

HYUNDAI SOLAR MODULE

- Hyundai offers shingled module for more efficiency and higher reliability
- Hyundai provides 25 years product warranty on the shingled module (Europe/Australia distribution channel only)



DG
SERIES

G12 PERC Shingled

HiE-S415DG HiE-S420DG
HiE-S425DG



FULL BLACK
DG
SERIES

G12 PERC Shingled

HiE-S410DG(FB) HiE-S415DG(FB)
HiE-S420DG(FB) HiE-S425DG(FB)



Residential & Commercial



HG
SERIES

G12 PERC Shingled

HiE-S435HG HiE-S440HG
HiE-S445HG



FULL BLACK
HG
SERIES

G12 PERC Shingled

HiE-S430HG(FB) HiE-S435HG(FB)
HiE-S440HG(FB) HiE-S445HG(FB)



Residential & Commercial



KN
SERIES

G12 PERC Shingled

HiE-S545KN HiE-S550KN
HiE-S555KN HiE-S560KN



DJ
SERIES

**G12 PERC Bifacial
Dual-Glass Shingled**

HiE-S655DJ HiE-S660DJ
HiE-S665DJ HiE-S670DJ



Utility

Certification



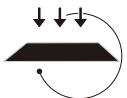
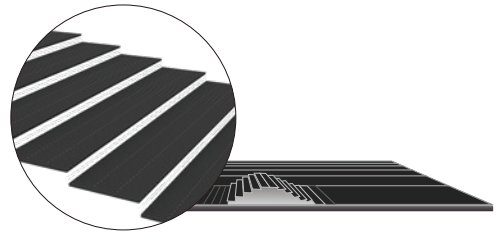
ADVANTAGES OF SHINGLED MODULE

- Shingled technology is an innovation process of manufacturing for PV Modules.



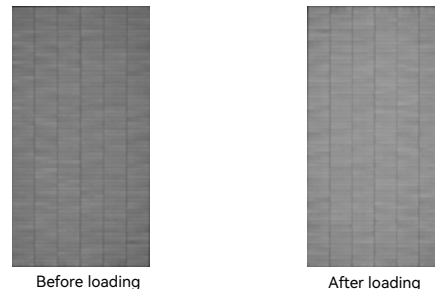
Shingled Technology

Shingled Technology provides ultra-high efficiency with better performance in low irradiation. Maximizes installation capacity in limited space.



Better Mechanical Loading Performance

Tempered glass and reinforced frame design withstand rigorous weather conditions such as heavy snow and strong wind.



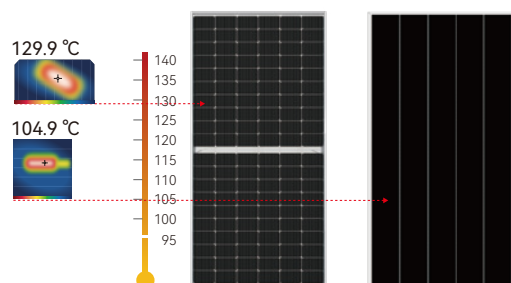
8100Pa static mechanical load test

No additional micro-crack and the power degradation is <math><0.5\%</math> after an 8100Pa mechanical load test at room temperature.



Lower Temperature Coefficient $-0.34\%/^{\circ}\text{C}$

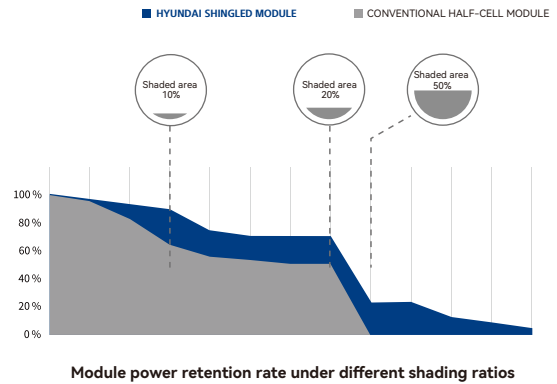
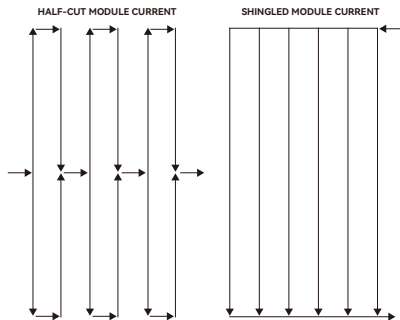
Compared with traditional half-cell module, the hot spot temperature is more than 20°C lower, which greatly reduces the impact on the service life of component packaging materials. Compared with the traditional half-cell, the service life of the module is prolonged, and it has a 15-year material process warranty, and the total power generation in the whole life cycle leads the traditional half-cell module.





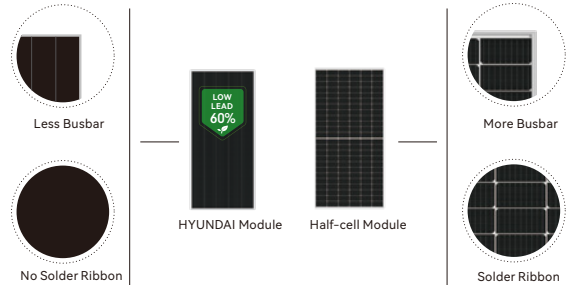
Excellent Low Irradiance Performance

Compared with traditional half-cell module, the parallel circuit structure design make the power output 20% higher regardless of the shading direction.



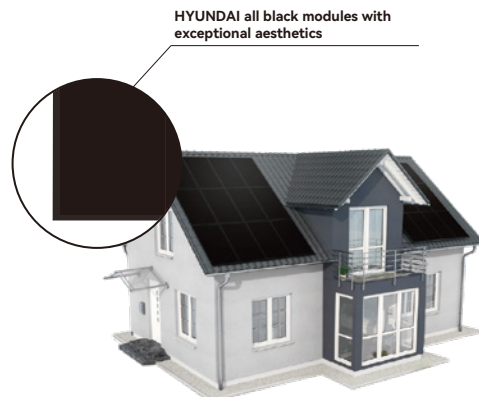
Green and Eco-friendly

HYUNDAI modules are fluoride-free and low on lead, more eco-friendly; Replace 0.3kg metal ribbon with adhesives. Reducing the module's lead content by more than 60%.



Dazzling Appearance

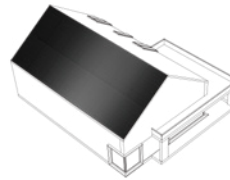
Shingled module, no ribbon, appearance uniform and consistent, perfectly integrated with household roofs, improve the aesthetics of photovoltaic building integration.



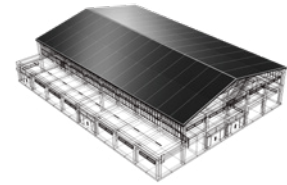


Suitable for Household and C&I Projects

HYUNDAI solar modules are suitable for household and C&I Projects.



Suitable for Household Projects

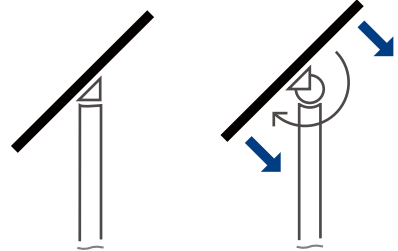


Suitable for C&I Projects



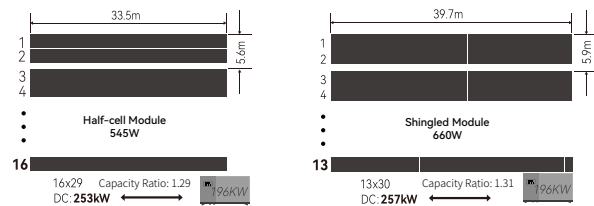
Adaptable with Tracker and Fixed Mounting Systems

HYUNDAI solar modules are adaptable with tracker and fixed mounting systems.



System Cost Saving

Efficiency and power increased 3.5% compared with mainstream products, saving 3% BOS cost with the same capacity. Capacity is increased 3.5%, making full use of land space, reducing cost of AC devices.



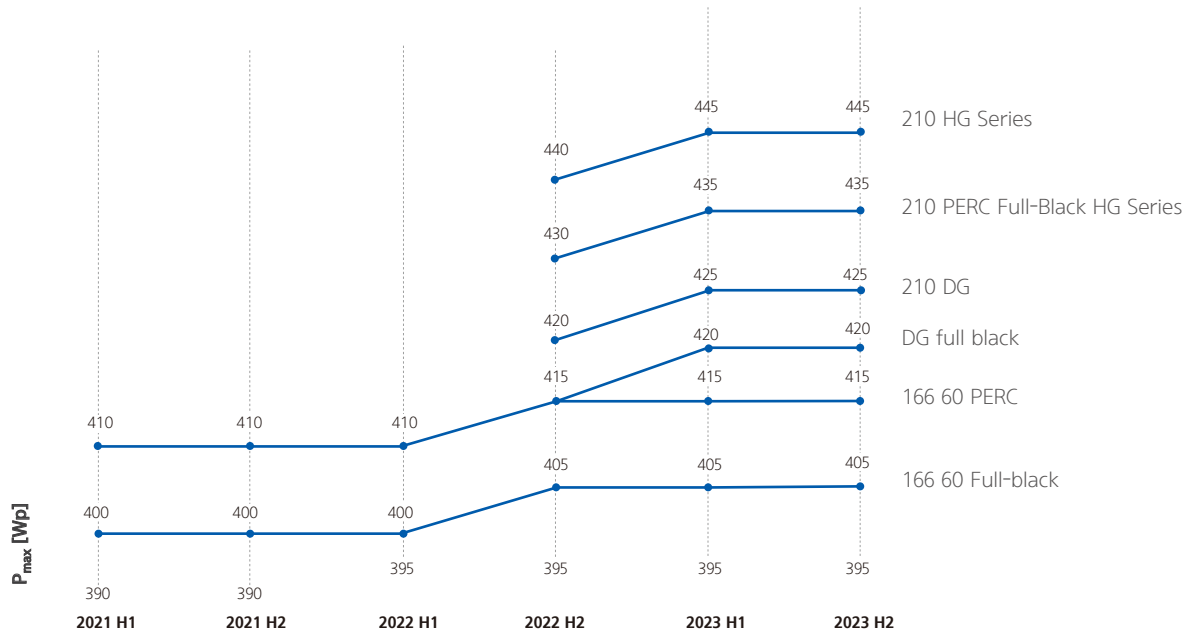
Take a low-latitude area (Binyang, Guangxi, 23° north latitude) as an example, configure a string inverter, a 10° inclination fixed bracket, and apply HYUNDAI shingled modules system BOS cost is reduced by 3.6%.

Cost Type	Half-cell-545W	Shingled-660W
Tracker	Compare	-7.4%
Electrical Materials	Compare	-2.2%
Installation	Compare	-15.1%
Construction	Compare	-0.4%
System BOS	Compare	-3.6%

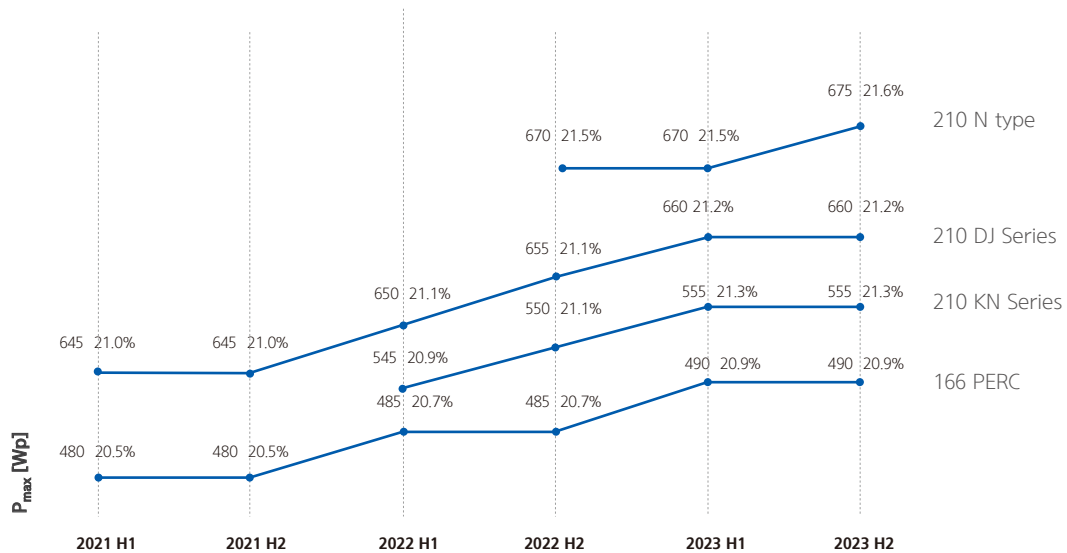
PRODUCT ROAD MAP IN 2022

- Main product will be G12 (210mm) HG series PERC shingled module and the power output will be constantly improved (440Wp for Black Frame, 435Wp for Full Black at Q3 2022)

60-cells

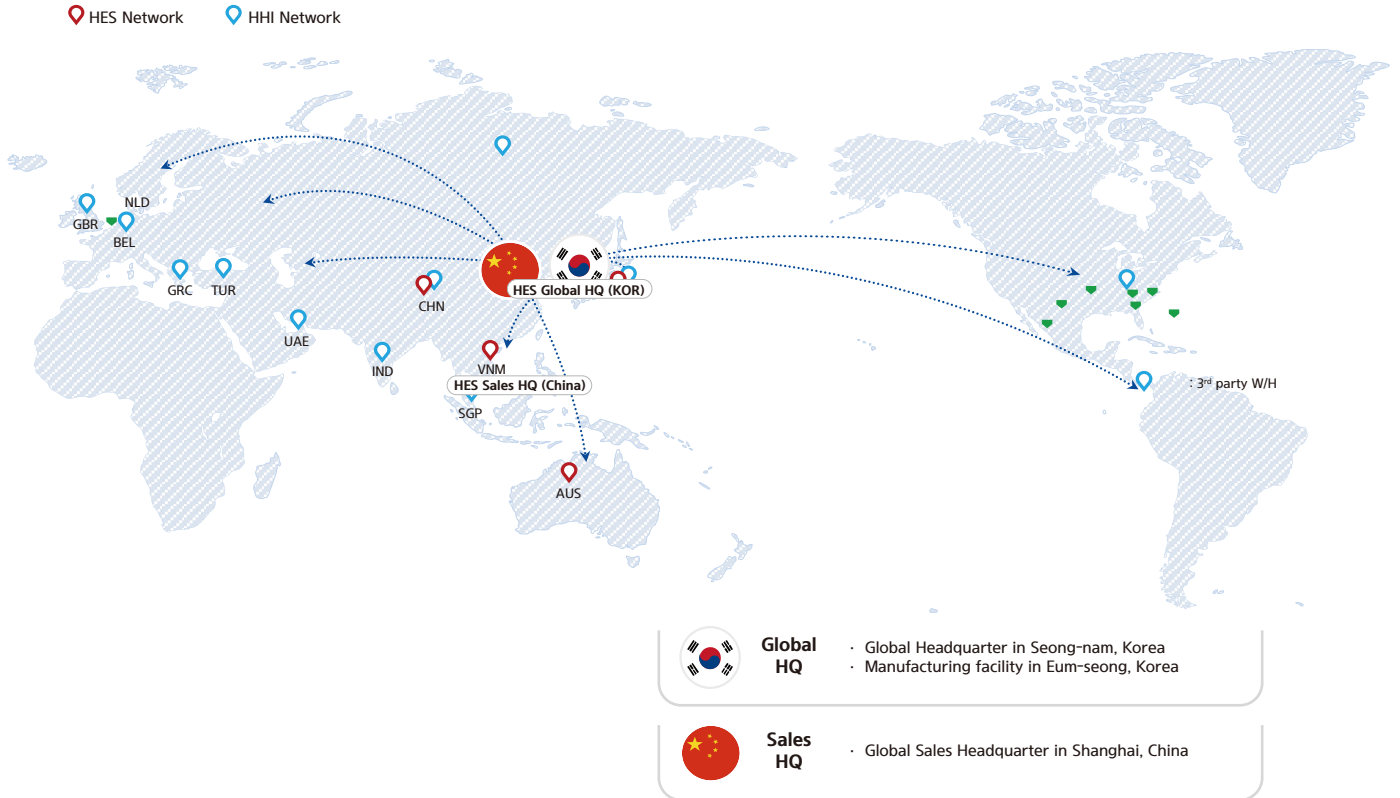


72-cells



GLOBAL NETWORKS

- The worldwide networks of Hyundai Energy Solutions (HES) and Hyundai Heavy Industries (HHI)
- Operating the 3rd party local warehouses in EU (Rotterdam) and the US



HYUNDAI ENERGY SOLUTIONS Co.,Ltd. (Global Headquarter)

Address: 55, Bundang-ro, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea (Bundang First Tower,
Seohyeon-dong)
Contact No.: +82 (0)31-8006-6913
E-mail : sales@hyundai-es.co.kr

EUROPE DISTRICT

Mobile: +86-136-8174-7619
Email: sandy.xiong@hyundai-es.co.kr

MEA DISTRICT

Mobile: +86-181-6832-2063
E-mail: carrie.zhu@hyundai-es.co.kr

HYUNDAI ENERGY SOLUTIONS Co.,Ltd. (Global Sales Representative office)

Address: Room 609, Building T6 , The Gate, 990 lane
Shenchang Road
Minhang District, Shanghai, China (201106)
E-mail: idchung@hyundai-es.co.kr