PVTECH TECHTalk Product Series

Trinasolar

550/600W+ Vertex Series Module Introduction

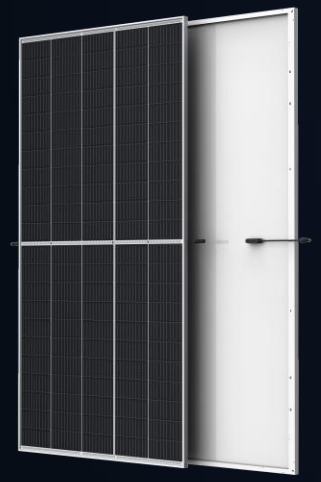
Vertex

Vertex

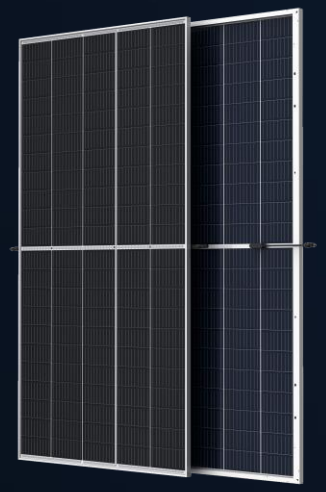
Trinasolar

550W+

Mono-facial



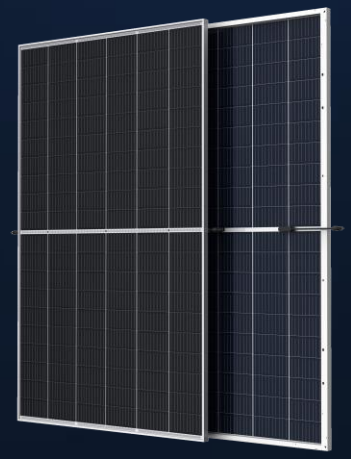
Bi-facial



600W+

Mono-facial

Bi-facial



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Module Power Trend

1. Module cost
2. BOS→Module power, Module efficiency

$$LCOE = \frac{\text{Total cost}}{\text{Total power generation}} = \frac{\text{Initial investment} + \text{total O\&M cost} + \text{other costs} - \text{system residual}}{\text{Total power generation}}$$

Module power generation per watt

600W+

Jul 16th 2020

600W+ Vertex module paves the way for further lowered LCOE

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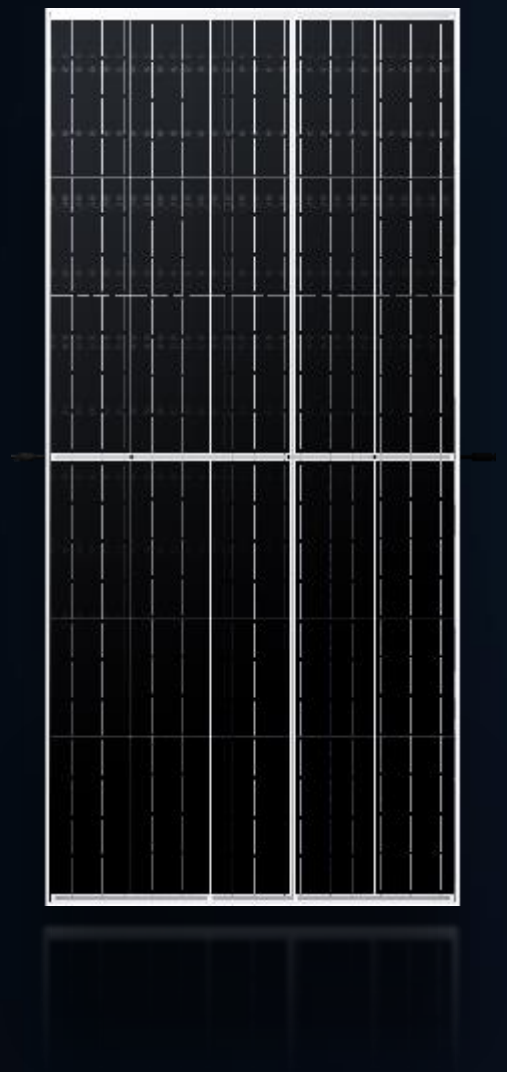

Max. Power

550W+

Max. Eff.

21%+

- 210mm cell
- Multi-busbar
- Non-destructive cutting
- High-density interconnection
- 5*11 layout
- Half-cut cell
- Warranty: 30 years

- Size: 2384mm*1096mm
- Weight: 32.6kg dual glass
- Isc: 18.39A
- Voc: 38.1V
- Temp coeff: -0.35%/°C
- 1st year degradation: 2%
- Annual degradation: 0.45%

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Trinasolar

Max. Power

600W+

Max. Eff.

21.2%+

- 210mm cell
- Multi-busbar
- Non-destructive cutting
- High-density interconnection
- 6*10 layout
- Half-cut cell
- Warranty: 30 years

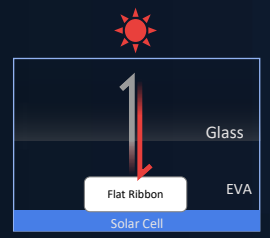
- Size: 2172mm*1303mm
- Weight: 35.3kg dual glass
- Isc: 18.42A
- Voc: 41.7V
- Temp coeff: -0.35%/°C
- 1st year degradation: 2%
- Annual degradation: 0.45%

MBB

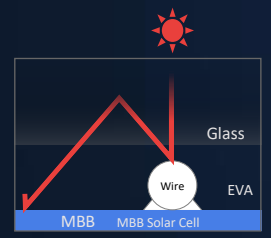
Technical characteristics

Multi-busbar

Optical performance
Power improvement
1%~1.5%

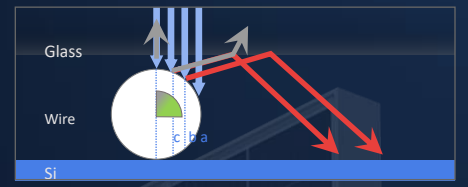


5BB Module



MBB Module

Shading reduction

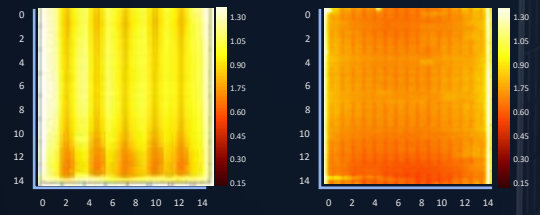


Light trapping effect

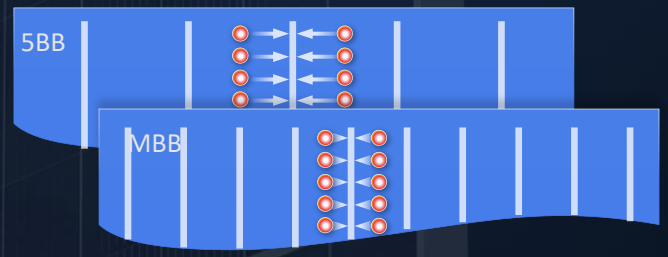
Module efficiency improvement

0.4%~0.6%

Electrical performance
Power improvement
1%~1.5%



Distribution of resistance on PI (photoluminescence) test



Shorten current path 50% Comparing to 5BB

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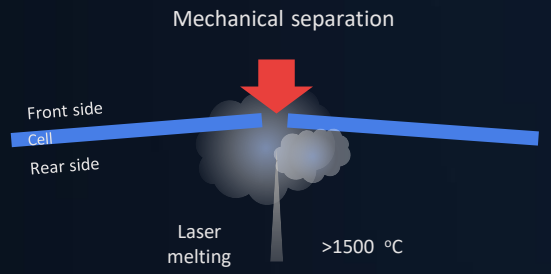
NDC

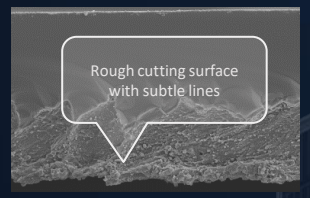
Technical characteristics

Non-destructive cutting(NDC)

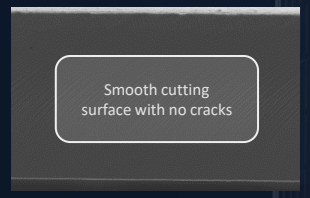
Outstanding strength of cutting cells



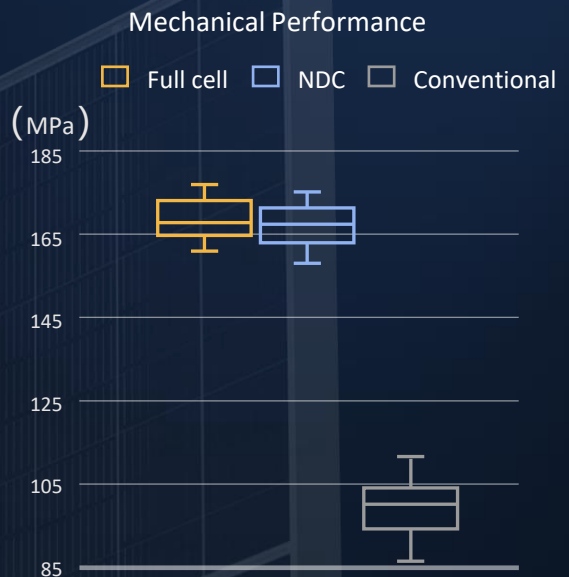
Low Temperature
Non-destructive cutting(NDC) Process



Section after traditional cutting



Section after Non-destructive cutting



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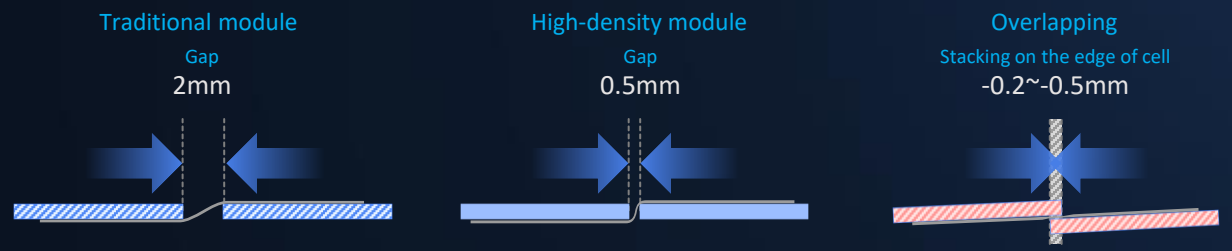
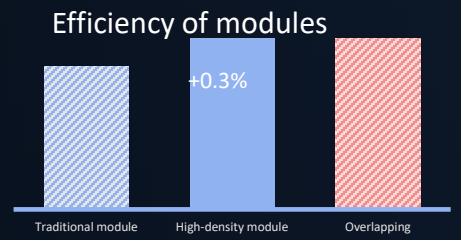
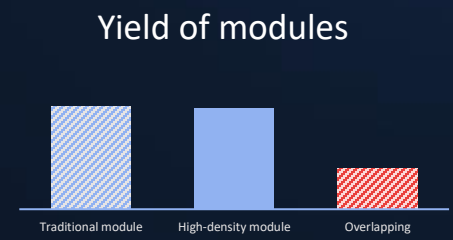
HD Interconnection

Technical characteristics

High-density interconnection technology







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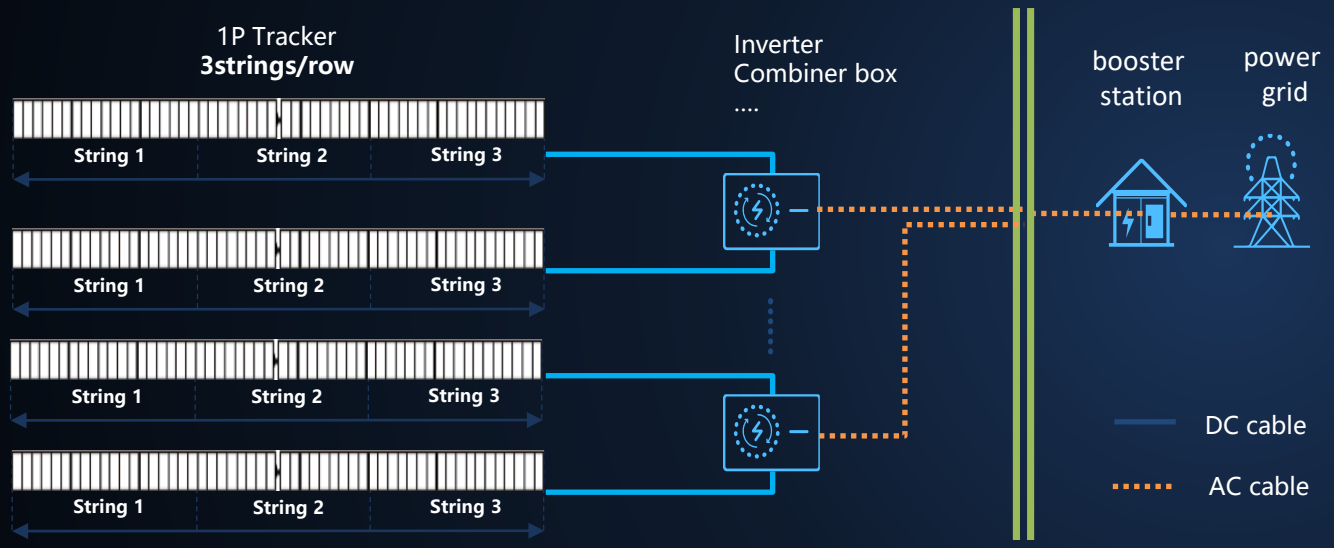
Trinasolar

Low Voltage, High String Power

String power

String is the basic subunit of PV plant



structural connection

electrical connection

$$P_S = P_M * N = P_M * \frac{1500}{Voc[1+(t-25)*Kv]}$$

P_S: String power
P_M: Module power
N: Module pcs per string
V_{OC}: Open circuit voltage
K_V: Voc temperature coefficient

Higher

- Module power
- System voltage

Lower

- Module Voc
- Module Kv

Single string power is the core factor that determines the cost of BOS system.

High String Power

Vertex
550W series

35.8%

Higher string power compared to reference module

Module characteristics comparison

Module Type	182cell 72pcs backsheet	VERTEX 550 series
Power (W)	540	550
Length (mm)	2256	2384
Width (mm)	1133	1096
Weight (kg/pcs)	27.2	28
Isc (A)	13.85	18.52
Voc (V)	49.5	37.9
Module eff.	21%	21%

Comparison Module Quantity per String& Power

Module	Module Quantity/String	Per Module Power	Total Power per String
Trina Solar VERTEX 550W series	36	550W	19800W
Reference Module	27	540W	14580W

10 degrees below zero , 1500 V system

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PV Module Array Arrangement

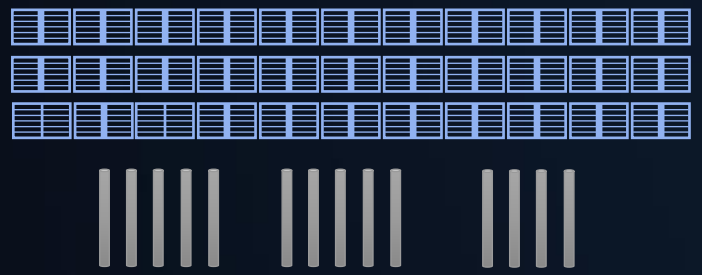
Project site : Jiangsu, China
Project size : 100MW
Adopting 1500V centralized inverter, capacity ratio 1.3, fix tilt,
Bifacial module, 3-row transverse installation mode.

550W

19800W

Total power/String：

36 pcs/string



Pile : 22pcs/string 560pcs/MW

3312

Total Racking

Racking Steel
33.68 ton/MW

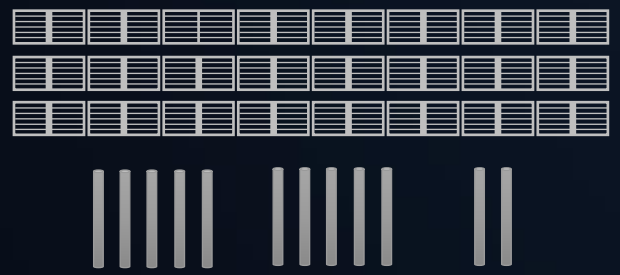
Cable Length 2.5km/MW

540W

14580W

Total power/String：

27 pcs/string



Pile: 18pcs/string 622pcs/MW

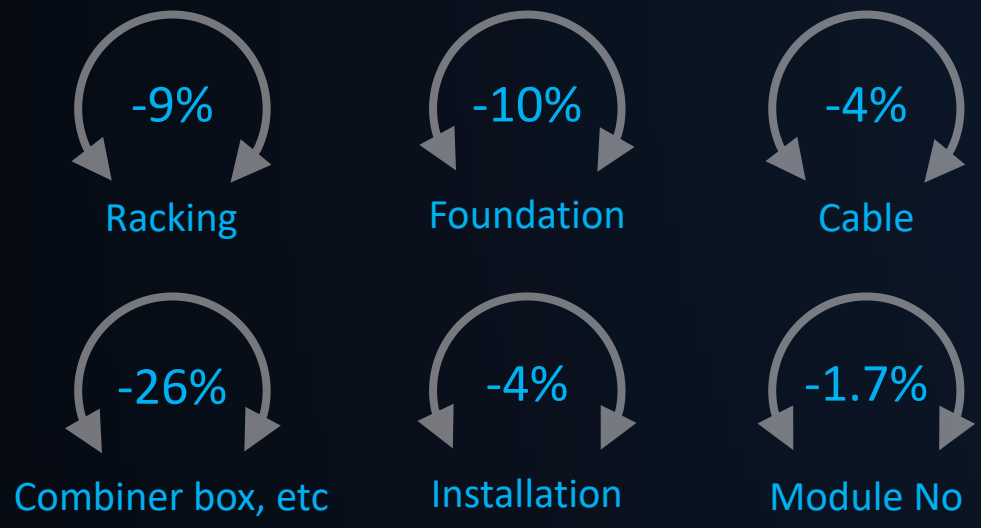
4496

Total Racking

Racking Steel
37.19 ton/MW

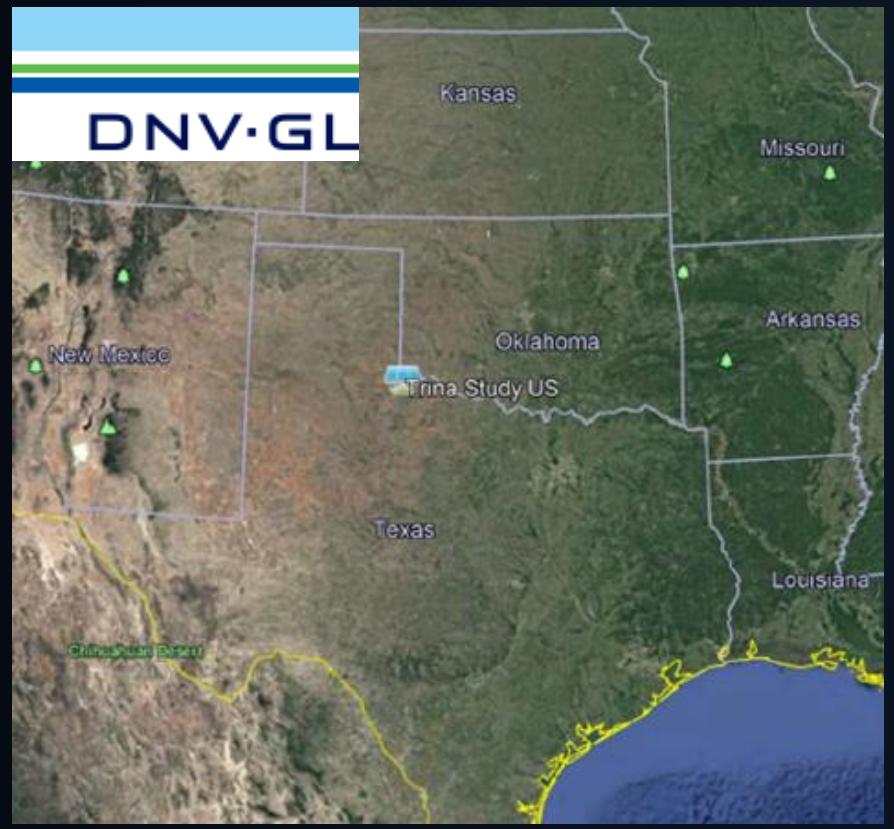
Cable Length
3.5 km/MW

BOS analysis of 550W Vertex PV system



	Module type	Reference Module	Trina Solar VERTEX	Diff.
	Power （W）	540	550	
BOS （¥/W）	Racking	0.279	0.253	-0.026
	Foundation	0.123	0.111	-0.012
	Cable	0.046	0.044	-0.002
	Combiner box, etc	0.015	0.011	-0.004
	Installation	0.137	0.131	-0.006
	Sum	0.8248	0.7741	-0.05
LCOE （¥/W）				-2 %

3rd party assessment



Project site : Texas, US Latitude: 34.36° Longitude: -99.89°

Annual GHI: 1,865 kWh/m2 Average temperature: 17.5°C

Project size : 100MW

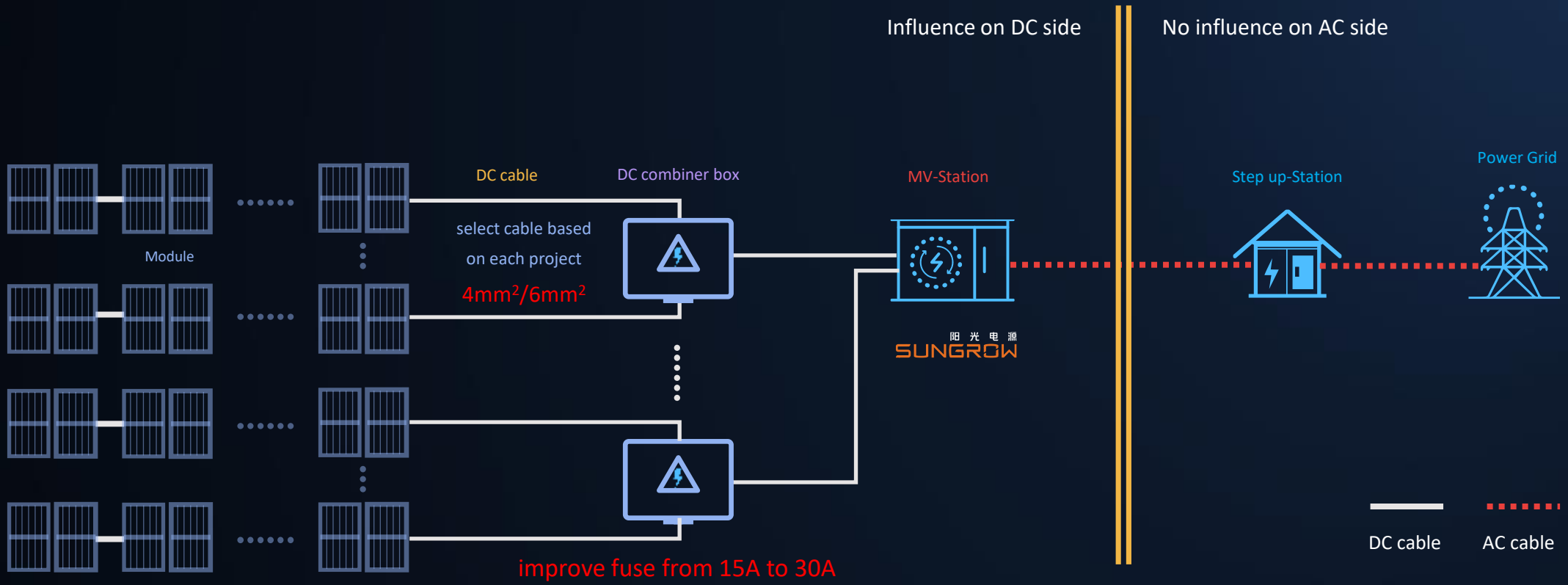
String inverter, 1P tracker design

Module price is assumed to be the same for comparison.

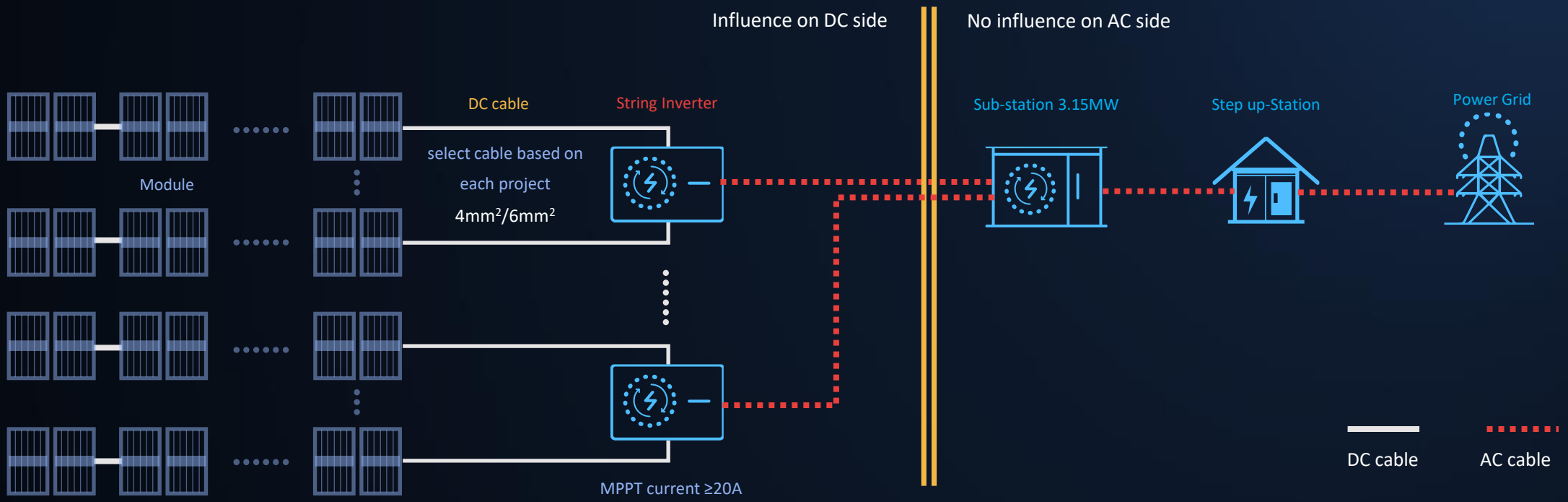
Bi-facial	535	545
String	26pcs/String	35pcs/String
BOS $/kwh	0.6015	0.5625
BOS	Base case	-6.49%
LCOE $/kwh	0.0434	0.0418
LCOE	Base case	-3.78%

*The result is highly dependent on the input assumptions, and should not be taken as a guidance for specific projects.

Compatibility - Central Inverter



Compatibility -String Inverter



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Compatibility -Tracker

Tracker

Current scenario：
The length can hold 30 pcs modules/each string；
This year Q4 , next year Q1：
Optimized tracker length to hold 36 pcs modules/each string

Fix Tilt：

High flexibility, adjust design to
increase compatibility

Capacity Plan of VERTEX

550W mass production in Q4, 2020

600W mass production in Q1, 2021

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Trinasolar

Thanks for watching !

Vertex

Trina Solar 550/600W+ VERTEX