RUNERGY

Company Introduction

An International and Integrated Leading Technology PV Company

Last Update:
March, 2024

RUNERGY

- 01 Company Profile
- 02 Leading Technology Innovation
- 03 New Generation N-Type Modules
- 04 Creating a Green Ecosystem

01 Company Profile

- Sound and Steady Growth since a Decade ago
- Tier 1 Module Maker listed by BNEF
- IPO Approved
- Vertically Integrated Value Chain
- Global Footprint with Overseas Factories

Milestones

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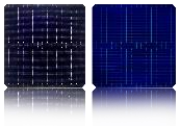
2013
Runergy **founded**

2015
expanded into **cell** business



2017
first **2GW** PERC solar cell capacity

2018
3GW cell capacity

RAMBO Power established, to develop power project business

2019
Cell Production Facility in **Thailand** began construction

4GW cell capacity in Yancheng

2020
9GW cell capacity in Yancheng

Phase I of **Thailand** Facility began operations

2021
Thailand 4GW cell capacity

Ningxia **Silicon** capacity commenced

2022
Began **module** business

16GW N-type cell capacity

Thailand **4GW** cell capacity
2GW module capacity began operation

Thailand N-Type **7GW** cell and **7GW** module capacity

2023
obtained **IPO** approval for listing in Shenzhen Stock Exchange

MGS and **Silicon** capacity in Inner Mongolia; **Silicon** capacity in Ningxia

Module Factory in Alabama, **USA** began construction

2024
17 factories

15,000+ employees

65GW, accumulative cell shipment

Top. 3 in global PV cell shipment by *PV Infolink*

~45% average ROE, for the past 5 years

Tier 1 – Module Manufacturer Listed by BNEF

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Runergy is listed by BloombergNEF as a Tier 1 PV module manufacturer from 4Q 2023.

Table 1: PV module manufacturers meeting BNEF's Tier 1 criteria as of 1Q 2024

Firm/brand	Annual module capacity, MW/year	Firm/brand	Annual module capacity, MW/year
[illegible]	[illegible]	[illegible]	[illegible]
Runergy/ Hyperion*†	21,000		
		Total	783,300

RUNERGY TIER 1

*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 for 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. Companies can download the dataset of financings here.*

Bankability Rating by PV ModuleTech

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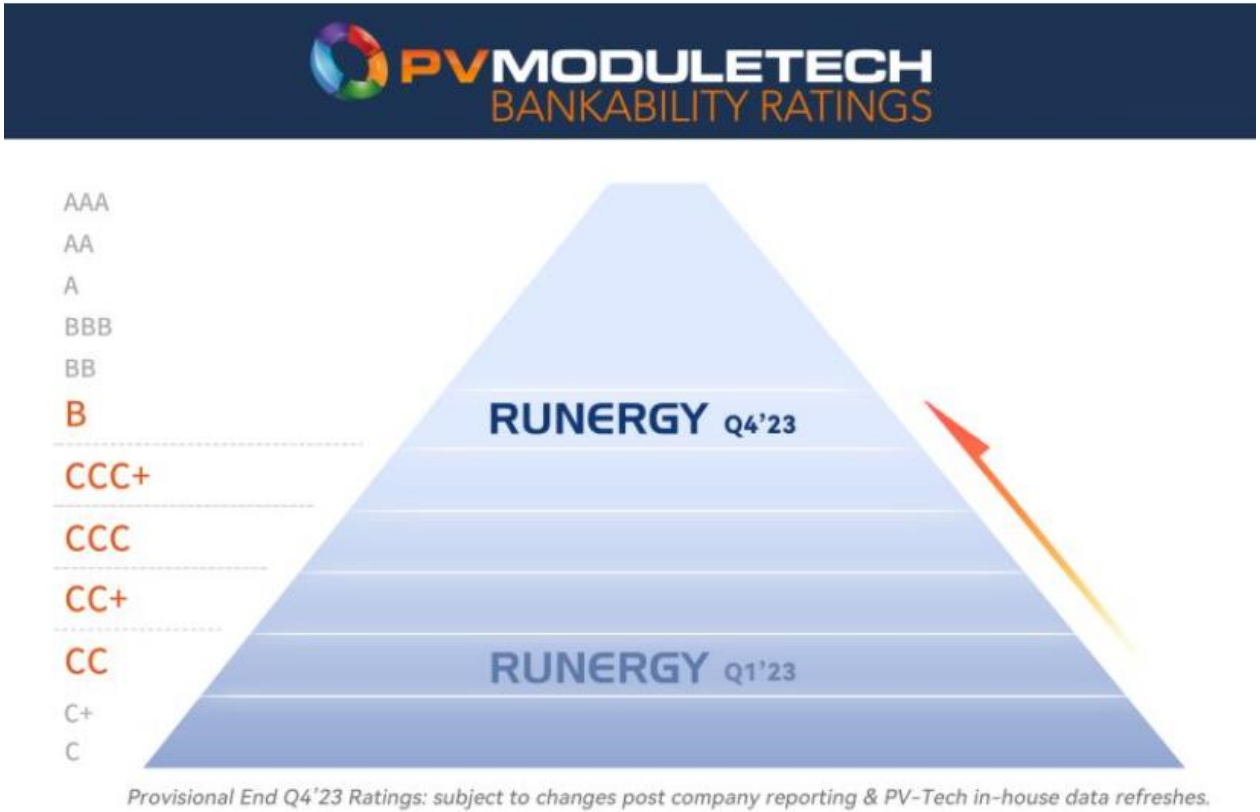

Financial Soundness

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2022 Full Year Financial Performance (Billion RMB)

Total revenue

22.04

2021	10.62
2022	22.04

107.57%▲ Year-on-year growth

Net profits attributable to owners of the parent company

2.04

2021	0.49
2022	2.04

319.88%▲ Year-on-year growth

Total assets

21.64

2021	11.72
2022	21.64

84.65%▲ Year-on-year growth

Net cash flows from operating activities

2.18

2021	1.46
2022	2.18

49.65%▲ Year-on-year growth

Globalization

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Production capacity by the end of 2023

200,000 T	20GW	65GW	24GW
Polysilicon	Wafer	Cell (N –Type 40GW)	Module

Integrated Value Chain

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Quartz Mine
(10 mil. tons, Inner Mongolia)

MGS Factory
(120,000 tons, Inner Mongolia)

Polysilicon Factory
(200,000 tons, Ningxia and Inner Mongolia)

Solar Wafers
(20GW, Vietnam)

Solar Cells
(13GW overseas, 65GW in total)

Solar Modules
(14GW overseas, 24GW in total)

Production Facilities in China

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Jiangsu Yueda Facility
5GW PERC Cell

Jiangsu Jianhu Facility
6GW PERC Cell & 16GW N-Type Cell in 2023

Jiangsu Century Facility
10GW PERC Cell

Yancheng Module Facility
10GW Module

Ningxia Polysilicon Facility
80,000 tons of High-Purity Polysilicon

Yunnan High-Efficiency Cell Facility
15GW N-Type Cell

Production Facilities in Thailand

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Thailand Cell & Module Facility 2020

- 6GW PERC Cell & 2GW Module
- 7GW N-Type Cell & 7GW Module in 2023

Factory in Alabama, US

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5GW

Annual Module Capacity

$200 Million

New Investment

Factory in Alabama, US

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800

Local new job opportunities

6

Intelligent and automated module production lines

02 Leading Technology Innovation

- High Efficiency N-Type Technology
- HJT, Perovskite in R&D
- Intelligent and Automation Manufacturing to Enhance Efficiency
- Stringent Quality Control to Best Serve Customer

R&D Capabilities

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TÜVRheinland®
certified witness laboratory

RUNERGY PV INSTITUTE

Advanced Technology	Production	Reliability	Simulation
Passivated contact	New material	Cell reliability	Test lab
Hetero junction	Equipment	Module reliability	Digital simulation
N-type bifacial cell (Topcon)	Process optimization		Big data analysis
Perovskite solar cell	On-line monitoring		AI intelligent production

Investment: ~$60 million

Global Partners: Fraunhofer ISE, UNSW SYDNEY, semi, IEC International Electrotechnical Commission TC 82, PVQAT International PV Quality Assurance Task Force

Cell Technology Development Trend

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BSF
aluminium back surface field

PERC
emitter passivation and back contact

N-type efficient

PERT
emitter passivation and full back diffusion

HJT
heterojunctions with intrinsic amorphous layers

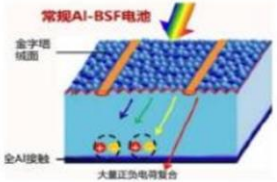
IBC
interdigital back contact

TOPCON
tunnel oxide passivated

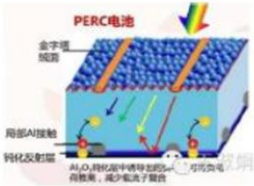
HBC
HJT+IBC

TBC
TOPCON+IBC

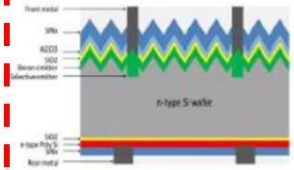
laminated cell
perovskite /crystalline silicon lamination



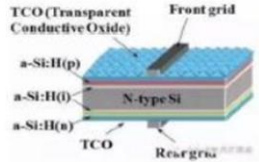
BSF



PERC



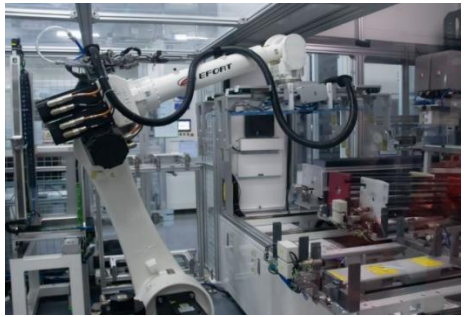
TOPCon

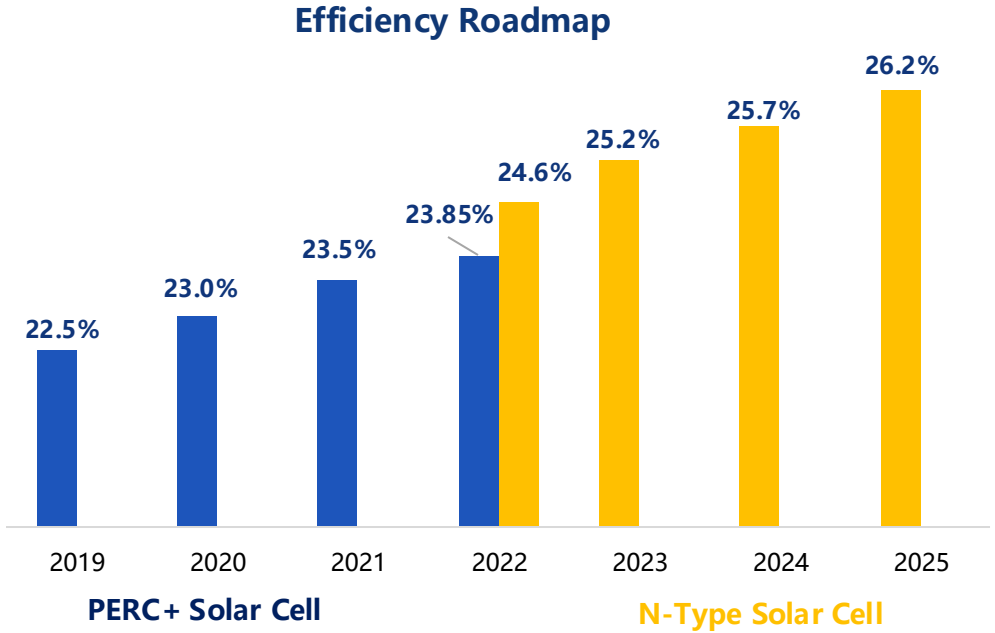


HJT

N type are the main technology for mass production in next several years.

Industry-leading Technology





Solar Cell Technical Advantage

Leading Cell Manufacturer

65GW
Accumulative cell shipment

24.87%
PERC cell efficiency record

26%
N-type cell efficiency lab record

HJT, Perovskite
Technologies under research

Stringent Quality Control

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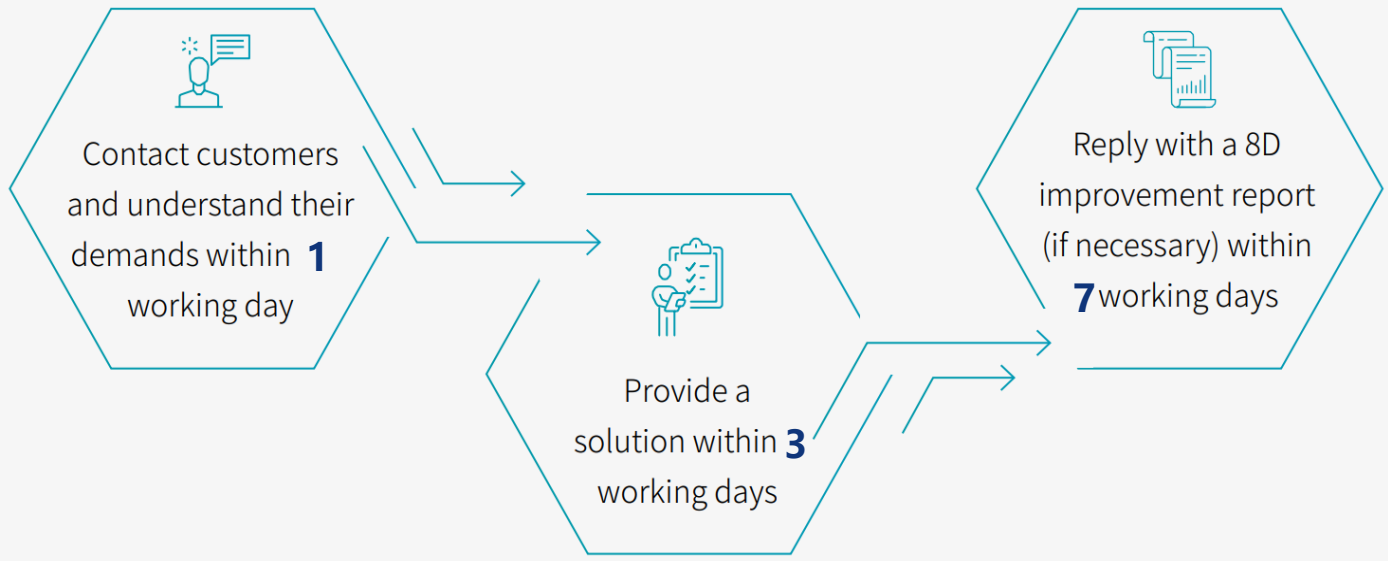
Runergy values all the feedback information from customers and has established a comprehensive Customer Feedback Control Procedure.



Better understand market demand
optimize product design
improve service levels

better meet customer expectations

Stringent Quality Control

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Runergy conducts customer satisfaction survey once a year in the first quarter of every year.

2023 customer satisfaction survey results

Customer satisfaction score for Silicon

97.32 points

Customer satisfaction score for cells

90.75 points

Customer satisfaction score for power station

99.55 points

Customer satisfaction score for modules

99 points

03 New Generation N-Type Modules

- Higher Power of New Rectangular Module
- N-Type Module Family for All Scenarios
- Excellent Product Quality Endorsed by 3rd Party Institute
- Field Test Data to Manifest Better Performance in Real Time

N-Type Technology Advantages

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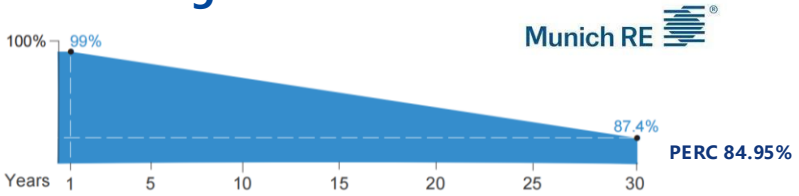
Higher Bifaciality

N-Type: **80%**±10%
P-Type: 70%±10%
More energy yield from rear side

Lower Degradation

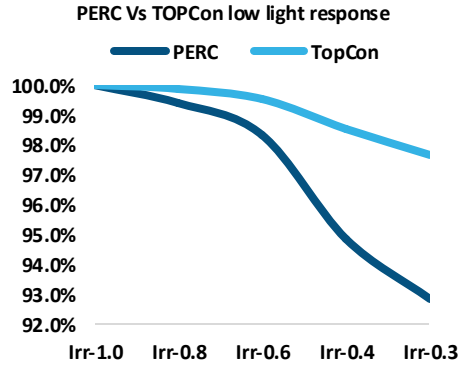


First year degradation: N Type **1%** VS PERC 2%
Annual degradation: N-type **0.4%** VS PERC 0.45%
>2.45% power warranted.

Better Temperature Coefficient

Product	Temp. Coefficient %/℃	600W module, power loss under 65 degrees	Power loss under high temp.
PERC	-0.35	73.5W	12.5%
N-Type	**-0.29**	**60.9W**	**10.15%**

Better Low Light Performance



New Ultra-High Power N-Type Rectangular Modules

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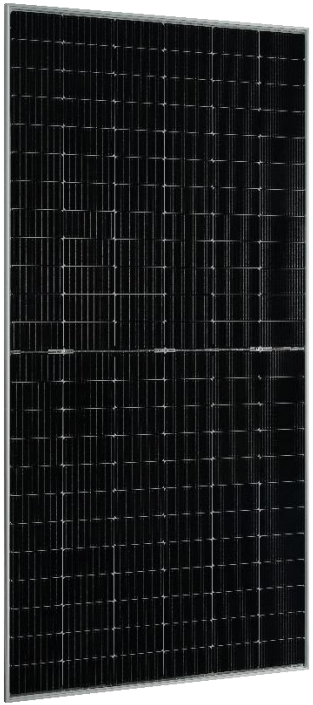
440W+

DH108N12B
1762x1134x30mm

500W+

DH120N9
1994x1134x30mm

600W+



DH144N9
2382x1134x30mm

Residential Rooftop Choices of N-Type Modules

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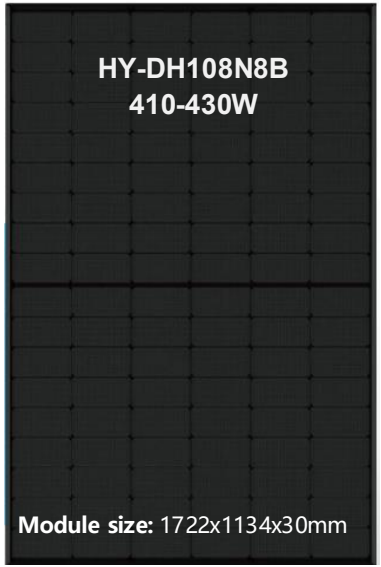
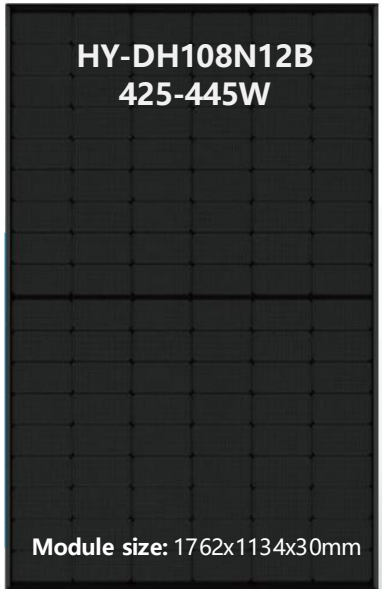


Container: 36 pcs/Pallet, 936 pcs/40' HC



Container: 36 pcs/Pallet, 936 pcs/40' HC

All Black Appearance

Aesthetic design

Dual Glass Options:

2.0+2.0 weight: **26kg**

1.6+1.6 weight: **22kg**

Easy installation

Warranty Options:

15 years warranty for materials and workmanship

25 years also available for European Market on residential projects less than 300kw

30 years warranty for extra linear power output

Intertek Munich RE Ariel Green

C&I Rooftop Choices of N-Type Modules

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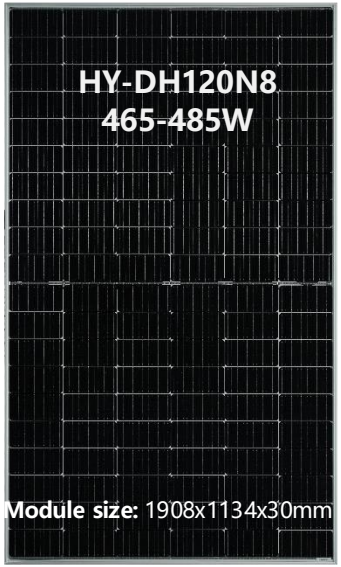
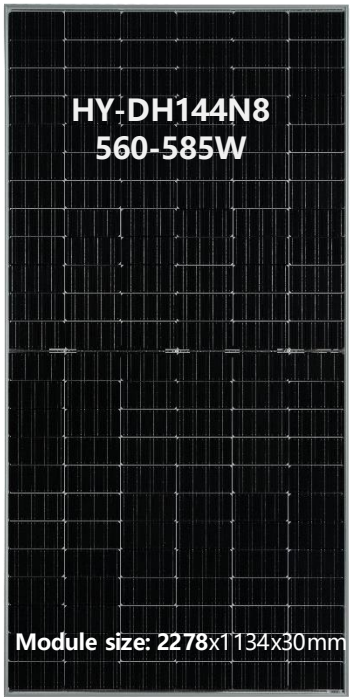


Container: 36 pcs/Pallet, 864 pcs/40' HC

Container: 36 pcs/Pallet, 864 pcs/40' HC



Container: 36 pcs/Pallet, 720 pcs/40' HC

Container: 36 pcs/Pallet, 720 pcs/40' HC

Intertek Munich RE Ariel Green

Utility and Tracker System Choices of N-Type Modules

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Container: 36 pcs/Pallet, 720 pcs/40' HC

Container: 36 pcs/Pallet, 720 pcs/40' HC

Container: 36 pcs/Pallet, 576 pcs/40' HC

Intertek Munich RE Ariel Green

N-Type HJT Module, 66-Cell

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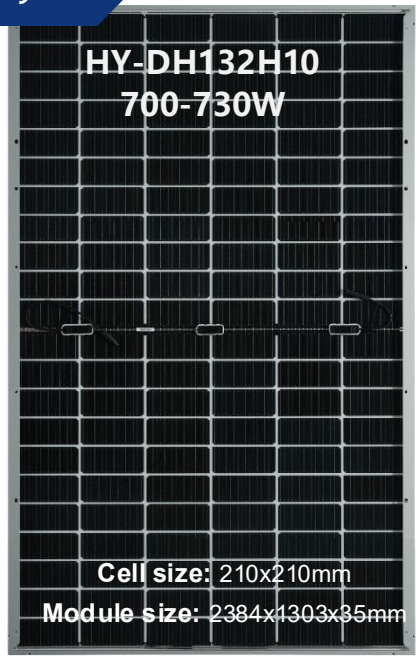
Ready Soon



Container: 31 pcs/Pallet, 558 pcs/40’ HC

Application: Utility projects, tracker system

High Conversion Efficiency
Module efficiency up to **23.2%** based on HJT technology

High Power Output
720W+ power output at mass production, generate significantly higher value for customers

Lower LCOE, reduced BOS cost
Higher reliability, contributes to greater long term investment return

Significantly Lower Degradation:
Annual degradation is less than **0.38%**

N-Type Module Technology Roadmap

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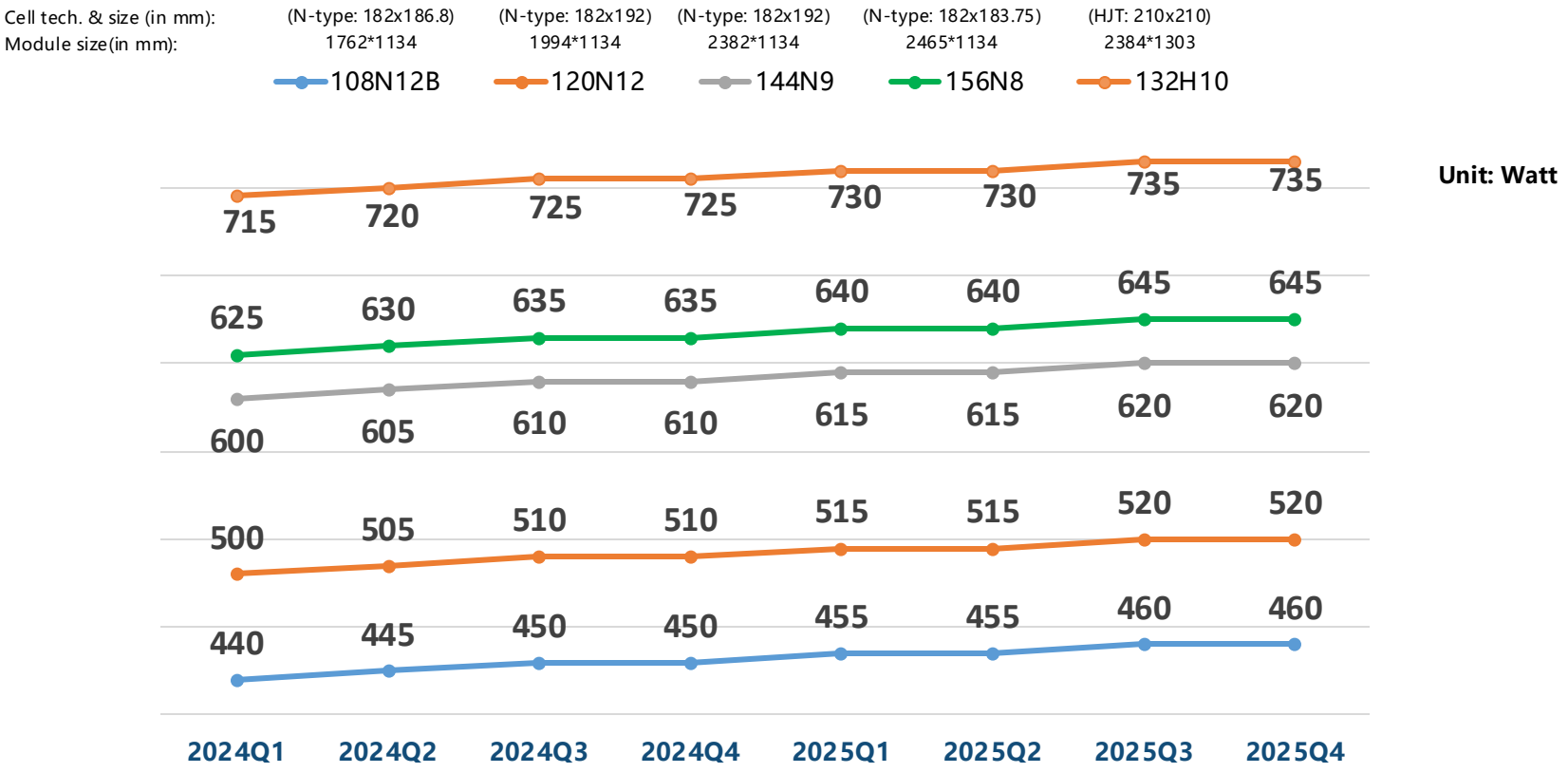

Unit: Watt

Last update: Dec.2023

Excellent Product Quality

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Runergy's N-Type dual glass modules have been recognized as an **Overall Highest Achiever** in the RETC's 2023 PV Module Index (PVMI) Report.

Runergy's N-Type dual glass modules have passed rigorous Product Qualification Program (PQP) by PVEL.

Field Test Data: Higher Energy Yield of N-Type Module

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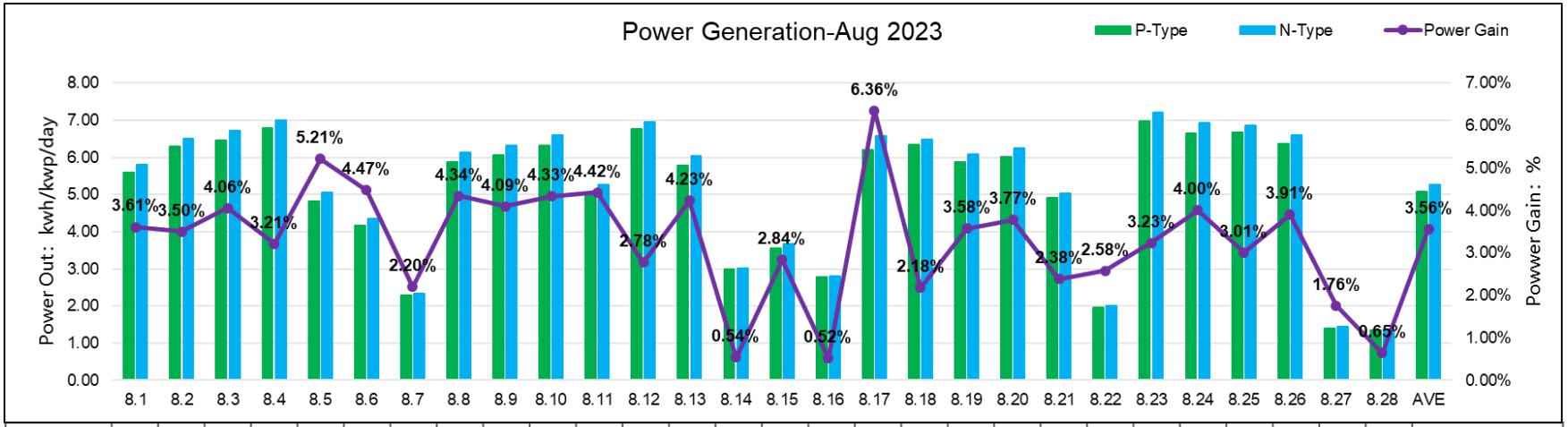
The latest N-type field test data run by Runergy: averagely ~3.5% higher energy yield than perc



	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	8.10	8.11	8.12	8.13	8.14	8.15	8.16	8.17	8.18	8.19	8.20	8.21	8.22	8.23	8.24	8.25	8.26	8.27	8.28	AVE
Weather																													/
P-Type	5.60	6.29	6.45	6.78	4.81	4.16	2.29	5.88	6.06	6.32	5.04	6.75	5.78	2.98	3.56	2.79	6.19	6.34	5.88	6.02	4.90	1.96	6.98	6.66	6.66	6.35	1.41	1.34	5.08
N-Type	5.80	6.51	6.72	7.00	5.06	4.35	2.34	6.13	6.31	6.59	5.27	6.94	6.03	3.00	3.66	2.80	6.58	6.47	6.09	6.25	5.02	2.01	7.21	6.92	6.86	6.60	1.43	1.35	5.26
Power Gain	3.6%	3.5%	4.1%	3.2%	5.2%	4.5%	2.2%	4.3%	4.1%	4.3%	4.4%	2.8%	4.2%	0.5%	2.8%	0.5%	6.4%	2.2%	3.6%	3.8%	2.4%	2.6%	3.2%	4.0%	3.0%	3.9%	1.8%	0.7%	3.56%

04 Creating a Green Ecosystem

- Application of Solar Energy to Benefit Global Community
- Commitment to UN SDG and Sustainability Development
- Ecosystem to Engage Global Partners

Track Record – Utility Projects

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Pingluo, Ningxia 100MW Ground-Mounted Project

Module: DH144P8, COD: November, 2023

Track Record – Distributed Projects

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Yancheng, Jiangsu 7MW C&I Rooftop Project
Module: DH144N8, COD: September, 2023

Sustainability Development

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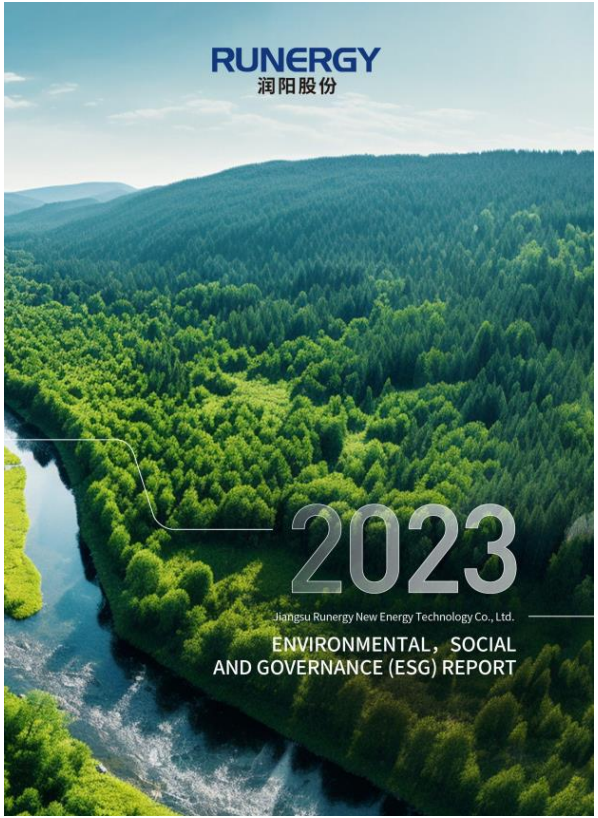

UN GLOBAL COMPACT

United Nations
Global Compact

Company Information

Company
Jiangsu Runergy New Energy Technology Co., Ltd.
www.runergy-solar.com

Type:
Company

Country:
China

Sector:
Alternative Energy

Ownership:
Privately Held

Global Compact Status:
Active

Participant Since
04 June 2023

Letter of Commitment

Next Communication on Progress (COP) due on:
31 July 2024

Share Profile

Sustainability Development

Runergy is awarded BRONZE medal by EcoVadis in 2024

Global Partners


RUNERGY
A GLOBAL PARTNER IN RENEWABLE ENERGY
THANKS