LONGi

Hi-MO X6 Guardian

Anti Humidty & Heat

The Immortal Light in Nature

Anti Humidity & Heat
Higher Power Gain
Higher Reliability

Hi-MO X6 Explorer

Classic and Everlasting

Bifacial Dual-Glass
Higher Efficiency
Stable and Worry-Free

The Demand for Bifacial Dual-Glass is Widely Prevalent Posing New Challenges to PV Modules

Application scenarios and customer demands diversify

Efficient Bifacial Power Generation

Using angle mounting, effectively utilize the light reflected from the rear to achieve additional power generation gains

High Weather Resistance

Modules are installed in high humidity areas, where water vapor infiltration may bring about large-scale failure of the modules, resulting in severe power degradation in a short period of time

Safe and Reliable Operation

Modules mounted on C&I rooftops or in critical building areas, once the modules are damaged, electrical leakage or even a fire, it will pose significant risks to the safe operation

Winter garden | C&I roof | Offshore | Carport | Concrete roof | Industrial park | Gas station | Damp freeze | Floating

The Operation of Modules in Humidity & Heat Area Have Received Great Attention

Prevalence of DH climate increase globally | Authorities speak out frequently

40%+

More than **40%** of the global regions are classified as the DH climate

84%

84% of C&I enterprises in China are located in coastal and humid areas

Global photovoltaic climate zone classification map

"Above T4 (T > 24℃) & H4 (RH > 32%)" is classified as a DH region

Source: Karin, Todd & Jones, Christian & Jain, Anubhav. (2020). PHOTOVOLTAIC CLIMATE ZONES: THE GLOBAL DISTRIBUTION OF CLIMATE STRESSORS AFFECTING PHOTOVOLTAIC DEGRADATION. 10.4229/EUPVSEC20192019-4BO.13.1.

PVEL TÜV SÜD

International organization for Standardization

A rooftop photovoltaic project suffers from severe degradation due to "damp heat", and the corrosion around the cell is obvious, forming "snail lines"

Authoritative Testing Agency

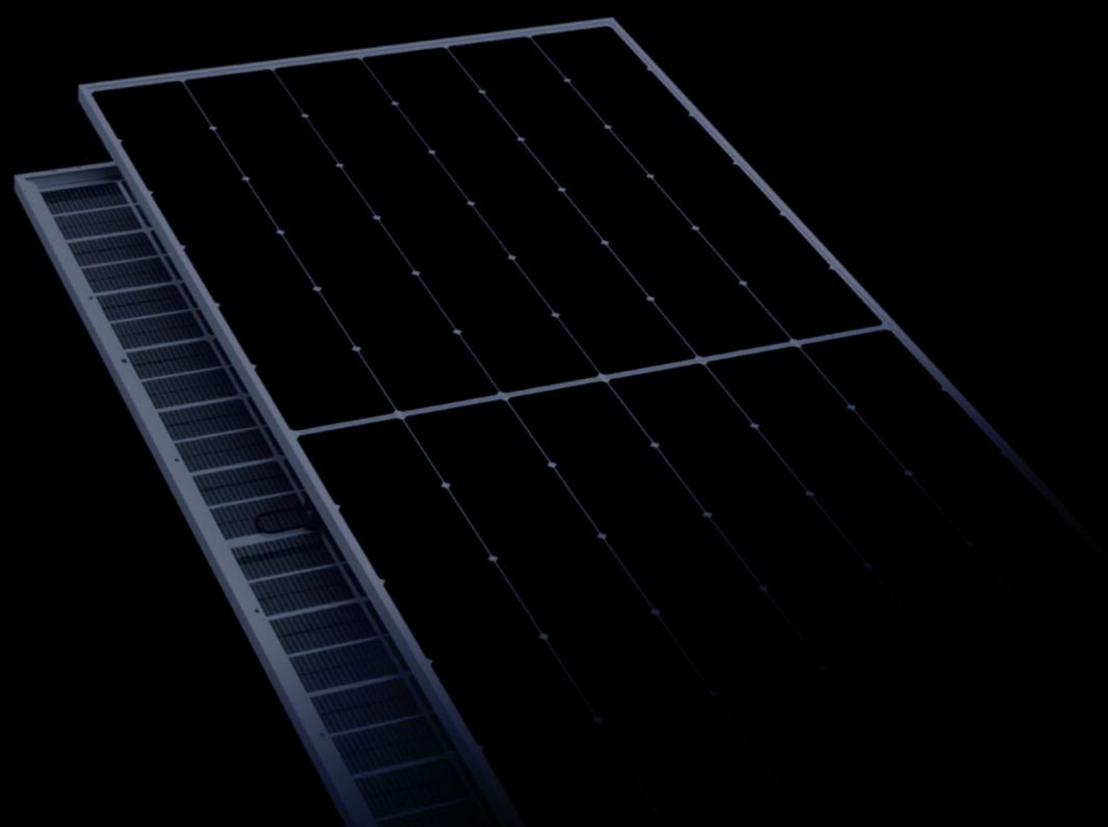
2023 the 7th "Future Light" summit organized by SUD, several specialized reports have indicated reliability challenges for PV modules, primarily in humidity, heat, and high-voltage scenarios.

International Trade Seminar

2023 "The performance characteristics and suggestions for selection of photovoltaic modules for DH environments in the Lammas Basin" Specialized seminar

Hi-MO X6 Bifacial Dual-Glass Product

The Best Choice for the Distributed Bifacial Market



Anti Humidity & Heat

- High water resistance encapsulation solution
- High-quality adhesive film process
- HPBC electrode process

Higher Power Gain

- First year degradation 1% and year 2-30 degradation 0.35%
- Better temperature coefficient: -0.28%/℃
- Stronger low light response

Better Long-Term Reliability

- High-quality wafer Dual glass double POE
- Innovative welding methods
- Authorities certification

Hi-MO X6

Anti Humidity & Heat | High Power Gain | High Reliability

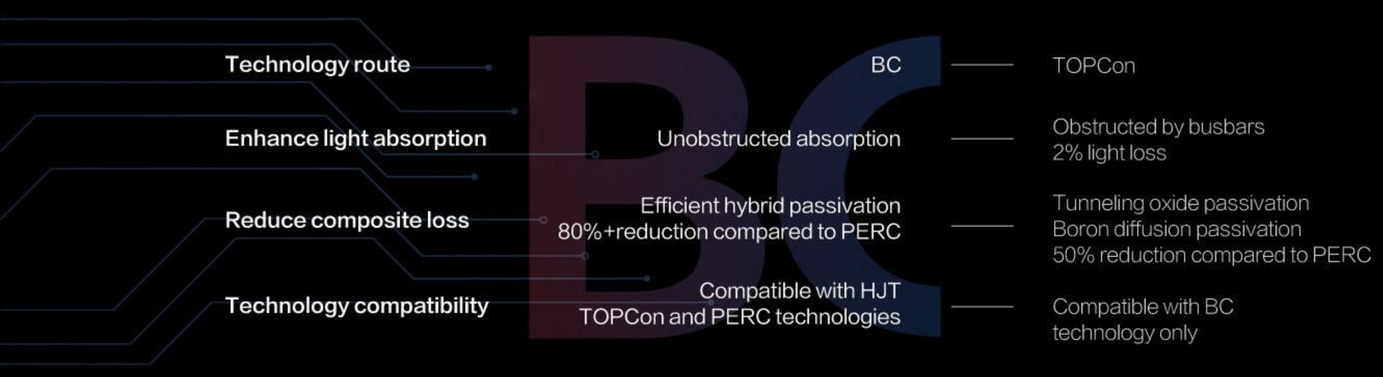
Bifacial Dual-Glass Product

Higher Power Gain

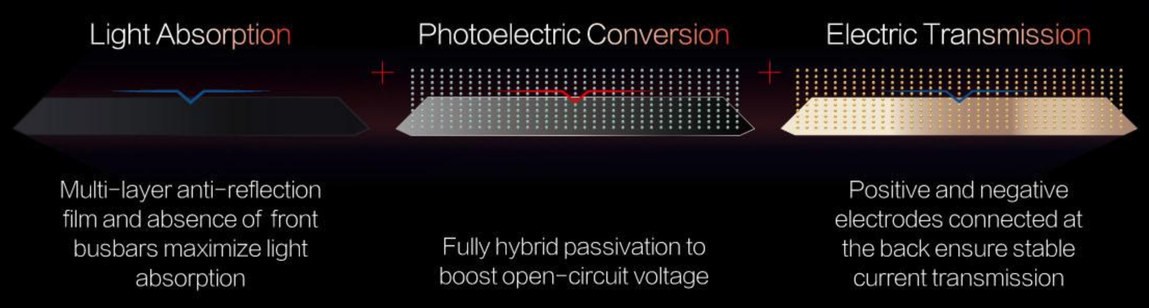
High Efficiency HPBC Cells Promote New Technological Revolution

The ultimate route to crystalline silicon cell:

Greatest efficiency potential | Optimal technical compatibility



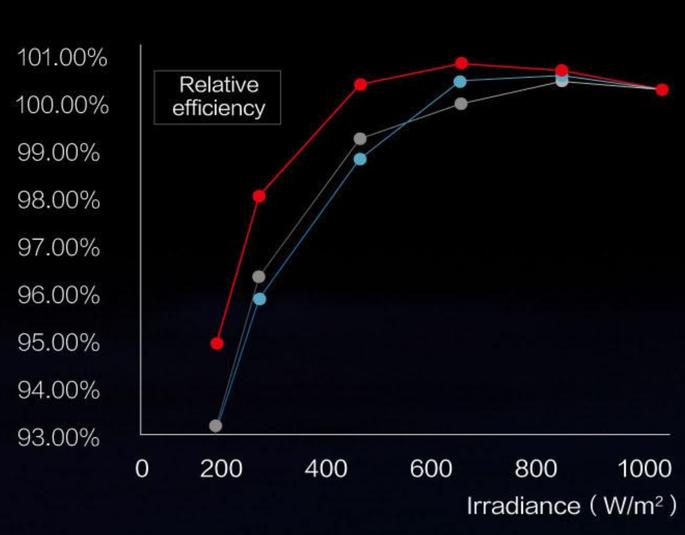
HPBC revolutionizes cell efficiency across the board



Better Performance at Low Irradiation Conditions

The lower the irradiation intensity,

the more pronounced the power generation advantage



*Data from authoritative third-party organization

Shanghai | China

The power generation improved **0.17%** compared to PERC and improved **0.91%** compared to TOPCon

Sydney | Australia

The power generation improved **0.15%** compared to PERC and improved **0.63%** compared to TOPCon

Dubai | UAE

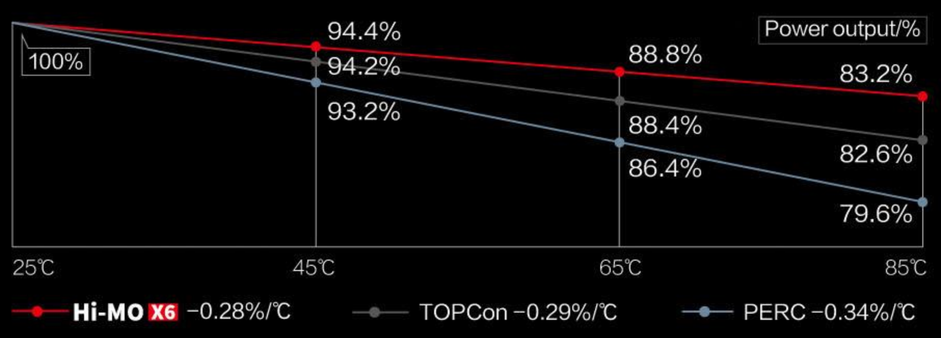
The power generation improved **0.16%** compared to PERC and improved **0.60%** compared to TOPCon

*Considering only the low irradiation's impact on the power generation of PV modules

Better Performance at High Temperatures

Improved 0.05%/℃ compared to PERC

Improved 0.01%/℃ compared to TOPCon



Power temperature coefficient as low as −0.28%/℃

Ensure stable power generation in hot conditions

Shanghai | China (Annual temperature 14.4℃)

The power generation improved **0.9%** compared to PERC and improved **0.15%** compared to TOPCon

Sydney | Australia (Annual temperature 19℃)

The power generation improved **1.2%** compared to PERC and improved **0.2%** compared to TOPCon

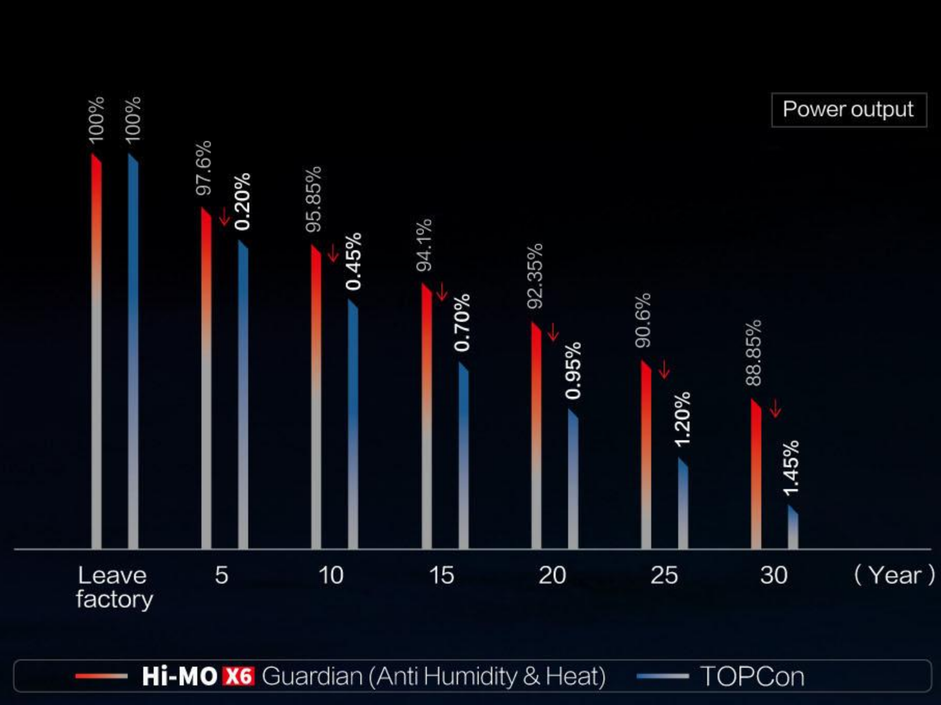
Dubai | UAE (Annual temperature 25℃)

The power generation improved **1.35%** compared to PERC and improved **0.27%** compared to TOPCon

*Considering only the temperature coefficient's impact on the power generation of PV modules

Lower Degradation Stronger Long-Term Power Generation

First year power degradation 1% and year 2-30 power Degradation 0.35% | Better than TOPCon



Hi-MO X6

Anti Humidity & Heat | High Power Gain | High Reliability

Bifacial Dual-Glass Product

Anti Humidity & Heat

Insight into Pain Points in DH Conditions LONGi Conducts Technology Research

Comprehensive breakthroughs from electrode Process to packaging technology

2021 — Focusing on DH scenarios | Initiating project development

LONGi establishes the "Anti Humidity & Heat Module" project team to address the impact of DH environments on PV modules

2022 — HPBC electrode process | Creating opportunities to solve the DH problem

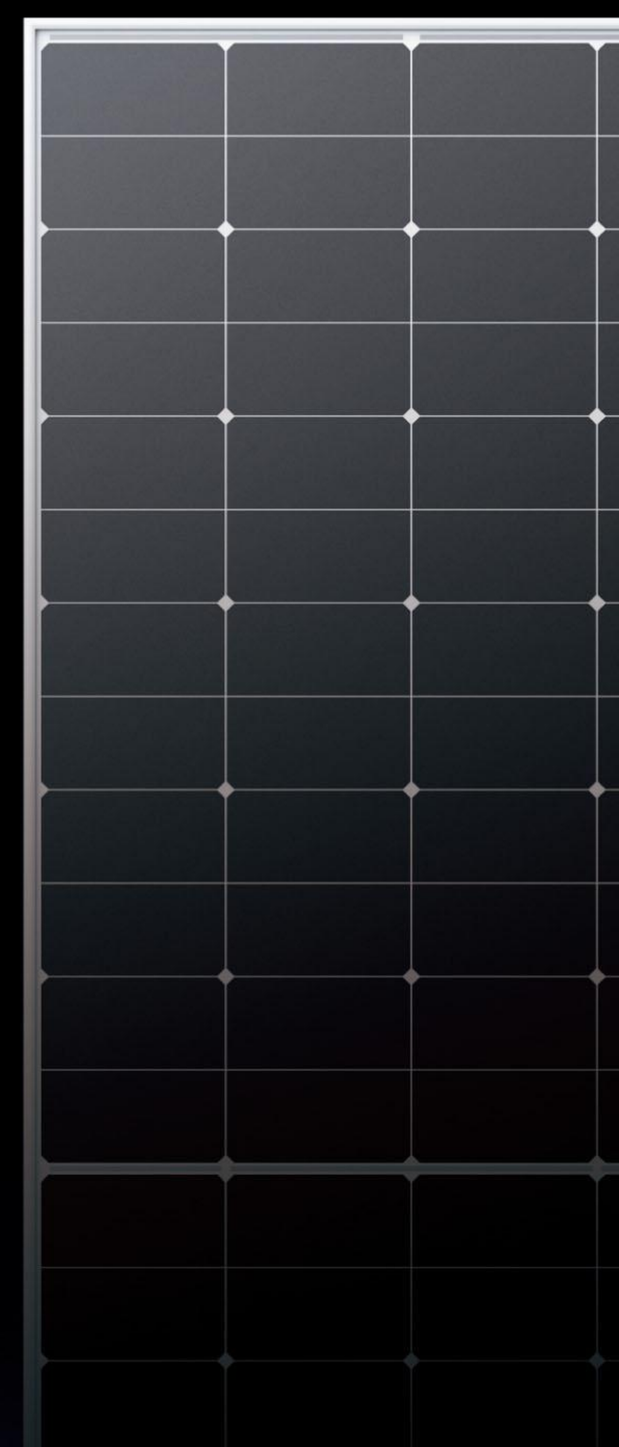
Full front-side illumination for efficient power generation, customized electrode paste to enhance the resistance to degradation in humidity & heat environments

2023 — New packaging solution | Breakthroughs in DH resistance

High water resistance encapsulation solution + high-quality adhesive film process to block water vapor intrusion

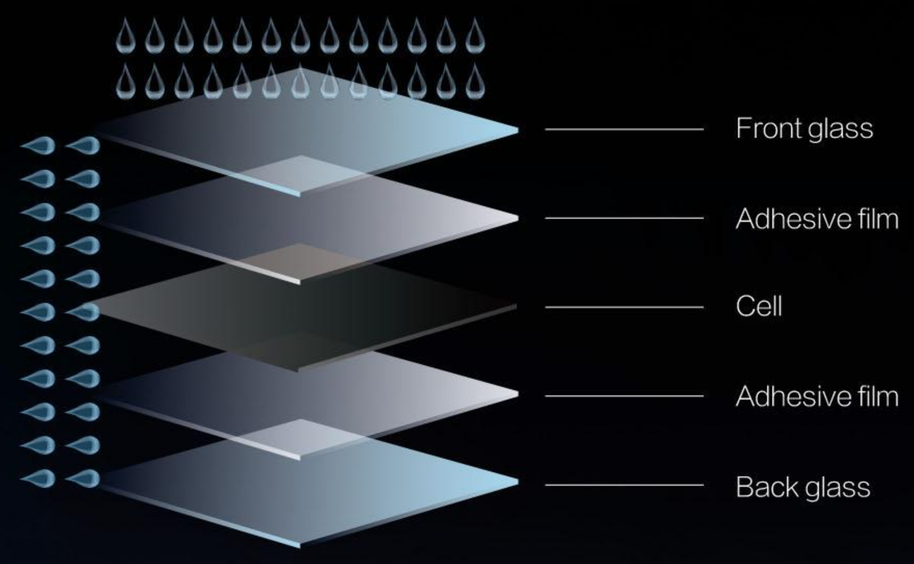
2024 — **Hi-MO X6** Guardian (Anti Humidity & Heat)

Customized for DH conditions, enhance overall reliability and performance



Source Tracing of Water Vapor Intrusion Pathway Triple Layers of Protection from the Outside to the Inside

Multiple guarantees of new encapsulation solution and unique electrode process



1 High water resistance encapsulation solution

Dual glass+ high water resistance encapsulation, preventing water vapor intrusion

2 High-quality adhesive film process

High water resistance adhesive film + lean compression molding process Stable and non-decomposable, preventing water vapor infiltration

3 HPBC unique electrode process

Customized electrode paste to enhance the resistance to degradation in humidity & heat environments

Hi-MO X6

Anti Humidity & Heat | High Power Gain | High Reliability

Bifacial Dual-Glass Product

Three Layers of Protection are Reinforced and the Results of Rigorous Testing are Better

Significantly leading mainstream TOPCon test data

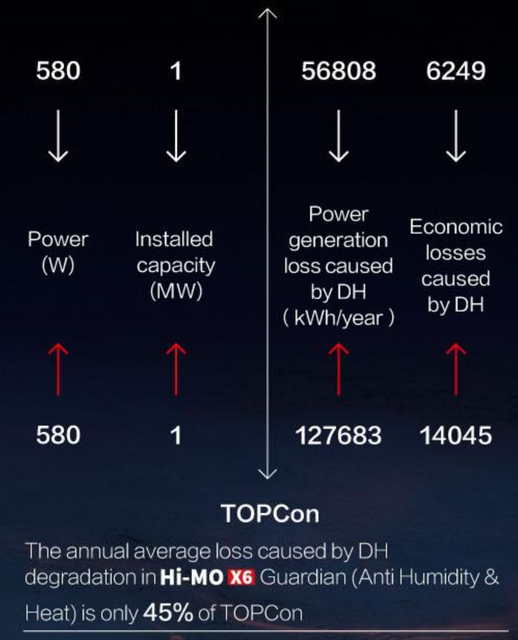
Simulation of continuous operation
of modules in high humidity and heat environments

Environmentally Durable Ensuring Long-Term Stable Returns

Hi-MO X6 Guardian (Anti Humidity & Heat) is only 45%
of TOPCon's DH degradation

Simulating module degradation in
different humidity & heat environments

Estimation of economic losses
in high DH environments



The annual average loss caused by DH degradation in **Hi-MO X6** Guardian (Anti Humidity & Heat) is only **45%** of TOPCon

*C&I price of electricity is 0.11$/kWh

1、According to the paper "Karin, Todd & Jones, Christian & Jain, Anubhav. (2019). Photovoltaic Degradation Climate Zones.", low/high DH environments are defined.
2、According to Hallbary-Peck equation，calculating degradation values for corresponding damp-heat environments by converting simulated environment and degradation values in DH experiments (Recognized by authoritative third-party organizations).

Hi-MO X6

Anti Humidity & Heat | High Power Gain | High Reliability

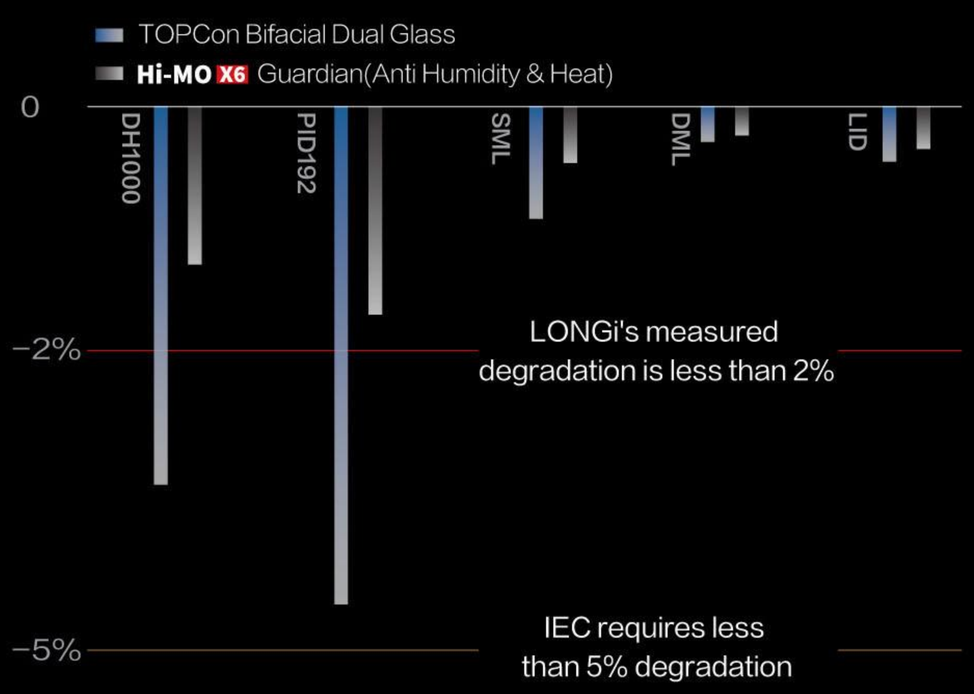
Bifacial Dual-Glass Product

Better Long-Term Reliability

Lower Degradation Under Extreme Test Conditions

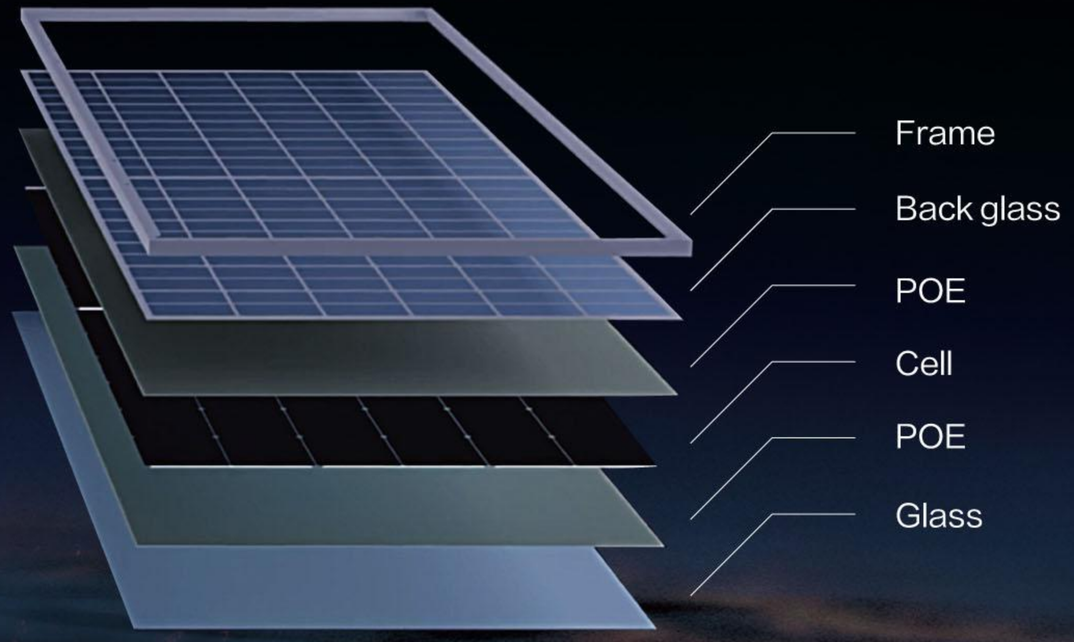
The degradation is significantly lower than mainstream products

Module degradation under severe test conditions



Dual Glass Double POE Adhesive Film Structure

Ensure the stability and reliability of module power Generation in special environments



Longer Product Warranty

Provide 15-year product warranty and 30-year power warranty, eading mainstream products in the market

15+30

Hi-MO X6 Bifacial Dual-Glass Product
Provide **15** -year product warranty

Hi-MO X6 Bifacial Dual-Glass Product
Provide **30** -year power warranty

TOPCon Bifacial Dual Glass
12-year product warranty 30-year power warranty

Technischer ü berwachungs- Verein

Renewable Energy Test Center (RETC)

Water vapor resistance

- POE provides 7 times water vapor resistance compared to EVA film
- Better cell protection | Inhibits module PID degradation

Impact resistance

- **2mm+2mm** glass
- Ensures load performance of the module at high impacts

Aging resistance

- The molecular structure of POE film is stable, which effectively slows down the aging of modules
- and has thermal stability and UV aging resistance compared to ordinary EVA film

About LONGi

Founded in 2000, LONGi Green Energy Technology Co., Ltd. (LONGi) is committed to being the most valuable solar technology company in the world.

Under the mission of "To make the best of solar energy to build a green world" with a brand positioning of "The most trusted, reliable solar company that blazes the trail for green technology", LONGi is developing solutions for large-scale power plants, for different industries and households with its innovation-focused development. Eventually, we will also supply "Green Power + Green Hydrogen" solutions for global zero-carbon development.

2000 Foundation

60000+ Global Employees

30+ Global Network

LONGi Sustainable Development Concept System

With "Solar for Solar", LONGi officially joined Global Initiatives RE100, EV100, EP100 and will keep building towards achieving 100% in clean energy consumption.

LONGi always has sustainable management as a core criterion for business decision-making, including continuous investments in innovation and research, advocating an open corporate culture, and promoting scientific institutional research.

At the same time, LONGi has been leading continuous changes in electric power and energy, promoting the sustainable development of the planet and mankind.

RE100

Committed to 70% renewable electricity by 2027. Committed to 100 renewable electricity by 2028.

- In 2022, the proportion of green power use reached 47.18% and the use of green power will increase by 38.21% compared with 2021.
- In 2022, the proportion of green power use of Baoshan LONGi reached 99.09% , and energy-saving technology improvement projects are steadily progressing.

EP100

Committed to completing the installment of energy management systems (enms) by 2025 and improving energy efficiency by 35% compared to the baseline year of 2015.

- By 2022, a total of eight production bases have completed the construction of the energy management information system.
- 1 new production site was added in 2022.
- 66.64% improvement in overall group-wide energy use efficiency in 2022 compared to 2015.
- Construction of a "Zero Carbon Theme Park" in the factory, greening and beautifying the factory, raising the awareness and participation of all employees in green and low carbon.

EV100

Committed to installing charging infrastructure at all production and operational sites by 2030.

- Organized group-wide centralized procurement of charging piles, involving 7 provinces, 13 cities, and 23 business sites, and the first charging piles planned for "EV 100" are expected to be put into use in 2023.

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Committed to setting a greenhouse gas (GHG) emission reduction target, aligned with the global 1.5℃ temperature increase goal.

- With the approval, LONGi has become one of more than 4600 companies worldwide that have joined the SBTi and set science-based targets.
- LONGi is the first Chinese solar photovoltaic company that has obtained the official validation.
- Group-wide greenhouse gas reduction of 2.01% compared with 2021.
- LONGi launched the "Supply Chain Green Partner Empowerment Program" and provided carbon empowerment to over 480 suppliers.

LONGi

www.longi.com

2024.03