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**webinar** is powered by  
**LONGi**

18 July 2024

2:00 pm – 3:00 pm | BST, London  
3:00 pm – 4:00 pm | CEST, Berlin  
4:00 pm – 5:00 pm | EEST, Athens



**Mark Hutchins**  
Magazine Director  
pv magazine



**Blathnaid O'Dea**  
Editor  
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pv magazine  
**webinars**

## Going big on back contact




**Francisco Estela**  
CTO Europe  
LONGi



**Channey Ni**  
Head of Product Solutions, Utility Europe  
LONGi



# Welcome!

**Do you have any questions?**  

Send them in via the Q&A tab.  We aim to answer as many as we can today!

You can also let us know of any tech problems there.

**We are recording this webinar today.** 

We'll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience.  

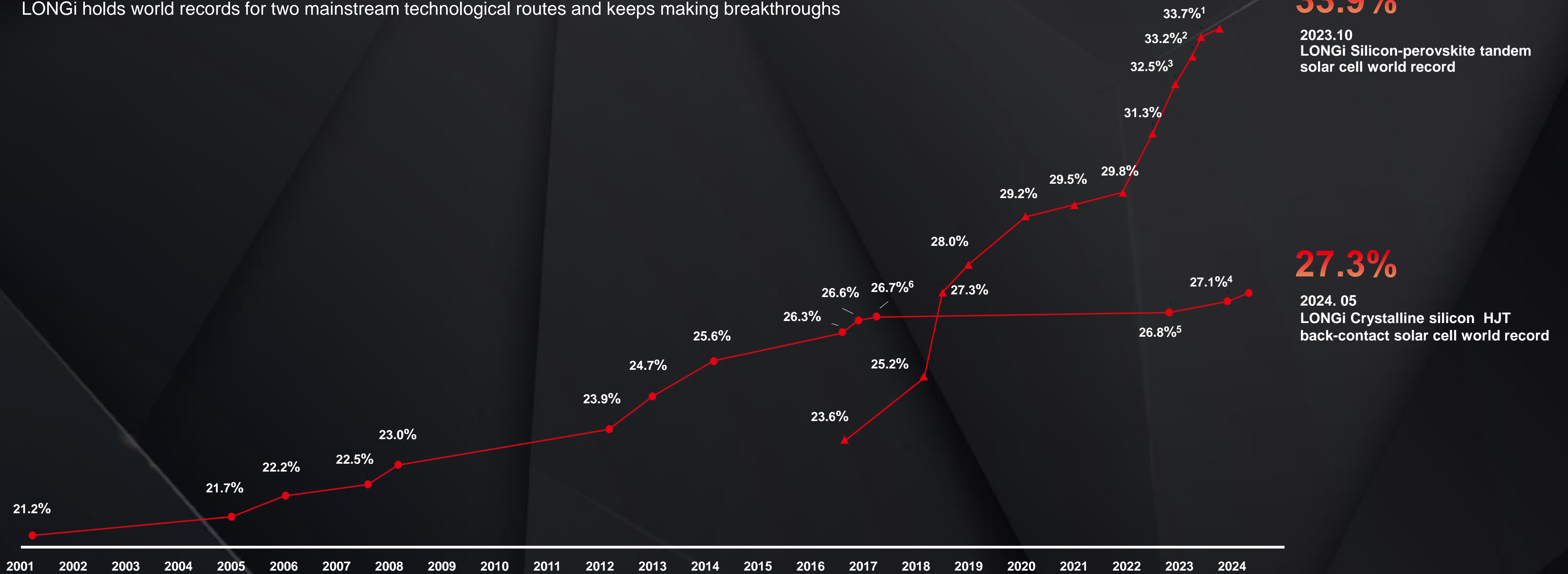


**WHY IS BC THE MOST OPTIMAL CHOICE?**



# WE' RE MAKING HISTORY, AND THE QUEST GOES ON

LONGi holds world records for two mainstream technological routes and keeps making breakthroughs



**33.9%**

2023.10  
LONGi Silicon-perovskite tandem solar cell world record

**27.3%**

2024.05  
LONGi Crystalline silicon HJT back-contact solar cell world record

Note – 1- 2023.04, KAUST (KPV-Lab) 2- 2023.06, KAUST (KPV-Lab) 3- 2022.12, Helmholtz-Zentrum Berlin (HZB)  
4- 2023.12 LONGi 5- 2022.11 LONGi 6- 2017.03, Kaneka Corp.

# THESE AREN'T JUST NUMBERS, THEY'RE OPTIMAL VALUES IN BUSINESS REALITIES



**Mono Si**  
**Monocrystalline Si wafer**  
RCz and diamond wire slicing  
Reduced the cost of monocrystalline silicon wafers  
Making it the dominant choice in the industry



**PERC Bifacial**  
**Mono Si PERC cell**  
Continuously achieving PERC cell efficiency records  
Addressing monocrystalline PERC light-induced degradation issues  
Conducting systematic research on the electricity generation advantages of PERC modules

**Bifacial electricity generation**  
Accelerated adoption of reliable dual-glass modules at 10GW scale  
Validated electricity generation and reliability globally through third-party partnerships



**HPDC**  
**HPDC series**  
Enhancing double-sided electricity generation for utility markets with high-efficiency N-type products

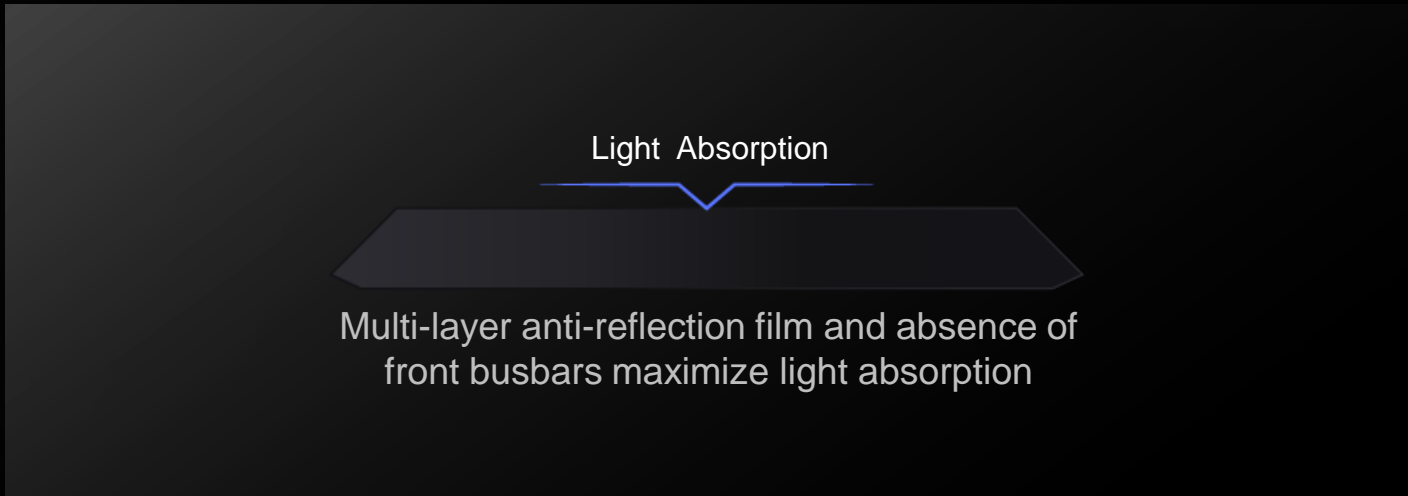


**HPBC**  
**HPBC series**  
BC platform's first-generation products  
Combining high efficiency and aesthetics, ideal for low double-sided scenarios

# WE BELIEVE BC IS THE ULTIMATE TECHNOLOGY

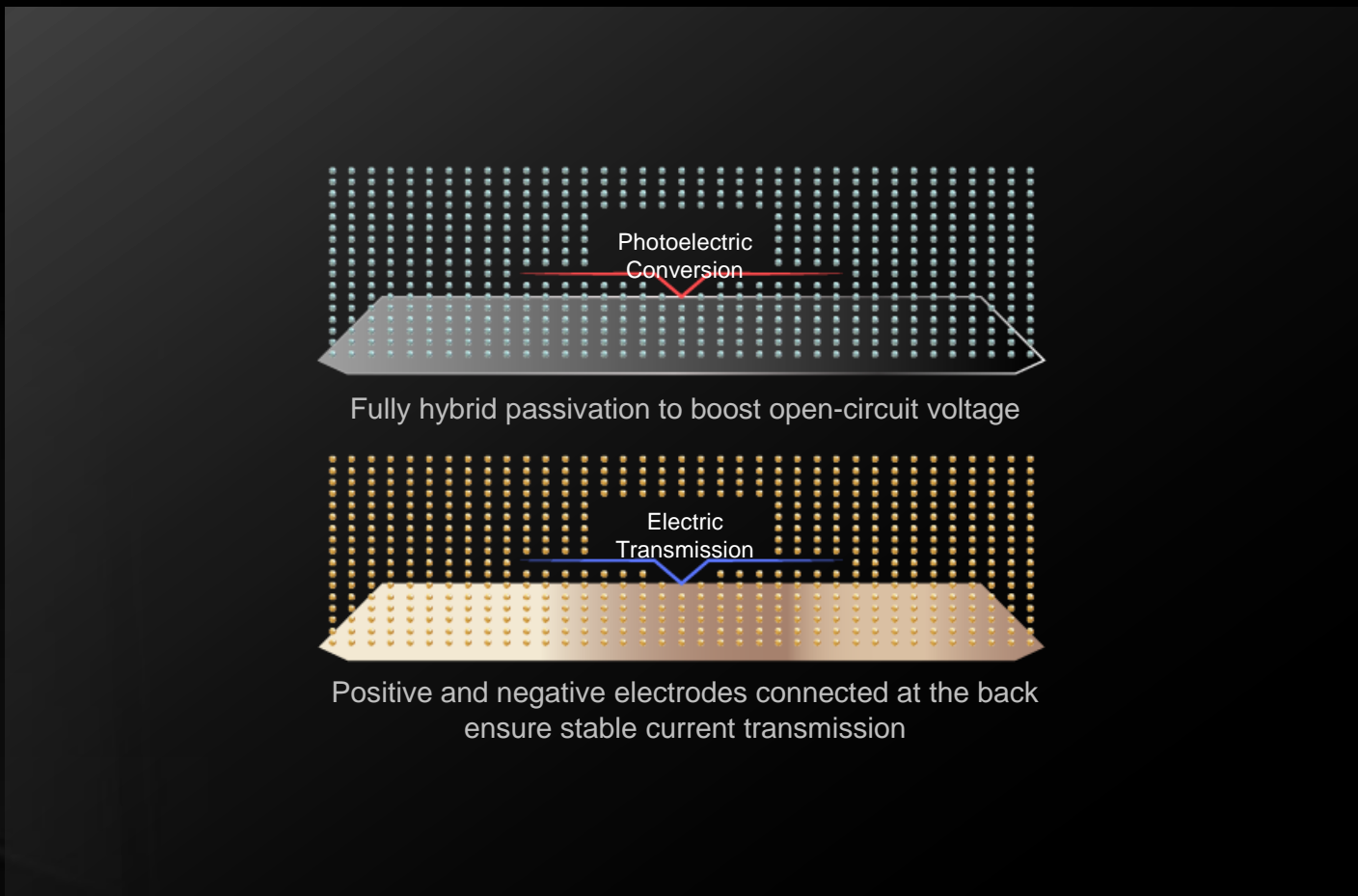
## Zero

Light loss



## 60% +

Reduced current loss<sup>1</sup>



## Maximum

Technology compatibility

# 29.1%

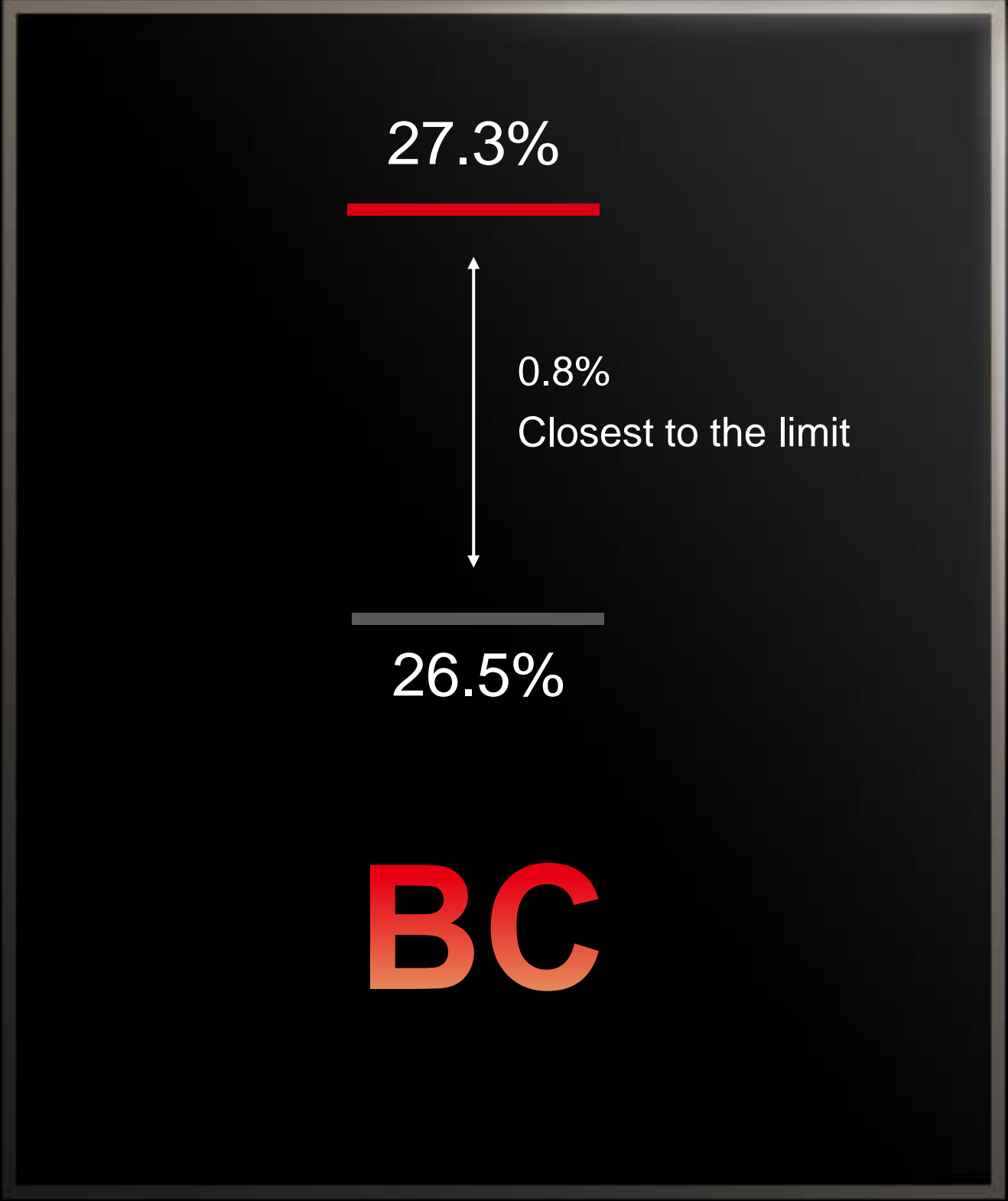
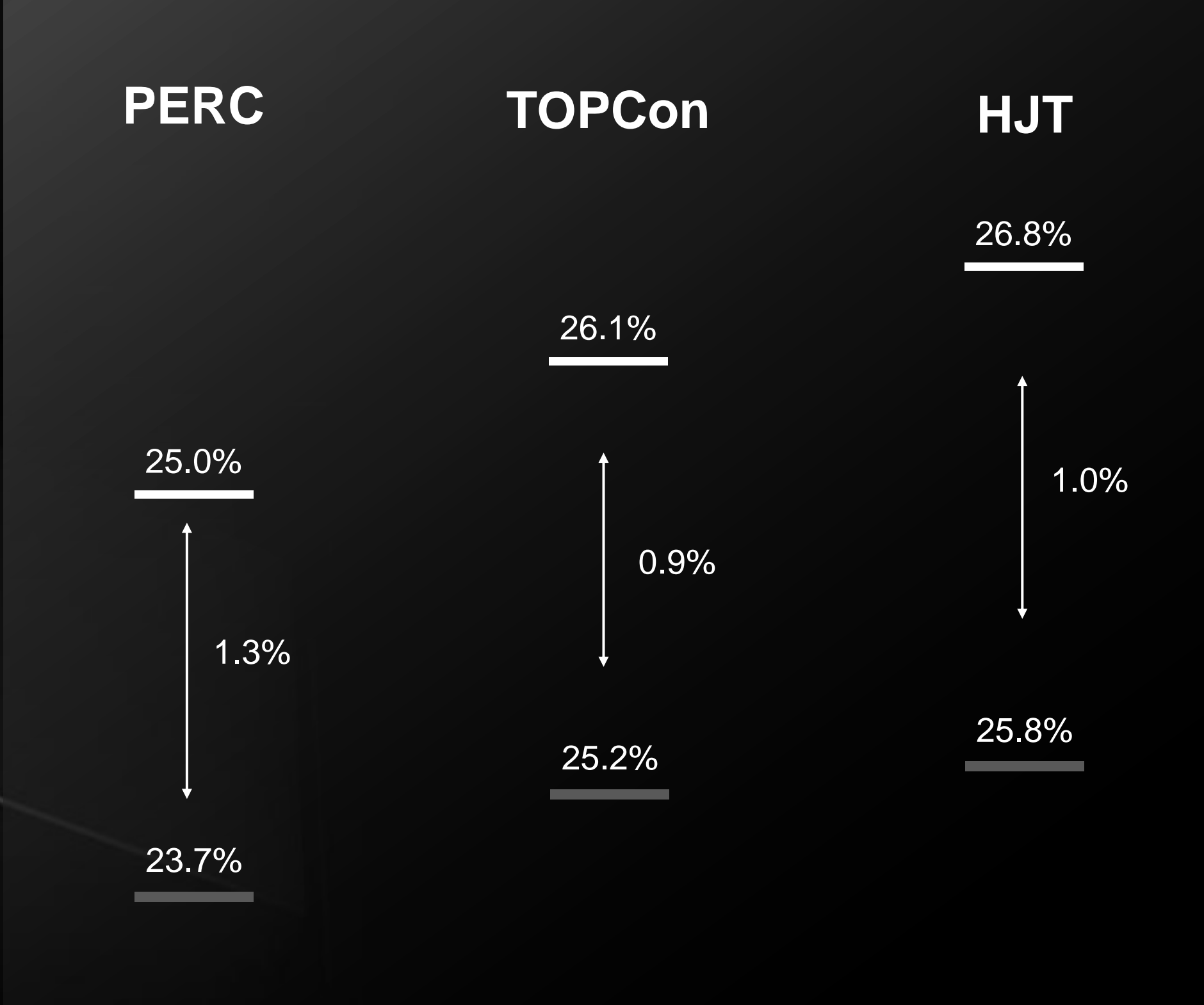
Highest practical cell efficiency among all Si technologies<sup>2</sup>

Note – 1- compared to TOPCon  
2- single-junction crystalline Si cell technologies

# WE ARE ON THE CLOSEST PATH TOWARDS THE EFFICIENCY WORLD RECORD

CELL EFFICIENCY  
WORLD RECORD

CELL EFFICIENCY  
IN MASS PRODUCTION



# DEDICATED INNOVATION MAKES THE COMMERCIALIZATION OF BC HAPPEN

## Our unmatched R&D capability

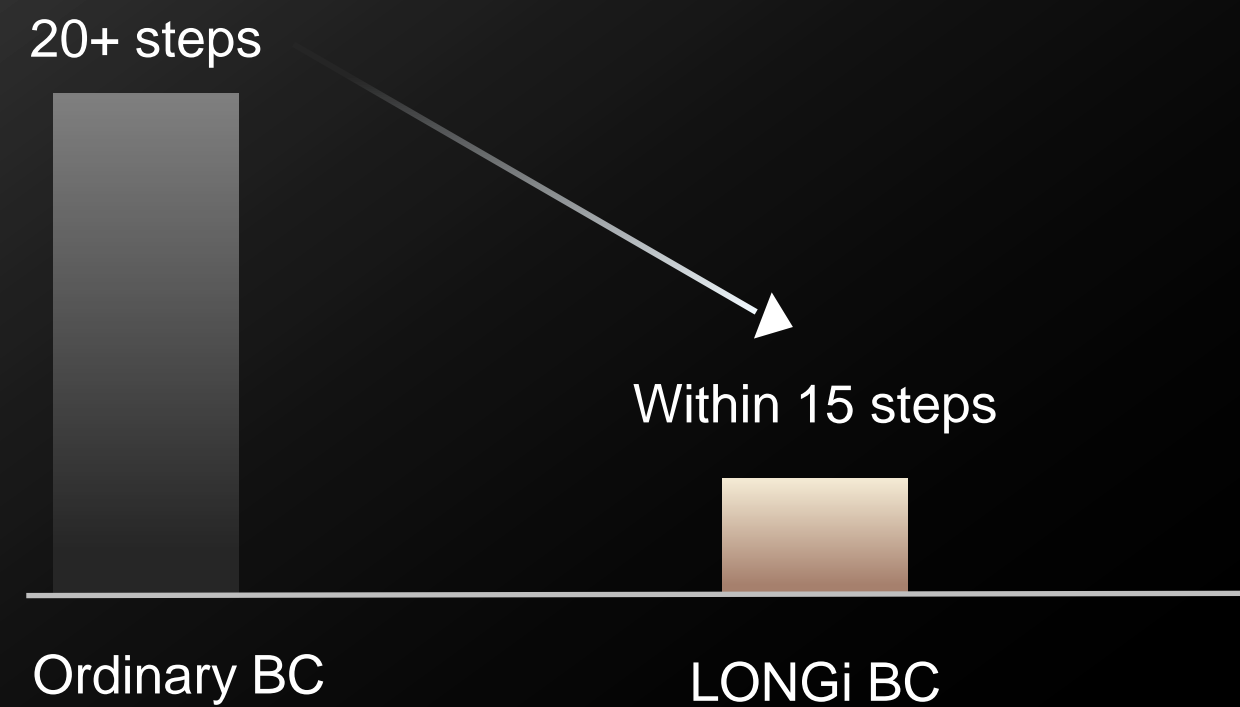
**1000+** R&D team members

**500+** Patent application filed

**120+** Patent granted

## The technical breakthroughs

### Streamline the process



### Innovation in insulation materials

The utilization of self developed insulation materials help raise the bar on cell efficiency

**0.2%+ up**



# THE WORLD IS BEING ILLUMINATED BY OUR BC PRODUCTS

LONGi is the **first** company that successfully commercialized BC PV modules at > 10 GW level

## 11 GW+

Shipments achieved  
Proven record of large volume delivery

Guarantee of future production capacity

## 38 GW+

capacity in operation



# WHAT TO EXPECT NEXT?

**7 years+**

Efforts

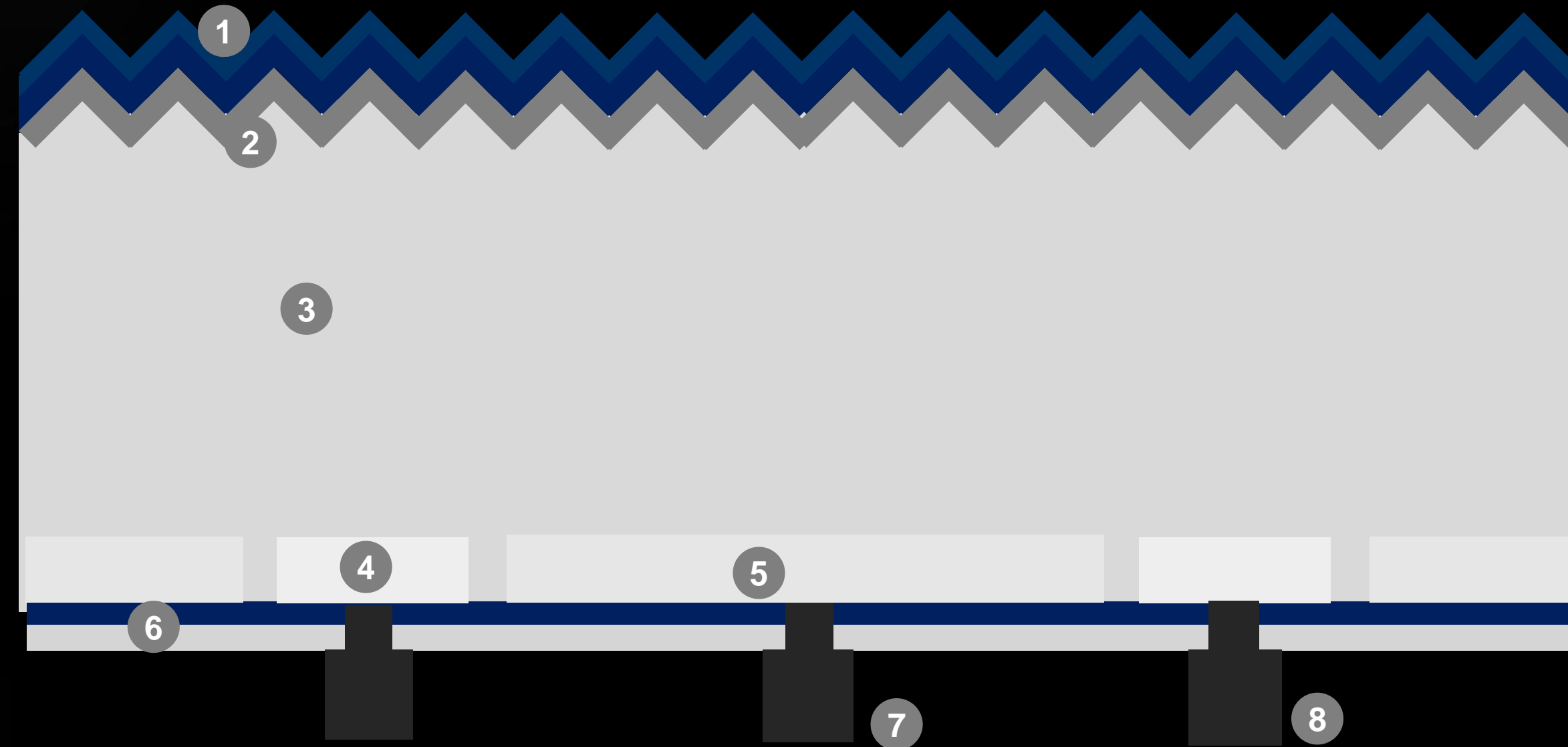
**RMB 1 billion+**



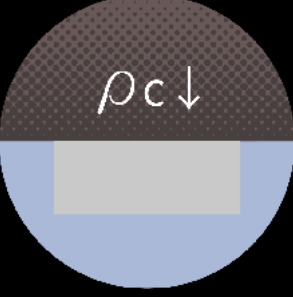
Investment

# HPBC 2.0

**SUPERIOR CONVERSION EFFICIENCY, POWER, TEMPERATURE COEFFICIENT, AND HIGHER RELIABILITY COMPARED TO THE PREVIOUS GENERATION**

- 1 Multi-layer antireflection coating
- 2 Low-recombination passivation layer
- 3 N-type substrate
- 4 Passivation layer p+
- 5 Passivation layer n++
- 6 Multi-layer passivating antireflection coating
- 7 8 Positive and negative metal electrodes



- I  Improved passivation performance, reduced dark saturation current  $J_0$ , increased  $V_{oc}$ , resulting in optimized power temperature coefficient and weak light performance.
- II  A front with no gridline shading can maximize the optimization of the front optical film layer and front surface passivation.
- III  Both the backside positive and negative electrodes are adopted with ultra-low-recombination heterojunction technology, matched with a low-resistance contact layer to reduce the contact resistance  $\rho_c$  and improve the efficiency of the cell.

WHAT DOES **Hi-MO 9** MEAN TO U?

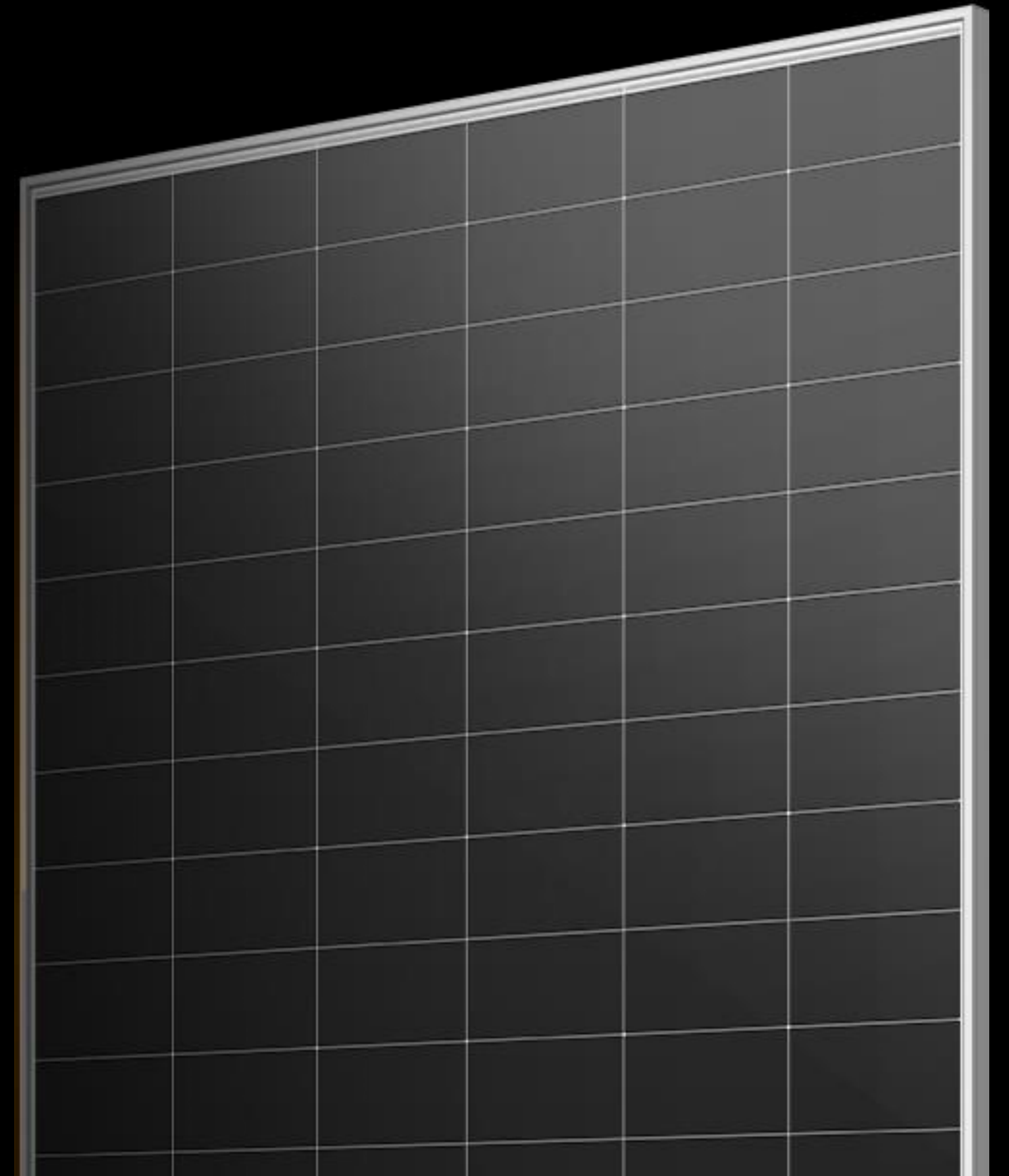


It redefines the ultra-high efficiency benchmark for commercially available modules

It has enhanced reliability with design aesthetics

**Hi-MO 9**

**IT'S THE BEGINNING OF THE  
NEXT ULTIMATE**



# BETTER EFFICIENCY, SUPERIOR POWER

## Hi-MO 9

Up to **24.43%**

**660W**

**5.0%+** more  
installed capacity

TOPCon

23.32%

**630W**

HJT

23.51%

**635W**



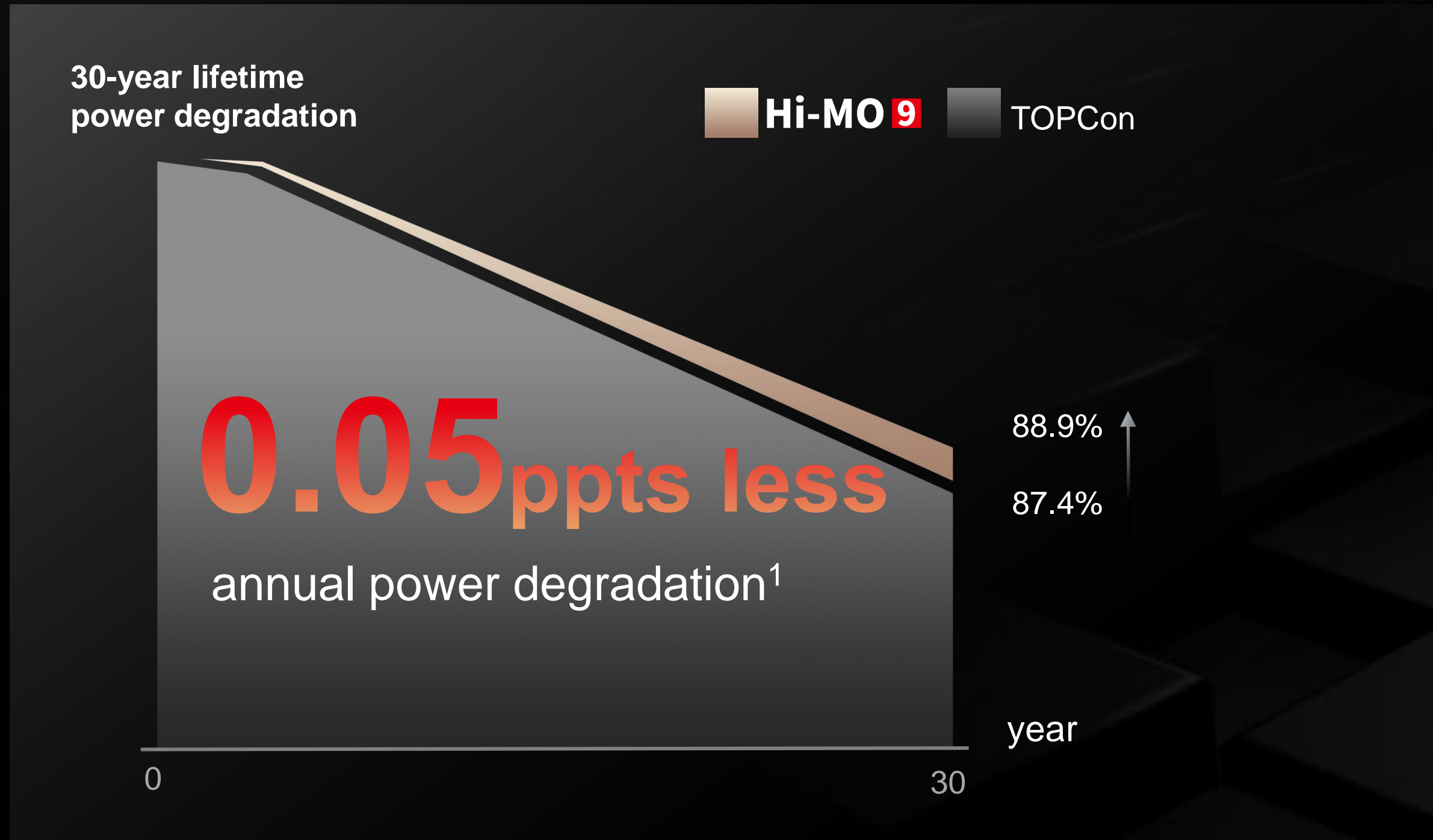
HPBC 2.0 TECHNOLOGY



TAIRAY WAFER

Note – compared with 630W TOPCon with the same module dimension at 2382mm x 1134mm, under the condition of same land area

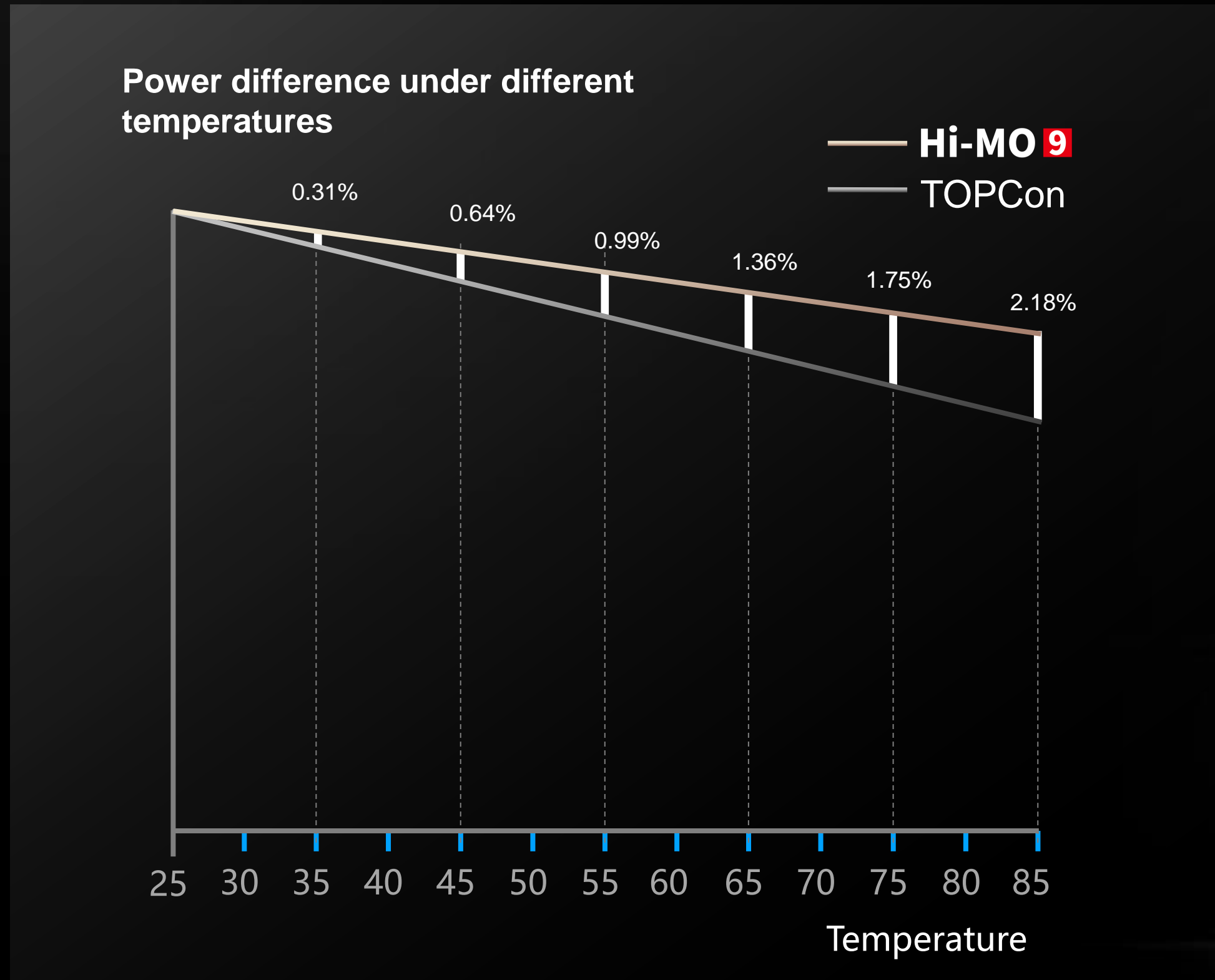
# LOWER DEGRADATION FOR UNWAVERING PERFORMANCE



**1.51% more**  
power generation<sup>2</sup>

1 - Compared with TOPCon  
2 - Per watt power generation compared with TOPCon, includes degradation adaptation optimization

# LOWER TEMPERATURE COEFFICIENT, BOOSTED PERFORMANCE



UP TO  
power

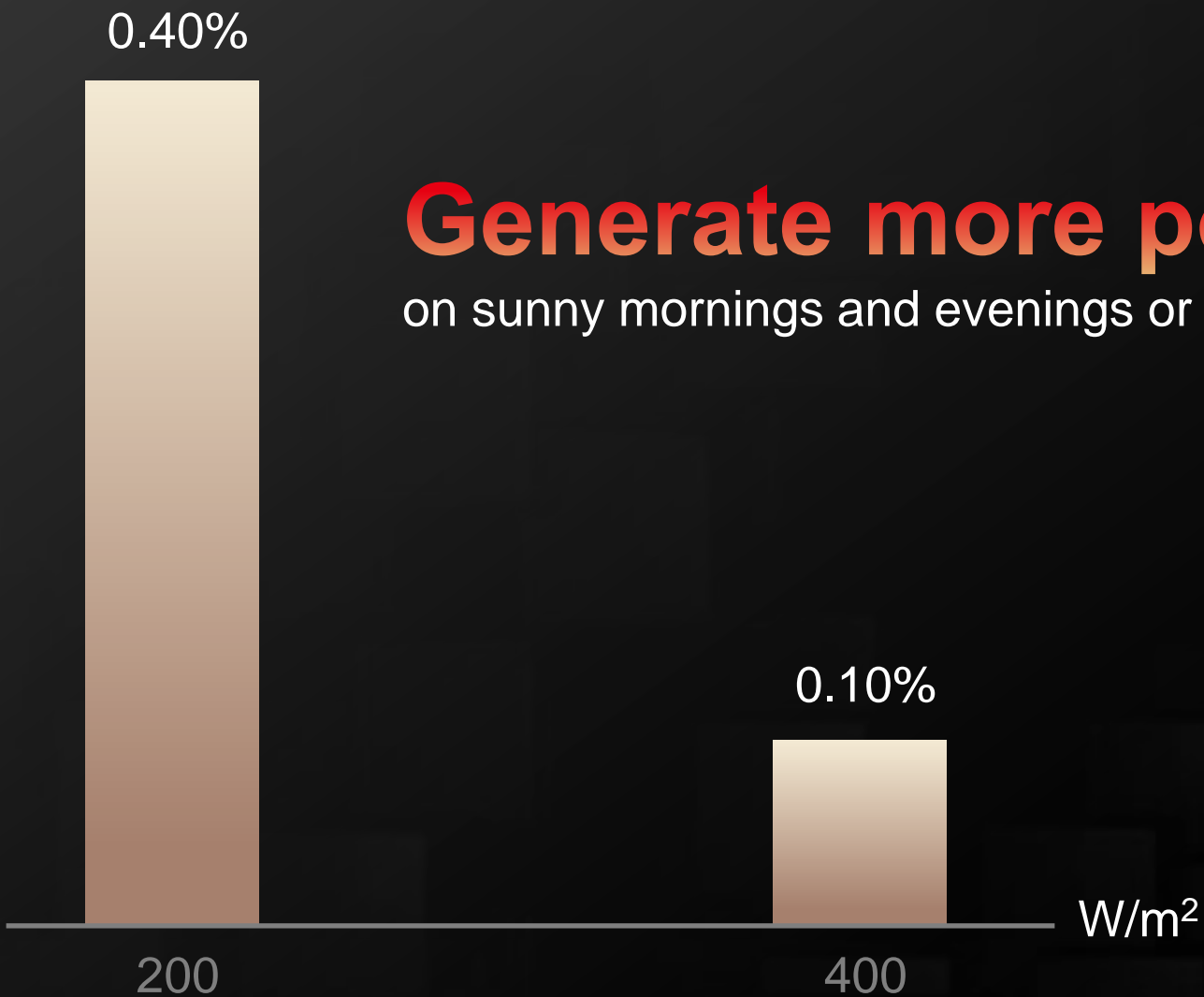
**2.18%** higher

Note – per watt power generation compared with TOPCon under the same environmental condition



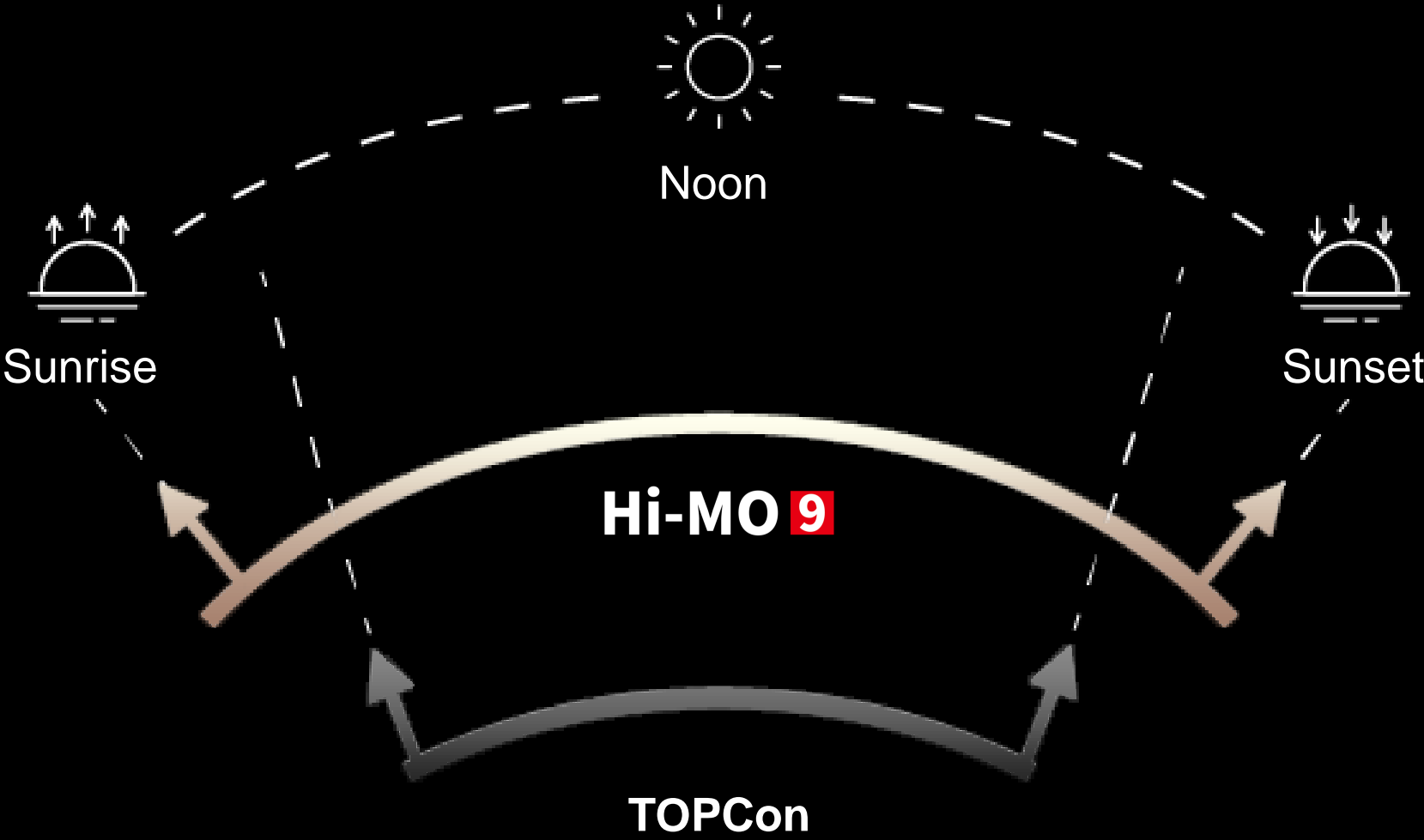
# THE DAYTIME BRIGHTNESS IS EXTENDED

Daytime Power Improvement under different Solar Irradiance



**Generate more power**  
on sunny mornings and evenings or cloudy days

Longer time for power generation



Note – compared with TOPCon under low-irradiation condition

# EXCEPTIONAL STRUCTURE FOR INCREASED STRENGTH

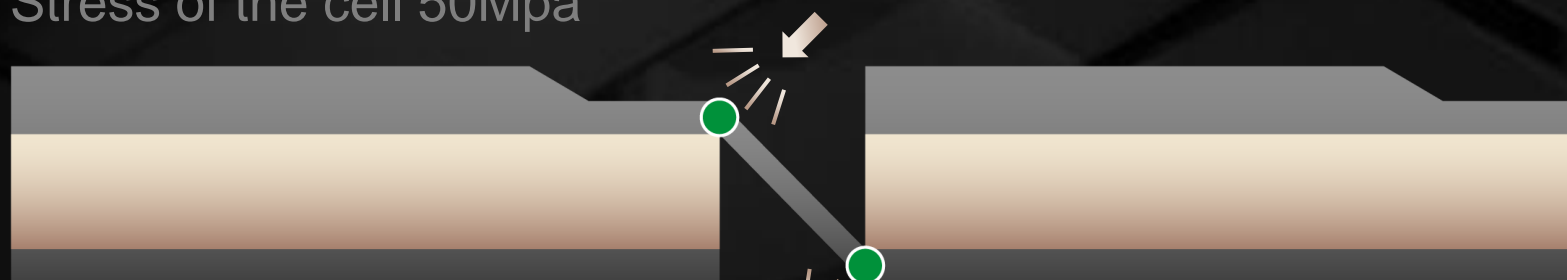
## Hi-MO 9

Less risk of micro cracking  
Stress of the cell 26Mpa



## Traditional products

Higher risk of micro cracking  
Stress of the cell 50Mpa



Cell Busbar

With a busbar soldered on the back,

**50% less**

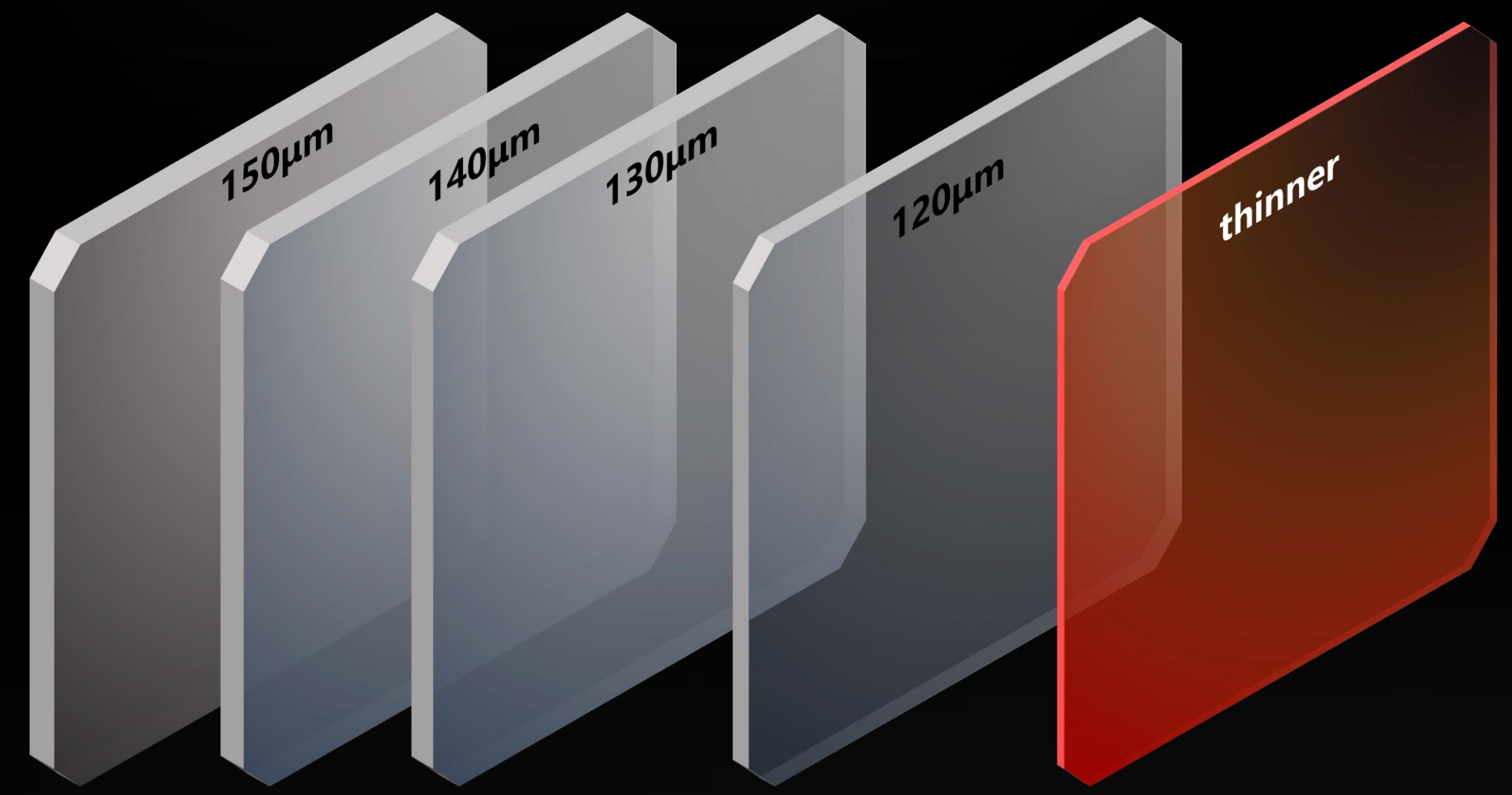
stress to the cell and  
stronger **resistance to micro cracking**

**19% less**

loss from soldering related risks

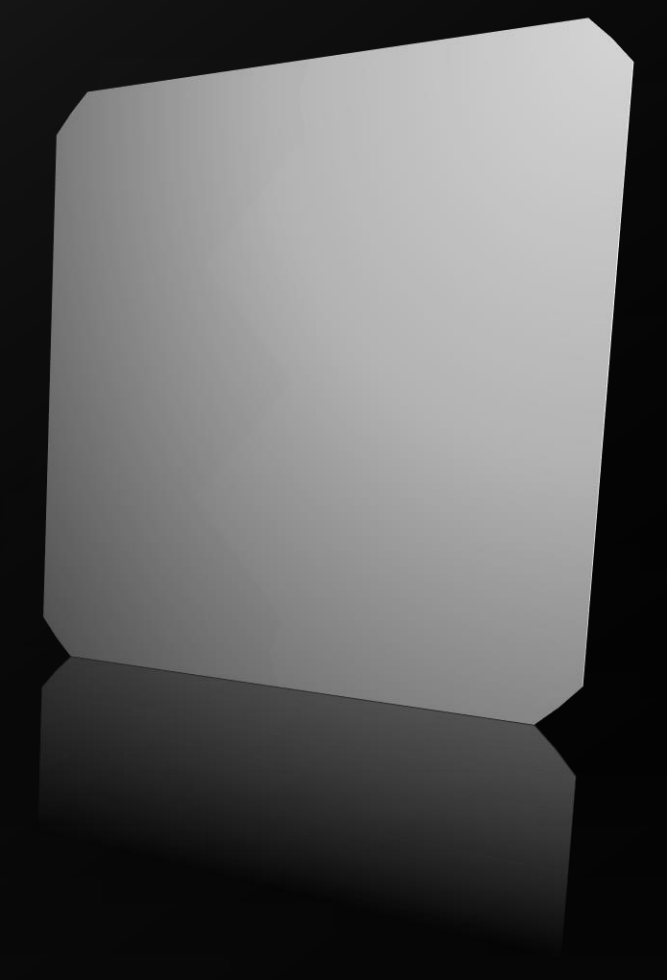
# PREMIUM QUALITY BACKED BY THICKER WAFER

The thinner the wafer, the higher the risks of reliability



Hi-MO 9

10µm thicker



# OPTIMAL MODULE SIZE, ALL-AROUND RELIABILITY

A larger-sized module has higher risks and potential losses from...



Production feasibility and cost



Module reliability



System Compatibility



Transportation



Installation

Hi-MO 9 has optimal module size with holistic and systematic consideration



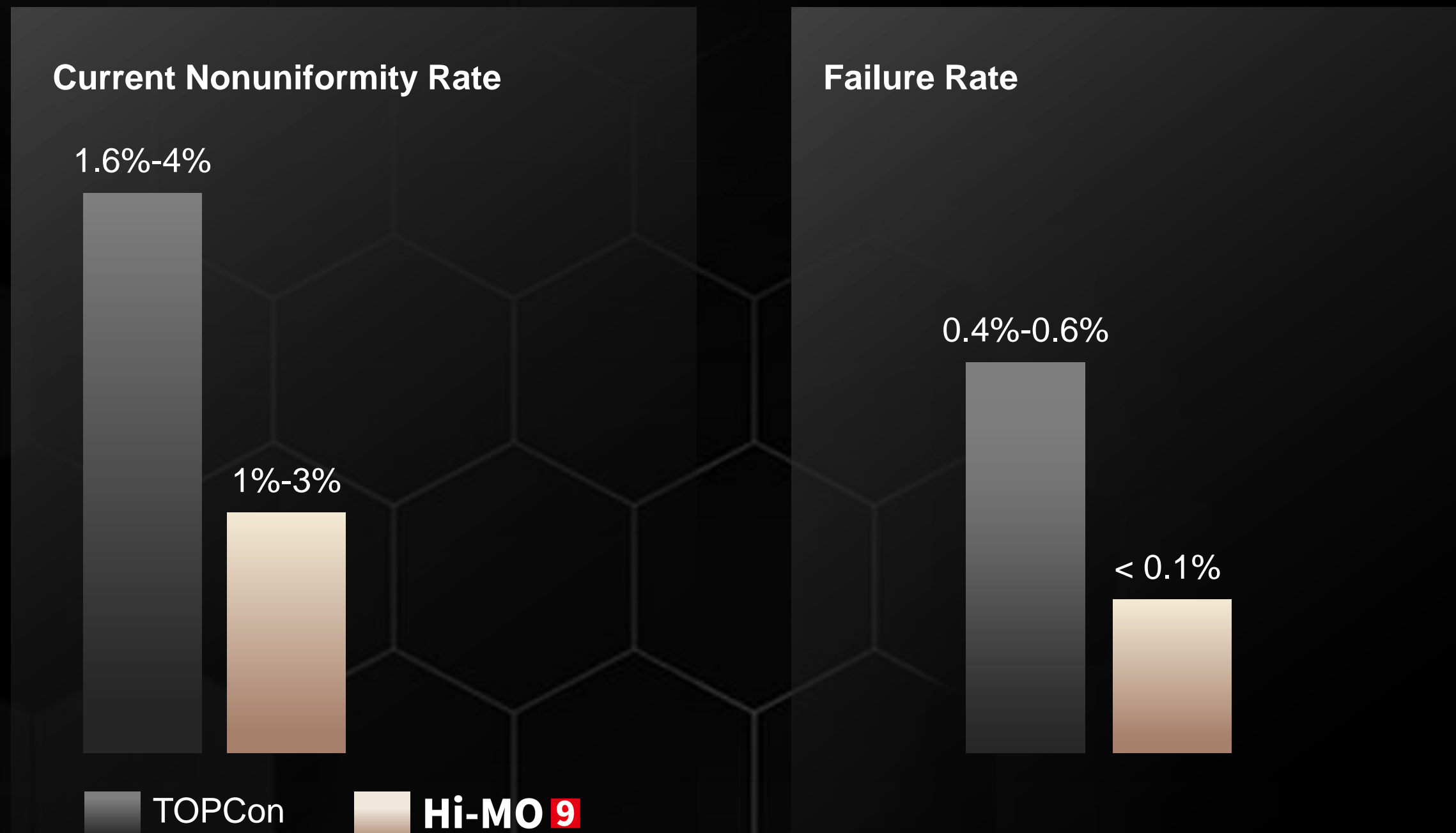
# SIGNIFICANT POWER GENERATION ADVANTAGE UNDER UNEVEN IRRADIATION

up to **92%** less

Power generation loss from uneven light  
irradiation

Note – compared with TOPCon with same layout under same condition

# LOWER RISK FROM CURRENT NONUNIFORMITY NO MORE FAILURE WORRIES



~30% less

Risk of current nonuniformity

~80% less

Subsequent failures

Note – compared with TOPCon, the data is based on industry research and theoretical simulation, the real results depend on the project situation

## TOPCon

Bi-facial factor

~80%

Module efficiency

~23.32%

Module power

~630w

Temperature coefficient

~-0.29%/°C

Degradation

Initial degradation	Annual degradation
≤ 1%	≤ 0.4%

Low-irradiation performance

Normal low-irradiation performance

Reliability

Traditional soldering technology  
Normal wafer

Unique design

/

## Hi-MO 9

~70%

up to **24.43%**

up to **660w**

**-0.26%/°C**

Initial degradation	Annual degradation
<b>≤ 1%</b>	<b>≤ 0.35%</b>

**Stronger low-irradiation performance**

**All-back soldering technique**  
**Unique Tairay wafer**

**Uneven irradiation tolerance & current nonuniformity risk mitigation**

Note – power generation in 30 years, compared with 630W TOPCon with the same module dimension at 2382mm x 1134mm, under the condition of same land area

THE DIAMOND SHINES IN EVERY SETTING  
Hi-MO 9 DELIVERS OPTIMAL VALUE EVERYWHERE

6.5 ~ 8.0%

Increased power generation

Sweden

Spain

Saudi Arabia

Note – 30 year power generation compared with TOPCon with the same module dimension at 2382mm x 1134mm, under the condition of same land/water area





**Europe@longi.com**



**THANK YOU**

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# Going big on back contact Q&A

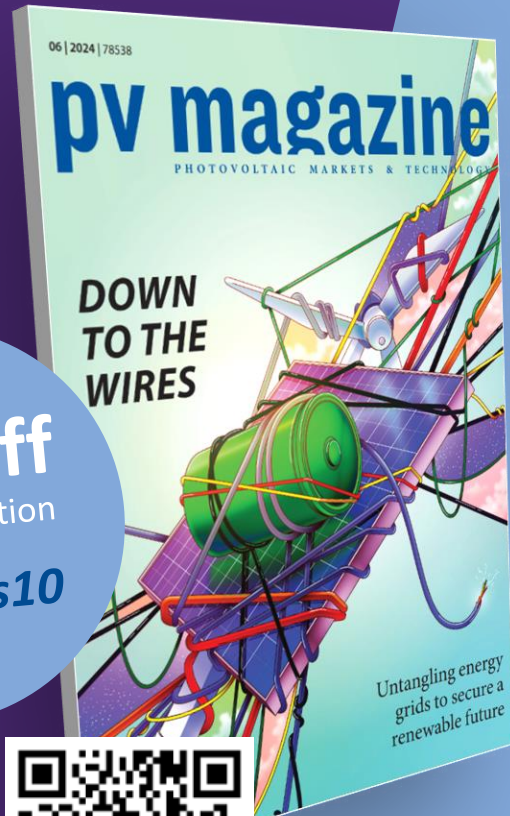


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**Most-read online!**

# Coming up next...

**Wednesday, 24 July 2024**

2:30 pm – 3:30 pm IST, Delhi

11:00 am – 12:00 pm CEST, Berlin

**Monday, 29 July 2024**

10:00 am - 11:00 am CEST, Berlin

**Many more to come!**

**Unlocking Solar  
Project Success:  
Best Practices for  
Selecting the Right  
Tracker System**

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höchsten  
Ansprüchen: das  
erste  
Heimspeichersyste  
m von Anker Solix**

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joining today!**