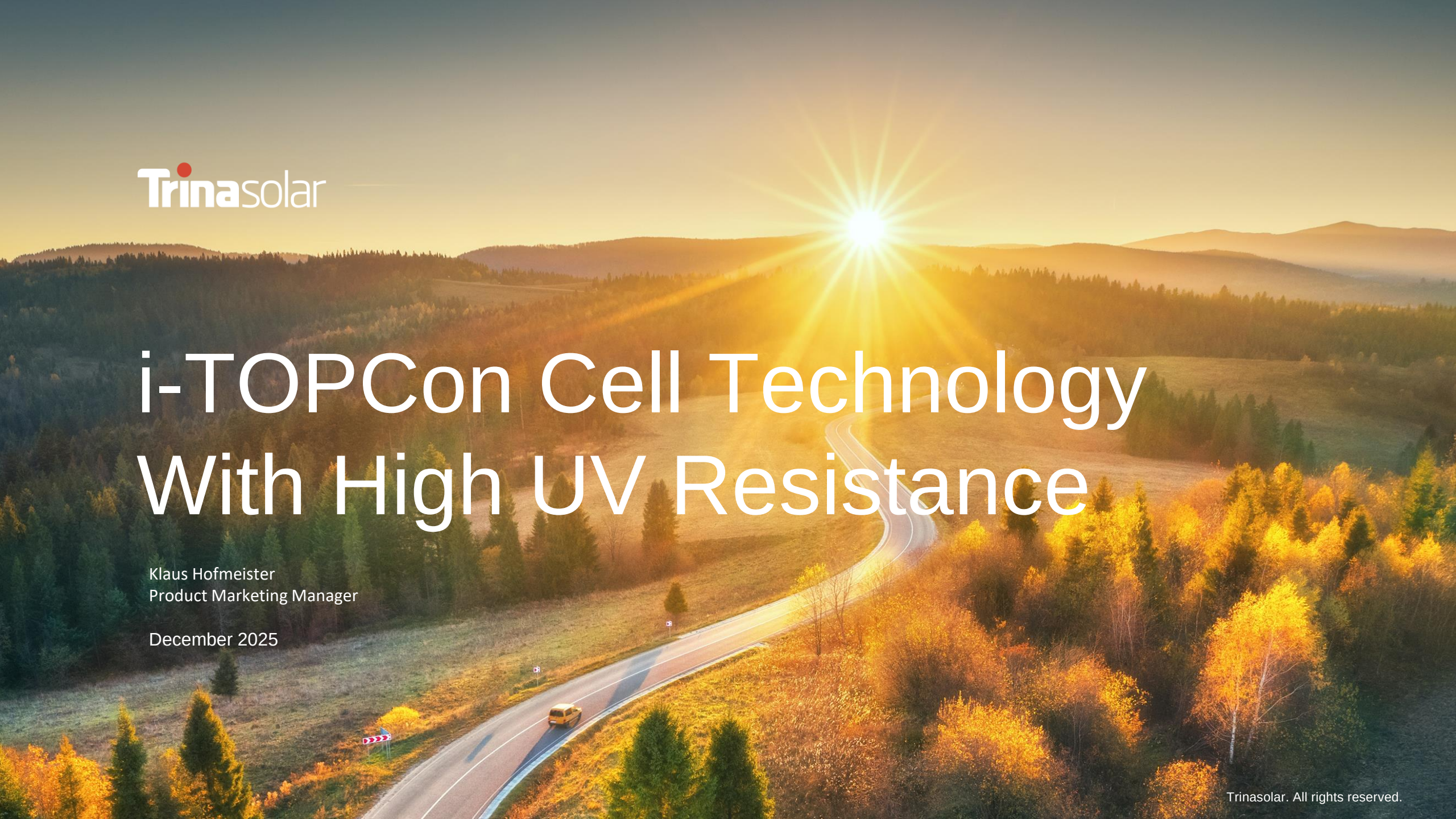


i-TOPCon Cell Technology With High UV Resistance

Klaus Hofmeister
Product Marketing Manager

December 2025

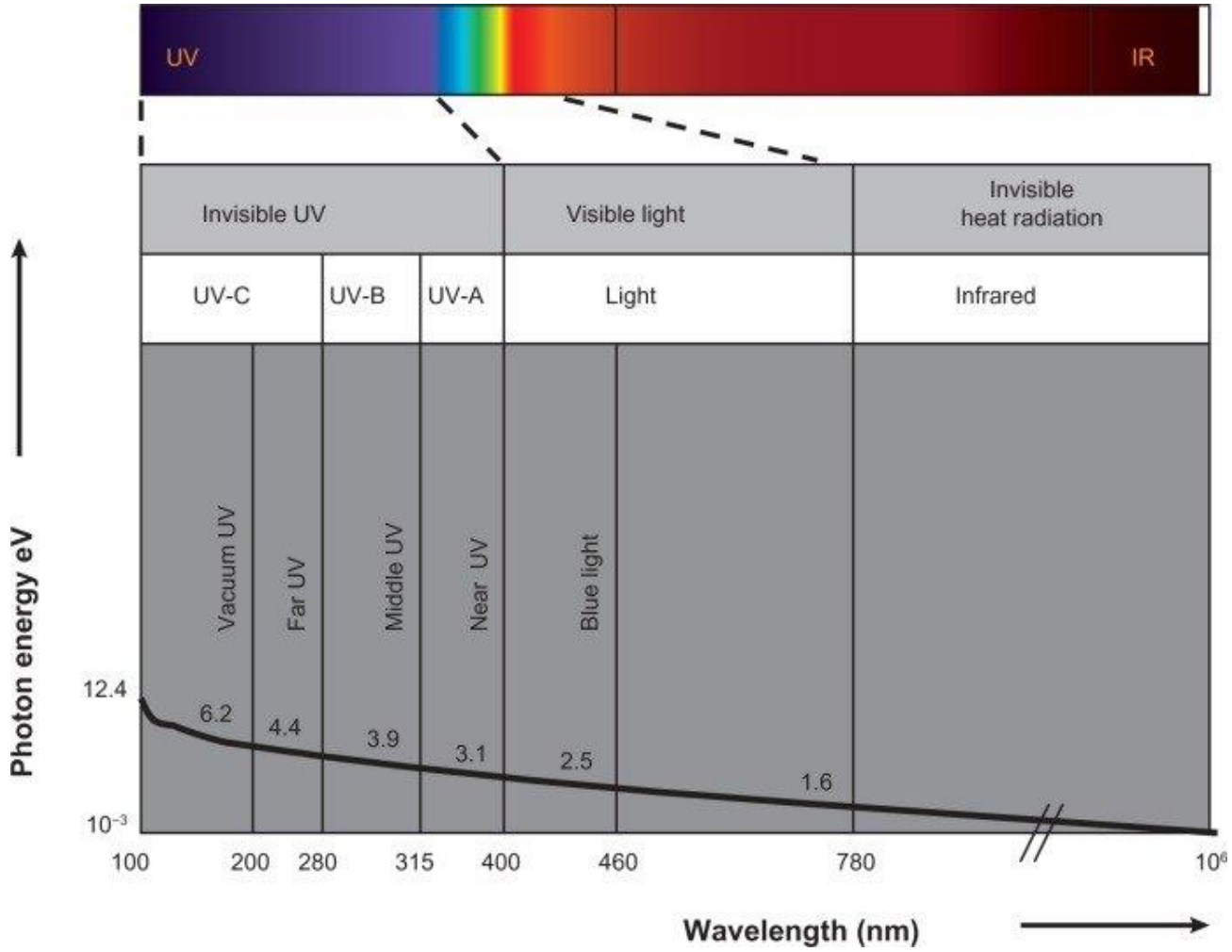
Agenda

01. UVID Degradation Mechanism

02. UV Resistant Cell Design

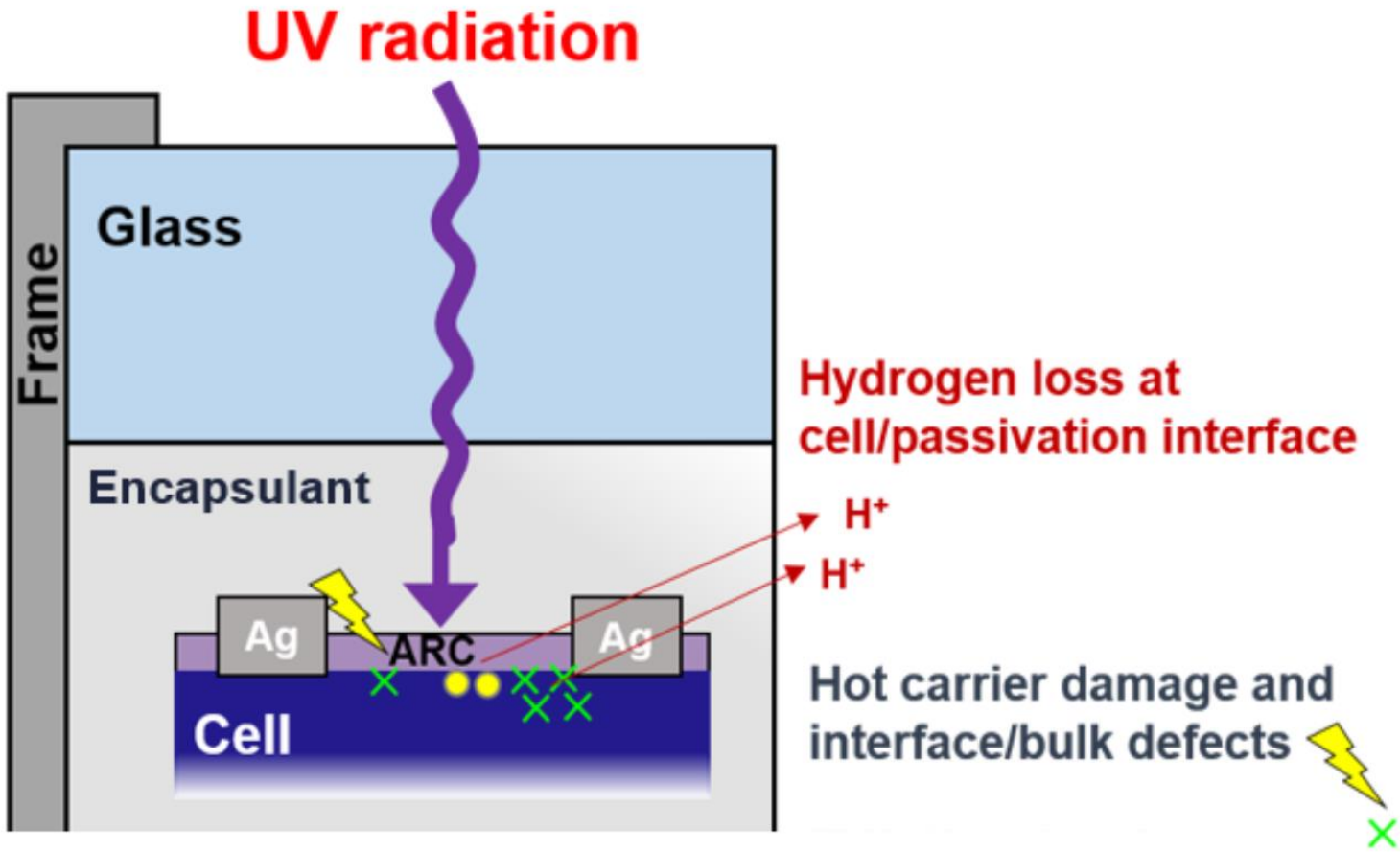
03. Trina Internal and 3rd-Party Test Results

Understanding the UVID Degradation Effect



Photon energy > 3.5 eV (<360nm) is cracking bonds of silicon-hydrogen (Si-H)

Understanding the UVID Degradation Effect



High energy Photons creating damage in interface/bulk and recombination is increased

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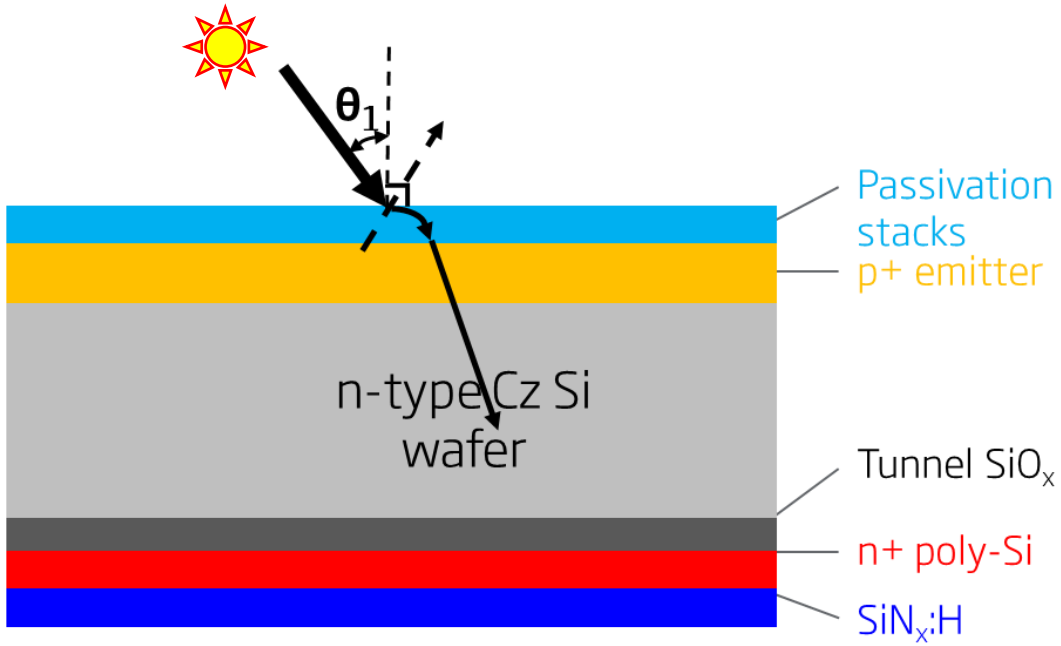
Advantages of Vertex UV Resistance: Cell Design

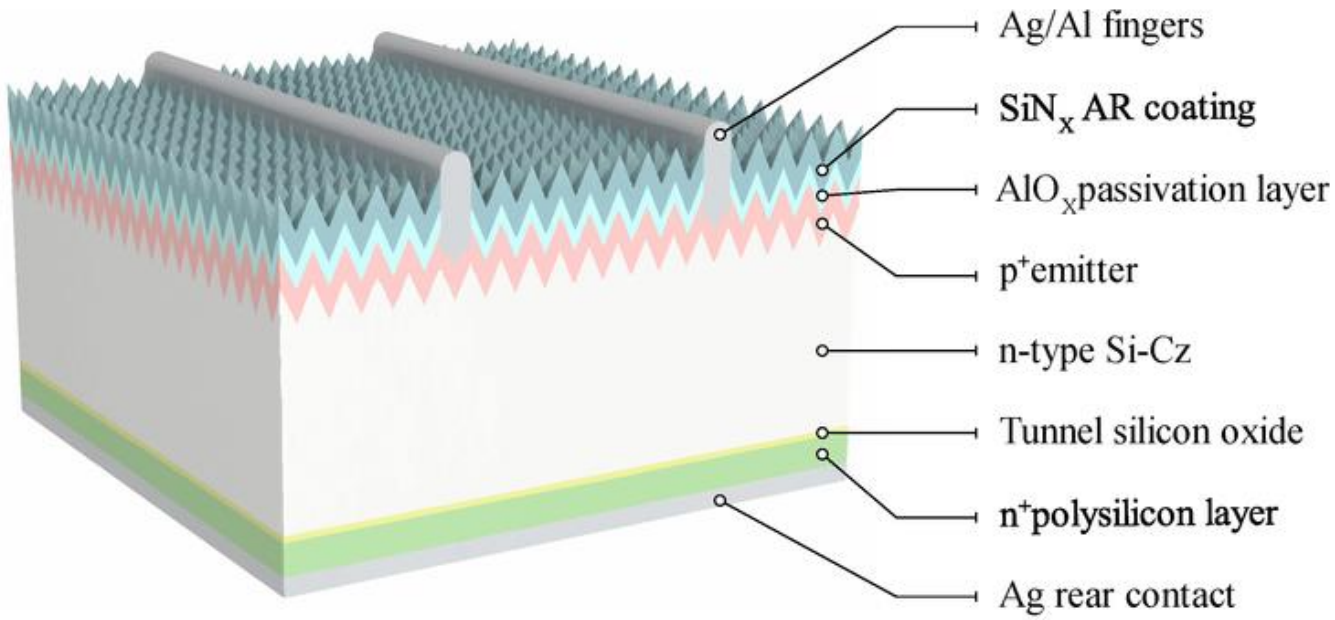
The unique anti-UV design of the cell reduces the overall degradation effect



By designing a stacked passivation film system, the detrimental effects on interface passivation are reduced, further enhancing the UV resistance of TOPCon cells.

Advantages of Vertex UV Resistance: Cell Design

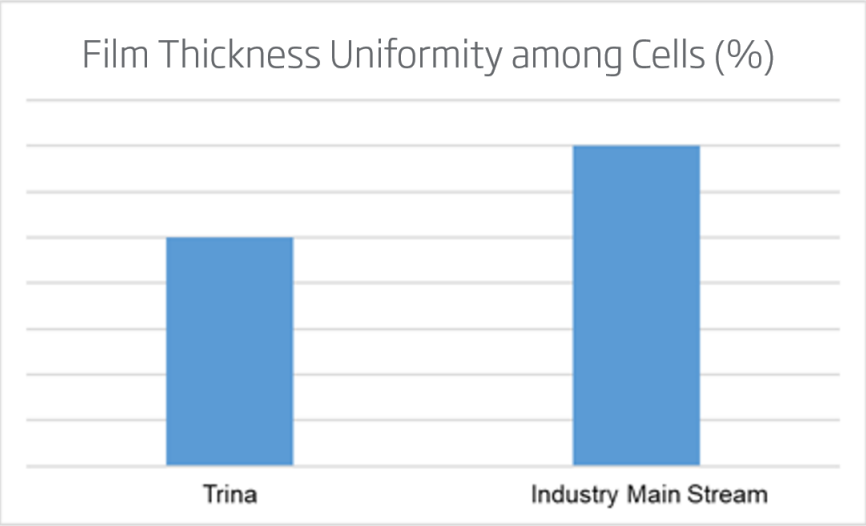
The unique anti-UV design of the cell reduces the overall degradation effect.

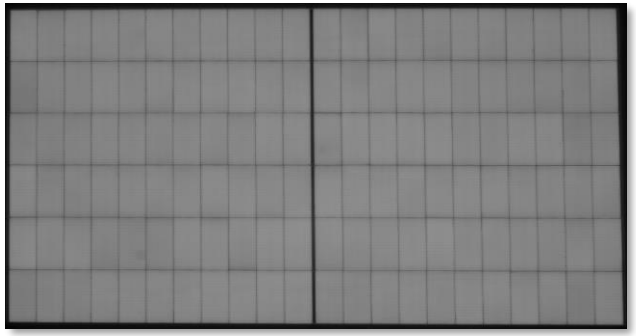


By designing a stacked passivation film system, the detrimental effects on interface passivation are reduced, further enhancing the UV resistance of TOPCon cells.

Advantages of Vertex UV Resistance: Strict Control

- A stricter control standard leads to a better film uniformity and more consistent passivation capability among cells. When the consistency of cell passivation capability is ensured, UV resistance is also improved.
- Following more rigorous monitoring methods and standards of passivation film thickness could achieve more accurate and better inter-sheet uniformity.
- To calculate the uniformity, other manufacturers use the average film thickness of each cell while Trina uses the average film thickness of several selected points on each cell.





Excellent Cell Uniformity Verified by EL

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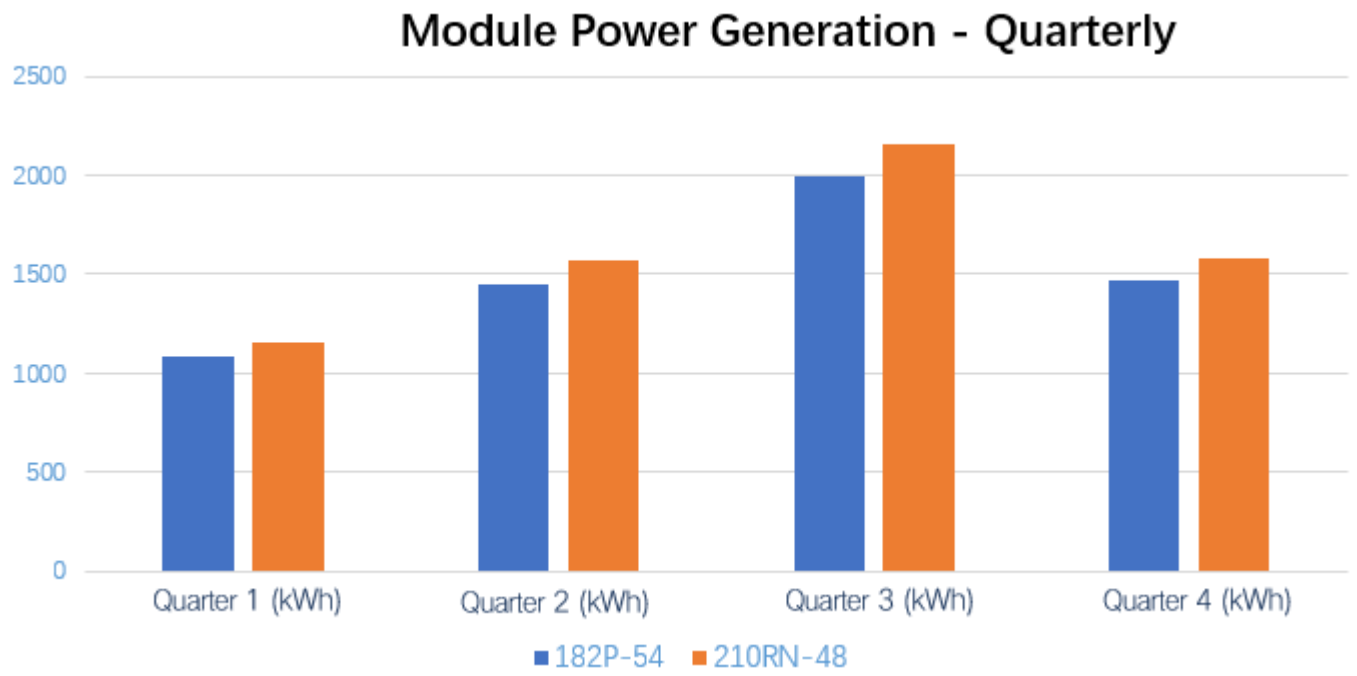
Vertex Modules Low Field Degradation: Certified by CGC



- Location： Haikou, Hainan Province, China
- Climate： High Temperature & High Humidity
- Mounting Structure： Small Inclination Angle (9°) above the roof
- Ground Condition： Concrete
- Test Period： 2022.10.29-2023.10.29
- Test Module: 210RN-48 （NEG9R.28)
- Reference Module： 182P-54

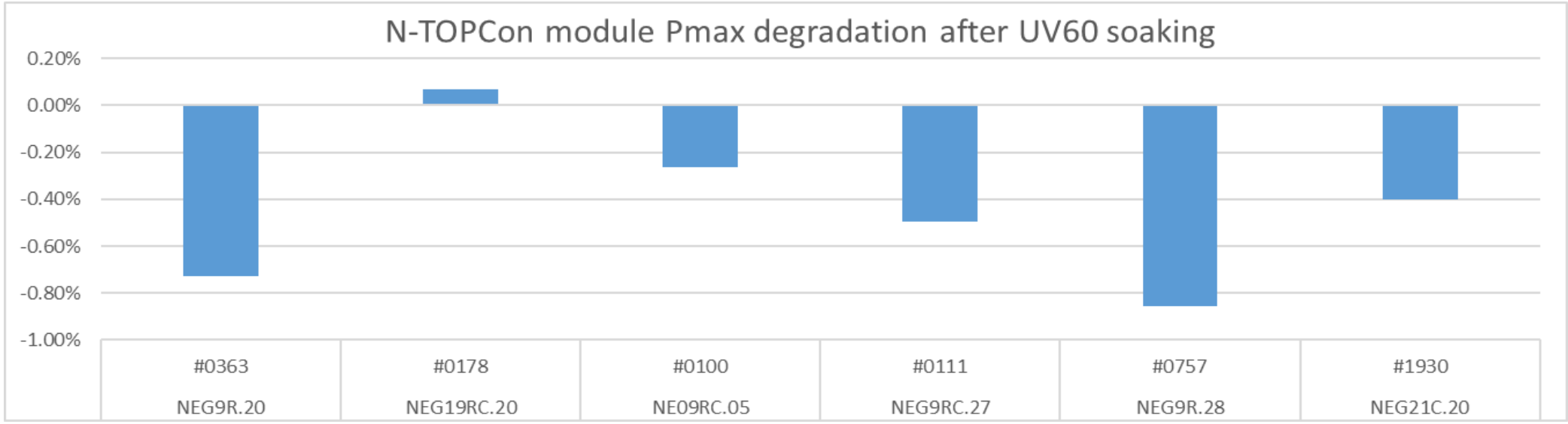
According to the module power measurement results at the lab, Trina's Vertex N mono-facial modules' annual power degradation is as low as 0.81%.

Trina Internal Test Results

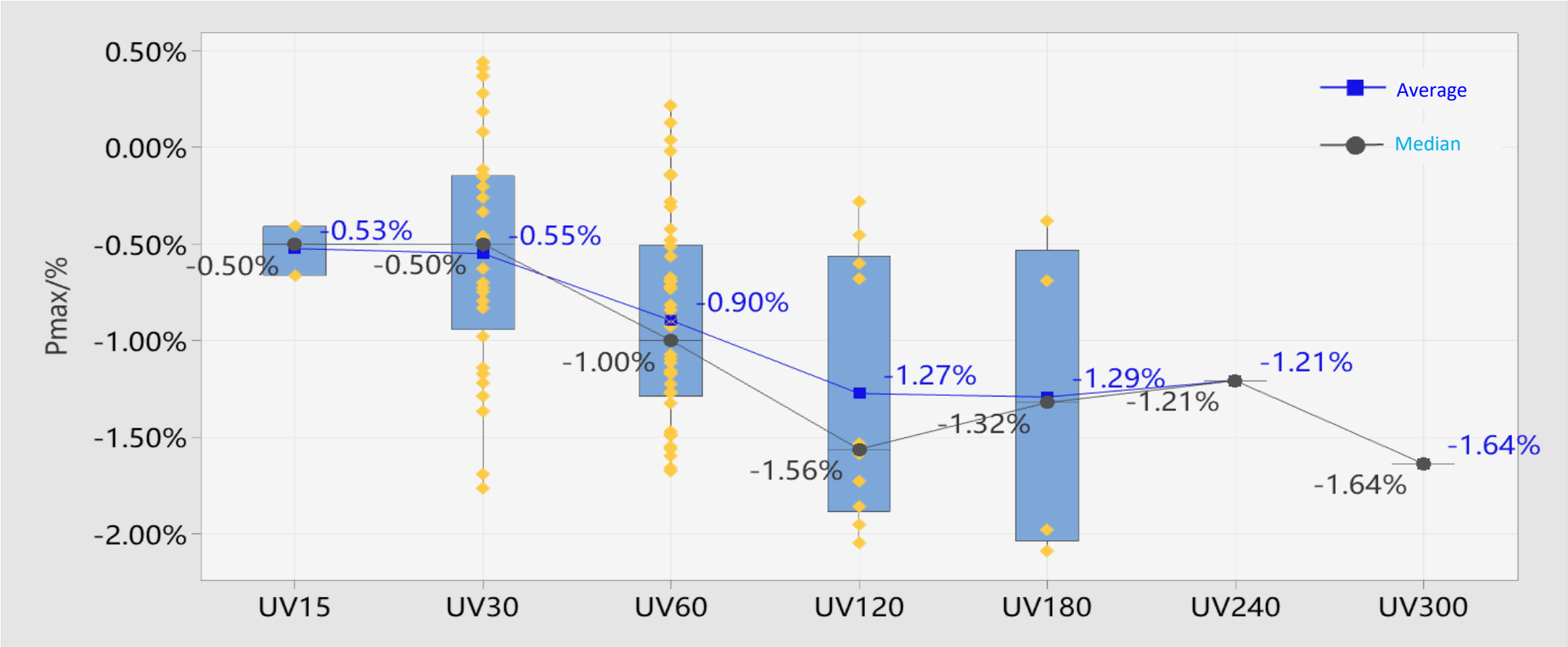
Comparison of data with other mainstream manufacturers

UV60	Trina	A	B	C	D
Front-side Degradation	**-1.5% ~ -0.2%**	-4% ~ -1%	-2.8% ~ -1.5%	-3% ~ -1%	-5% ~ -4%
Back-side Degradation	-1.2% ~ -0.2%	/	/	-3%	-5%

Comparison of data for different module sizes in Trina



Outstanding UVID Test Data by 3rd Parties: GCG



Hundreds of i-TOPCon modules (with different product types/production lines/production dates) were tested by CGC, with consistent test results.