



REPORTS | **PV MODULE MANUFACTURER RANKING**

EDITION 3 - 2026





Welcome to this Edition 3 - 2026 version of the **SINOVOLTAICS PV Module Manufacturer Ranking Report.**

The Altman-Z Scores in this report has been calculated from September 2023 until June 2026, and provide detailed insight how the financial strength of PV manufacturers has evolved over the past 3 years.

What's the value of Altman Z-Score?

Altman-Z Scores are calculated to understand which **PV module manufacturers are financially stable**, and which players are **at risk of going bankrupt**.

For any stakeholder involved in solar projects, the financial stability of the manufacturer is of crucial importance.

Employing solar PV modules from financially stable manufacturers provides for a better hedge against the potential risks of collapsing return of investment (ROI) of any PV project.

Why is financial stability important?

Ultimately, the **financial stability of a PV module manufacturer is geared to the validity and enforceability of the warranty policies** on its PV modules. Most people realize that today's PV module manufacturers will probably not be around in 25 years. However for the short to medium term, you want to be sure that warranties are in place.

In many years to come, lots of PV projects will likely face this tough question: whom to contact with performance complaints and replacement requests regarding a malfunctioning inverter after 2, 5 or 10 years, or even 15 years?

2023 - 2026: rating of PV module manufacturers worldwide

In this report we present you the **Altman Z-Scores of 60+ solar PV module manufacturers**. This report can be used to see how one manufacturer matches up to the other, and can be an important indicator when selecting your PV module manufacturer.

The Altman Z-Scores show you which PV module manufacturers are **financially strong**, and which manufacturers are in the **risk zone of going bankrupt within the coming 2 years**.

On the following pages you find the full table showing the Altman Z-Scores of the major, publicly listed Asian, European and American manufacturers.

The scores have been calculated by team Sinovoltaics with the use of publicly available financial data.

MANUFACTURERS	RANKING	TREND	ZONE	SEP23	DEC23	MAR24	JUN24	SEP24	DEC24	MAR25	JUN25	SEP25	DEC25	MAR26	JUN26	LISTING
HD HYUNDAI ENERGY SOLUTIONS	1	↓	SAFE	3.78	3.71	3.81	3.58	3.9	3.82	4.12	5.32	5.51	5.78	9.47	9.12	XKRX:322000
JG SOLAR (GANSU JINGANG SOLAR CO.)	2	↑	SAFE	-0.13	0.28	0.12	-0.93	-1.13	-1.44	-1.61	-2.65	-2.74	-1.83	-1.62	7.90	SZSE:300093
FIRST SOLAR	3	↑	SAFE	4.76	4.75	4.44	5.21	5.82	4.49	3.64	4.06	4.9	5.48	5.1	6.28	NAS:FSLR
PREMIER ENERGIES	4	↓	SAFE					11.65	14.46	8.57	9.49	8.41	7.37	7.68	5.93	NSE:PREMIERENE
ETERBRIGHT (HIWIN)	5	↑	SAFE	3.77	4.35	5.03	3.96	3.98	5.67	4.38	3.91	4.02	3.86	4.5	5.41	TPE:2049
WAAREE RENEWABLE TECHNOLOGIES	6	↓	SAFE						8.65	5.79	7.15	5.92	5.71	5.21	4.96	NSE:WAAREEENER
HT SAAE	7	↓	SAFE	2.09	1.9	1.56	1.37	2.1	2.58	2.57	2.64	3.23	6.1	5.31	4.64	SHSE:600151
KYOCERA	8	↑	SAFE	2.81	2.96	2.84	2.65	2.66	2.45	2.52	2.51	2.75	2.92	2.97	3.68	OTCPK:KYOCY
DMEGC SOLAR (DMEGC MAGNETICS GROUP)	9	↑	SAFE	3.4	2.84	3.07	2.75	2.85	2.73	2.7	2.87	3.26	3.23	2.88	3.39	SZSE:002056
TAINERGY	10	↓	SAFE	6.5	6.72	5.2	4.51	3.52	1.75	1.16	1.3	2.43	2.26	2.91	2.78	TPE:4934
SOLEX ENERGY LTD	11	↑	SAFE			4.62	6.66	7.55	7.49	5.19	4.62	5.72	4.82	2.67	2.71	NSE:SMSOLEX
BOVIET SOLAR (NINGBO BOWAY ALLOY MATERIAL CO)	12	↓	SAFE	2.51	2.59	2.73	3.16	2.91	3.15	3.11	2.91	3.11	2.79	2.73	2.66	SHSE:601137
INSOLATION ENERGY	13	↓	SAFE			17.38	31.29	32.02	36.35	26.03	17.08	13.92	10.77	3.64	2.63	BOM:543620
PHONO SOLAR (SUMEC)	14	↓	SAFE	2.87	2.74	2.76	2.71	2.63	2.69	2.71	2.69	2.77	2.68	2.71	2.63	SHSE:600710
BHARAT HEAVY ELECTRICALS	15	↑	SAFE	1.31	1.68	2.03	2.45	2.19	1.97	1.9	2	1.72	1.94	1.81	2.60	NSE:BHEL
LG SOLAR	16	↑	GRAY	2.35	2.24	2.3	2.34	2.35	2.26	2.09	2.16	2.27	2.15	2.18	2.39	XKRX:066570
ERA SOLAR (YONGGAO GROUP)	17	↓	GRAY	2.99		3.38	2.3	2.61	2.64	2.66	2.18	2.54	2.71	2.66	2.20	SZSE:002641
ADANI SOLAR (ADANI ENTERPRISES)	18	↑	GRAY	2.74	2.63	2.94	2.75	2.75	1.93	1.85	2.11	2.09	1.71	1.54	2.18	NSE:ADANIENT
HANSOL	19	↑	GRAY	2.22	2.32	2.04	1.9	1.77	1.8	2.01	2.18	2.21	2.05	1.72	2.13	XKRX:004710
REC SOLAR (RELIANCE INDUSTRIES LIMITED)	20	↑	GRAY	1.98	2.11	2.53	2.62	2.15	1.92	1.84	2.02	2.24	2.02	1.88	2.01	NSE:RELIANCE

**The trend column in the table reflects a comparison of the current quarter score to the previous one.*

MANUFACTURERS	RANKING	TREND	ZONE	SEP23	DEC23	MAR24	JUN24	SEP24	DEC24	MAR25	JUN25	SEP25	DEC25	MAR26	JUN26	LISTING
PENNAR INDUSTRIES	21	↑	GRAY	2.09	2.2	2.26	2.3	2.58	2.16	2.16	2.47	2.83	2.03	1.83	1.97	BOM:513228
TCL SUNPOWER GLOBAL (TCL ELECTRONICS HOLDINGS)	22	↑	GRAY		1.75				1.92		2.03	2.02	2.03	1.77	1.97	HKSE:01070
MISSION SOLAR (OCI)	23	↓	GRAY	3.41	3.44	2.74	2.8	2.58	2.07	1.62	1.73	1.87	1.97	2.01	1.90	XKRX:010060
MOTECH	24	↓	GRAY	2.45	2.69	2.5	2.61	2.11	1.77	1.69	1.54	1.51	1.5	1.86	1.79	ROCO:6244
TSEC	25	↓	GRAY	3.04	3.2	3.11	3.17	2.63	2.25	2.02	1.74	1.63	2.36	2.59	1.77	TPE:6443
TOPRAY SOLAR	26	↓	GRAY	2.22	2.31	2.1	1.61	1.89	1.96	1.77	1.71	1.8	2.02	2.86	1.73	SZSE:002218
LINYANG ENERGY	27	↓	GRAY	2.66	2.21	2.22	2.4	2.34	2.23	2.17	1.93	1.92	1.79	1.87	1.71	SHSE:601222
BYD	28	↓	GRAY	1.79	1.74	1.61	1.76	2	1.76	2.31	2.33	2.16	2	2.02	1.67	OTCPK:BYDDF
AU OPTRONICS	29	↑	GRAY	0.82	1.08	1.13	1.19	1.17	1.13	1.25	1.35	1.28	1.21	1.31	1.67	OTCPK:AUOTY
SHINSUNG E&G	30	↓	GRAY	2.37	2.25	2.15	1.93	1.83	1.6	1.36	1.38	1.5	1.42	1.96	1.59	XKRX:011930
TOPSOLA (HONGRUN GROUP)	31	↑	GRAY	1.35	1.37	1.35	1.26	1.28	1.37	1.4	1.32	1.71	1.72	1.56	1.57	SZSE:002062
ASTRONERGY (CHINT GROUP)	32	↓	GRAY	1.65	1.59	1.58	1.53	1.48	1.52	1.52	1.43	1.46	1.48	1.53	1.51	SHSE:601877
CHENGDU HUASUN TECHNOLOGY GROUP	33	↓	GRAY	2.61	2.48	2.14	1.94	2.04	2.06	2.05	1.77	1.57	1.71	1.8	1.35	SZSE:000790
TATA SOLAR (TATA POWER)	34	↑	GRAY	1.32	1.22	1.38	1.63	1.73	1.27	1.23	1.43	1.42	1.14	1.15	1.35	NSE:TATAPOWER
LONGI SOLAR (LONGI GREEN ENERGY)	35	↓	GRAY	3.37	2.91	2.78	2.04	1.97	1.78	1.78	1.68	1.82	1.74	1.7	1.27	SHSE:601012
ALMADEN	36	↓	GRAY	2.65	2.92	2.47	2.07	1.97	1.73	1.52	1.4	1.5	1.41	1.52	1.27	SZSE:002623
ALEO SOLAR (SINO-AMERICAN SILICON PRODUCTS)	37	↑	GRAY	1.71	1.67	1.7	1.46	1.17	1.09	0.98	0.83	0.97	0.88	1.02	1.15	ROCO:5483
RITEK	38	↓	GRAY	0.97	0.97	0.96	1.18	1.23	1.5	1.29	1.15	1.13	1.24	1.15	1.14	TPE:2349
CECEP	39	↓	DISTRESS	1.43	1.38	1.36	1.28	1.25	1.21	1.18	1.07	0.98	1.01	1.09	0.88	SZSE:000591
JINKOSOLAR	40	↓	DISTRESS	2.02	2.07	2.03	1.85	1.91	1.73	1.68	1.31	1.2	1.09	1.16	0.84	SHSE:688223

**The trend column in the table reflects a comparison of the current quarter score to the previous one.*

MANUFACTURERS	RANKING	TREND	ZONE	SEP23	DEC23	MAR24	JUN24	SEP24	DEC24	MAR25	JUN25	SEP25	DEC25	MAR26	JUN26	LISTING
HY SOLAR (HOYUAN GREEN ENERGY CO)	41	↓	DISTRESS	2.15	1.19	1	0.5	0.5	0.3	0.27	0.28	0.59	1.1	0.89	0.82	SHSE:603185
URE	42	↓	DISTRESS	1.66	1.39	0.64	0.54	0.35	0.19	0.46	0.29	0.29	0.32	1.17	0.80	TPE:3576
SHANGHAI ELECTRIC GROUP	43	↓	DISTRESS	0.81	0.8	0.82	0.77	0.77	0.89	0.81	0.83	0.87	0.83	0.8	0.80	SHSE:601727
TRINA SOLAR	44	↓	DISTRESS	1.83	1.76	1.69	1.51	1.4	1.24	1.2	0.92	0.81	0.79	0.79	0.73	SHSE:688599
JA SOLAR	45	↓	DISTRESS	2.62	2.07	1.98	1.4	1.26	1.21	1.15	0.86	0.91	0.76	0.75	0.71	SZSE:002459
ANJI TECHNOLOGY	46	↓	DISTRESS	1.39	1.32	1.11	0.93	0.76	0.56	0.6	0.57	0.78	0.6	0.74	0.69	TPE:6477
HANWHA Q-CELLS (HANWHA SOLUTIONS)	47	↓	DISTRESS	1.37	1.32	1.13	0.85	0.67	0.54	0.57	0.66	0.73	0.7	0.68	0.64	XKRX:009830
ULICA SOLAR (Scenergy / Changzhou Shichuang Energy Co., Ltd)	48	↓	DISTRESS	8.65	6.06	2.9	3.23	3.13	0.95	0.69	0.74	1.01	0	0.89	0.62	SHSE:688429
TONGWEI SOLAR (TONGWEI GROUP)	49	↓	DISTRESS	3.62	2.84	2.83	1.8	1.26	1.02	0.95	0.78	0.87	0.88	0.8	0.61	SHSE:600438
CANADIAN SOLAR	50	↑	DISTRESS	1.37	1.29	1.26	0.96	0.89	0.73	0.68	0.64	0.63	0.65	0.57	0.60	NAS:CSIQ
AIKO SOLAR	51	↑	DISTRESS	2.99	2.2	2.02	1.06	0.5	0.13	0.16	-0.24	0.24	0.35	0.38	0.44	SHSE:600732
GCL SYSTEM INTEGRATION TECHNOLOGY	52	↓	DISTRESS	1.11	0.97	0.95	0.68	0.8	0.9	0.85	0.71	0.63	0.54	0.93	0.35	SZSE:002506
HUANSHENG PV (ZHONG-HUAN SEMICONDUCTOR)	53	↑	DISTRESS	2.07	1.75	1.62	1.08	0.85	0.51	0.52	0.2	0.19	0.21	0.24	0.34	SZSE:002129
RENEW ENERGY GLOBAL	54	↓	DISTRESS	0.31	0.32	0.3	0.3	0.27	0.28	0.23	0.3	0.41	0.36	0.27	0.24	NAS:RNW
TANGSHAN HAITAI NEW ENERGY TECHNOLOGY CO LTD	55	↓	DISTRESS	2.25		2.36	1.88	1.76	1.85	1.97	1.49	1.26	0.94	0.94	0.22	BJSE:835985
JIAWEI RENEWABLE	56	↓	DISTRESS	2.48	1.74	1.48	1.27	1.08	0.65	0.71	0.57	0.61	0.4	0.87	0.15	SZSE:300317
TALESUN (ZHONGLI SCIENCE AND TECHNOLOGY)	57	↓	DISTRESS	-0.52	-0.72	-0.77	-1.88	-1.92	-1.77	-1.72	-0.32	-0.58	-0.33	0.41	0.10	SZSE:002309
RISEN ENERGY	58	↓	DISTRESS	1.34	1.21	1.17	0.99	0.77	0.56	0.53	0.19	0.24	0.32	0.35	0.07	SZSE:300118
JOLYWOOD	59	↓	DISTRESS	1.41	1.52	1.44	1.19	1.01	0.66	0.63	0.38	0.46	0.37	0.53	-0.09	SZSE:300393
S-ENERGY	60	↓	DISTRESS	0.85	0.73	0.6	0.52	0.47	0.39	0.14	0.04	0.12	-0.15	-0.28	-0.31	XKRX:095910

*The trend column in the table reflects a comparison of the current quarter score to the previous one.

MANUFACTURERS	RANKING	TREND	ZONE	SEP23	DEC23	MAR24	JUN24	SEP24	DEC24	MAR25	JUN25	SEP25	DEC25	MAR26	JUN26	LISTING
EGING PV	61	↑	DISTRESS	1.67	1.41	1.35	0.83	0.63	0.38	0.4	-0.83	-0.8	-0.86	-0.94	-0.61	SHSE:600537
MEYER BURGER	62		DISTRESS		-2.65	-3.33	-3.19	-3.45	-3.42	-3.44	-3.48	-3.48	-3.51	-3.51	-3.51	XSWX:MBTN
SOLARTRON	63	↓	DISTRESS	-0.56	-0.56	-0.48	-1.02	-1.15	-1.19	-1.33	-1.54	-1.44	-1.92	-3.63	-3.71	BKK:SOLAR
SPI ENERGY	64		DISTRESS	-4.05	-4.18	-4.07	-4.08	-4.09	-4.09	-4.12	-4.12	-4.12	-4.12	-4.12	-4.12	NAS:SPI

**The trend column in the table reflects a comparison of the current quarter score to the previous one.*

Graph overview

Graph #1 - The latest PV module manufacturers ranking, recorded June 2026

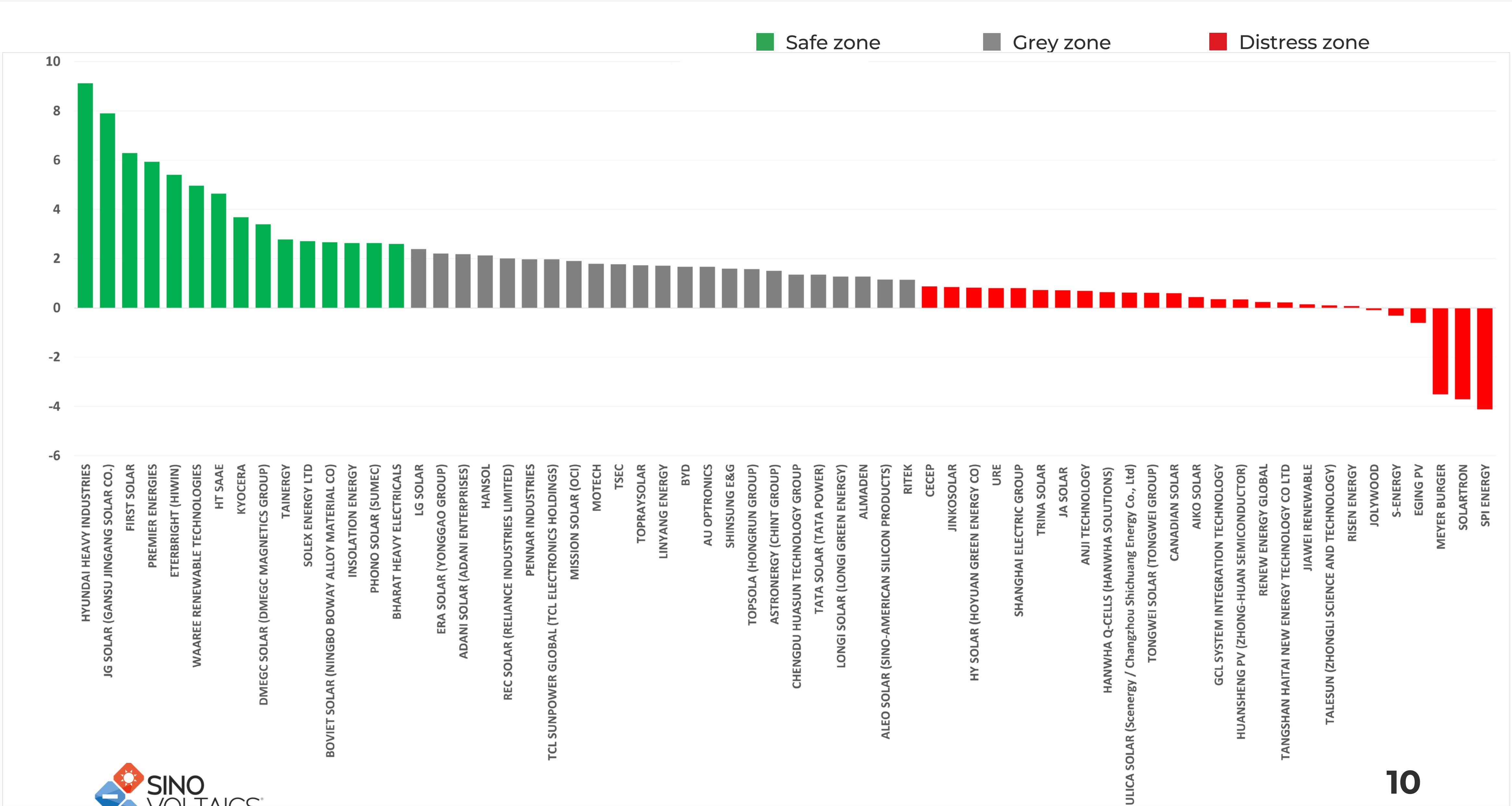
Graph #2 - PV module manufacturers that are currently in the Safe Zone

Graph #3 - PV module manufacturers that are currently in the Grey Zone

Graph #4 - PV module manufacturers that are currently in the Distress Zone

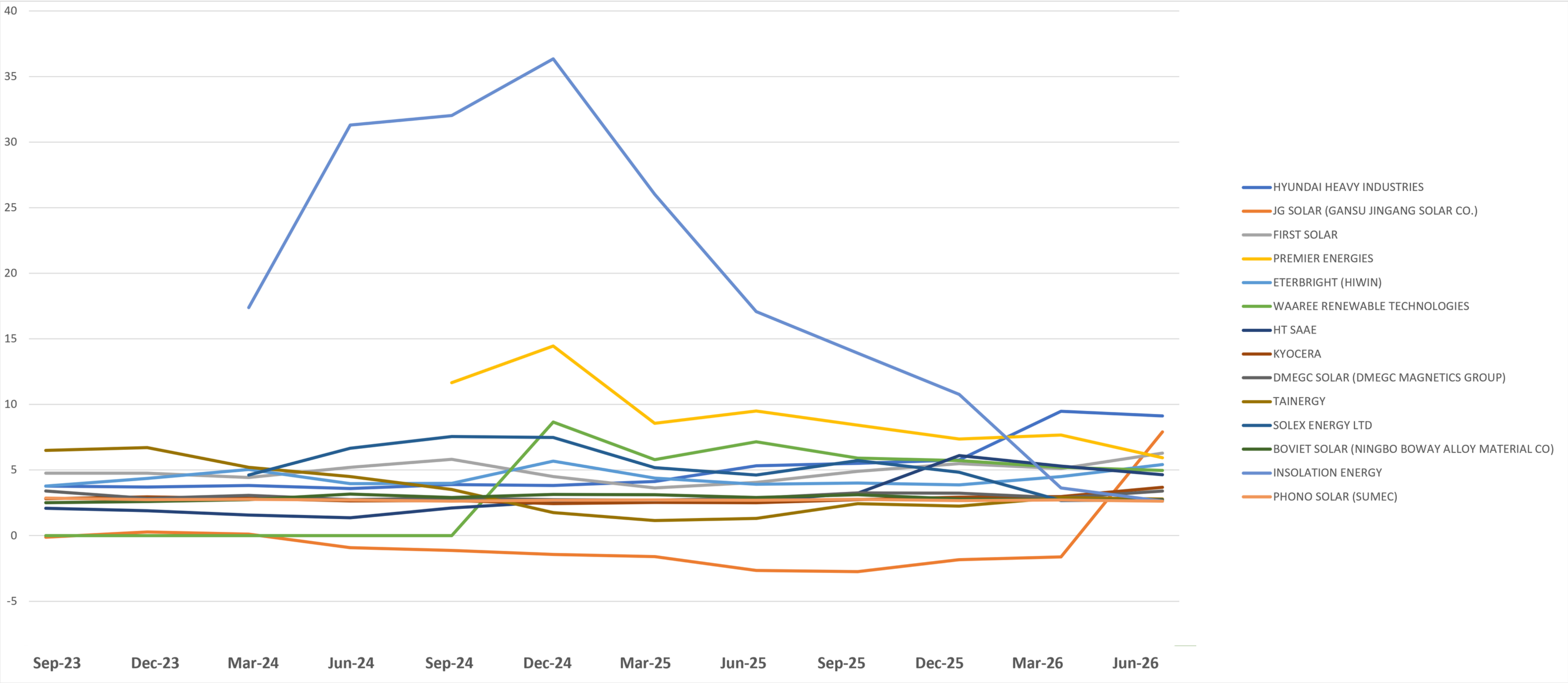
Graph #1 - Full ranking overview of PV Module Manufacturers

Sinovoltaics PV Module Manufacturer Ranking: Edition 3 - 2026



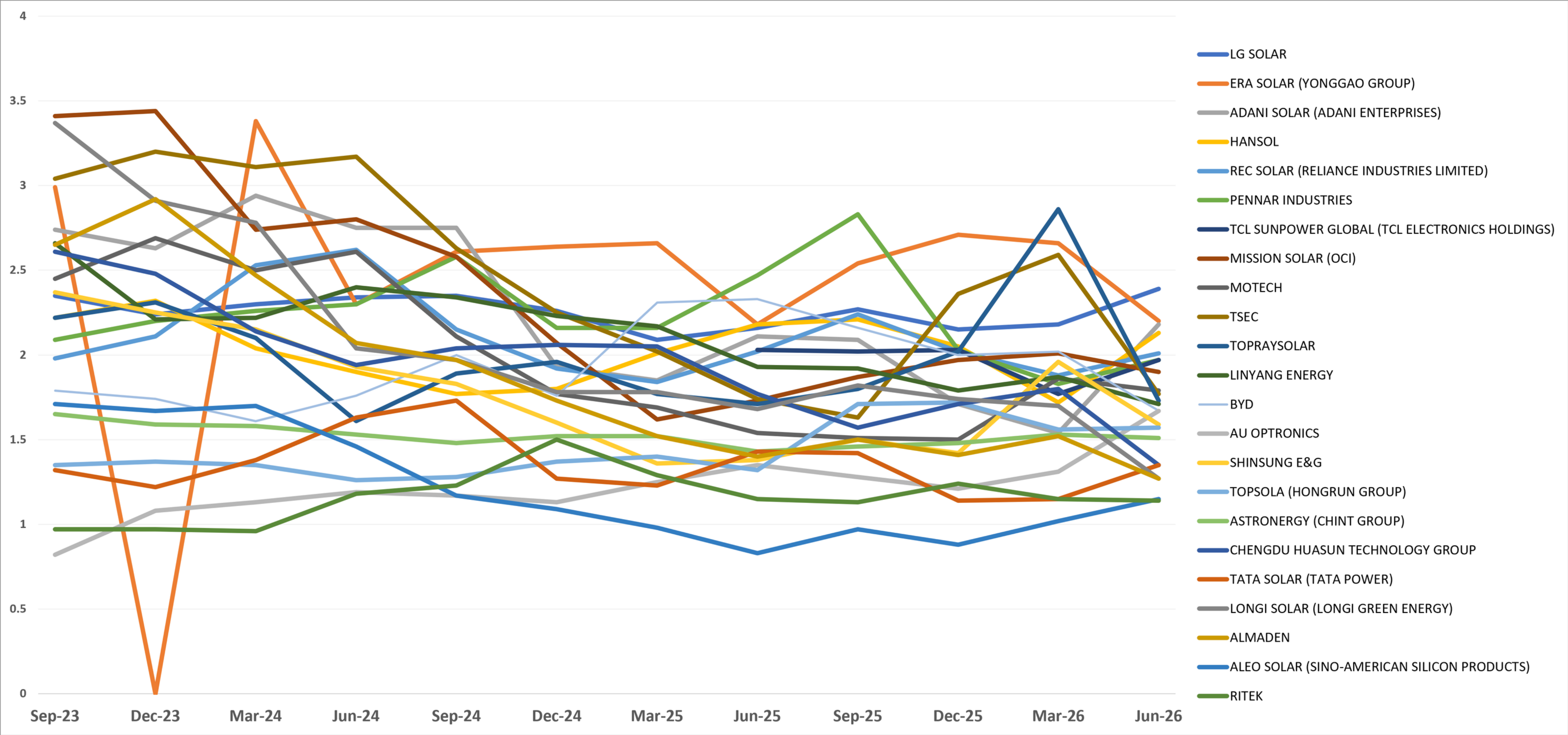
Graph #2 - PV Module Manufacturers - Safe Zone

Sinovoltaics PV Module Manufacturer Ranking: Edition 3 - 2026



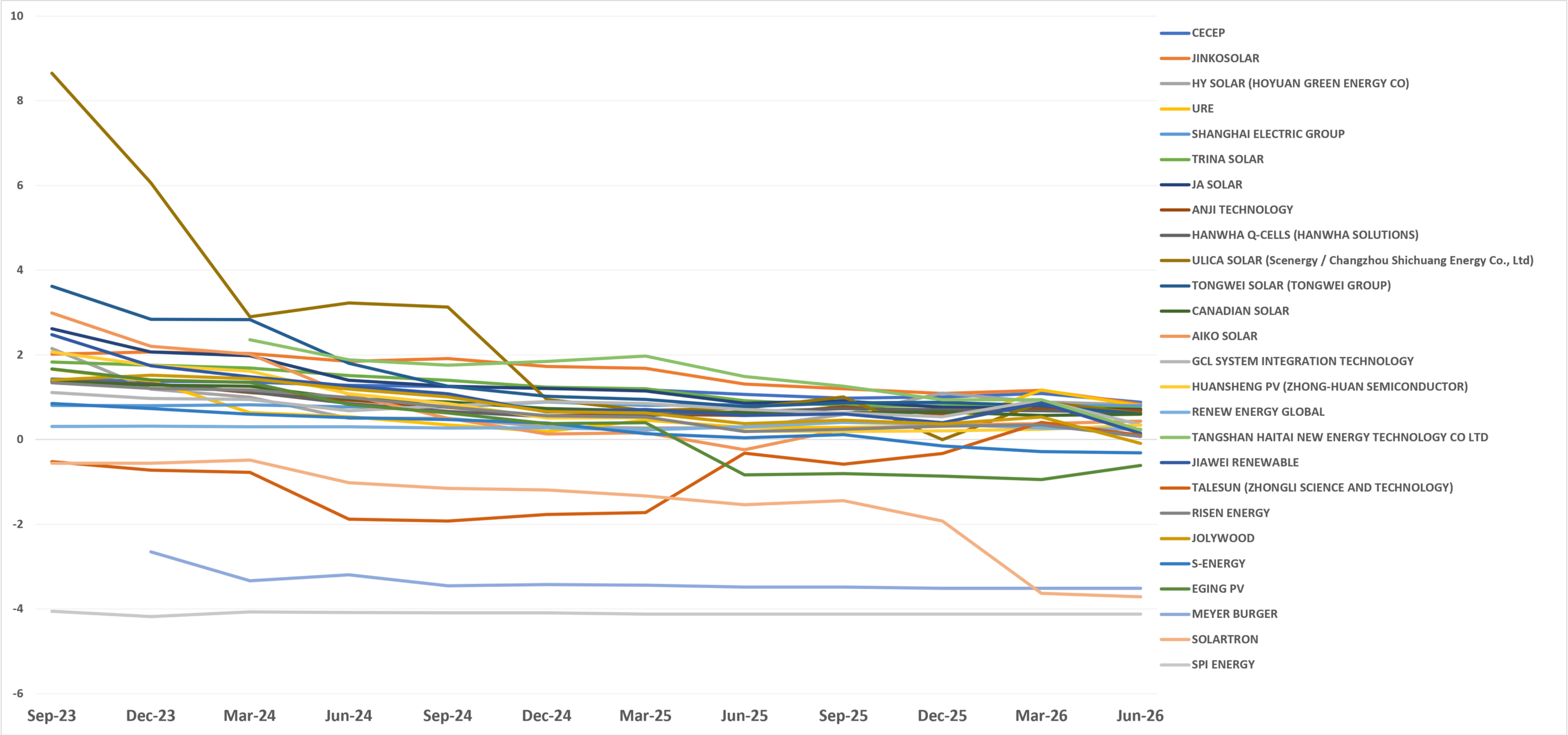
Graph #3 - PV Module Manufacturers - Grey Zone

Sinovoltaics PV Module Manufacturer Ranking: Edition 3 - 2026



Graph #4 - PV Module Manufacturers - Distress Zone

Sinovoltaics PV Module Manufacturer Ranking: Edition 3 - 2026



How is the Sinovoltaics Ranking Score calculated?

The Sinovoltaics PV Manufacturer Ranking Score is based on the Altman Z-Score

$$\text{Altman Z-Score} = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E$$

The original formula is broken down as following:

A	Working Capital/Total Assets: measures liquid assets in relation to the size of the company.
B	Retained Earnings/Total Assets: measures profitability that reflects the company's age and earning power.
C	Earnings Before Interest & Tax/Total Assets: measures operating efficiency apart from tax and leveraging factors. It recognizes operative earnings as being important to long-term viability.
D	Market Value of Equity/Total Liabilities: adds market dimension that can show up security price fluctuation as a possible red flag.
E	Sales/Total Assets: a standard measure for total asset turnover.

How are the Altman Z-Scores interpreted?

The scores are categorized into 3 zones called the Safe Zone, Grey Zone and Distress Zone:

$Z \geq 2.6$	Safe Zone
$1.1 < Z < 2.6$	Grey Zone
$Z \leq 1.1$	Distress Zone

How to interpret companies in the 'SAFE ZONE'?

A manufacturer in the 'Safe Zone' is generally a preferred choice, as it indicates stronger financial health and a lower risk of financial distress. Reviewing the company's Altman Z-Score trend over multiple years provides a more complete picture of its financial stability.

Take **ETERBRIGHT (HIWIN)**, the company has steadily improved its financial position and has now reached the Safe Zone. Here are its Altman Z-Scores over the years:

3.77 On Q3 2023

5.67 on Q4 2024

4.38 on Q1 2025

5.41 on Q2 2026

ETERBRIGHT (HIWIN)

Currently stands at 5.41 (June'26)

The number of PV module manufacturers in the safe zone has **increased to 15, up from 14 in the previous edition**. Based on Altman Z-Scores of 2.6 or higher, this growth signals continued strengthening of the sector's financial health.

DMEGC SOLAR (DMEGC MAGNETICS GROUP), headquartered in Hengdian, Dongyang, Zhejiang, China, recorded an Altman Z-Score of 3.39 as of June 2026. Throughout the reporting period, the company's Altman Z-Score remained consistently above the safe-zone threshold ($AZ \geq 2.6$), ranging from 2.70 to 3.40. Following a slight decline to 2.88 in Q1 2026, the score increased to 3.39 in the latest reporting period.

BHARAT HEAVY ELECTRICALS, headquartered in New Delhi, India, recorded an Altman Z-Score of 2.60 as of June 2026. Although the company's Altman Z-Score fluctuated within the grey zone over the reporting periods, it demonstrated an overall improving trend, reaching the safe-zone threshold ($AZ \geq 2.6$) in June 2026.

DMEGC SOLAR (DMEGC MAGNETICS GROUP)	BHARAT HEAVY ELECTRICALS
3.4 Q3 2023	1.31 Q3 2023
2.73 Q4 2024	1.97 Q4 2024
2.7 Q1 2025	1.9 Q1 2025
3.39 Q2 2026	2.6 Q2 2026

Discover our **ZERO RISK SOLAR & BESS SERVICES**

QUALITY ASSURANCE



PV QUALITY INSPECTIONS

Hire our **PV specialized quality engineers** to inspect your PV components on-site at the factories in Asia.

TEST ALL PV COMPONENTS, INCLUDING:

- Solar modules
- Inverters
- BOS components
- Solar cells
- Energy Storage



FACTORY AUDITS

Make a **fully informed decision** on the factories you're procuring from. Our accredited auditors provide you with **full insights** in the manufacturing capabilities of any PV factory worldwide. Use our **audit scoring card** system to manage and compare your factory selection.

FACTORY AUDITS INCLUDE:

- Pre-manufacturing audit
- General qualification audit
- Factory benchmark
- Factory background check
- Financial audit



LABORATORY TESTING

Thoroughly test your solar PV components at our **accredited PV lab**. Inform about country and climate specific test procedures for your region

A SELECTION OF LAB TESTS:

- Potential Induced Degradation (PID) test
- Light Induced Degradation (LID) test
- EVA gel content test
- Damp heat testing
- Thermal cycling testing



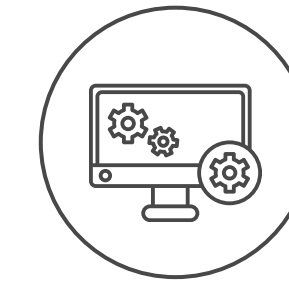
SOLAR FARM INSPECTIONS

On-site solar farm **inspections** and **troubleshooting** worldwide. Assess your existing solar farms and optimize performance.

SOLAR FARM INSPECTIONS INCLUDE:

- Drone infrared thermography
- I-V measurement
- Electroluminescence imaging
- Electrical safety tests
- Commissioning checks

SINOVOLTAICS EL MASS ANALYSIS (SELMA)



Eliminate **micro-cracks** and other cell-inherent defects and boost your solar power plant performance with **Sinovoltaics EL Mass Analysis (SELMA)**, our AI-driven electroluminescence Testing Software.

WHY CHOOSE SELMA FOR EL TESTING?

- Up to 99.9% accuracy
- Inspection of ALL modules (no sampling!)
- High-speed and on-the-fly analysis: avoid delays and easily keep up with the factory's production speed
- Identification and classification of up to 15 cell-inherent defect types
- Replace defective PV modules before shipment

QUALITY GUARANTEE

QUALITY ASSURANCE MEETS INSURANCE:

- With our Quality Guarantee, Sinovoltaics becomes a shared risk partner in our clients' PV projects.
- The Quality Guarantee enables the client to claim Liquidated Damages in case of a valid Warranty Claim with the factory.
- Eligibility: after performing our regular, 100% pre-shipment inspection on the client's PV modules at the factory, the client will be eligible for our Quality Guarantee for 3 years.
- Industry-wide unique protection and based on Sinovoltaics' Zero Risk Solar® framework, the Quality Guarantee is backstopped by Munich Re.



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15+ YEARS

at the
factories in Asia

10GWh+

Zero Risk
BESS projects

26GWp+

Zero Risk
Solar projects

350+

PV & BESS
Factories Audited