

Vertex N

FULLY UPGRADED

700W⁺

FUTURE FORWARD



The Way to Lower LCOE

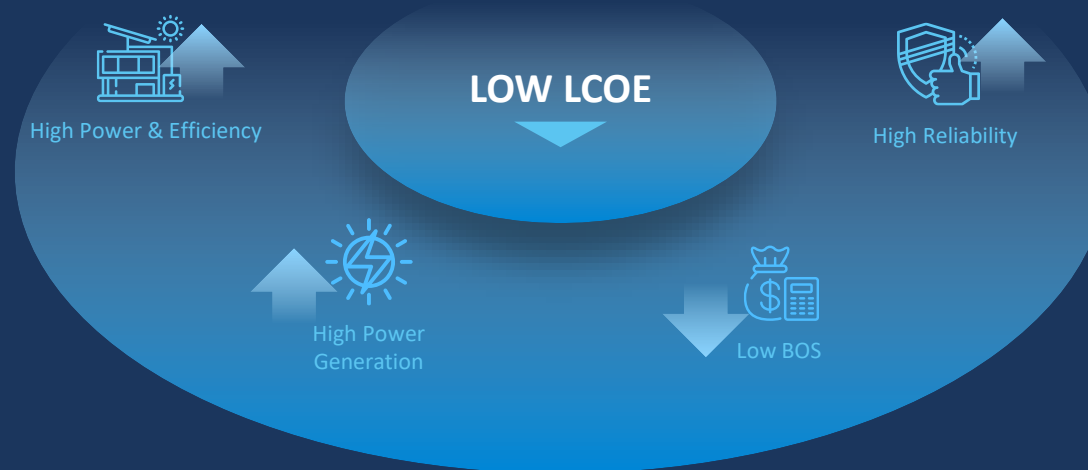
LCOE

Levelized cost of energy

$$\text{LCOE} = \frac{\text{Total cost}}{\text{Total power generation}} = \frac{\text{Initial investment} - \text{Equipment salvage value} + \text{Operating expense} + \text{Interest}}{\text{Total power generation within lifecycle}}$$

- Module price(Supply chain)
- BOS (Higher power, Higher efficiency)

- Higher power generation (Kwh/kw)
- Longer module lifecycle (High reliability)

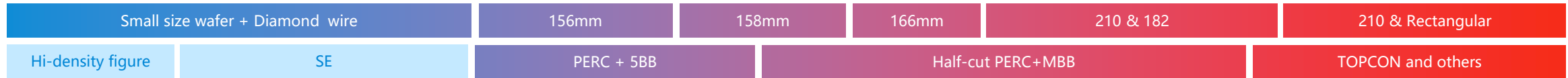


- Low voltage design + Higher power & efficiency -> Higher string power -> Saving on BOS (Investment)
- Lower Temperature Coefficient + Lower Power Degradation -> Higher power generation
- High Reliability -> stable high performance in the 30 years

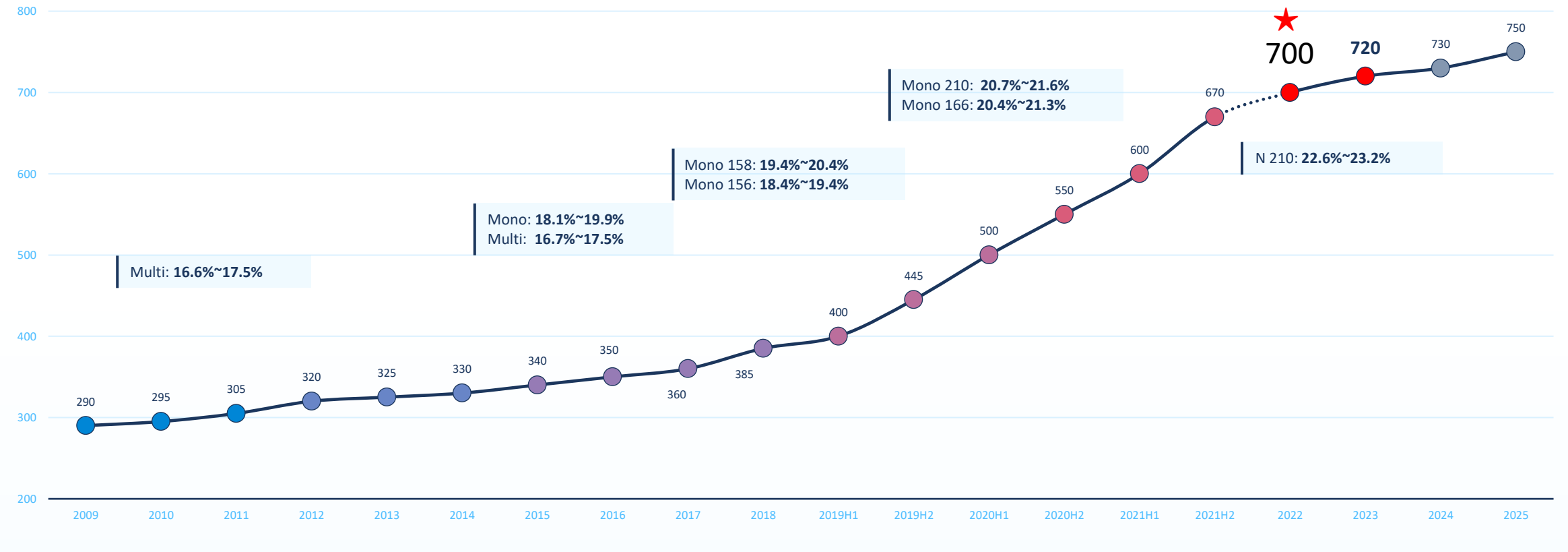
A Milestone in the PV Industry's Development

Trina Solar leads the commercialization of multiple key technologies:

Selective emitters, PERC, TOPCon, dual-glass, MBB, high density packaging, rectangular cells, etc., driving innovative development in the industry.



Module Power/Wp



Pioneer to Launch 700W+ TOPCon Modules in the Industry

May 2023

Global Launch of new generation i-TOPCon Advanced technology

August 2023

Officially announced mass production of Vertex N 700W+ TOPCon modules

December 2023

Vertex N 700W+ surged to 720W due to Upgrade of i-TOPCon Advanced technology

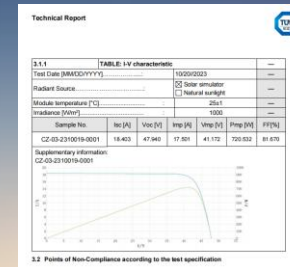
Vertex N 700W+

Trina Solar takes lead in the

N

ERA OF SOLAR ENERGY

TUV Certified



Vertex N

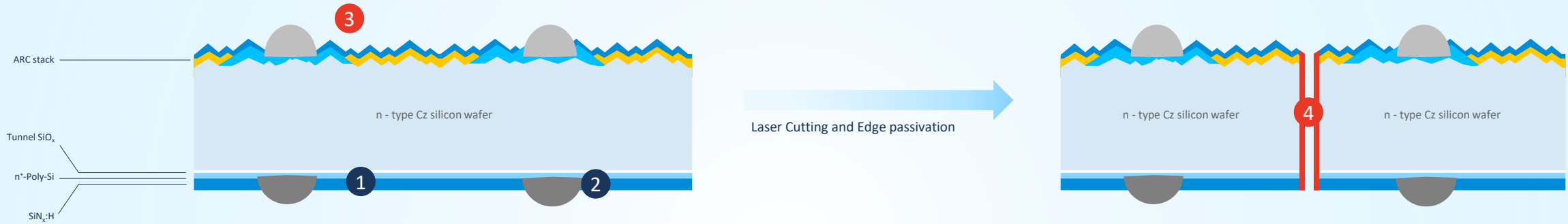
Trinasolar

NEW WORLD RECORD

740.6W

700W⁺ NEW ERA
**INNOVATE
BEYOND LIMITS!**





1

Rear planar reflector

25% increase in internal dorsal reflectance

2

Highly low rear TOPCon structure

PECVD, doping concentration up to $6 \times 10^{20} \text{cm}^{-3}$,

2-3 times higher than regular LPCVD

3

Laser induced Firing

Cell Efficiency **0.3%+** Voc improve **7 mV+**

4

Edge Passivation Technology

Cell efficiency improve **0.15-0.2%**

210+N

VERTEX DNA

210

Innovative Technology Platform

210/210R

Most advanced wafer products in mass production



Half-cut technology

High shadow tolerance and reduced risk of hot spots



Non-destructive cutting

Lower risk of hidden cracks, higher product reliability



MBB (multi-busbar)

Perfect balance of efficiency and reliability



High density packaging

Reduced risk of hidden cracks, higher reliability



N

Trinasolar i-TOPCon



i-TOPCon Advanced technology upgrade drives continuous efficiency improvement.

Laser induced Firing , Rear planar reflector, Highly low rear TOPCon structure, Edge Passivation Technology



TOPCon core patent group, globally Risk-free

Stand at the forefront of the industry with over a hundred patents in the TOPCon field.

Leading Performance & Continuous Advancement

720W High Power

23.2% High efficiency

Voc 49.4V, Imp 17.44A

30 years Power warranty

80%±5 High bifaciality

Lower temperature coefficient -
0.29%/°C

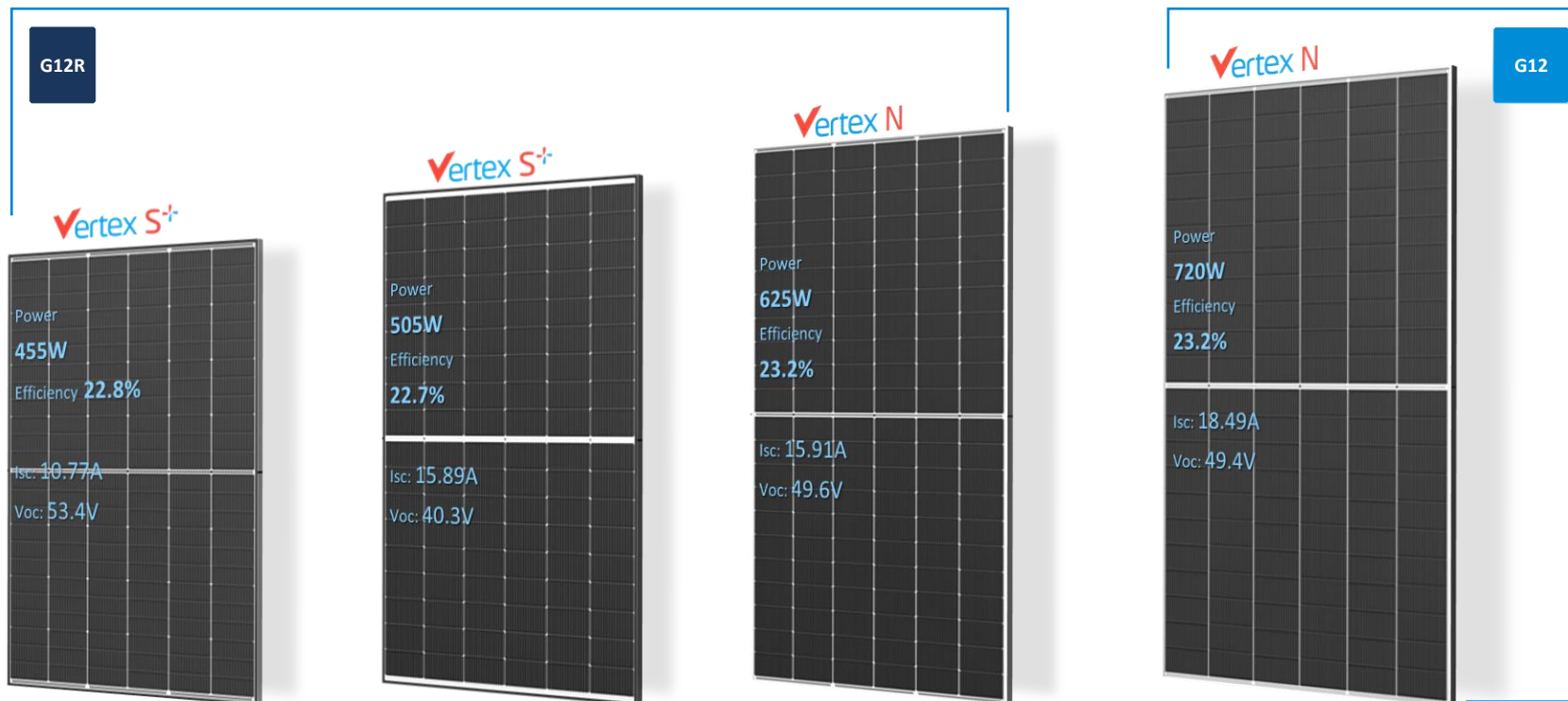
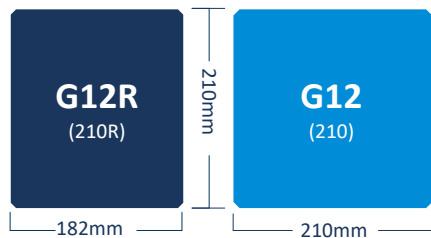
Module Size: 2384*1303*33mm
Module Weight: 38.3kg

Excellent low irradiance
performance

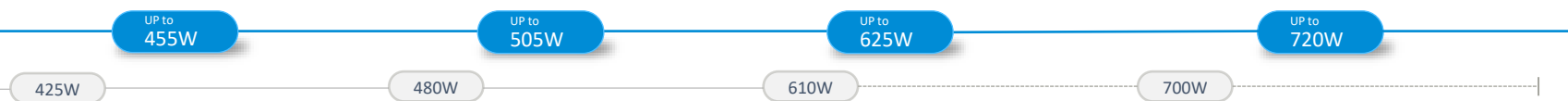
Anti-PID

Lower degradation, 1% first year degradation,
0.4% annual power attenuation

210N All Scenarios Vertex Family



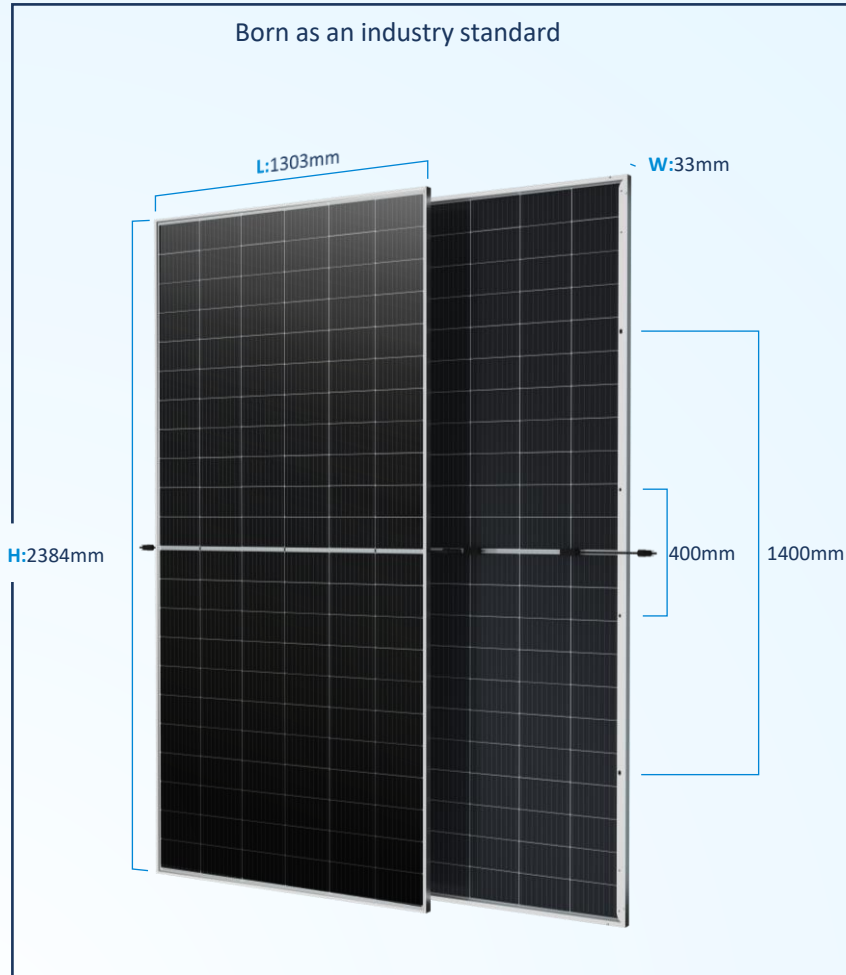
N-type industry average level



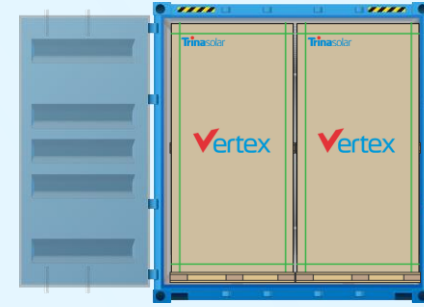
- Small format module: **2m² extreme design** , leading power and efficiency.
- Medium format module: excellent installation and electrical compatibility, **best partner for tracker**.
- Large format module: ultra high power, **“designed for optimal LCOE”**.

Golden-sized exterior design

Born as an industry standard



Nearly **98%**
Container utilization



Product Name	Vertex N	182-78pcs N
Module Size (mm)	2384x1303x33	2465x1134x30
Module Design	210-66 half cut cell 2+2 bifacial dual glass	182 half cut glass Bifacial
Cell Technology	i-TOPCon advanced	182 TOPCon
Module Power	720W (+13.9%)	620W (BL)
Container Utilization Rate	97.6%	81.4%
Container capacity/power	594 pcs = 427,680(+16.5%)	576 pcs = 357,120(BL)

Vertex N 700W⁺ Compatible with Mainstream Inverters



Commercial and Industry Roof

610W or 710W Vertex + String Inverter



Hundreds MW Utility

710W Vertex N + Central Inverter



Mountain and Hilly Land Utility

Medium size 610W Vertex + String Inverter

700W⁺

Industry Consensus to Build 700W+ Ecosystem

As a major player in solar industry, Trina Solar joined hands with industry partners to accelerate the industrialization of 700W+ and elevate the industry ecosystem.



Trinasolar i-TOPCon Technology Roadmap >>>>

2015-2019

i-TOPCon

- In 2015, Base on Trina Solar's State Key Laboratory of Photovoltaic Science and Technology(PVST), i-TOPCon Lab was established.
- Innovative hydrogen passivation
- Wafer size 158.75mm×158.75 mm
- Cell efficiency 23.07% (JET certificate) 24.58% (ISFH certificate) mass production efficiency 23.2%
- 500 MW mass production line



2019.12 250MW
Tongchuan 'Top Runner'
technical leader project

2019.6.30 250MW
Changzhi 'Top Runner'
technical leader project

- The first TOPCon Cell World Record in China, 23.5% (2019)

2020-2022

i-TOPCon Plus

- Wafer size: 210mm×210mm+ 18BB
- 500 MW TOPCon pilot line
- Average production cell efficiency 24.5%
- Cell efficiency 25.15% (ISFH certificate)



Vertex S in Europe

2020.9.30 137MW
Yellow River hydropower in Qinghai

- Cell efficiency record
- 25.25% (2022/2, ISFH certificate)
- 25.42% (2022/3, ISFH certificate)
- 25.5% (2022/3, China National Metrology Institute certificate)

2023-2024

i-TOPCon Advanced

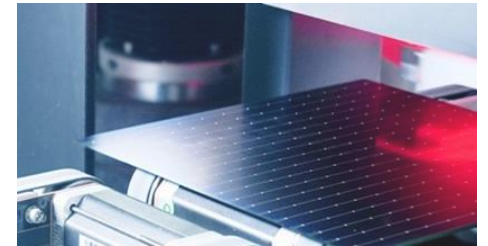
- Selective emitter, Rear planar reflector, Highly low rear TOPCon structure, Laser induced Firing, Edge Passivation Technology
- Large wafer: 210, 210R
- Lab efficiency reach 26% (German third-party certificates)
- Comprehensive product portfolio



2025+

i-TOPCon Ultra & Tandem

- i-TOPCon + Full frontal passivation contact cell technology : Efficiency >27%
- i-TOPCon + tandem cell Technology: Cell Efficiency >30%



Vertex N 700W⁺ High Value Recognized by Customers Globally



88MW , China



45MW Saudi Arabia



800MW, China



500MW, China



0.962MW, China



6.6MW Cambara, Brazil

Testing Site: CTC - Mohe Extreme Cold Test Park

Test modules: Vertex N 700W modules

Test Period: September 2023 - present

-43°C

Power generation monthly

276_{kWh}

System energy efficiency ratio

100%

(backside power gain included)



Reliability Recognized by Authoritative Third-party



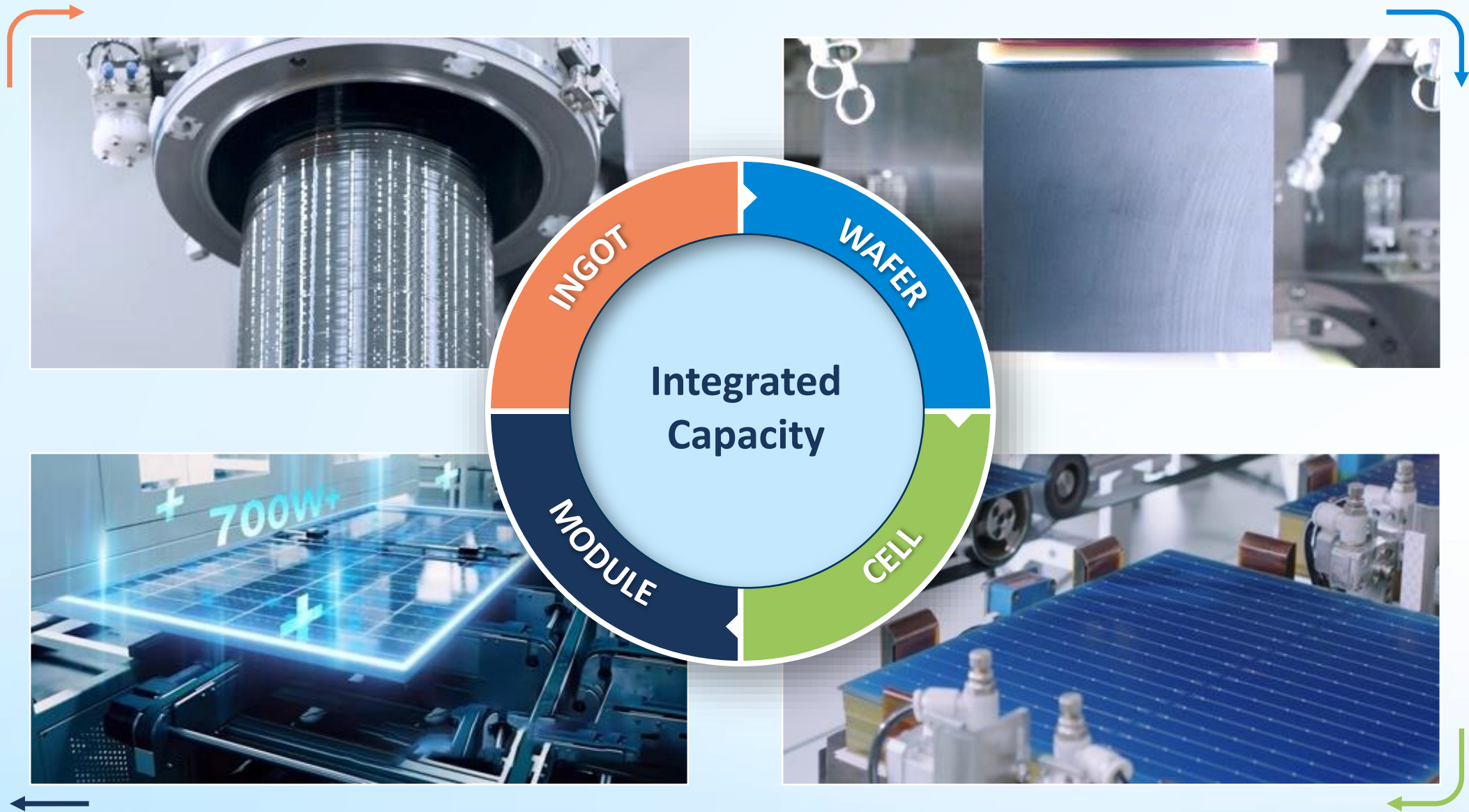
TC600	DH2000
SML+DML+TC50+HF30	
LeTID	PID 192



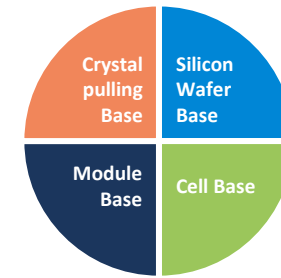
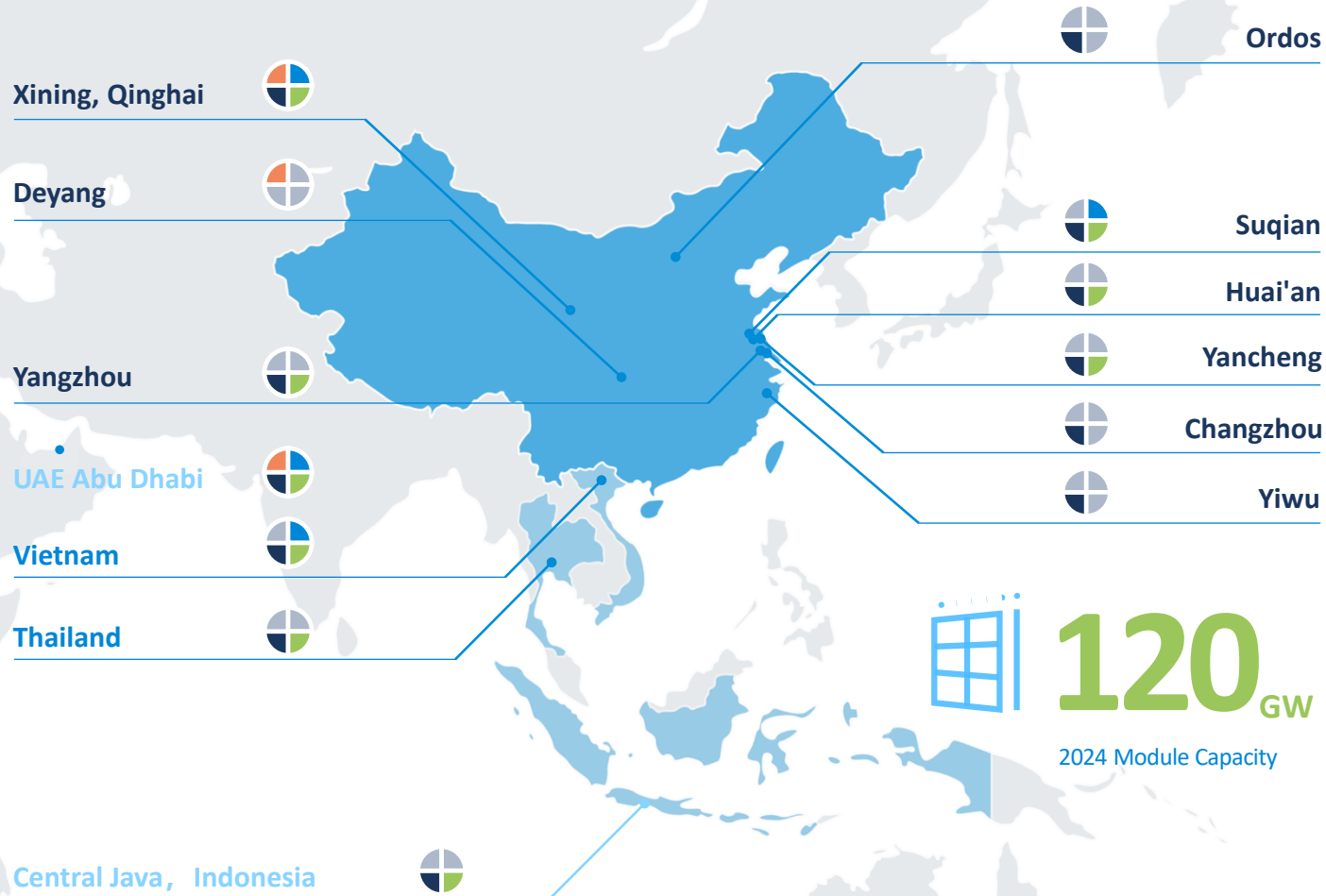
DH200+(UV60+TC50+hf10)*3+UV6.5	
SML+DML+TC50+HF10	TC600
	DH2000



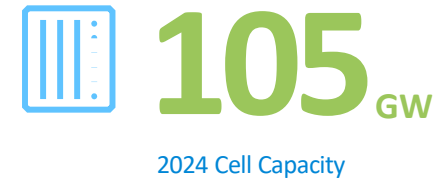
9	Trina Solar has been awarded PVEL “Best Performer” for 9 consecutive years, ranking first in the industry
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Vertex N 700W+ Global Vertically Integrated Production Chains



Vermeer, Texas, USA



As of 2024

The TrinaSolar logo is centered in the upper half of the image. It features the word "Trina" in a large, bold, blue sans-serif font, with a red circle above the "i". The word "solar" is in a smaller, lighter blue sans-serif font to the right of "Trina".

Leading the way in Smart PV and Energy Storage Solutions

