



Welkom bij het webinar!

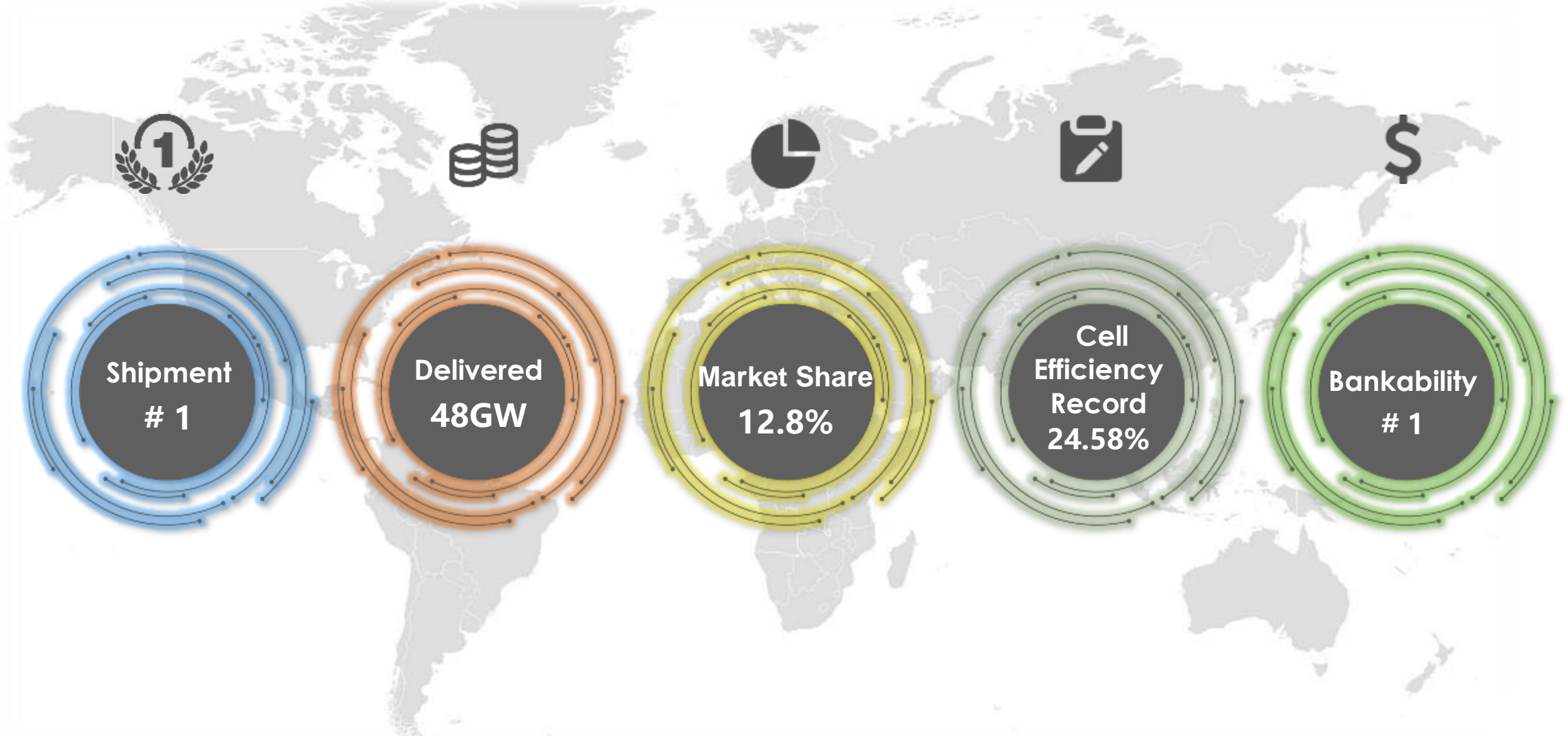
Dit webinar wordt opgenomen en kunt u na afloop op uw gemak terugkijken. **Veel plezier!**



N-type Modules Solar Today

Roberto Murgioni, Technical Service Manager Europe, JinkoSolar

Short Introduction of JKS

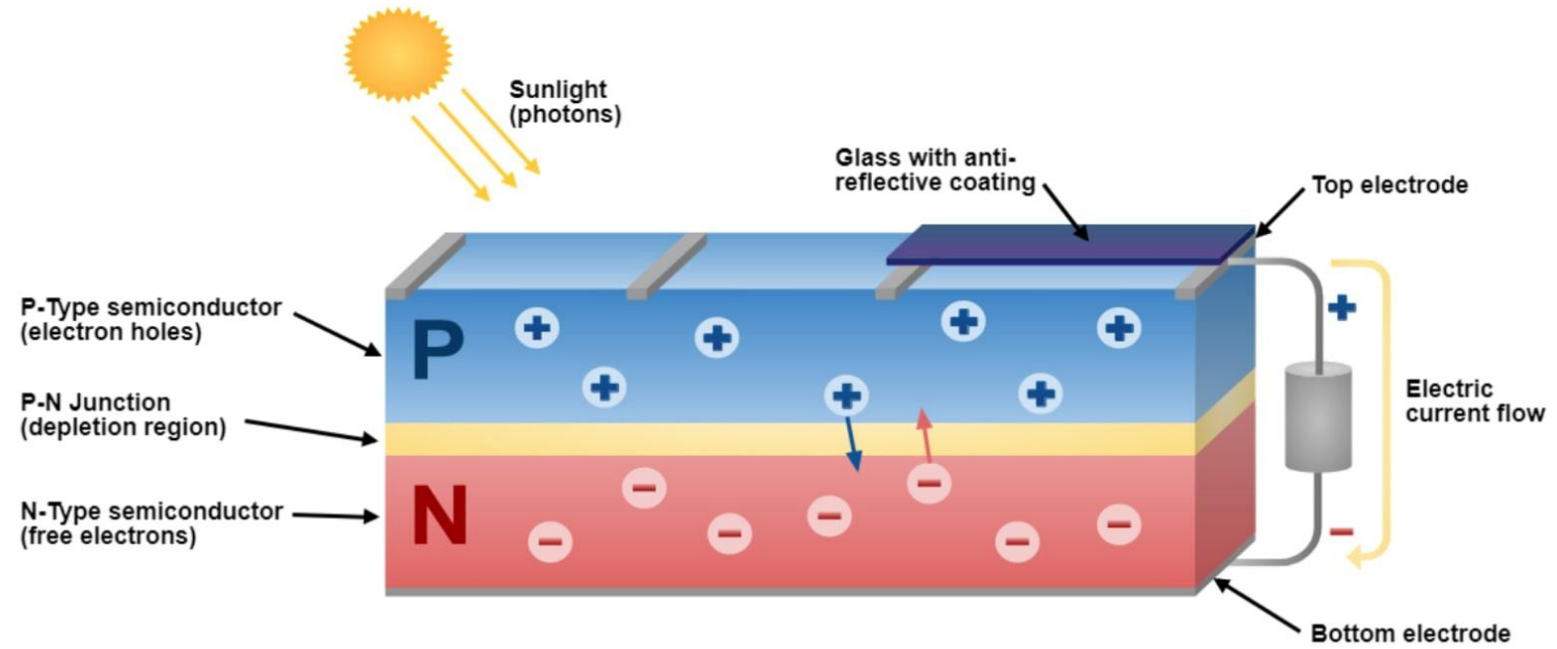
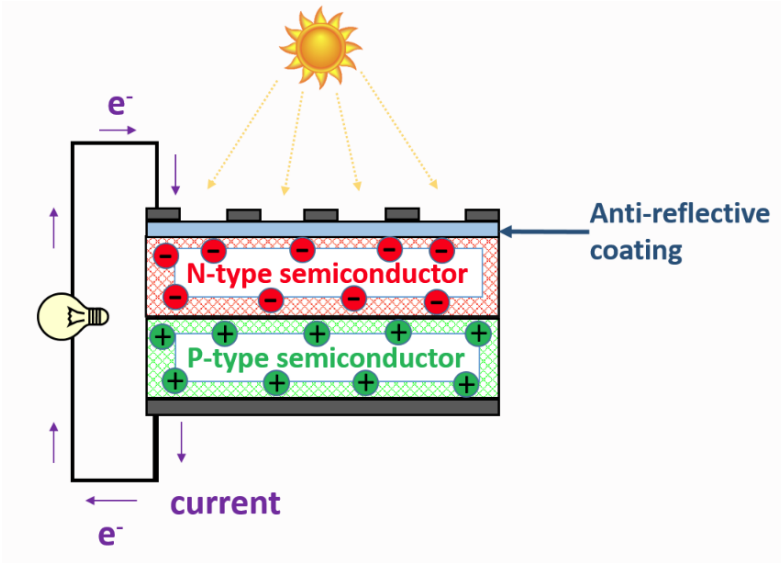


Main technology difference

P-Type



N-Type



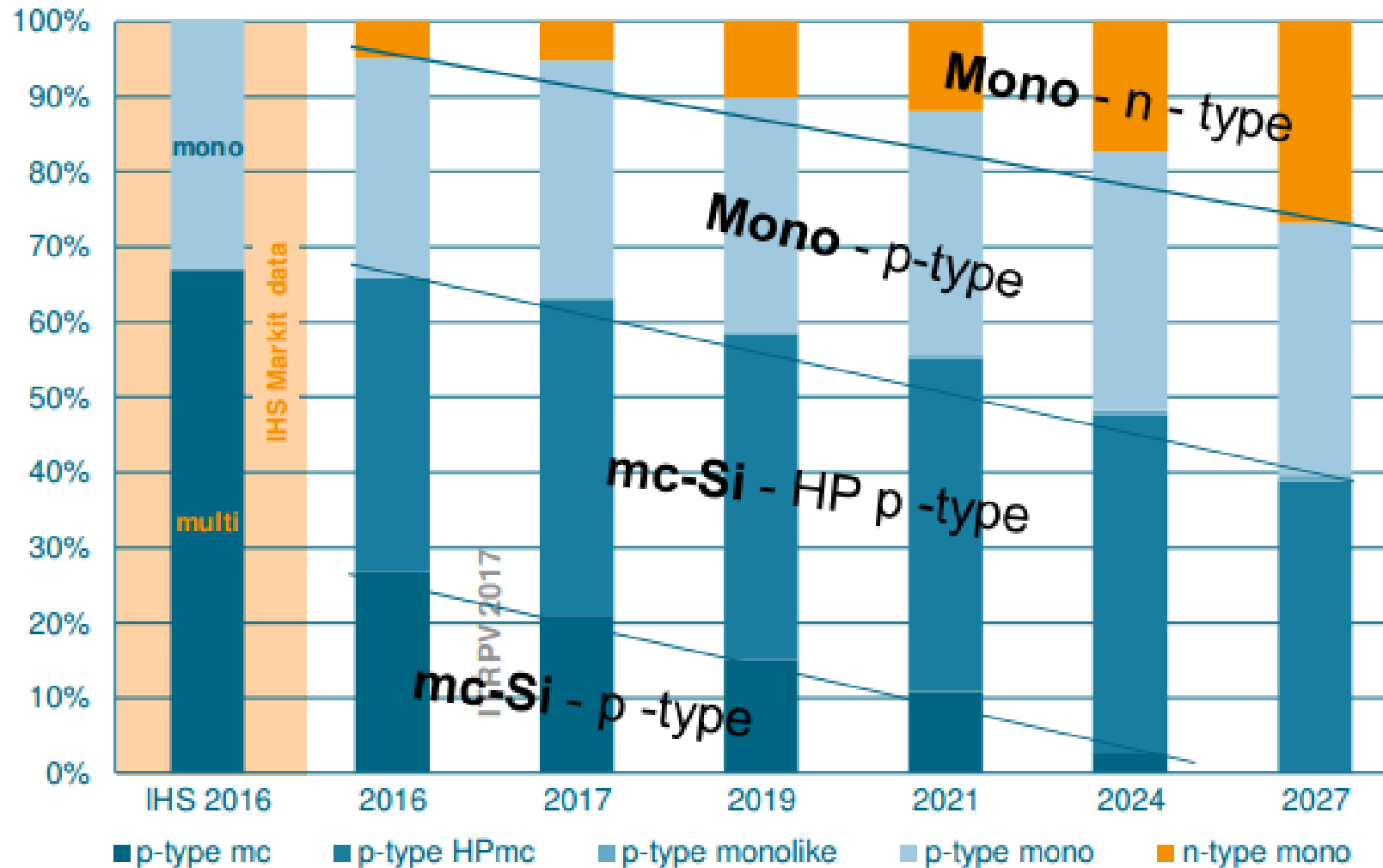
P Layer – Deficiency of electrons area, abundance of electron holes

P-N junction – depletion region created when P and N layers are in contact



N Layer – Abundance of electrons, few electron holes

Market Trend: N-type technology

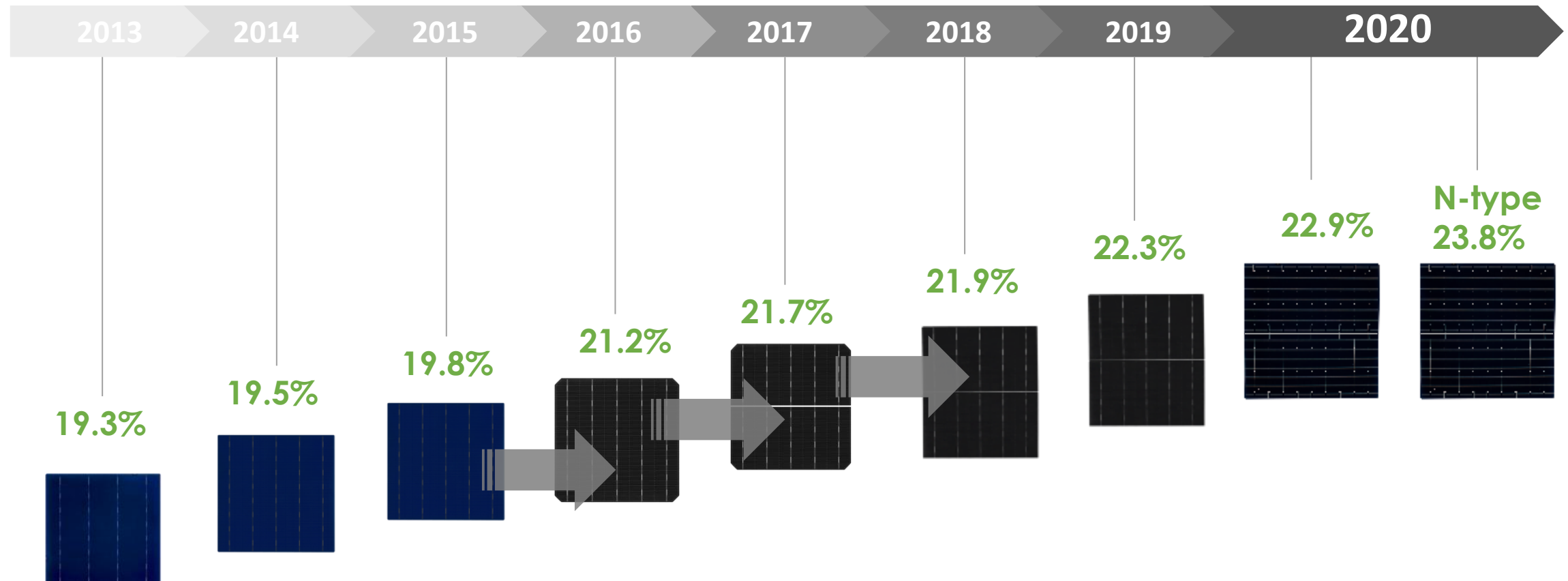
Trend: share of c-Si material types



N-type Product Portfolio 2020

N-type Half cell Cheetah (60/72)	N-type Half cell Swan 72pcs	66pcs N-type Cheetah Monofacial	66pcs N-type Cheetah All black	78pcs N-type Tiger Mono facial	78pcs N-type Tiger Bifacial
<ul style="list-style-type: none"> • 420Wp • Efficiency 20.87% • 9BB • 1st year: 1% • 2-30 year: 0.4% 	<ul style="list-style-type: none"> • 415Wp • Efficiency 20.63% • 9BB • 1st year: 1% • 2-30 year: 0.4% 	<ul style="list-style-type: none"> • 405Wp • 9BB • Efficiency 21.22% • 1st year: 1% • 2-30 year: 0.4% 	<ul style="list-style-type: none"> • 395Wp • 9BB • Efficiency 20.69% • 1st year: 1% • 2-30 year: 0.4% 	<ul style="list-style-type: none"> • 475Wp • 9BB • Efficiency 21.16% • 1st year: 1% • 2-30 year: 0.4% 	<ul style="list-style-type: none"> • 470Wp • 9BB • Efficiency 20.65% • 1st year: 1% • 2-30 year: 0.4%
					
<p>158 series</p>		<p>Cheetah</p>		<p>Tiger</p>	

Technology Roadmap-Cell Efficiency



Jinko N-type cell technology efficiency will be reached to **23.8%** in 2020.

Product Introduction — For Distribution Market

Linear power Warranty

1st year: **1%**

2-30 years: **0.4%**



Lower Working Temp.



Better Temp. Coefficient

-0.34%

-0.34%



Product Warranty

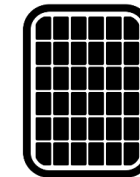
Black backsheet: **25** years

White backsheet: **15** years



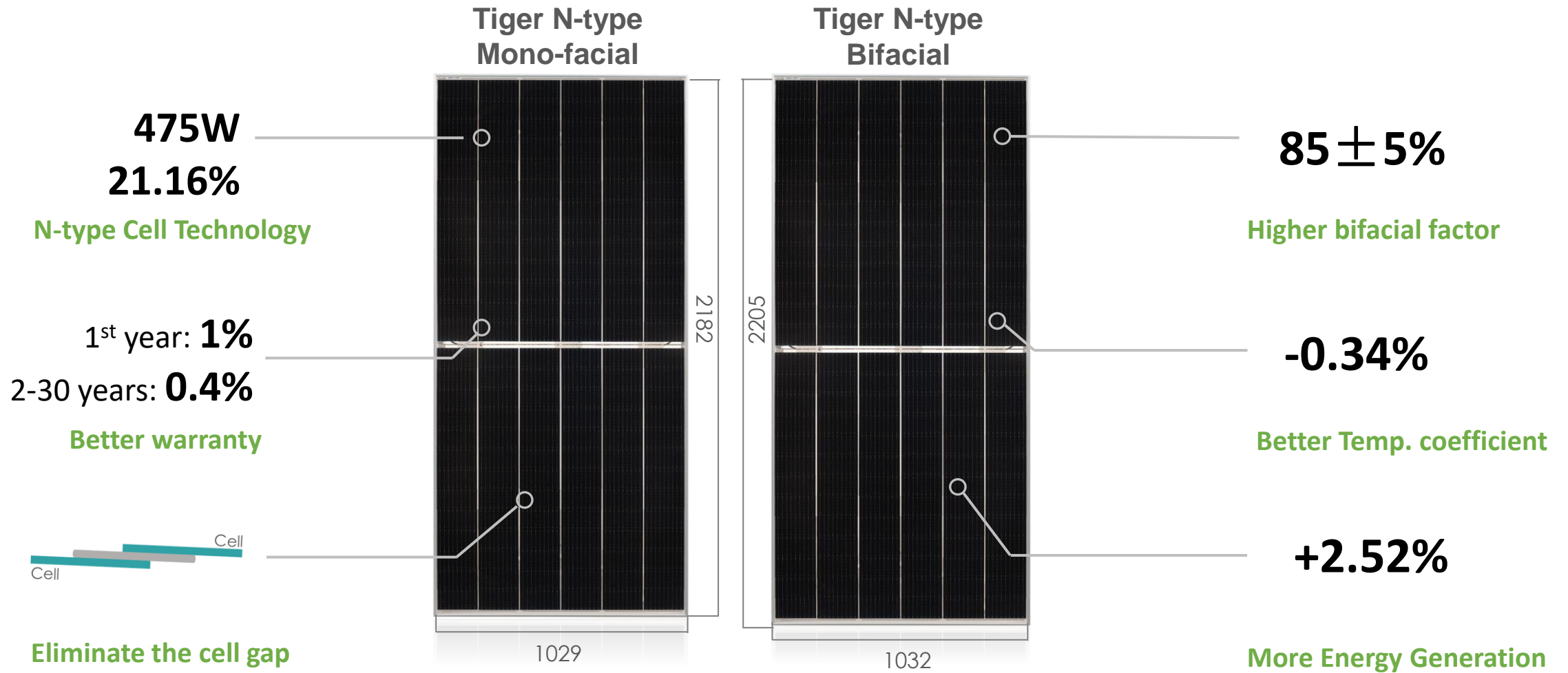
Higher Module Efficiency

Up to **21.16%**



All Black appearance

Product Introduction — For Utility Project



Main applications for N-type——Distribution Market

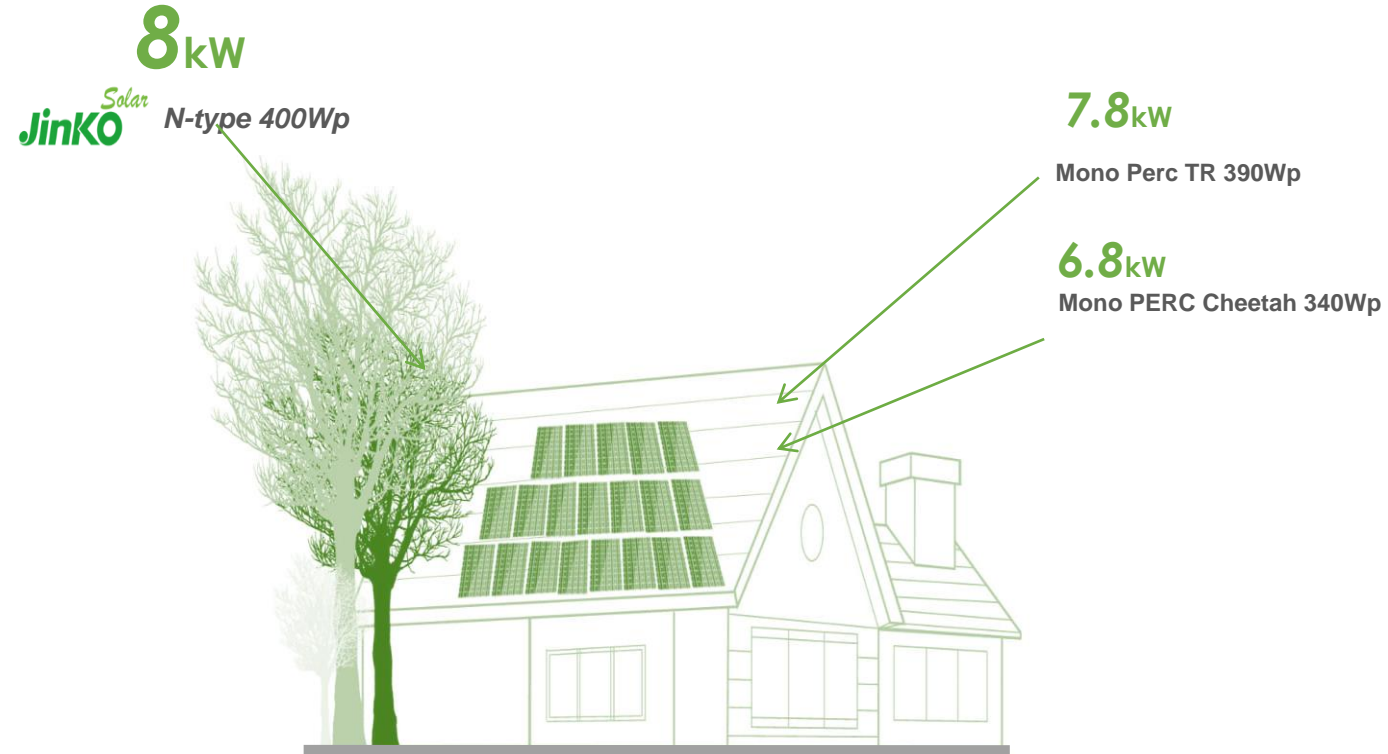
* The capacity of a solar power system with limited rooftop area



Residential Rooftop



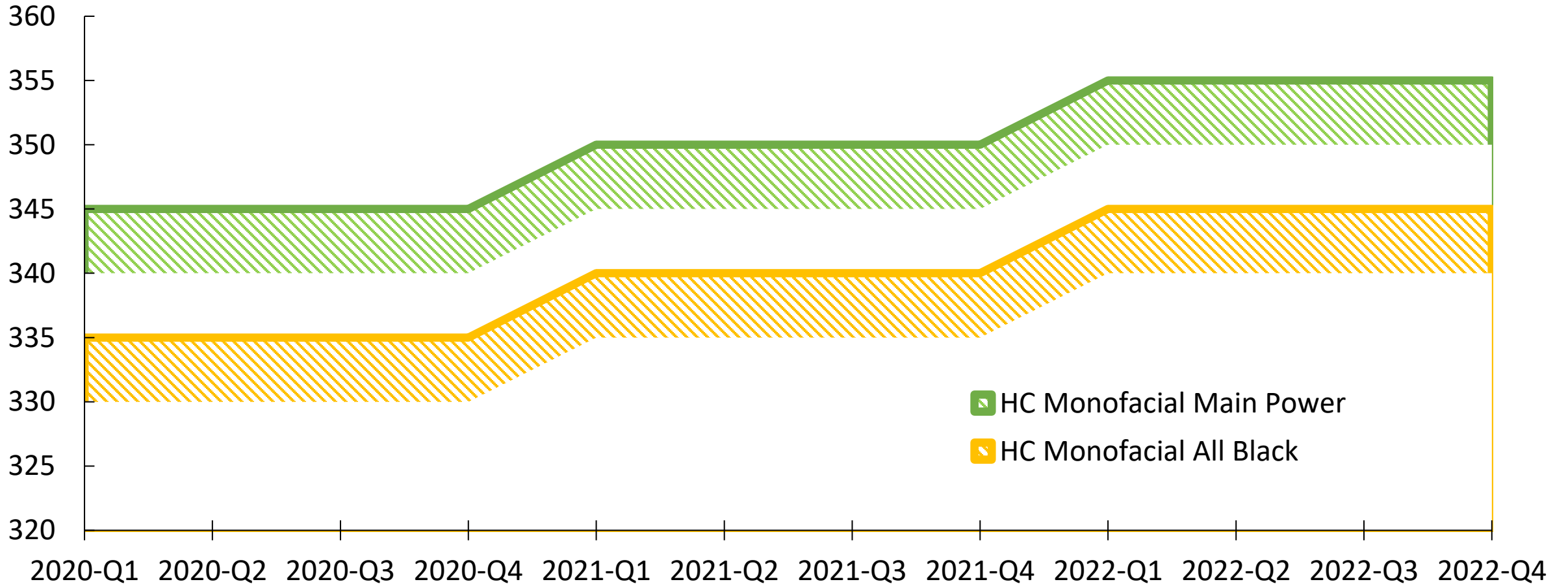
Commercial and Industrial Rooftop



Jinko N-type module is suitable for distribution market particularly because of its higher efficiency and power output.

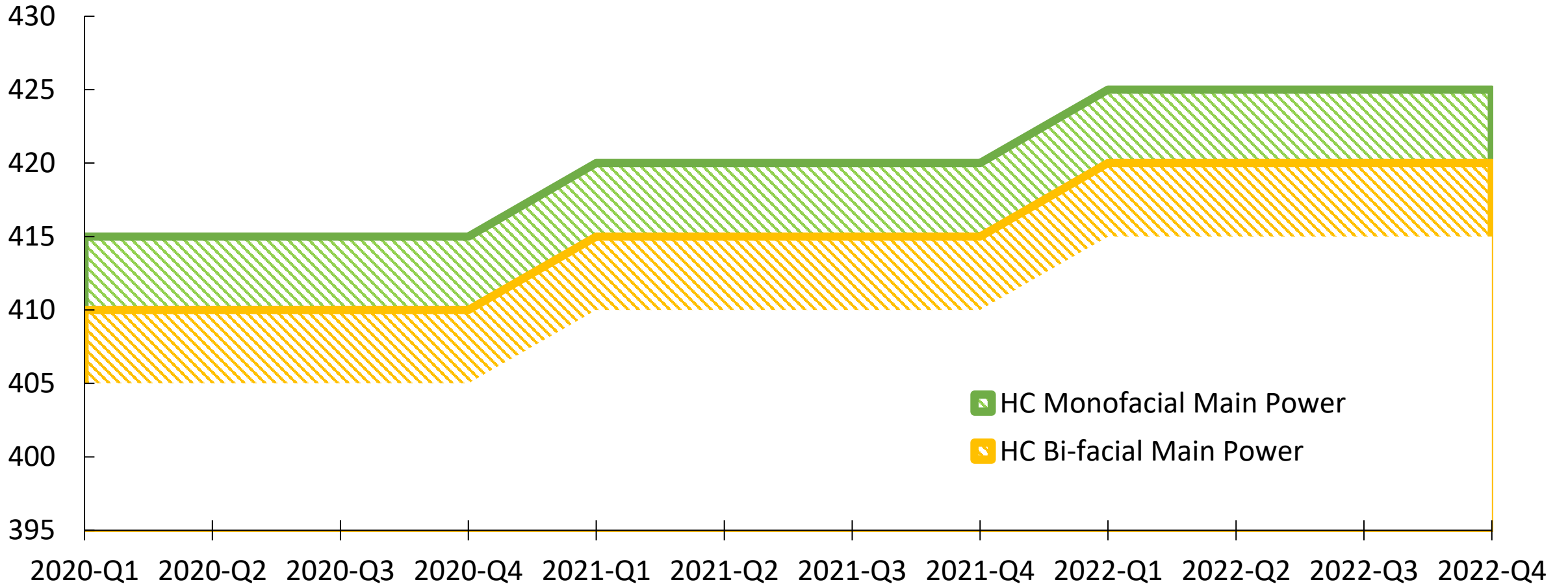
Product Introduction — Power roadmap

60pcs 158.75 N-type



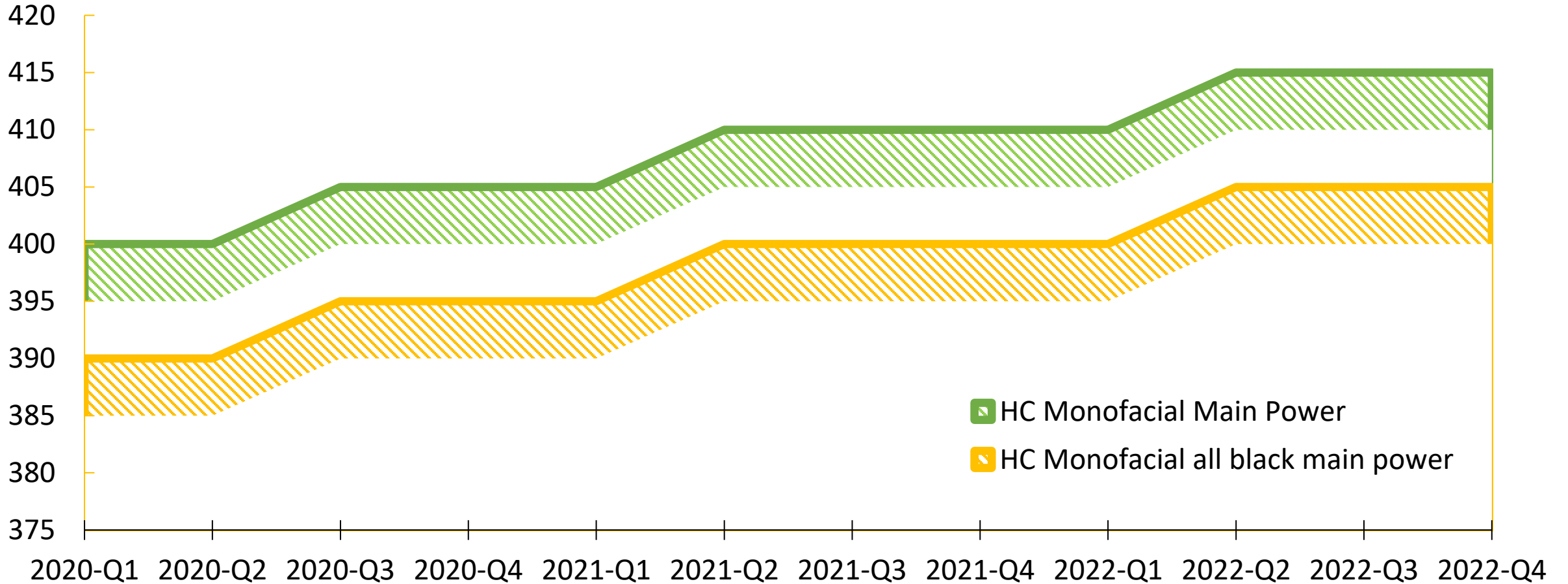
Product Introduction — Power roadmap

72pcs 158.75 N-type



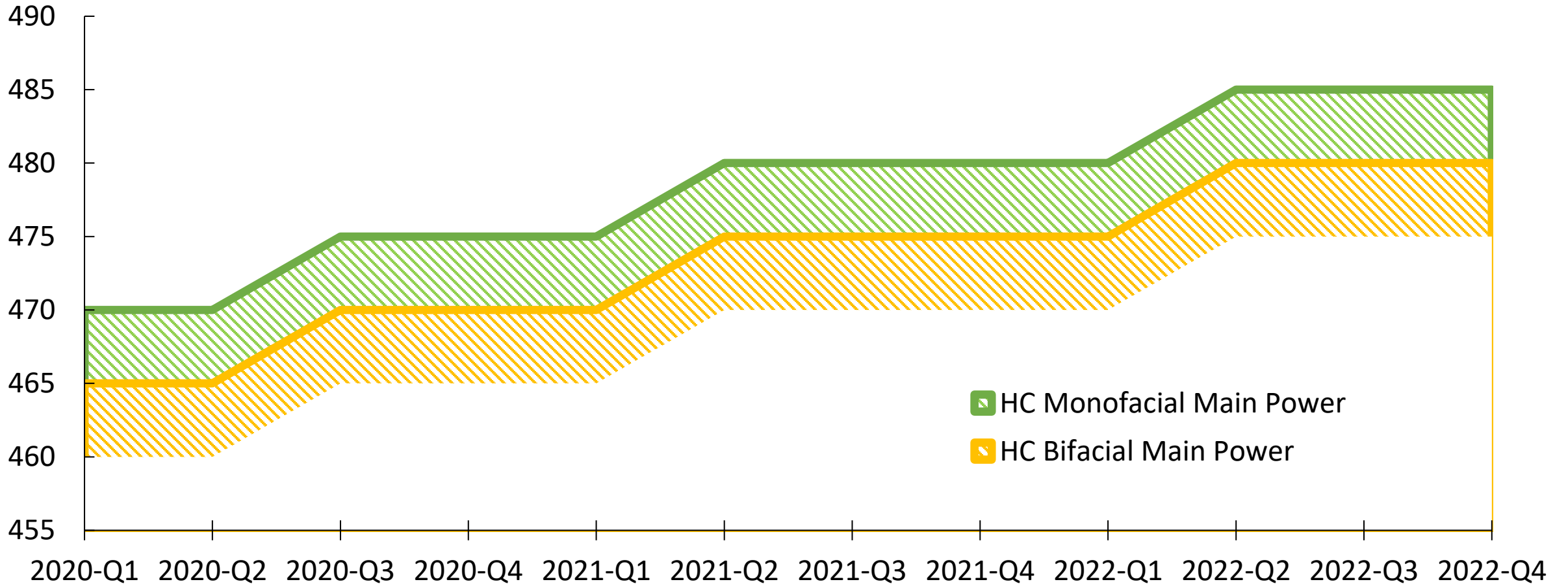
Product Introduction — Power roadmap

66pcs TR N-type

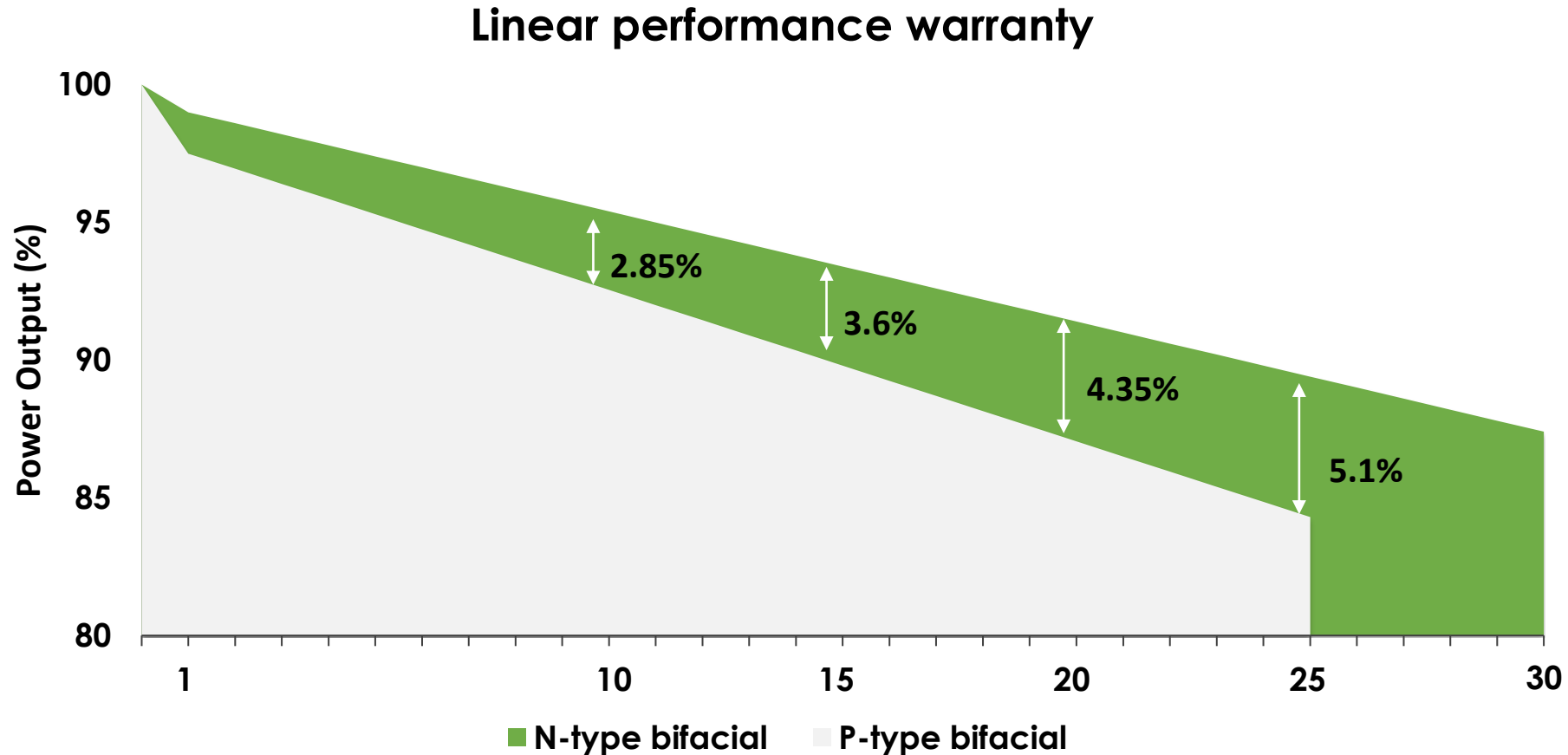


Product Introduction — Power roadmap

78pcs TR N-type

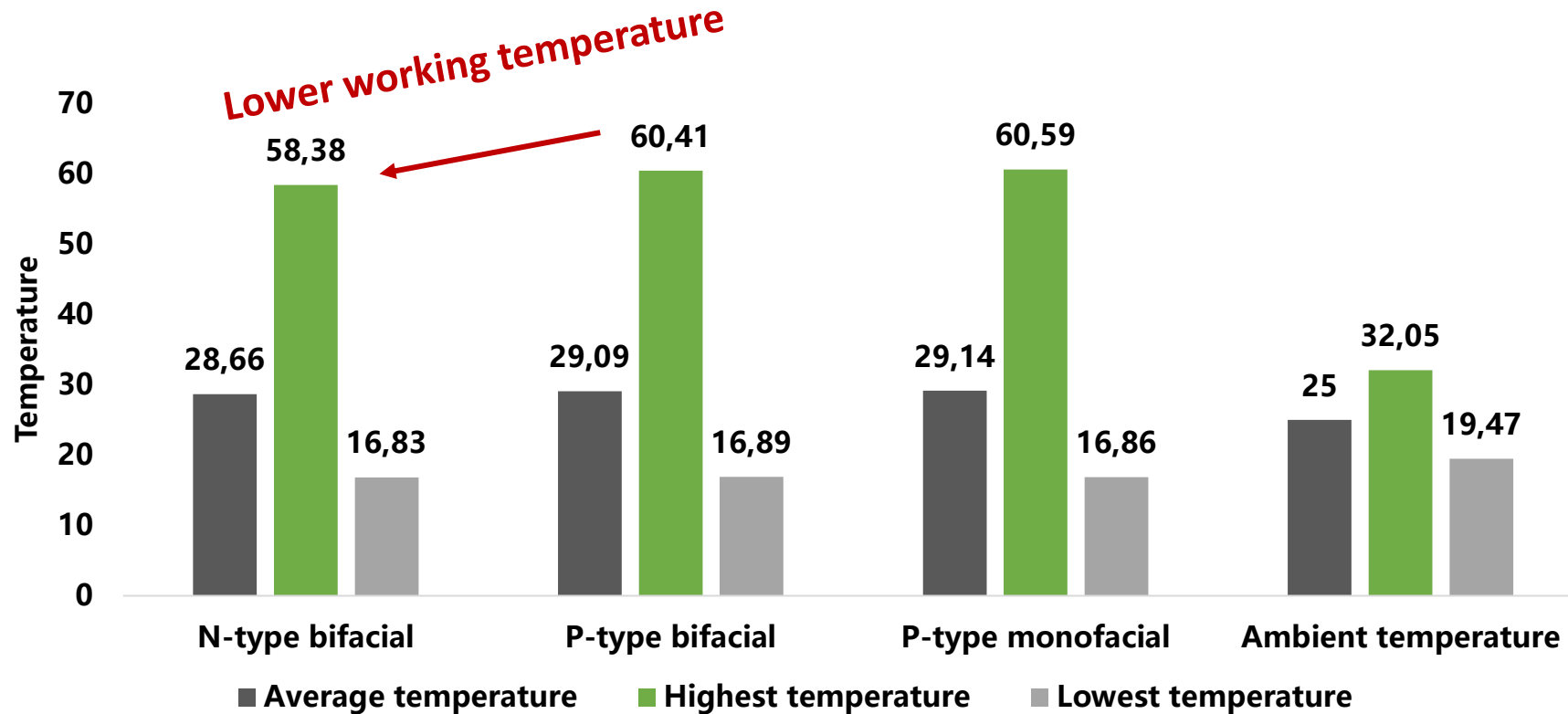


Linear performance Warranty



- ✓ **30-year** Warranty for Extra Linear Power Output.
- ✓ **-1.00%** 1st-year Degradation, **-0.4%** Annual Degradation.

Lower Operating Temperature



Location: Qionghai, China

Tilt: +/-60°

Installation height: 1.5m

Ground type: Sand

Albedo: 20.41%

Test period:

2019.10.23~2019.11.13

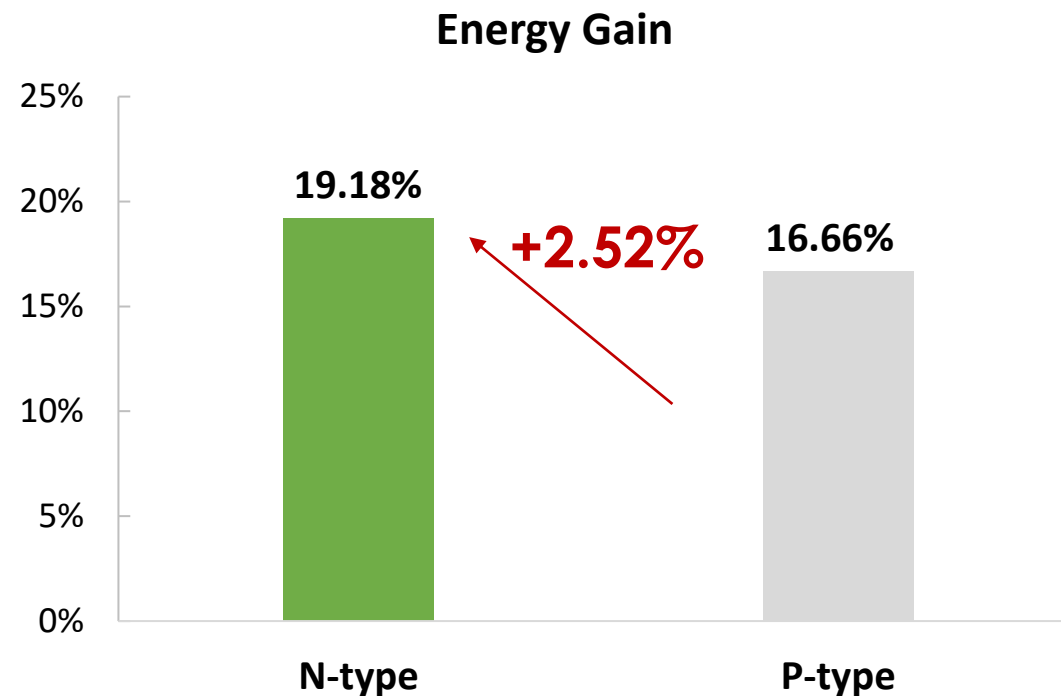
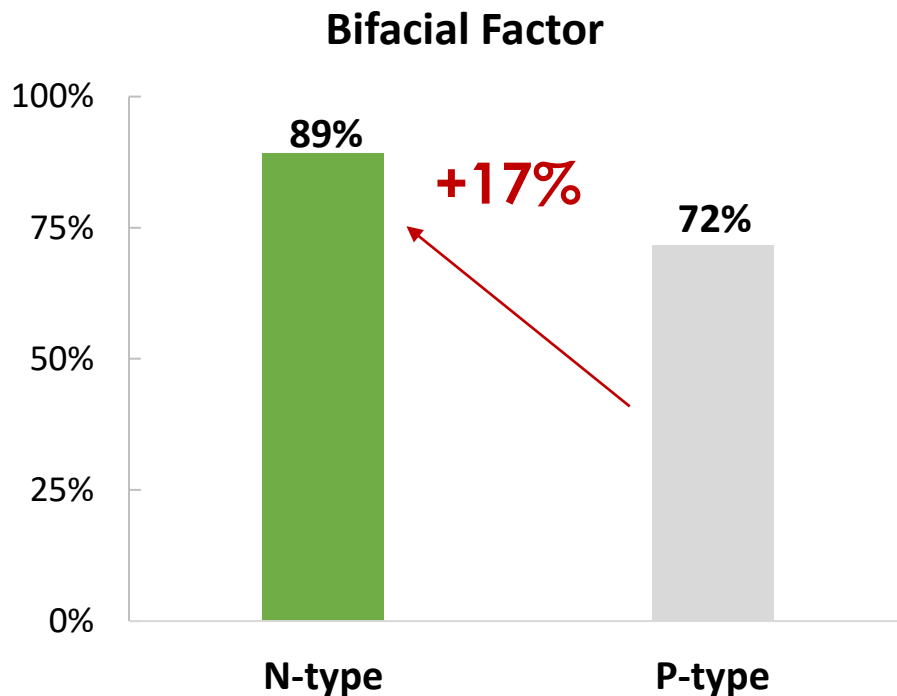
Module average temperature: P-type Mono facial>P-type Bifacial> N-type Bifacial

Module highest temperature: P-type Mono facial>P-type Bifacial> N-type Bifacial

N-type module has lower operating temperature

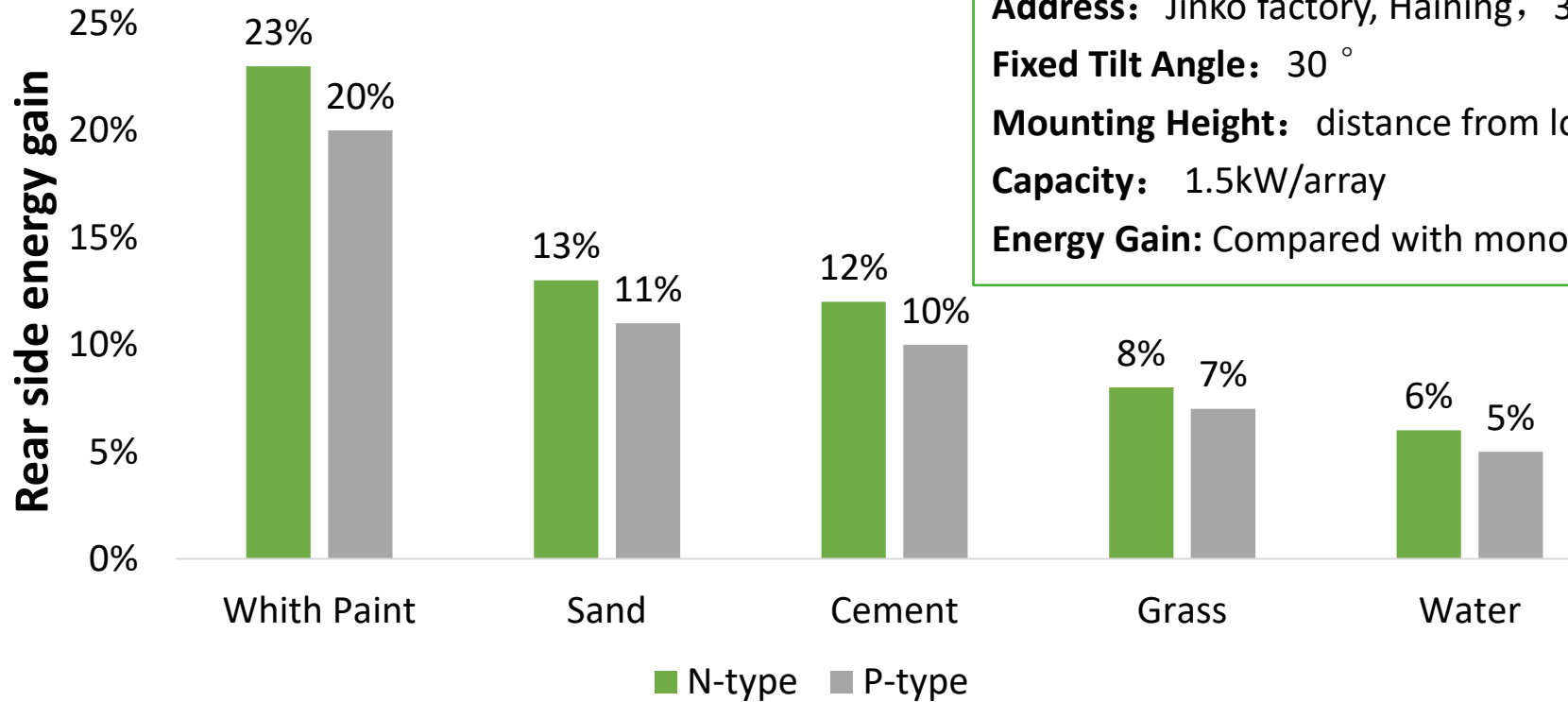


Better Bi-facial Factor



N-type bifacial generate **2.52%** more energy than p-type bifacial mainly because higher bifacial factor (**89% vs 72%**).

Haining Energy Generation Performance



Address: Jinko factory, Haining, 30.3° N/ 120.4° E
Fixed Tilt Angle: 30 °
Mounting Height: distance from lower edge to ground is 1.2m
Capacity: 1.5kW/array
Energy Gain: Compared with mono-facial module in same condition

✓ **N-type module has better rear side performance than P-type**
 ✓ **Testing module is using Transparent backsheet**

Albedo

80%-85%



22%-25%



30%-33%



10%-20%



2%-5%

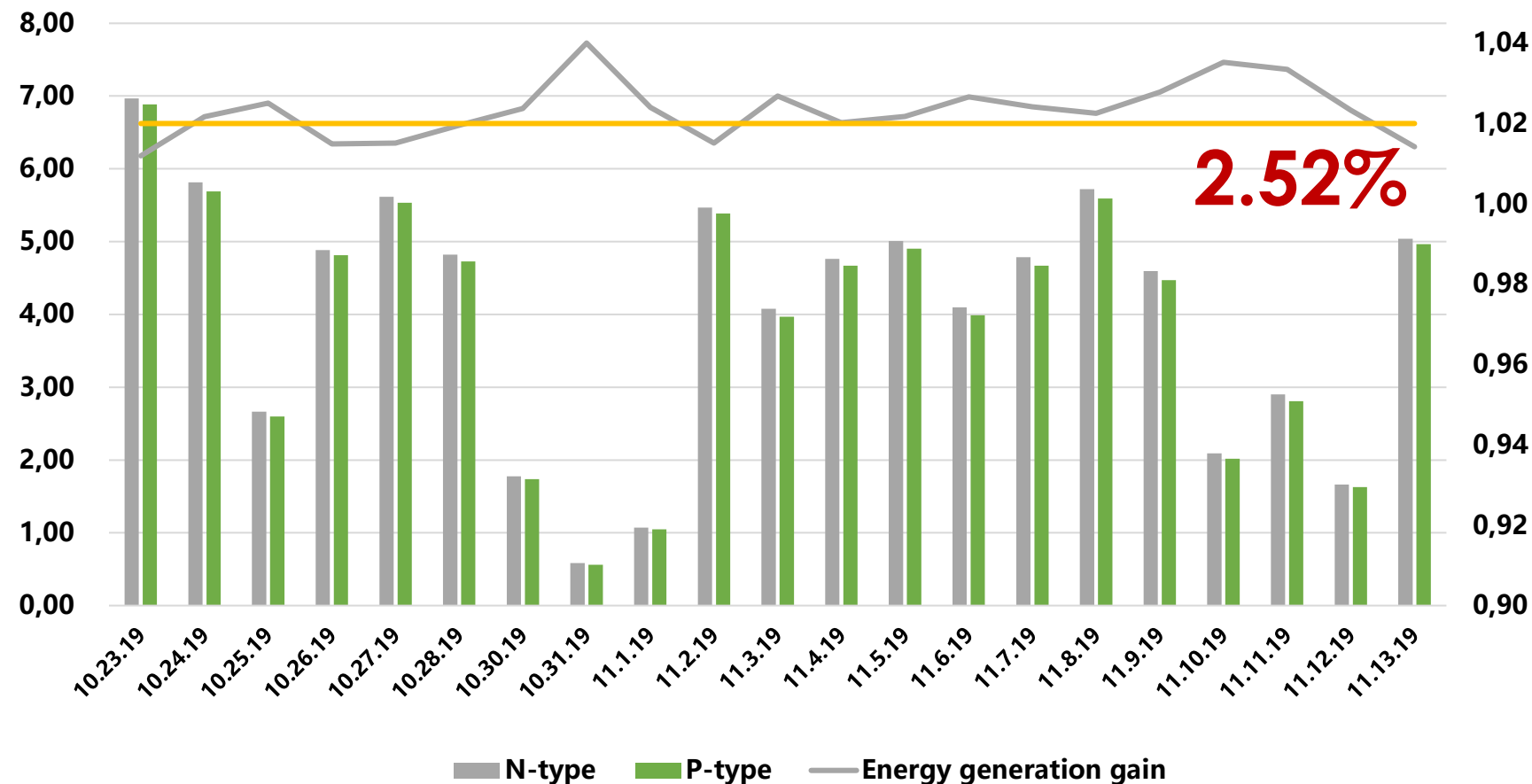


*Note: The PR of sand is higher than cement, because the yellow light the sand reflect is the module energy gain need. Bifacial with transparent backsheet have almost same bifacial factor as bifacial with dual glass.

3rd Party Testing Result

Comparing with P-type, there is about 2.52% energy generation gain

Energy generation
(kWh/kW)



Location: Qionghai, China

Tilt: +/-60°

Installation height: 1.5m

Ground type: Sand

Albedo: 20.41%

Test period:

2019.10.23~2019.11.13



CEI 中国电器科学研究院
China National Electric Apparatus Research Institute

Source: Testing result from CQC

Advantages of N-Type



- 01** Ultra-high Power for the Lowest LCOE and Highest IRR
- 02** Ultra-high Efficiency
- 03** Nearly no LID and nearly no LeTID
- 04** Highly Recommended for PPA Projects
- 05** Lower initial Degradation
- 06** Longer Product & Linear Power Warranty



Thank you!



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Bedankt voor het kijken. U krijgt de link om het webinar terug te kijken per e-mail.

Heeft u vragen? Neem contact op met SolarToday.

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