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Tiling ribbon technology and the system implications of 500 W+ modules

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Building Your Trust in Solar

Tiling Ribbon Technology & The Age of 500+ Wp Modules

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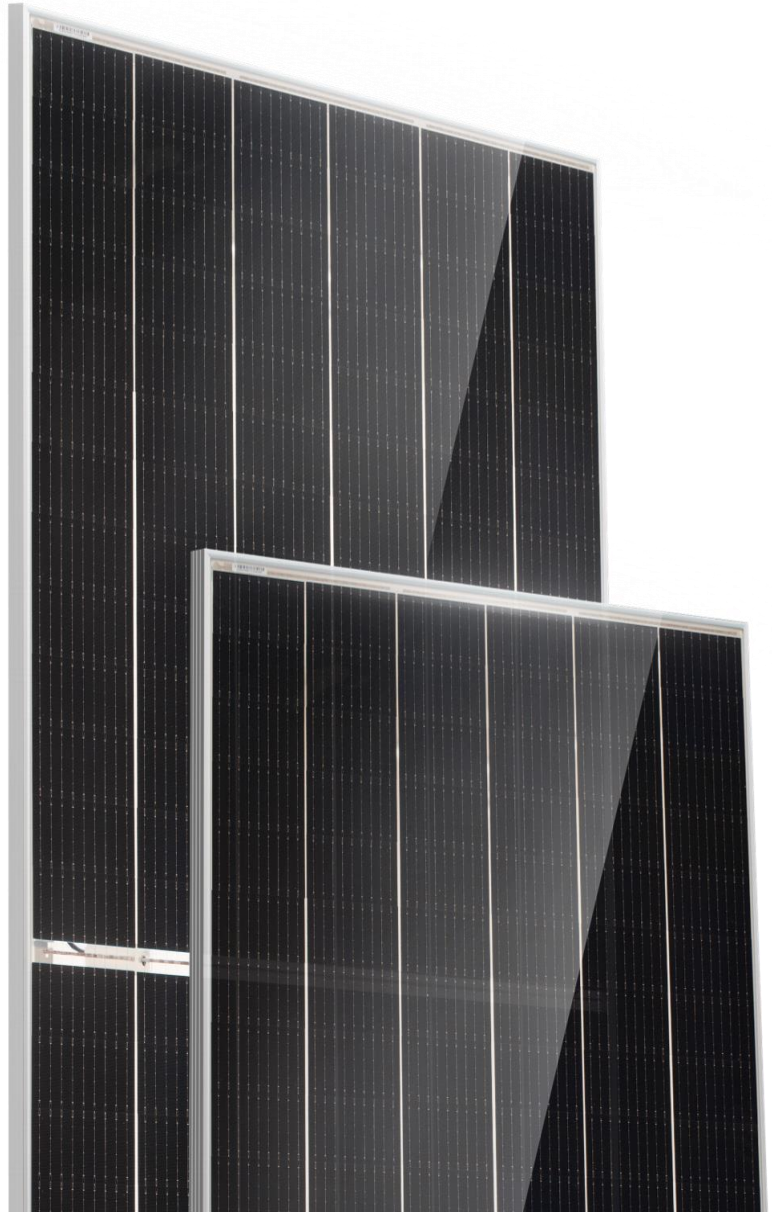
About Jinko


14 GW modules sold in 2019
Biggest supplier for the 4th year in a row
55 GW of modules shipped
Most bankable PV supplier in 5 year period -PV Tech
+3500 clients in 140+ countries globally

PV Technology in 500+ Wp Modules

- Mono-PERC and Half Cut Cell have become mainstream
- **MBB** the industry is moving from 5BB to 9BB and beyond
- **Tiling Ribbon (TR)** technology is commercially available in the market
- **Bigger Wafer --> More Power**
  - Bigger wafer --> bigger module --> mounting system compatibility
  - More power--> higher current --> invertor compatibility

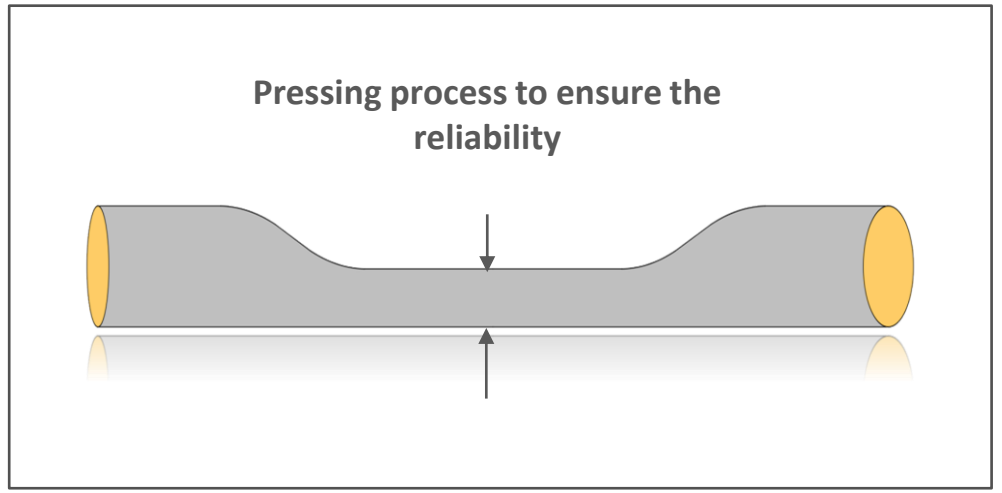


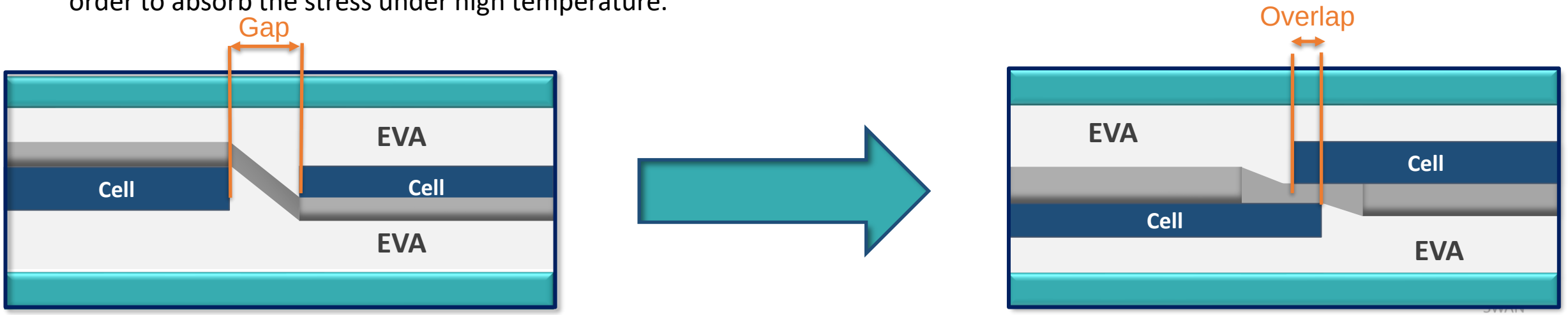
The 500+ Wp modules are pushing the limits of current BOS

Tiling Ribbon Technology

Tiling Ribbon (TR) Technology

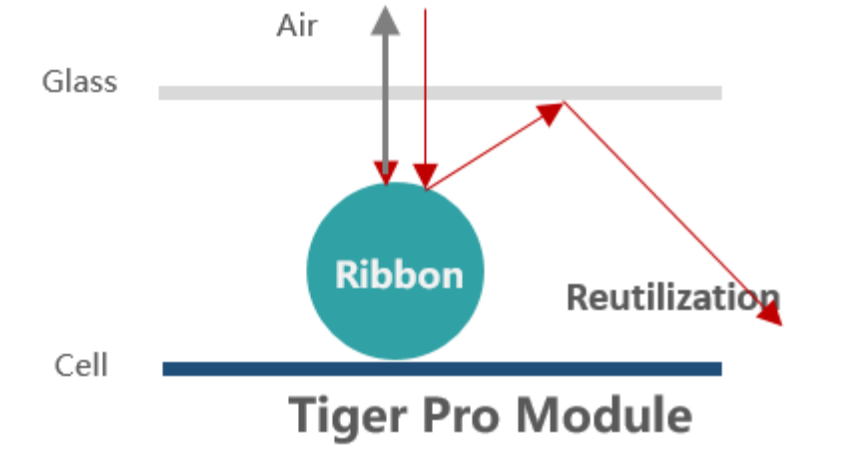
- Tiling Ribbon technology (TR) eliminates the gap between the cells on the horizontal edge and pile the cells on each other with overlap distance of less than 2mm.
- Special round ribbon is used to connect the cells.
- The ribbon is squeezed in the overlap area and takes Z shape.
- To ensure maximum reliability the ribbon is tested before soldering
- Special encapsulant (EVA/POE) is designed to fill the overlap area in order to absorb the stress under high temperature.

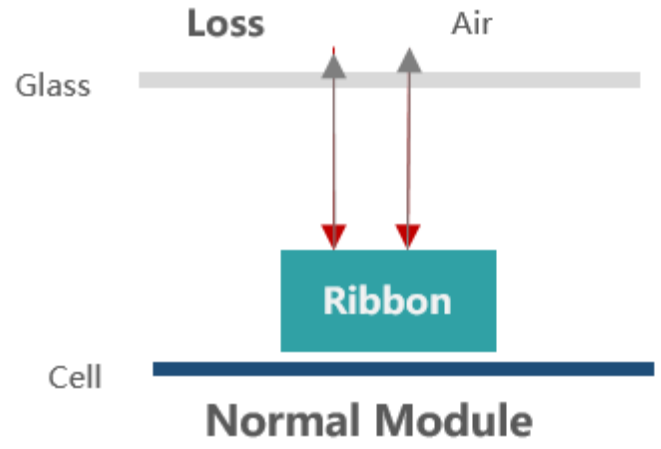


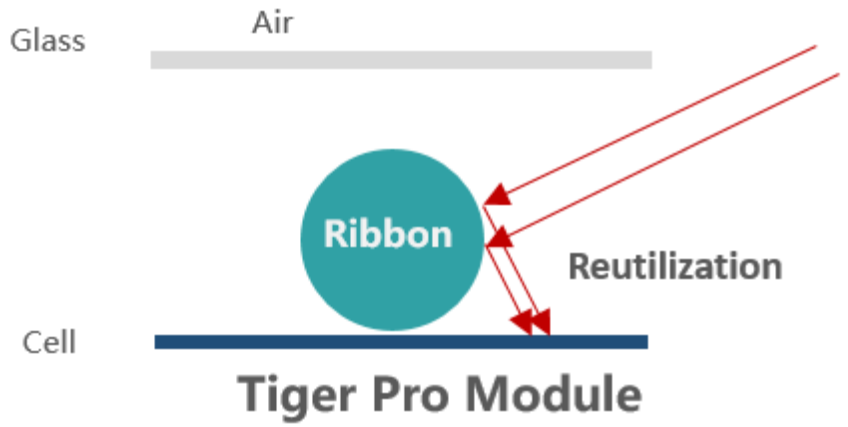


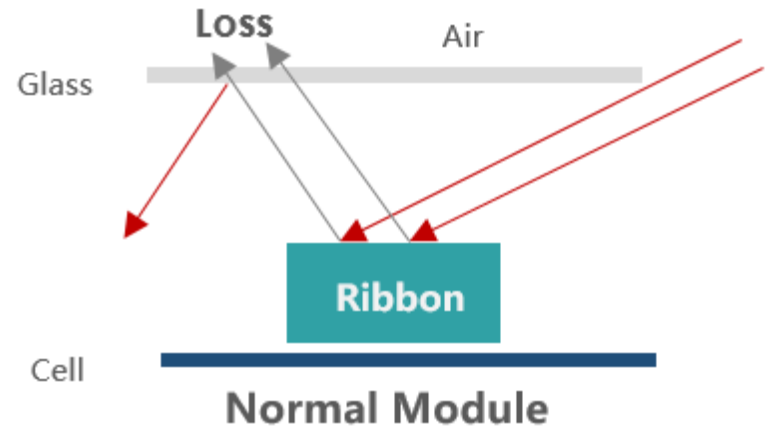
Circular Ribbon Brings More Energy

Round Ribbon is developed by Jinko Solar R&D to improve the reutilization of light absorption and increase the energy generation, is also reduces the IAM losses and creates less shading on the solar cell

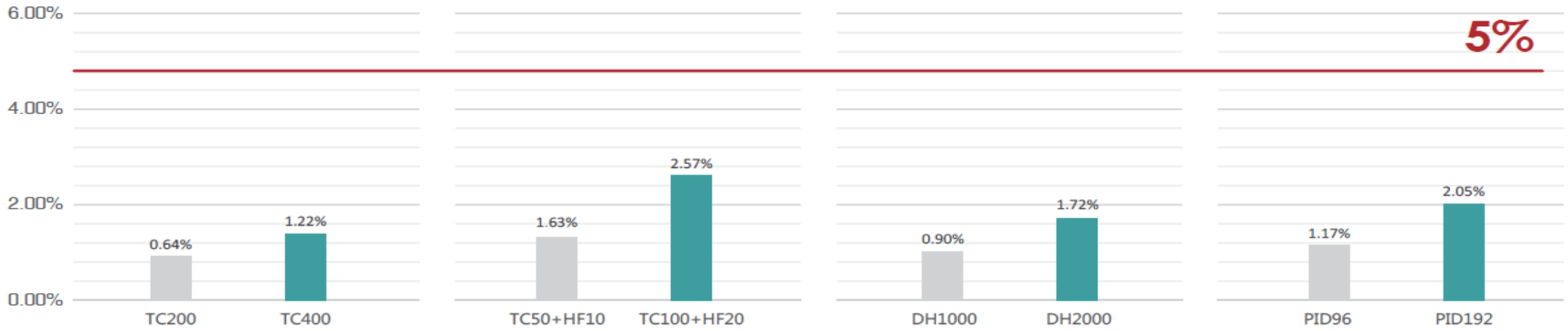








The Reliability of Tiling Ribbon

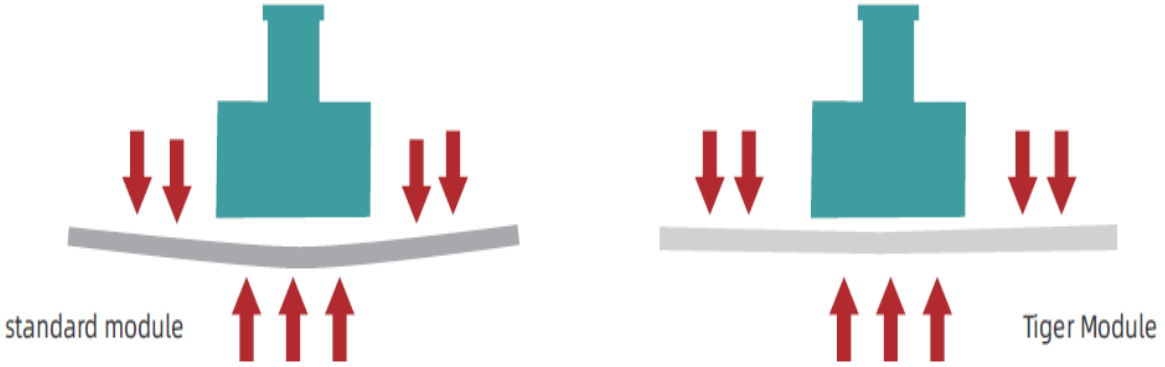


Excellent Double IEC tests with degradation less than 3%

Excellent mechanical load results

- In the dynamic load test the front-side power degradation rate is 0.6%, and the back-side power degradation rate is 1.68%

- In the static load test the front-side power degradation is only 0.3%, and the back-side power degradation is 1.82%



Tiger Pro

Tiger Pro

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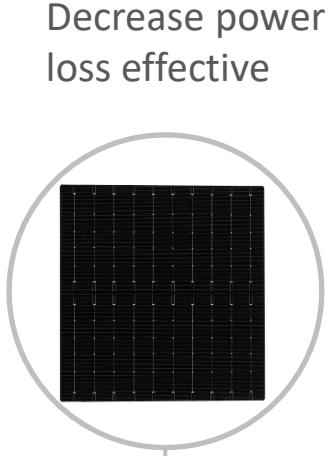
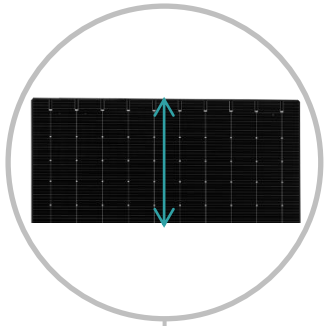
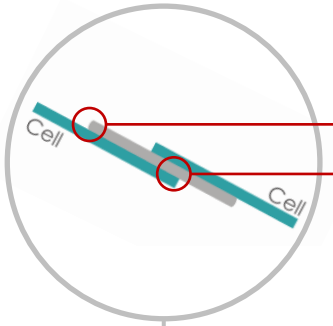
MBB
Decrease power loss effective

HC Technology
Improve shading tolerance because of splitting a full-cell into half

Tiling Ribbon (TR)
Eliminate cell gap to increase module efficiency significantly.







Using circular ribbon
Overlap on each cell to eliminate the gap

TiGER Pro

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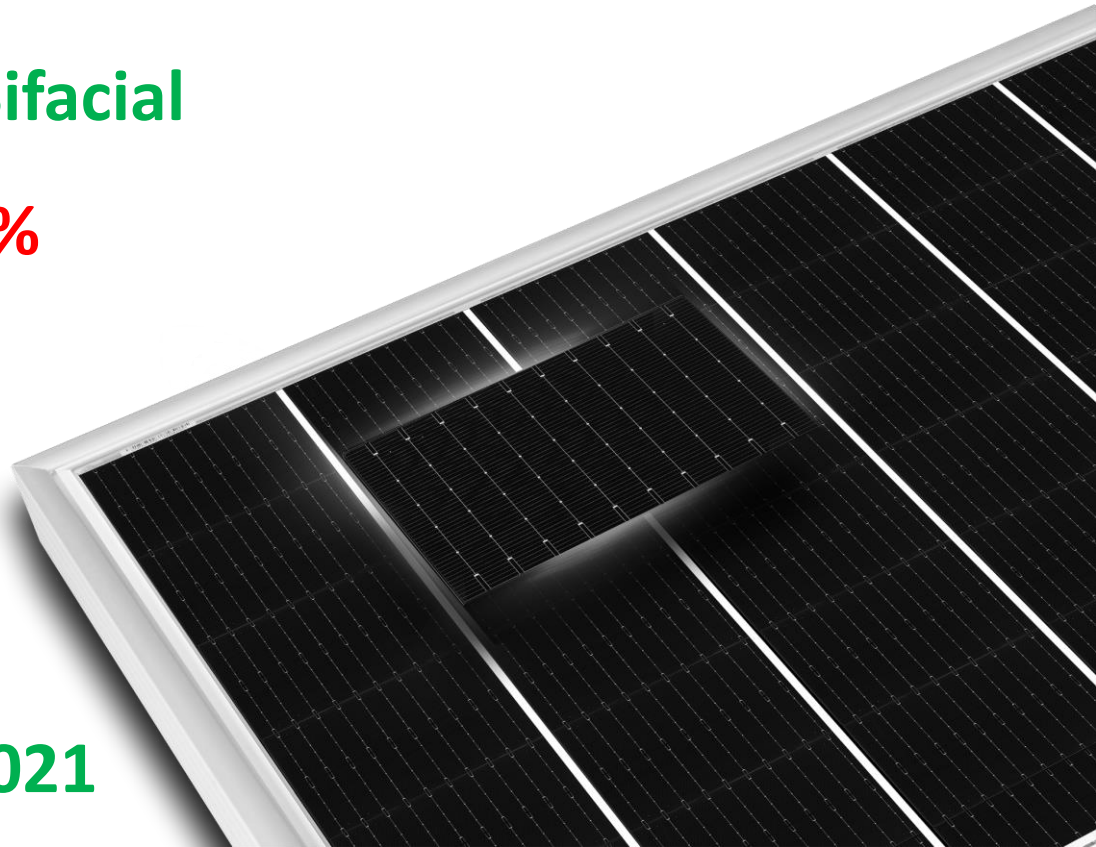
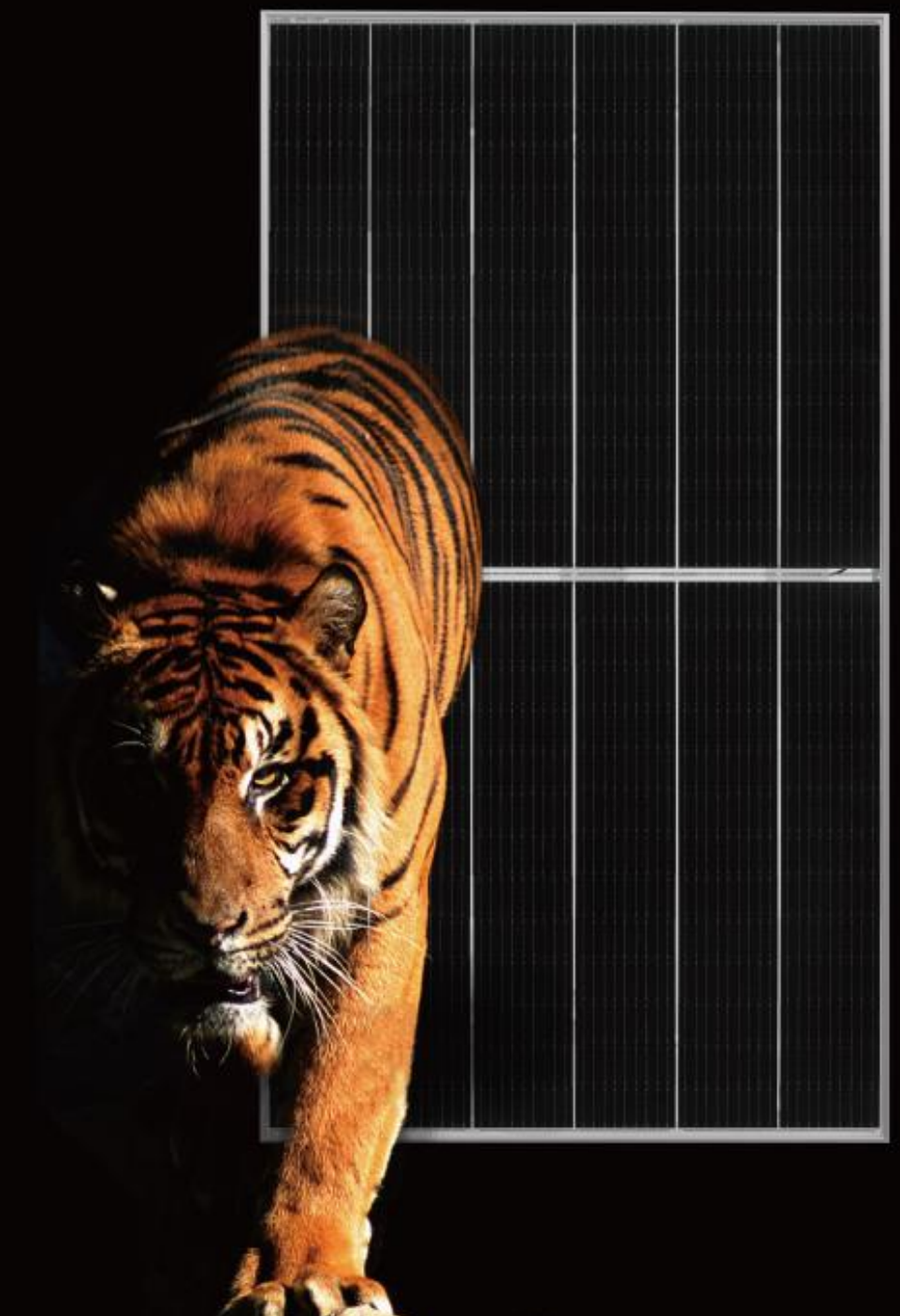
- ✓ Available in two sizes: 72 and 78 cells
- ✓ Power reach up to 580W
- ✓ Efficiency reaching up to 21.2%
- ✓ Available in two options: Mono-facial and Bifacial
- ✓ Improved degradation : 2% initial year 0.55% annual
- ✓ Optimized Voc: 49.5V
- ✓ Best temperature coefficients : -0.35%/℃
- ✓ Production in Q3 and capacity is 10GW in 2021



LCOE Analysis

	500/505W	Tiger Pro Monofacial 530/535W	Tiger Pro Bifacial 525/530W
Initial investment	71,196,752	70,311,035	70,464,288
BOS cost per watt	0.3383	0.3309	0.3322
Tracker	10,351,852	9,999,820	10,095,056
DC cable and its installation	2,473,499	2,277,442	2,255,926
Pile foundation	2,674,597	2,439,335	2,462,600
Labor cost	480,000	452,832	457,144
LCOE (US Cent/kWh)	4.2465	4.1583	3.8596 ↓
IRR	18.14%	18.81%	21.08% ↑
ROI	16.62%	16.98%	18.32%

Project	Ningshun Province
Capacity	120MW
Number of irradiation hours per year	1886
DC/AC	1.2
Bifacial gain	7%



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Thank You

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