



SUNOVA SOLAR

Pv Tech Expert.

TIER 1

BloombergNEF

Company Introduction

14.03.2024

Vision & Mission



Vision

- Our vision is to become a dedicated market player in distributed PV plants by building Sunova Solar into a leading one-stop technical solutions provider globally.
- We are committed to fair and socially responsible working standards and are working towards carbon neutrality as we aim to becoming the world's leading green energy supplier in the PV business.

Mission

- We aim to become the most user-centric energy enterprise.

About
SUNOVA SOLAR

www.sunova-solar.com

Company Profile



5.5GW

4.5GW

4.3GW

9GW

10+

20+

100+

Global Module
Capacity

Under
Construction

Global
Accumulative
Shipment

Cell Capacity

Global Sales &
Service Offices

Shipping
Countries

Global
Partners

Milestone



Sunova Solar Technology Co., Ltd



200 MW production line



Expand production capacity



Sunova Group AUS PTY LTD



Brazilian branch



Signing contracts with insurance companies



Vietnam factory



Signing contracts with Munich RE



YIBIN Cell Factory

2016

2017

2018

2019

2021

2022

2023

2024

- Sunova Solar Technology Co., Ltd founded in Wuxi, China.
- Setting up 1st 200 MW production facility.
- Sunova Group AUS PTY LTD founded in Australia.

- Sunova set up the second 200 MW production line.
- Production capacity expanded to 1 GW.
- The annual cumulative shipment reached to 2 GW.
- Sign with PINGAN, Ariel-Re and LLYOD'S.

- Production capacity expanded to 1 GW.
- The annual cumulative shipment reached to 2 GW.
- Sign with PINGAN, Ariel-Re and LLYOD'S.

- Produced TOPCON modules and expanded to 2.5 GW capacity..
- Expanding 1.5 GW production capacity in Vietnam factory.

- Became BNEF Tier 1 player
- Building warehouses in Rotterdam / Itaja / Milan.
- Signed performance guarantee insurance with Munich RE.

- Set up 1GW differentiated product line.
- Expand 9GW cell capacity.
- Started construction of new HQ at Wuxi Yanqiao

WUXI Factory 4 GW Modules

800+ EMPLOYEES



Vietnam Factory 1.5 GW Modules

200+ EMPLOYEES



Sichuan Yibin Cell Factory

Cell capacity: 9GW





Wuxi Yanqiao Factory Global Headquarter Base



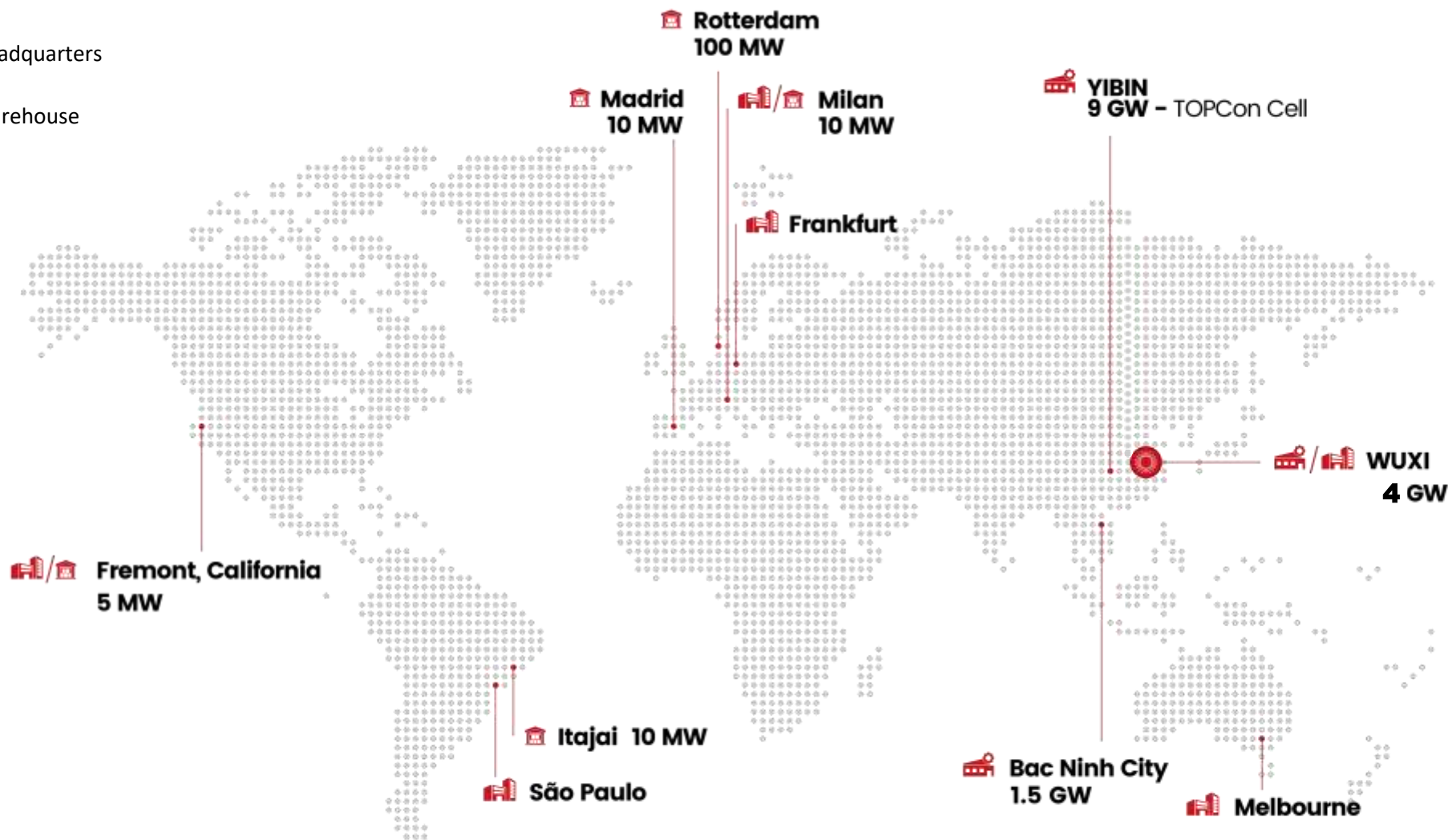
Under
Construction

Global Networking

 Regional headquarters

 Regional warehouse

 Factory



Integrated Industrial Chain

www.sunova-solar.com

Production Process - Cell

Advanced Technology:

A Mutually Beneficial Situation of Cost Reduction and Efficiency Improvement.

Why TOPCon?

01 Investment Economics:

- More advanced technological processes
- Improved key equipment
- The investment economics of the current technology are more pronounced.

03 Cost Reduction:

- Use of thinner wafer $\leq 130\mu\text{m}$
- Further cost reduction through optimization of BOM
- Can increase the potential for cost reduction.

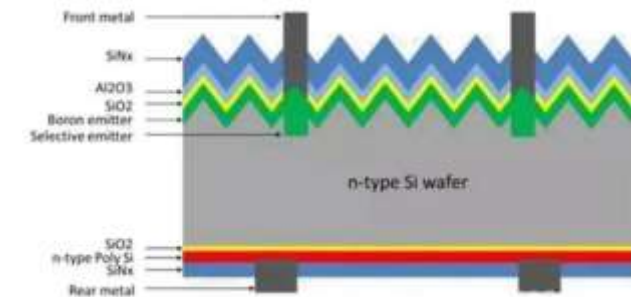
02 Significant Power Generation:

- Mass production cell conversion efficiency $> 26\%$.
- First-year degradation rate is $\leq 1\%$, and annual degradation is $\leq 0.4\%$.
- Bifacial rate of up to 85%.
- Increased power generation.

04 Great Potential for Improvement:

- Can be combined with x BC and other platform technologies.
- Theoretical efficiency of 28.7%.
- Has vast room for expansion and development potential

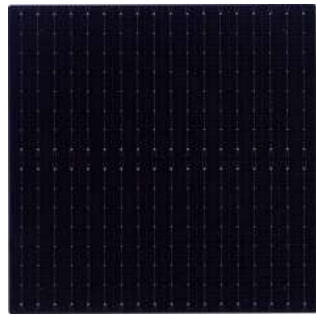
Introduction of TOPCon Technology



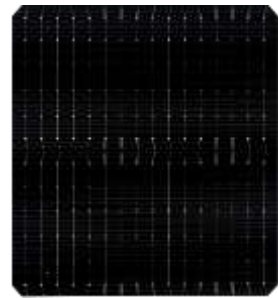
Tunnel Oxide Passivated Contact Cell

Production Process - Cell

High-Efficiency Cell Products: Reliable and Stable Power Guarantee



210*210 mm



182*199 mm



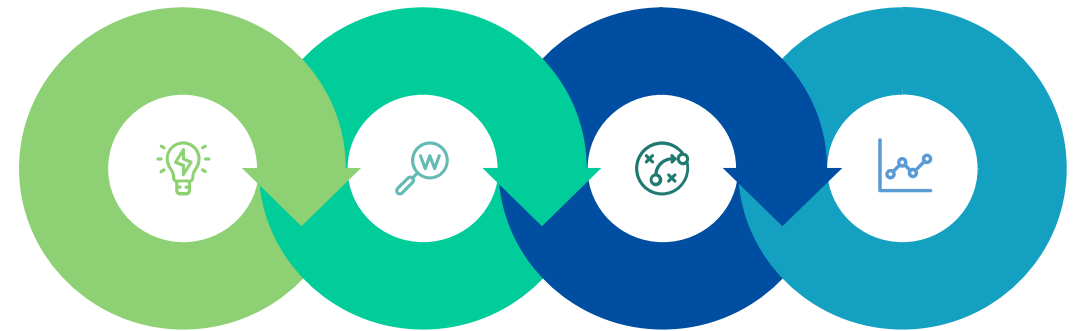
182.2*191.6 mm



182.2*182.2 mm



182.2*183.75 mm



Higher
conversion
efficiency

Better low
irradiation
response

Lower
temperature
coefficient

Lower
LID

Mass Production efficiency **25.6%**

High Efficiency N-Type Module

Maximum Power ▶
705W

Higher Bifacial Rate ▶
Up to 85%

Better Temperature Coefficient ▶
Power temperature coefficient
(-0.30% -> -0.28%)

Linear Power Guarantee ▶
30 years



◀ **Highest Efficiency**
22.7%

◀ **Size**
Cell Size : 210 * 210 mm
Module Size : 2384 * 1303 * 35 mm

◀ **Lower Power Degradation:**
First-year degradation $\leq 1\%$,
Annual degradation $\leq 0.4\%$

◀ **Improved Low Irradiation Response**
Excellent long and short-wave spectral response
ensures continuous power generation

Sunova N-Type Series: **Tangra™**



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Bifacial technology enables additional energy harvesting from rear side. (up to 30%)



Excellent low irradiance performance.



Optimized electrical design and lower operating current for reduced hot spot loss and better temperature coefficient.



30 years lifespan brings 10-30% additional power generation comparing with conventional P-type module.



Better light trapping and current collection to improve module power output and reliability.



Certified to withstand: wind load (2400 Pa) and snow load (5400 Pa).



N-type solar cell has no LID naturally which can increase power generation.



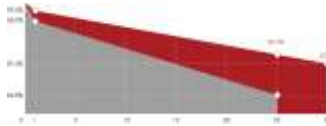
Industry leading lowest thermal co-efficient of power.



100% triple EL test enabling remarkable reduction of hidden crack rate of modules.

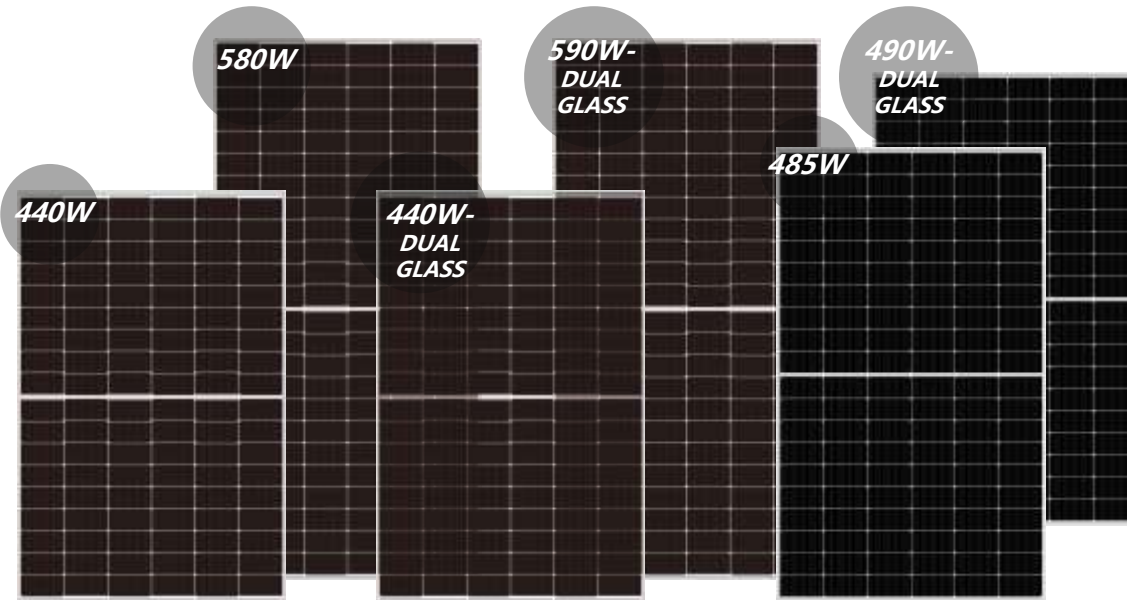
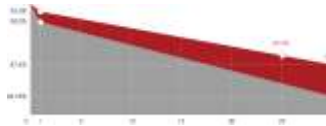
Half-Cell Mono Module

Standard Module Linear Performance Warranty
SUNOVA N-type High Efficiency Half-Cell Mono Module Linear Performance Warranty



Bifacial Dual Glass Module

Standard Module Linear Performance Warranty
SUNOVA N-type Bifacial Double Glass Module Linear Performance Warranty



15 years Product quality & process guarantee
30 years Linear power guarantee
0.40% Annual Degradation



S

- Tangra S (420-440) 54MDH
- Tangra S Pro (420-440) 54MDH
- Tangra S Pro Alpine (420-440)-54MDH
- Tangra S Pro Black (420-440)-54MDH
- Tangra S (465-485) 60MDH
- Tangra S Pro (470-490) 60MDH

M

- Tangra M (510-530) 66MDH
- Tangra M Pro (520-540) 66MDH
- Tangra M (560-580) 72MDH
- Tangra M Pro (570-590) 72MDH

L

- Tangra L (610-630) 78MDH
- Tangra L Pro (600-615) 78MDH
- Tangra L Pro (620-640) 60MDH G12(T)
- Tangra L Pro (680-705) 66MDH G12(T)



N-Type Series: **Tangra™ HD**



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182x186mm

S

Tangra S HD (425-445)-54MDH
Tangra S HD Black (425-445)-54MDH
Tangra S Pro HD (425-445)-54MDH

182x191.6mm

S

Tangra S HD (445-465)-54MDH-G10
Tangra S Pro HD (445-460)-54MDH-G10

M

Tangra M HD (495-515)-60MDH-G10
Tangra M Pro HD (495-510)-60MDH-G10
Tangra M HD (545-565)-66MDH-G10
Tangra M Pro HD (545-560)-66MDH-G10

L

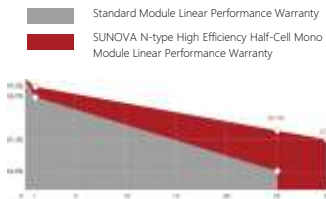
Tangra L HD (600-620) 72MDH-G10
Tangra L Pro HD (595-615) 72MDH-G10

182x199mm

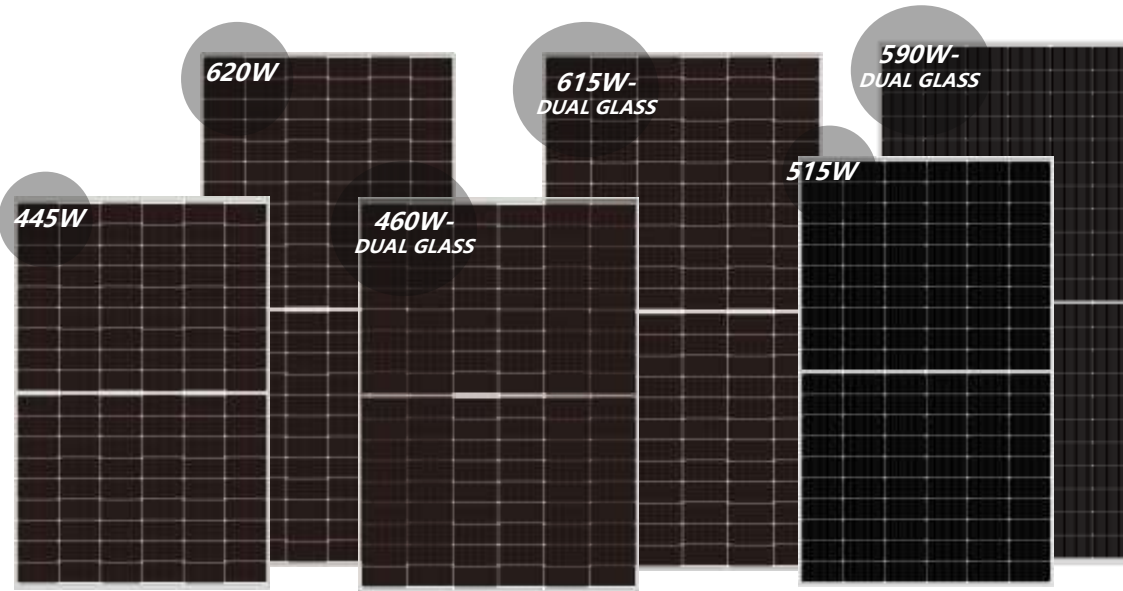
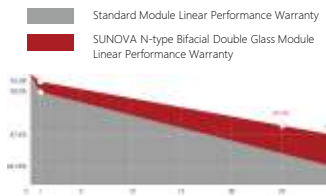
M

Tangra M Pro HD (565-590)-66MDH-G13

Half-Cell Mono Module



Bifacial Dual Glass Module



15 years Product quality & process guarantee
30 years Linear power guarantee
0.40% Annual Degradation



Certification & Warranty



COMPREHENSIVE CERTIFICATES



IEC61215/IEC61730/IEC61701/IEC62716/
IEC62804/IEC60068/UL61730

- ISO 9001: Quality Management System
- ISO 14001: Environmental Management System Standard
- ISO 45001: International Occupational Health and Safety Assessment System Standard
- SA 8000: 2014 Social Accountability Management System

PERFORMANCE INSURANCE



Sunova's Product Introduction



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Why choose
SUNOVA

www.sunova-solar.com

BloombergNEF Tier 1

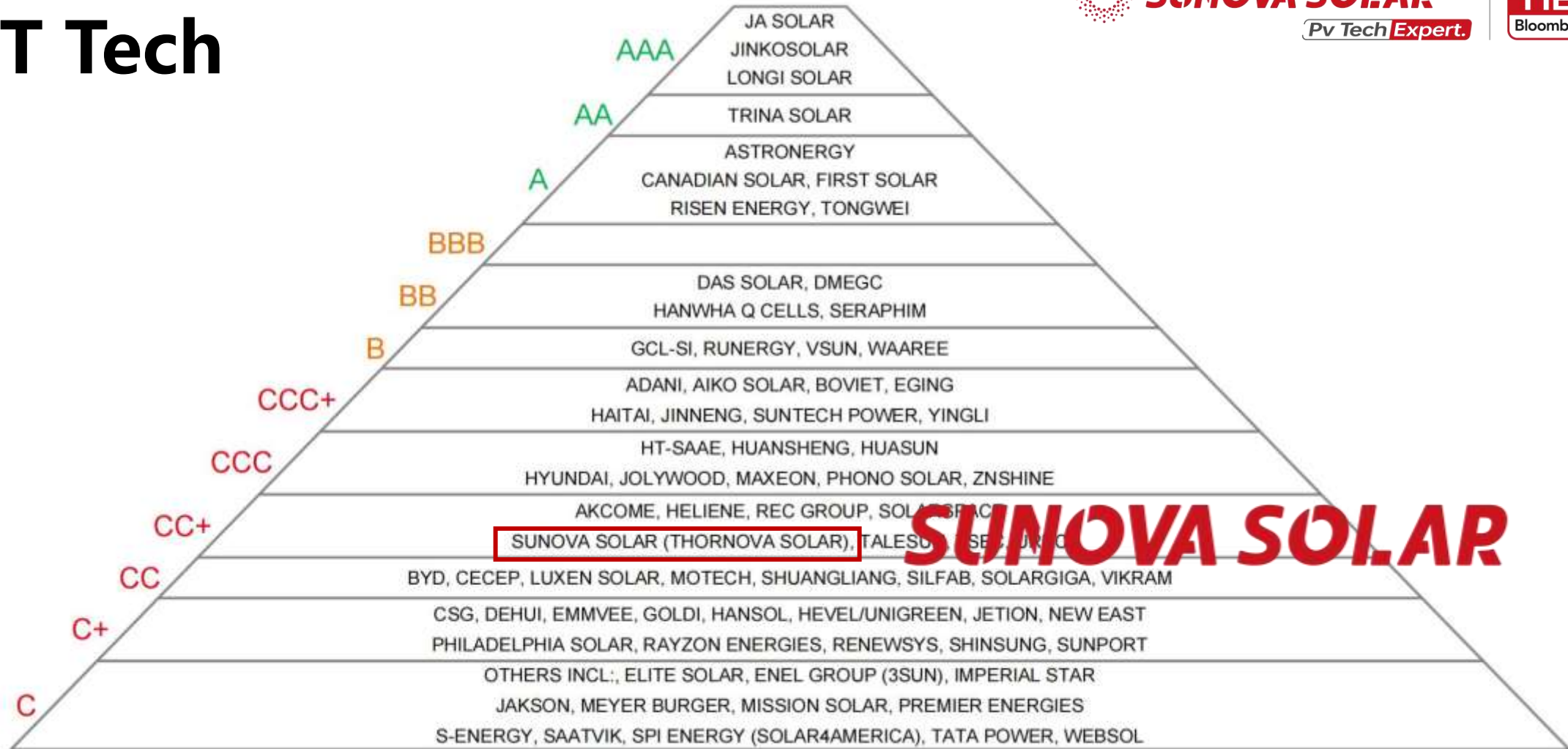


Table 4: PV module manufacturers meeting BNEF's Tier 1 criteria as of 1Q 2024

Firm/brand	Annual module capacity, MW/year	Firm/brand	Annual module capacity, MW/year
Sunova Solar/ Thomova*	5,500		

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](#).

PT Tech



Provisional End Q4'23 Ratings: subject to changes post company reporting & PV-Tech in-house data refreshes.

Stable Finance



Excellent company financial condition

- The company's assets are in good condition and its operations are stable.
- Without the historical burden of outdated photovoltaic capacity, it has developed rapidly

Stable Cooperation with Bank and Government

- Significant projects receive policy and financial support from the local government.
- Collaboration with major banks and financial institutions in order to form strategic partnerships

Sustainable Financing Capacity

- Diverse Financing Methods
- Flexible and Efficient Financing Projects

Sustainable Development

Awarded the title of Green Factory



Sustainable Development

ESG REPORT

Certificate Authority



Acquisition Time
December 2023



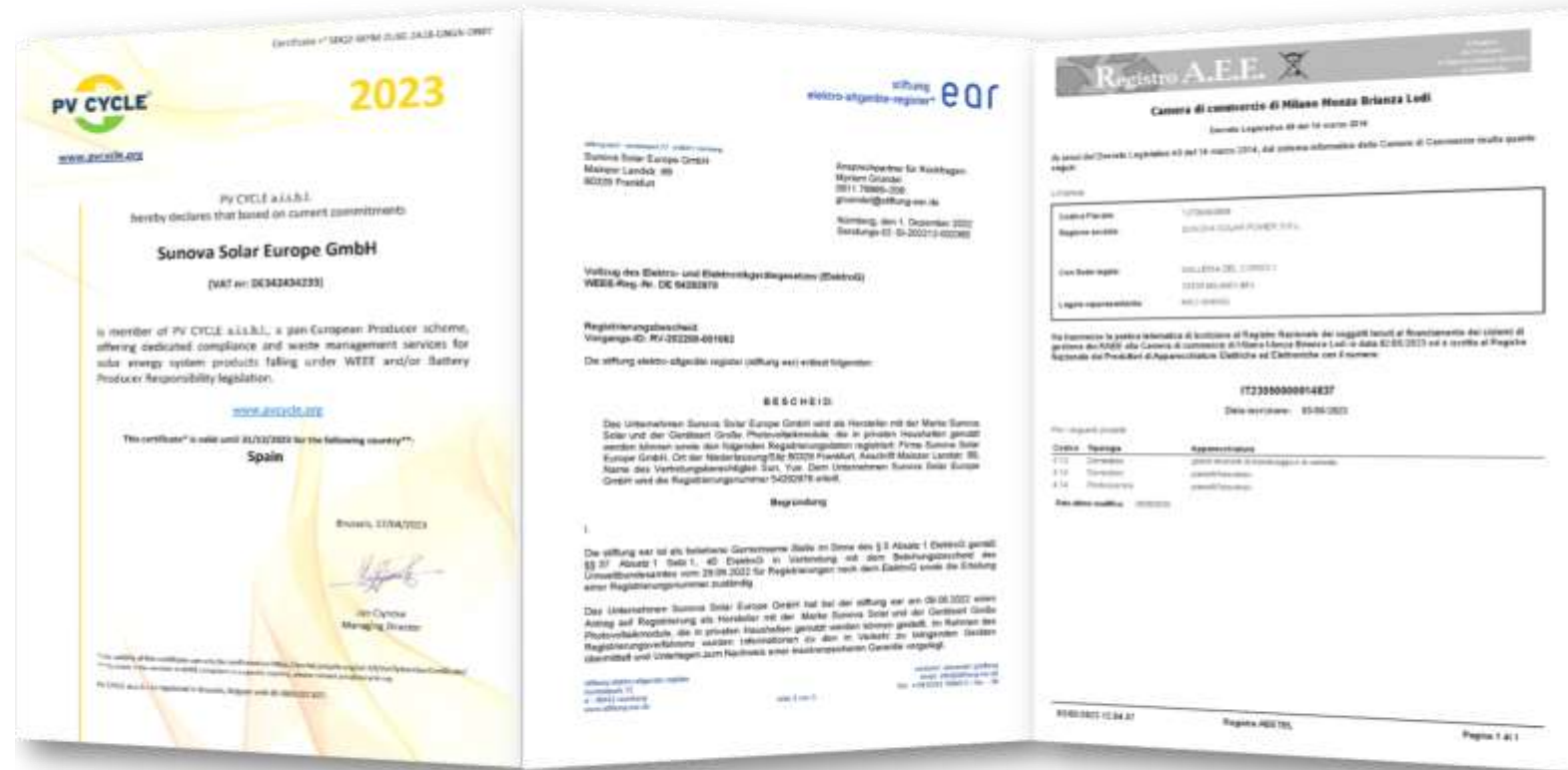
Sustainable Development



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PV CYCLE

WEEB

A.E.E.

Anti-Forced Labour

SocialAccountability8000 (SA8000)



SUNOVA SOLAR ANTI-FORCED LABOR DECLARATION

Here, in Sunova Solar Technology Co., Ltd, human rights are always a top priority for us. We have a zero-tolerance policy for human trafficking or slavery. For whom works at or with Sunova Solar, we are committed to treating everyone with respect, and takes seriously and fully supports national and international efforts to end any forms or kinds of modern slavery, servitude, forced or compulsory labor, and human trafficking in any places.

As always, Sunova Solar strictly follows the "ISO 45001 occupational health and safety management system", we devoted in being a company that provides our employees with a free, fair and just platform for self-growth, and strive to transmit the highest moral, ethical and legal values to the public; Besides, we devoted in fair recruitment, promotion and compensation; illegal forced labor and child labor are prohibited.

At the same time, we opposed resolutely to discriminate on the basis of race, color, religion, gender identity, sexual orientation, national origin, age, disability or genetic information.

This commitment also extends to the use of any factory or sub-vendors who make or assemble Sunova Solar products.

We are **not** using below companies' poly silicon in Sunova Solar cells and modules production.

- Hoshine Silicon Industry (Shanshan) Co., Ltd
- Xinjiang Daqo New Energy Co., Ltd
- Xinjiang East Hope Nonferrous Metals Co., Ltd
- Xinjiang GCL New Energy Materials Technology Co., Ltd
- Xinjiang Production and Construction Corps (XPCC)

Wuxi, China, Oct 8, 2023



Participating Association

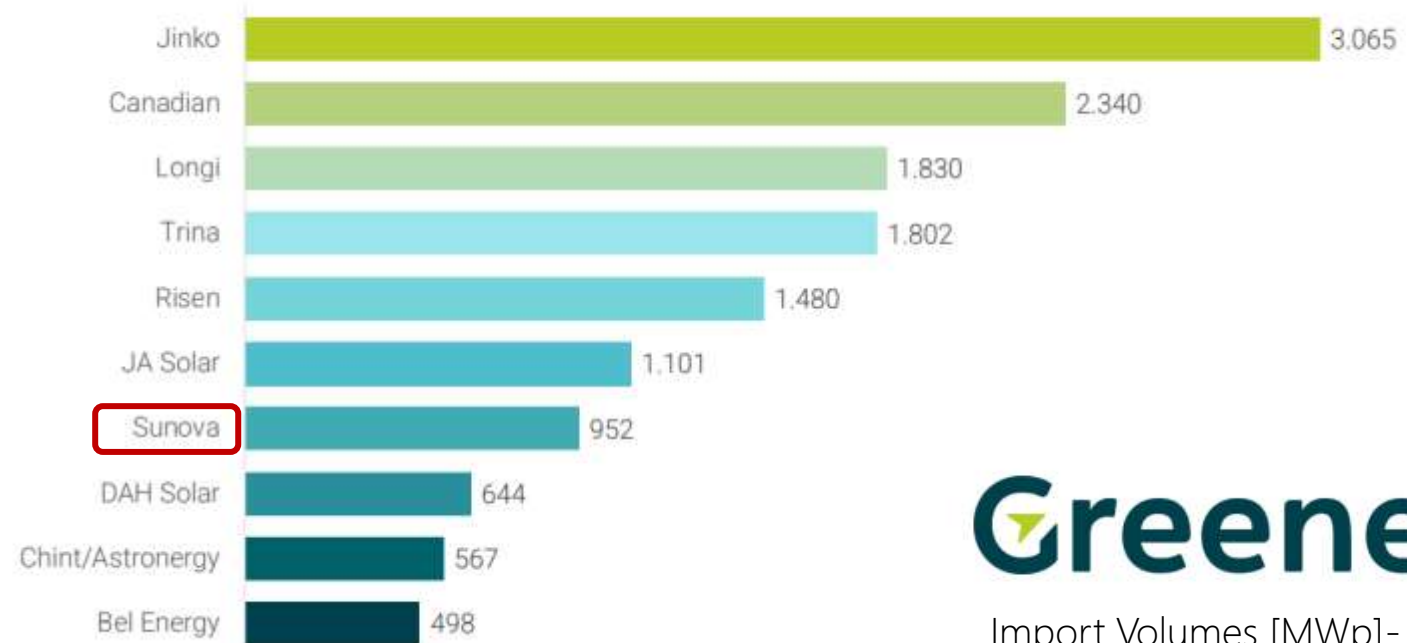


South American Market Greener Report

Of the 71 module brands for Brazil, the top 10 accounted for 81% of the total import volumes.

10 most remembered

1. Canadian Solar
2. Jinko
3. JA Solar
4. DAH Solar
5. Sunova Solar
6. Trina Solar
7. ZNShine
8. LONGi
9. Ulica Solar
10. Risen Solar





Import Volumes [MWp]- 2022

More flexible, customer-centric business support



Spare modules

Any project > 10MW, Sunova will keep 5% of original delivery modules in nearby warehouse as spare modules



Payment Bond

Company guarantee/ Bank guarantee/ Letter of Credit



Flexible Payment Solutions:

OA (Sinosure, tradewind etc) / Letter of Credit/ Confirming

C&I Project References

www.sunova-solar.com

Project References



1.5 MW / 410 W

Neuhausen, Germany

Project References



900 kW / 450 W

Czech

Project References



990 kW / 550 W

Madrid, Spain

Project References



500 kW / 410 W

Sweden

Project References



300 kW / 410 W

Germany

Project References



300 kW / 410 W

San Simon, Philippines

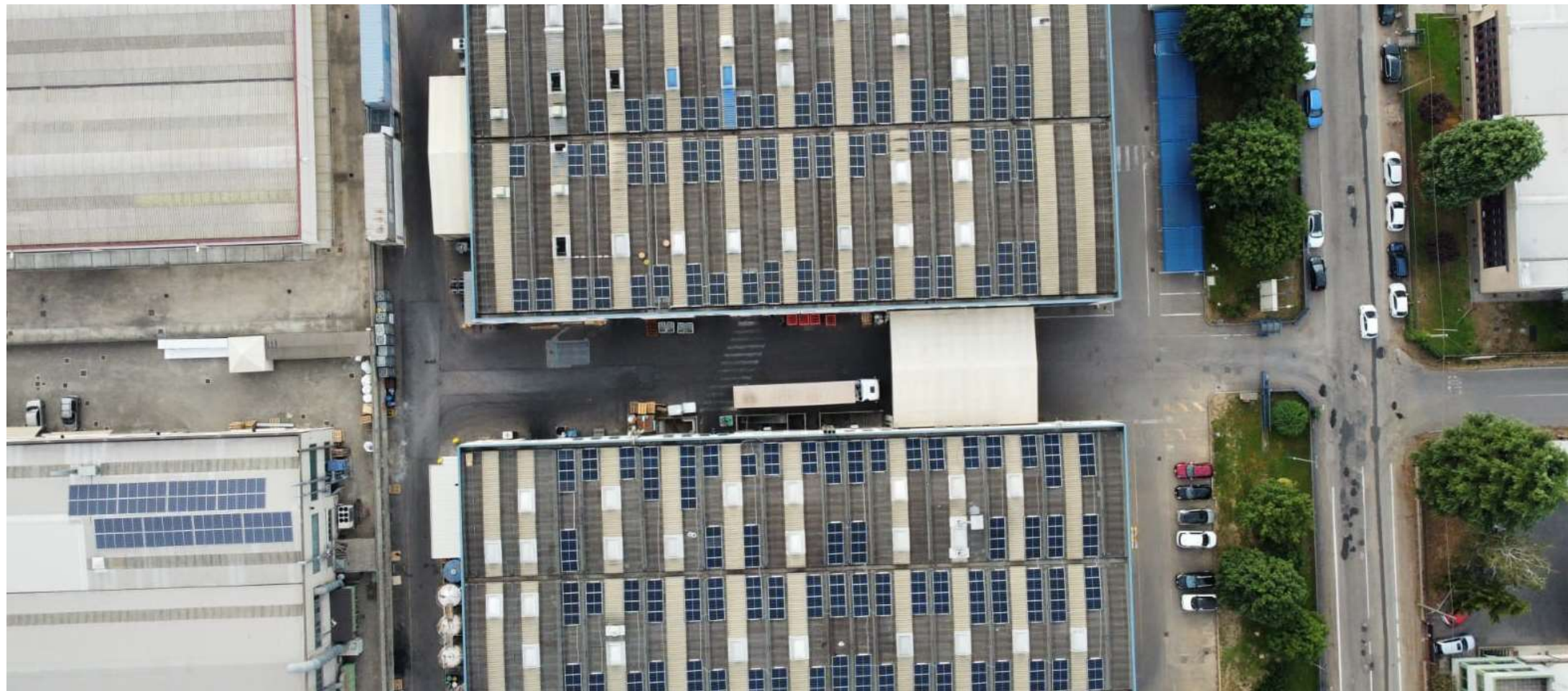
Project References



220.14 kW

Germany

Project References



200 kW

Italy

Project References



107.8 kW / 550 W

Elias Fausto – São Paulo, Brazil

Utility Project References

www.sunova-solar.com

Project References

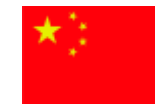


Module: **Zosma™ M 550**

 **中国华能集团有限公司**
CHINA HUANENG GROUP CO., LTD.

300 MW

Liaoning · China



Project References



Module: Zosma™ M 545

Powerfield

Financial Bank

LB≡BW & Rabobank

122 MW

Wolvega, The Netherlands



Project References



12 MW

Calarasi County, Romania



Project References



Module: Tangra™ L Pro 615



Financial Bank

Crédit Mutuel
ARKEA
DE NOUVEAUX LIENS POUR CHANGER DEMAIN

80 MW

40090 Uchacq et Parentis, France



Project References



Module: **Tangra™ L Pro 690**



Financial
Bank



9.99 MW

92026 Favara Sicilia, Italy



Project References



Module: **Tangra™ M 575**



Financial
Bank



6.28 MW

Município de Erval Seco RS



Project References



Module: Zosma™ M 550



Financial Bank



5.17 MW

São Paulo, SP, Brazil



Project References



Module: **Tangra™ M Pro 570**

5.63MW

Gegharkunik province, Armenia



Project References



6.7 MW

Vauxhaul, Alberta, Canada



Project References



5.34 MW

2.190 Greycourt Rd, Chester, NY 10918, US





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言出必行

Make It Happen

www.sunova-solar.com