology
- Mono-facial & bifacial
- Excellent performance in weak light

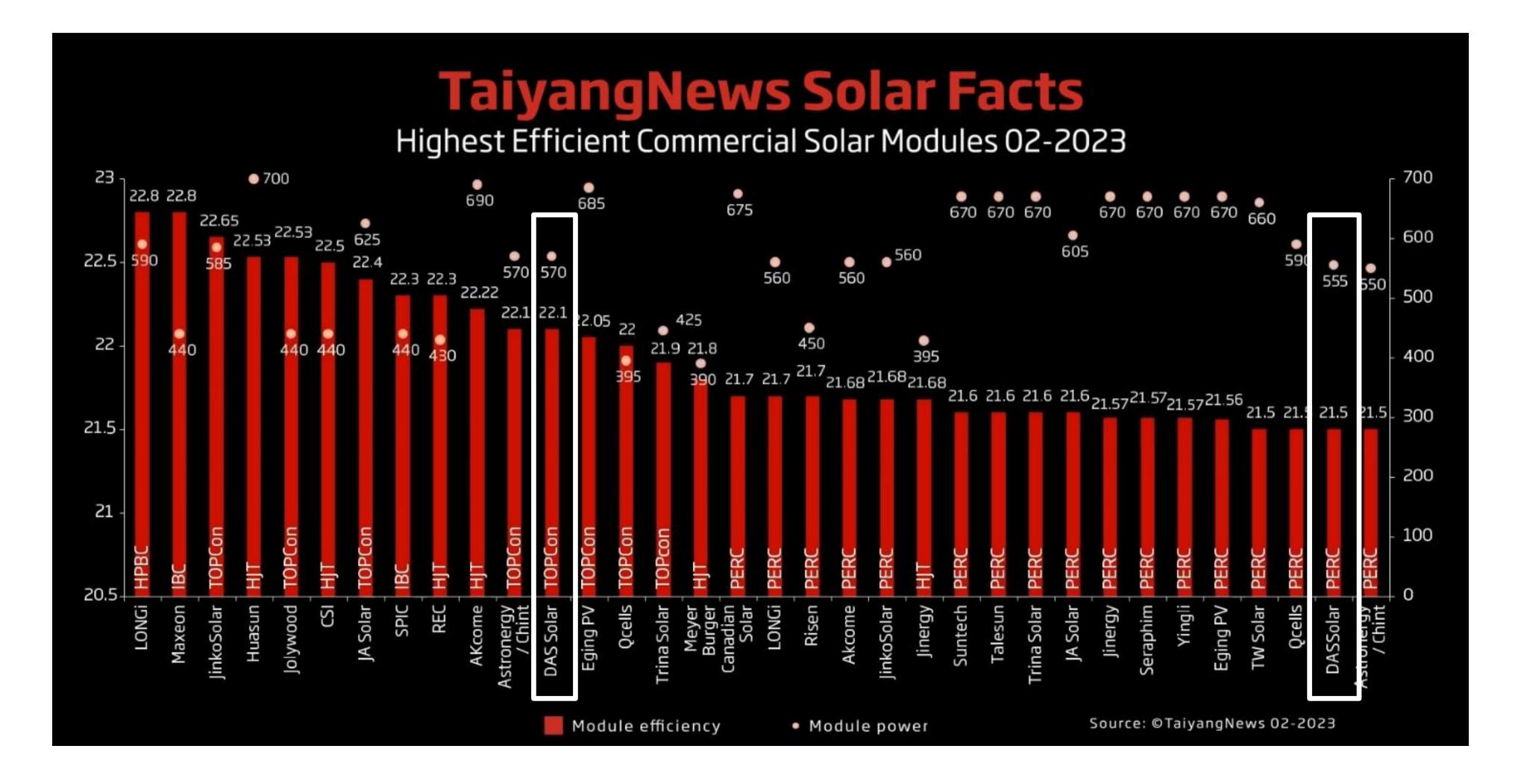
N-Type Mono Bifacial Cell

Conversion efficiency

>25.45%

- SMBB technology
- Bifacial
- Light induced Degradation(LID)







P-type Mono PERC module 550Wp



Conversion efficiency 21.30%



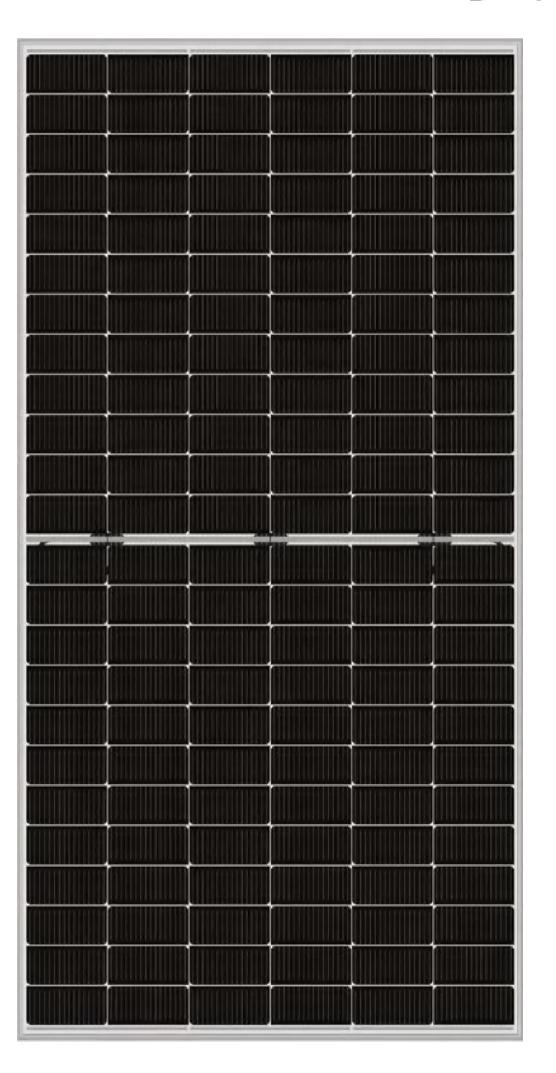
Low operation temperature 43°C



Low fluence response



High reliability
(3X IEC standard test)
TC600/DH3000/
UV200/ETC





N-type Bifacial Double Glass Module 570Wp



Conversion efficiency 22.10%



Excellent performance in weak light



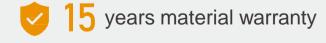
"0" LID



Low cracked risk



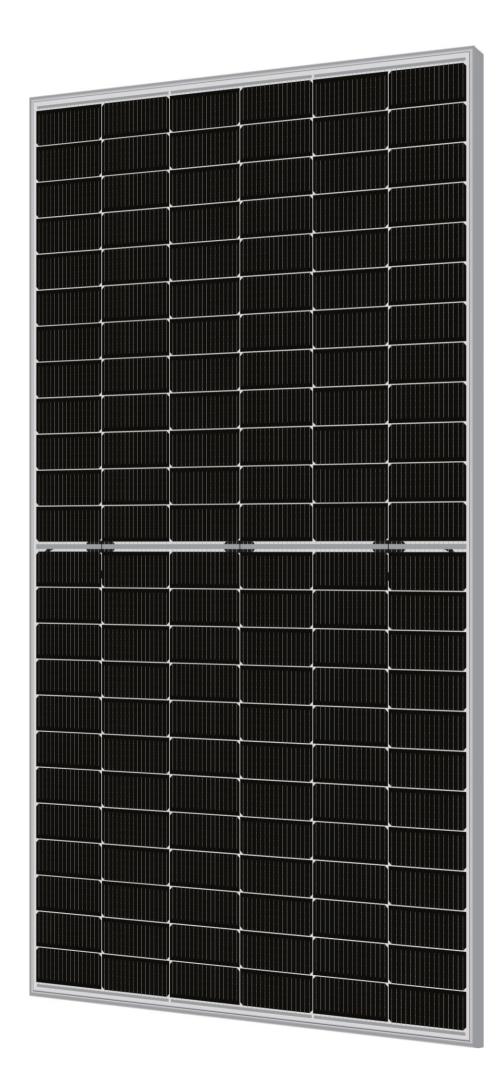
Bifacial ratio reach 80%



30 years power warranty

-1.00% 1st-year Degradation

-0.40% Annual Degradation





Lightweight High Density Module 415~430Wp



- 4.3kg / m²
- 70% lighter than regular PV modules



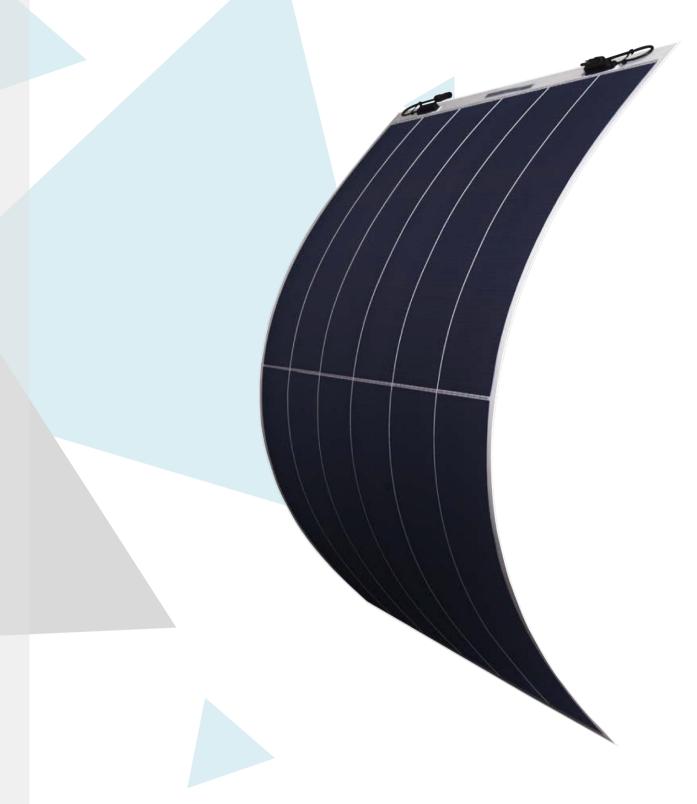
- 4mm thickness
- Lower warehousing and transportation cost



- Flexible
- Bending radius 880mm fit well for the buildings



- · Low risk of micro-crack,
- High efficiency shingling technology





Product Specifications



Limited Warranty



Lightweight High Density Module 420Wp

Lighter, 4 mm in thickness and 4 KG/m2 in weigh softer, fitting the curved surfaces better; thinner, releasing the energy of light

430W

Maximum Power Output

20.8%

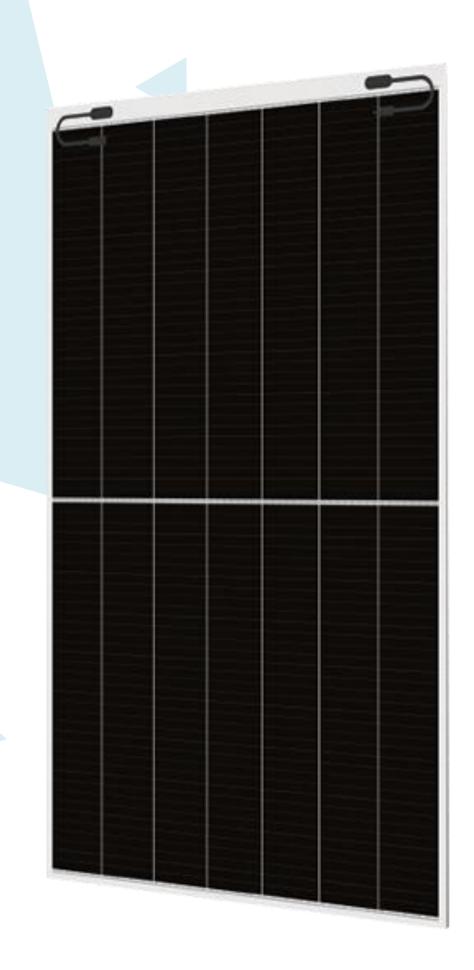
Maximum Module Efficiency

10years

Product warranty

25years

Linear power warranty







Lightweight High Density Module

Lightweight

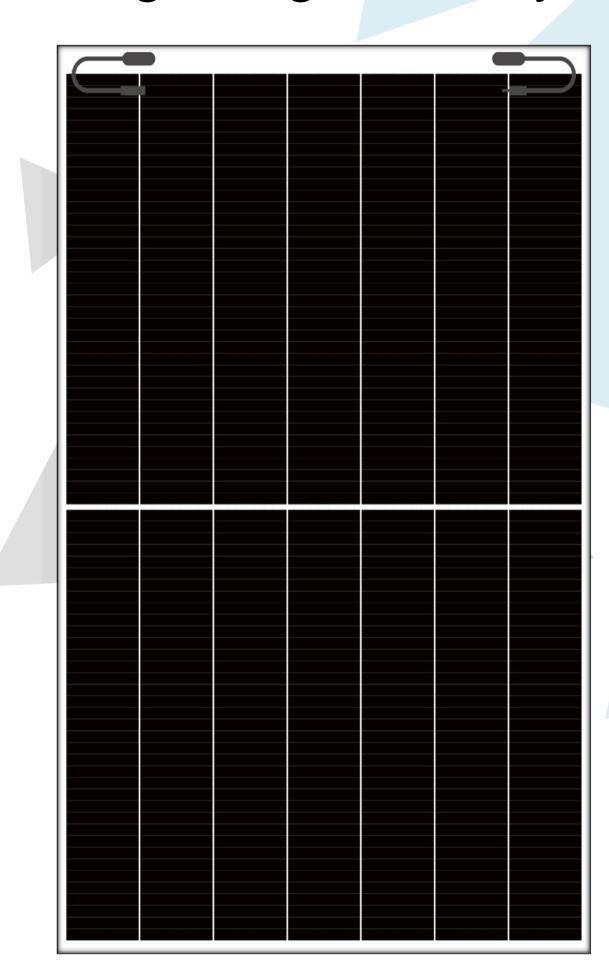
Optimized composite materials, 70% lighter at the same power

Flexible

Flexional encapsulating and patent materials

Excellent Appearance and Performance

Esthetics module design, no flare effect, low risk of micro crack



Easy transportation and installation

Original design making it far less costly for transportation and installation

Customization

Customization for various senarios, high additional value

Superior Low Irradiance Performance

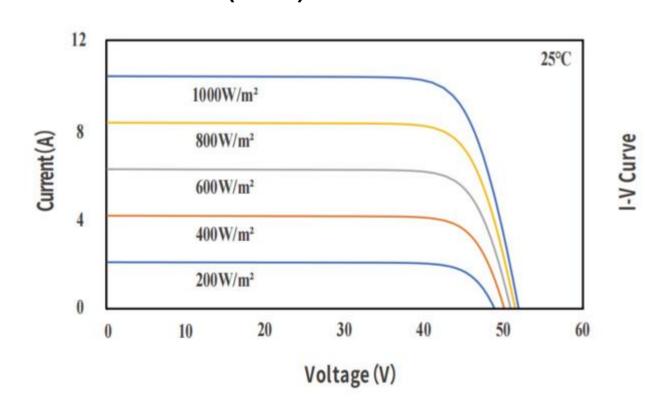
Excellent low irradiance performance, increase power generation in low-light conditions like mornings, evenings and cloudy days

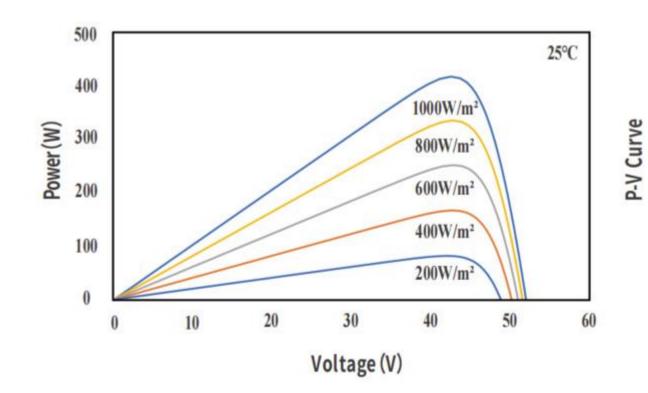
Mechanical Parameters



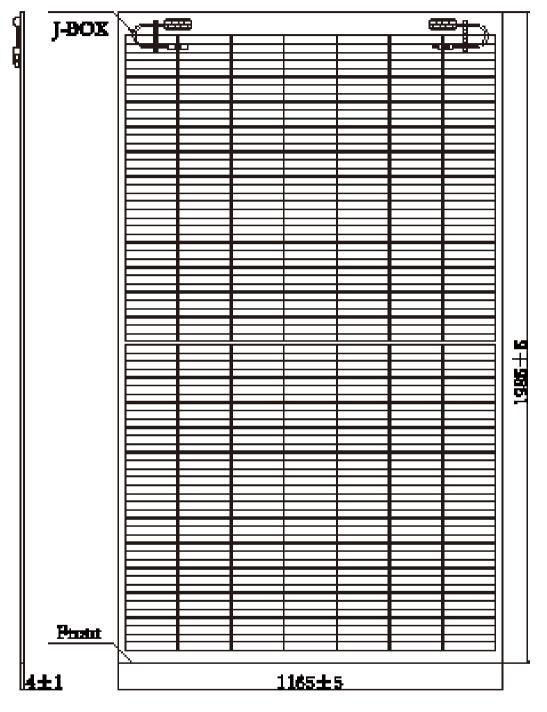
Cell Type	P Type	
Module Size	1985×1165×4mm	
Module Thickness	4mm	
Module Weight	9.9Kg	
Output Cable	4mm², cable length 300mm (can be customized)	
Connector	MC4 comparable	
Junction Box	IP68, 2 bypass diodes	
Back Color	Black / White	

Characteristic Curves(420W)





Engineering Drawing (MM)



Operating Parameters

Max. System Voltage	DC1500W
Power Tolerance	0~+5W
Operating Temperatue	-40°C~+85°C
Max. Fuse Rated Current	20A
Front Static Load	Snow load 2400Pa, Wind load 2400Pa

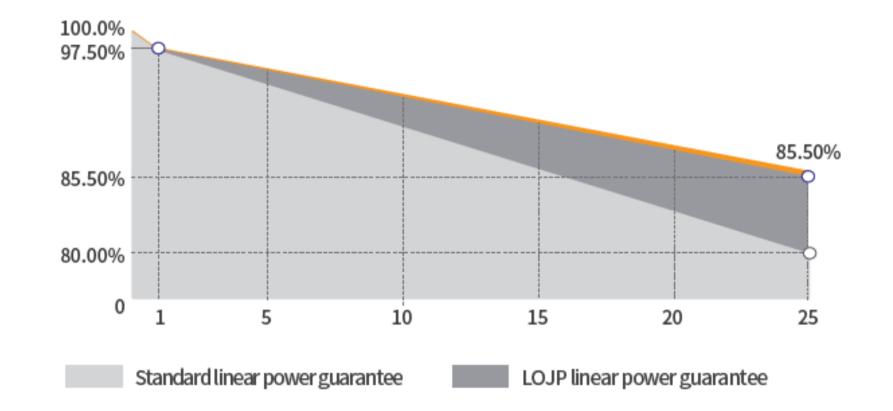
Operating Parameters



Packing Type	20'GP	40'HQ
Piece/Pallet	60	60
Pallet/Container	8	18
Piece/Container	480	1080
kWp/Container	201.6kWp	453.6kWp

Product and Quality Certifications

IEC 61215, IEC 61730
ISO 9001: Quality Management System
ISO 14001: Environment Management System
ISO 45001: Occupational Health and Safety Management System





















MANAGEMENT SYSTEM AND PRODUCT CERTIFICATION



Product certifications

- IEC 61215 & IEC 61730:2005
- IEC 61215 & IEC 61730:2016
- TUV/JET/CQC/CGC/CEC/PCCC
- UL61730
- CE

- JPEA
- Brazil Inmetro
- BIS
- KS
- UKCA
- Carbon Footprint 450kg/KW
- MCS
- WEEE































QS certifications

- SA8000
- ISO9001
- ISO14001
- . ISO45001
- IEC62941
- ESG











Special certifications & test

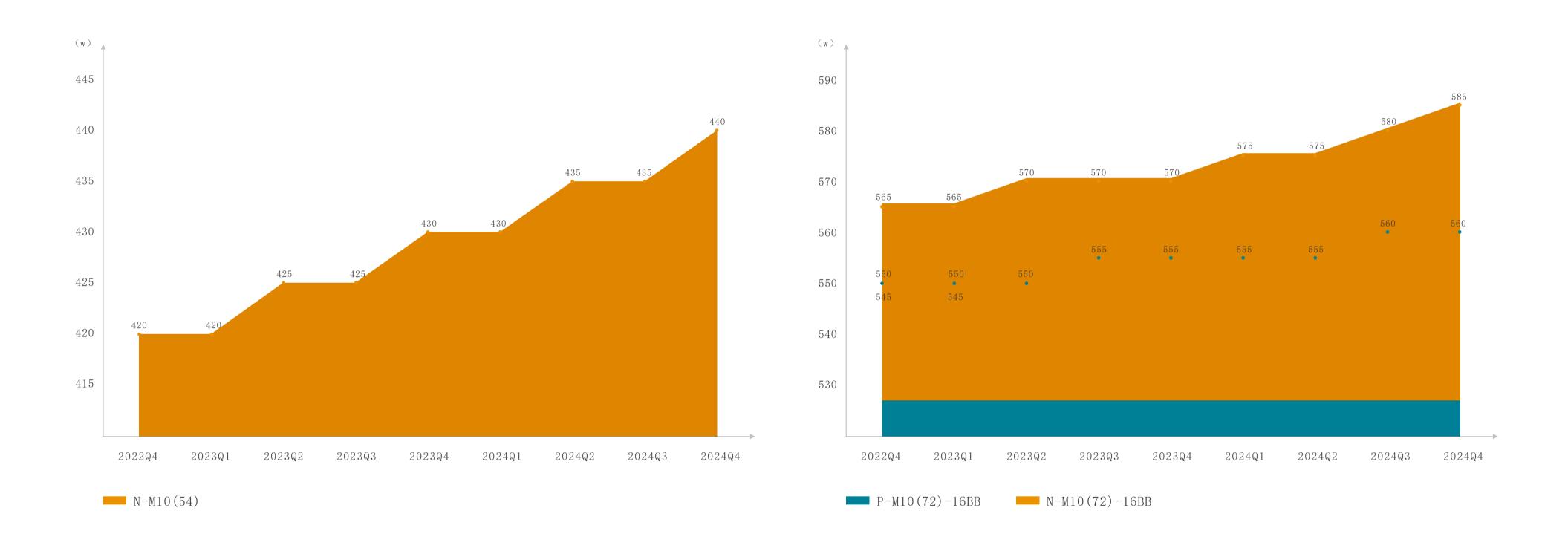
- IEC61701 Salt mist corrosion testing
- IEC62716 Ammonia corrosion testing
- IEC60068-2-68 Sand and Dust Erosion Resistance Test
- IEC62804 Test methods for the detection of potential-induced degradation
- IEC 61215 LID





ROADMAP OF DAS SOLAR CELL&MODULES



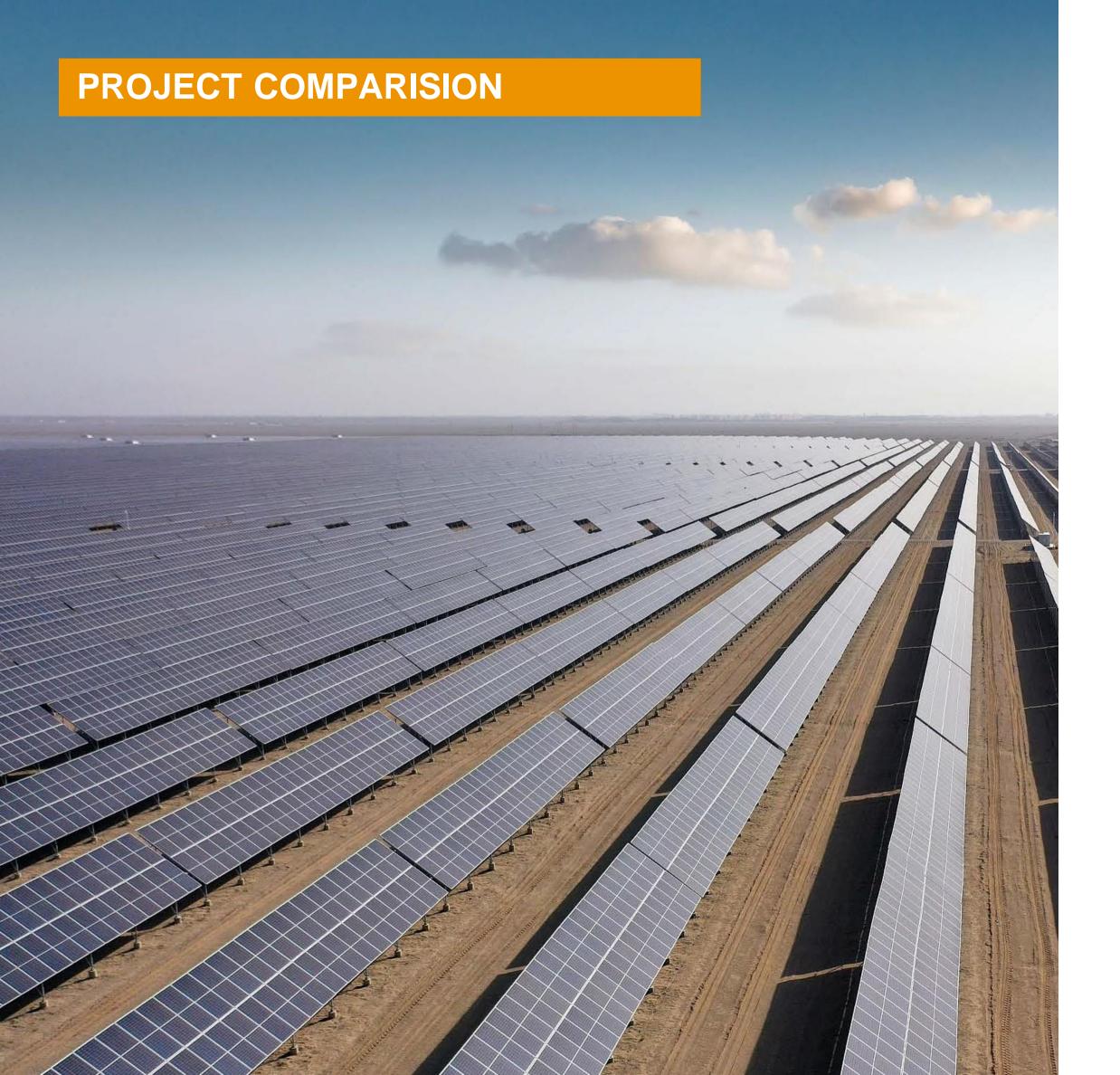


DAS Solar PV cell mass production Efficiency>24.8% > 25%

R&D efficiency

Bus bars **16BB**

Wafer thickness 140µm Target thickness





series

BOS cost

-3.57% -3.68%

LOCE

Electric generation ratio

4.64% +0.62%

IRR

- Shanghai 10MW project, adopting fixed mounts, surface albedo 40%
- DAON series increases the system yield with low BOS cost and high power generation ratio. In the case of the electric charge is more expensive 0.1 yuan per watt, the system yield increases 0.62% in contrast to P-type.

GUALTY HRST



QUALITY CONTROL



Each process is inspected by full participation quality control from raw materials to finished products. On-site quality controller ensures the circuit inspection and 100% Al automatic identification detection in key inspection positions.



AUTOMATED MANAGEMENT



Intelligent Controlling

The integrated intelligent management ensures product quality and improves operational efficiency and service efficiency.

Intelligent business management system

System integration & database: OA、BI、ERP、CRM、SRM

Intelligent manufacturing

Automation equipment, packaging lines & robots: MOM (MES, DAQ)

Intelligent logistics

MCS, Cache warehouse, AGV/logistics equipment







GLOBAL CUSTOMER SERVICE





Pre-Sales

Response within 24h **Quotation within 3 work days**

- CRM system
- Contract review process
- Exclusive technical support engineer

Customized solution

- Technical team with more than 5 year experience
- Technical team with vertical industrial chain channel



In-Sales

Delivery in time

- CRM system
- ERP system
- Exclusive order support engineer

Delivery according to quality and technical requirements

- MES system
- First-class equipment
- Comprehensive quality control spots
- Special requirements order management



After-Sales

Response within 24h 8D report within 2 work days Proposal for resolution within 7 work days

- Professional CQE team
- Exclusive technical support engineer

Customer service

- Visiting for feedback
- On-site service support

GLOBAL PARINERS



GLOBAL PARTNERS



























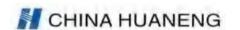














































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220MW

Ningxia, China 2021.12

Power Plant / Desert

DAS-DH144PA-540W

220MW

Yunnan, China 2022.08

Power Plant / Mountain

DAS-DH144PA-540W





150MW

Chengde, Hebei, China 2022.05

Power Plant / Plain

DAS-WH144P6-450W





60MW

Tongliao, Neimenggu, China 2022.06

Power Plant / Grassland

DAS-WH144P6-450W





183.92KW

Taihe, Jiangxi, China 2021.02

Floating / Water

DAS-LOEP-220W

100MW

Wanan, Jiangxi, China 2021.06

Floating / Water

DAS-WH144PA-535W





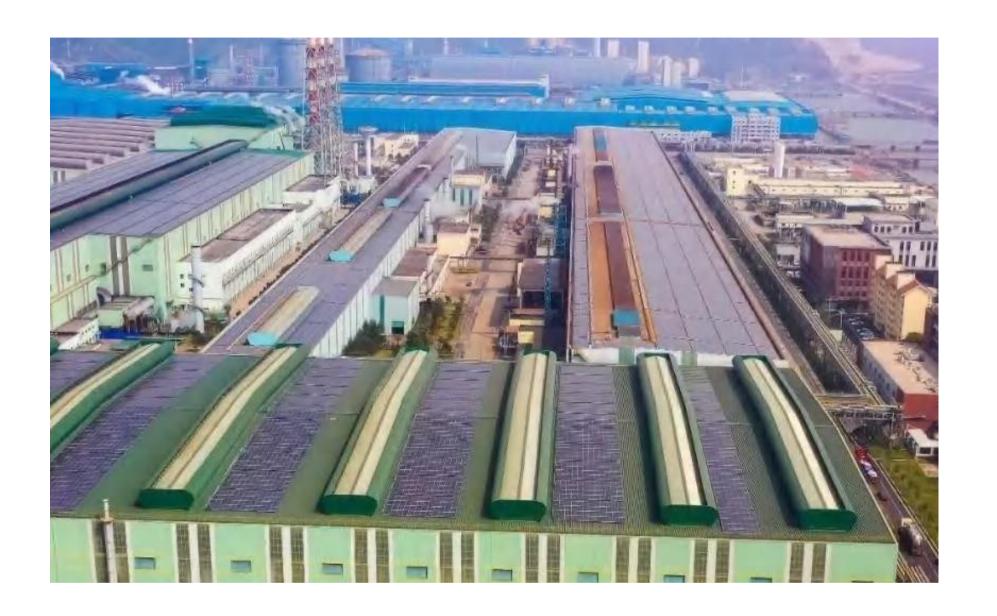
100MW

Hainan, China 2022.05

Power Plant / PV agricultural combined

DAS-DH144PA-540W





13.5MW

Fujian, China 2022.06

Rooftop / Plant roof

DAS-WH144P6-450W





3.2MW

Jinan, Shandong, China 2022.06

Expressway service area

DAS-DH144NA-550/DAS-LOCP-320W

4.4MW

Vietnam - Lam Dong Province - Bao Loc 2020.12

Utility / Mountain

DAS-WH144P6-440W





3.29MW

Vietnam - Dong Nai Province

Utility | Grassland

DAS-WH144P6-440W





Thailand. Bangkok 2020.02

Commercial&Industrial / Landscape light

DAS-LOCP-330W





6.66KW

Australia. Victoria 2020

6.66kw Residential / Rooftop

DAS-WH120-330W

1.7MW

Honduras. Tegucigalpa 2019.09

Commercial&Industrial / Rooftop

DAS-WH144P-380W



THALAND Site Reference







40kW

Ratchaprajanuhroh 46, Chainat

2023.05

DAS-WH144PA-550

100kW

Suniti shrimp farm, Prachuap Khiri Khan

2023.08

DAS-DH144NA-570







10kW

S1

2023.08

DAS-WH144PA-550

118.8kW

S1

2023.08

DAS-WH144PA-550







10kW

S1

2023.08

DAS-WH144PA-550

10kW

S1

2023.08

DAS-WH144PA-550



30kW

Prasert energy

2023.08

DAS-WH144PA-550

10kW

S1

2023.08

DAS-WH144PA-550

