

Mysolar



New Energy, Smart Living

Mysolar Bifacial PV Introduction

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What is bifacial solar panel?

1. History of bifacial PV and its implementation

The first functioning bifacial PV was designed in 1966.

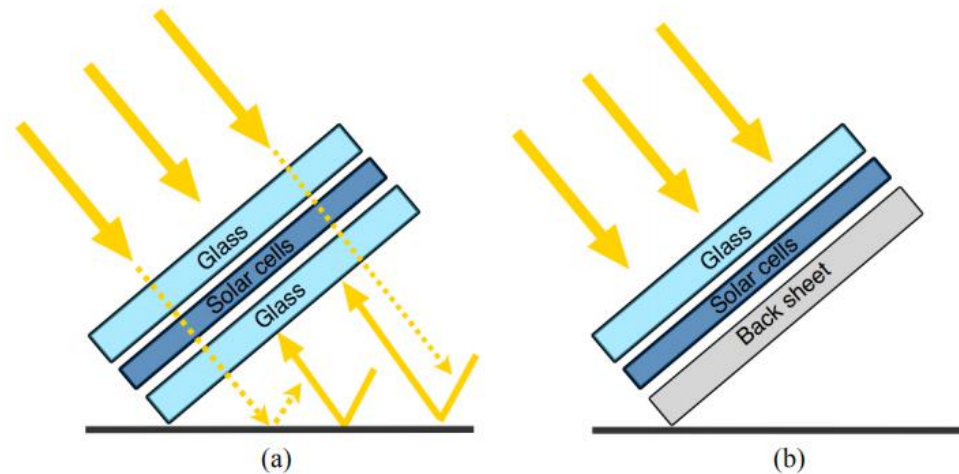
Russian Space Program in the 1970s is the first bifacial PV program.

3. Three main factors of bifacial PV

The albedo is the largest factor in BiFacial performance which will be mentioned later.

The evaluation is mounted from the ground or roof, the more light is able to reach the rear side which results in greater energy yield.

Tilt angle is determined by the latitude of the installation. The closer a solar panel is located to the equator, the more leveled the angle should be.



In (a), a BiFacial PV module. In (b), a standard PV module.

2. The differences between bifacial PV and standard PV

In contrast to standard PV cells, bifacial PV consists of glass sheets on both sides instead of one glass sheet and one back sheet.

Bifacial PV produce more power than a standard cell, without covering more physical area, but utilizing the same amount of silicon.

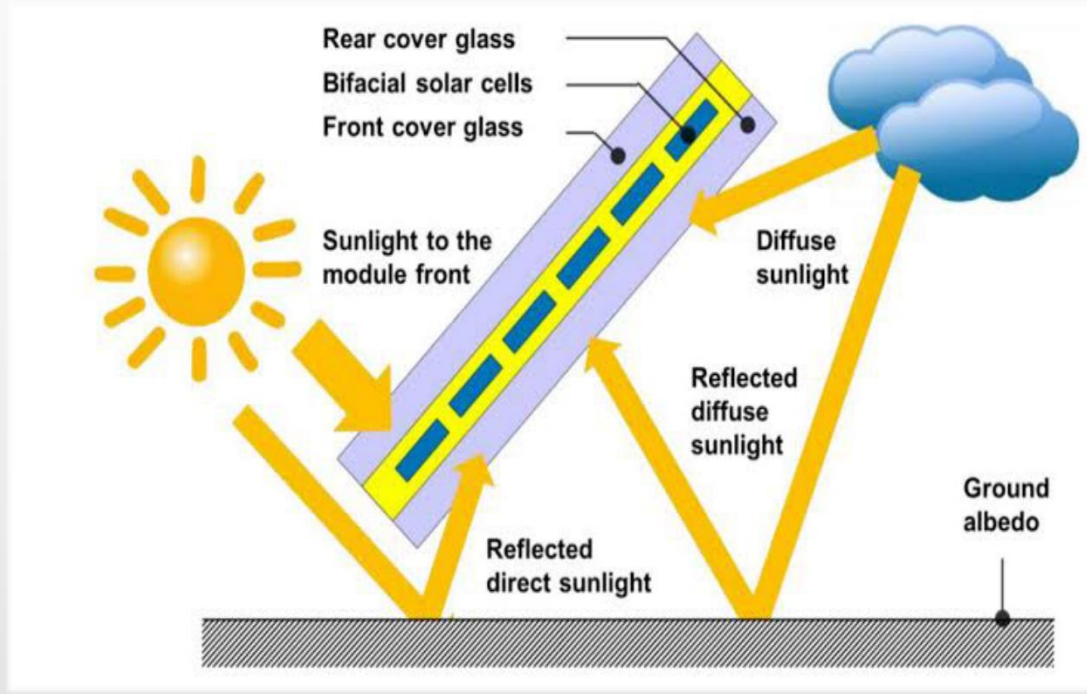
4. Types of bifacial PV

Mysolar has two types of bifacial PV Star MDHF120 and MDHF144.

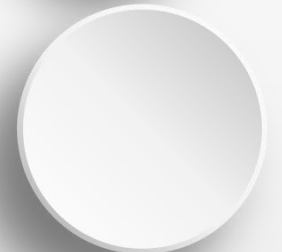
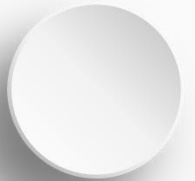
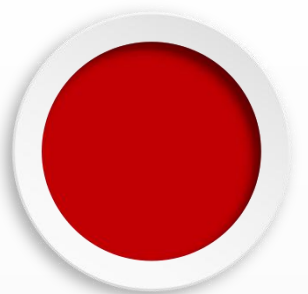
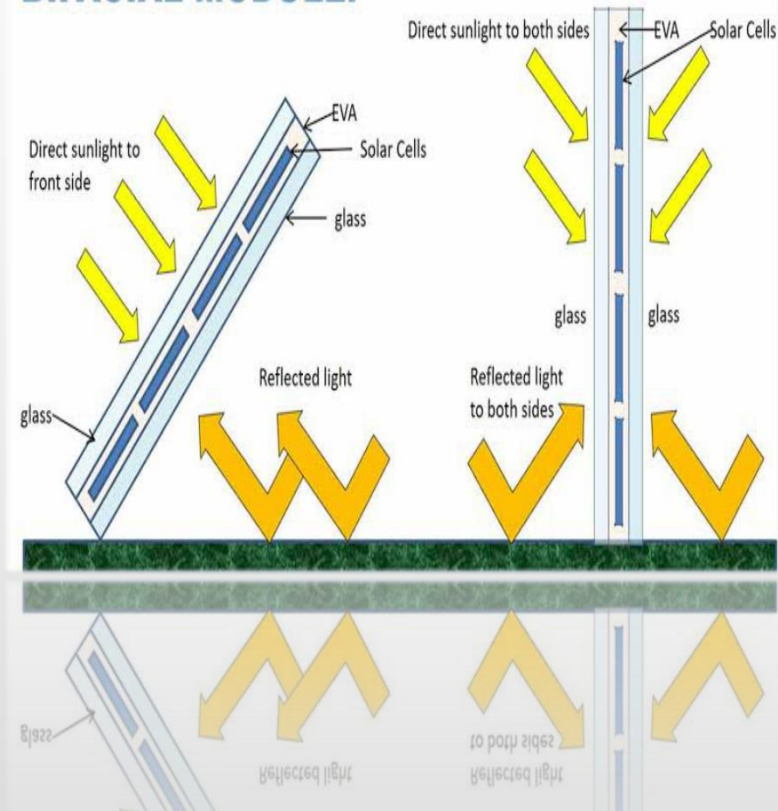
The highest efficiency of both Star MDHF120 and MDHF144 can reach to 20.10%. For standard PV, it can only be 19.88%.

How Bifacial PV Works?

Bifacial solar panels generate power by exposing both sides of the cells to sunlight, increasing total energy generation. To do this effectively, they either have a reflective backsheet or dual panes of glass rather than an transparent backsheets that features on monofacial solar panels



BIFACIAL MODULE:





Bifaciality factors

Bifacial Energy Gain Depends on:

01

Type of horizontal surface (**Albedo**)

Green Field Grass 23-25%

Concrete 16%

White Painted Concrete 60-80%

White Gravel 25-27%

White roofing Metal 50-58%

White roofing foil >80%

02

$$\text{Bifaciality} = \frac{\text{power of rear side of module @ STC}}{\text{power of front side of module @ STC}}$$

03

Type of solar cell:

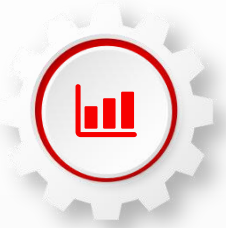
Cell- PERC+ >70%, PERT >90%, HIT >95%, IBC >70%

If Bifaciality factor is more, the energy yield is also more

04

Others:

- Location of site
- Tilt angle
- Row to Row distance
- Elevation and Height of Structure
- Usage of Single axis tracker
- Vertical mounting with E-W direction

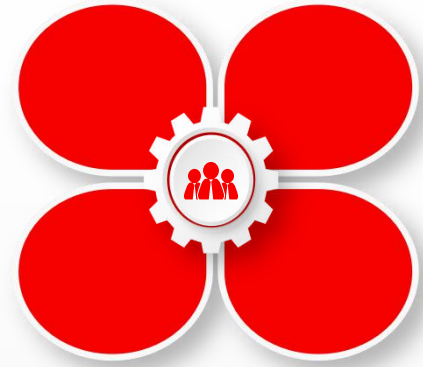
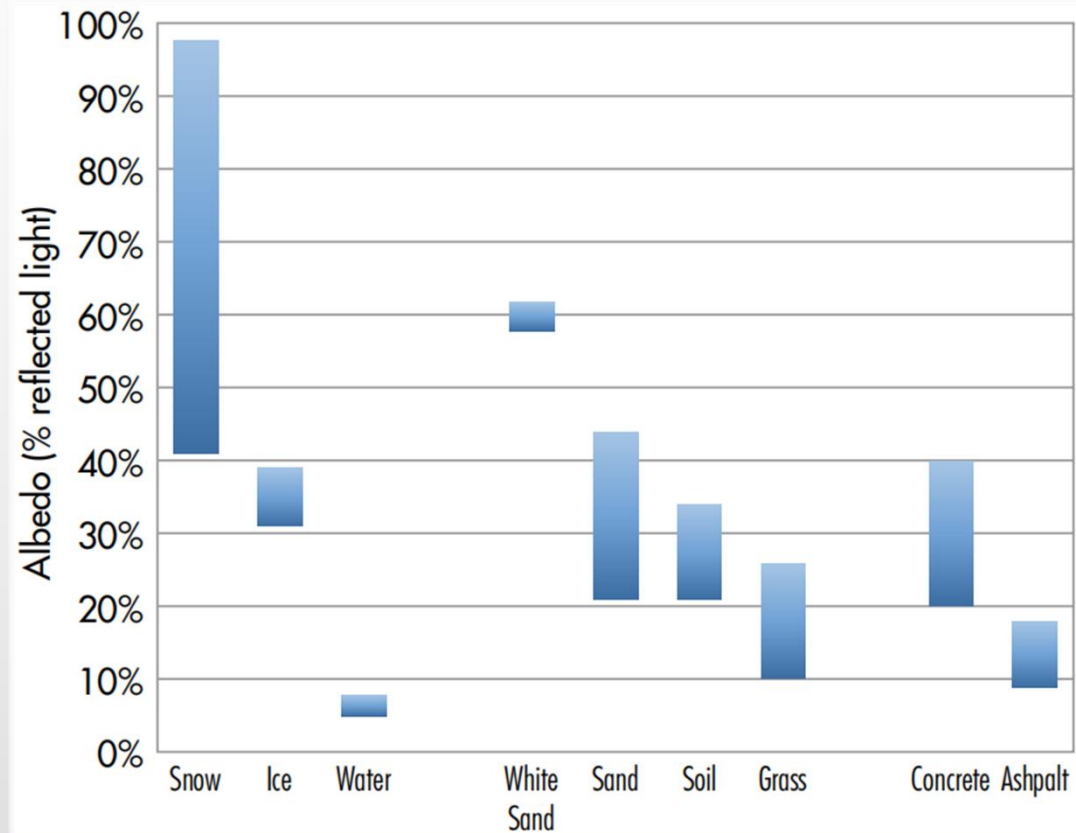


Albedo

The backside light can emanate from a variety of sources, such as reflection from the ground or from a neighboring row of PV modules. The ratio of light reflected from these various sources compared to incoming irradiance is called “albedo”.

The albedo is a measurement of the reflectivity of a body and is crucial for the energy output of a BiFacial module.

Albedo ranges for a variety of surfaces





Bifacial PV Applications

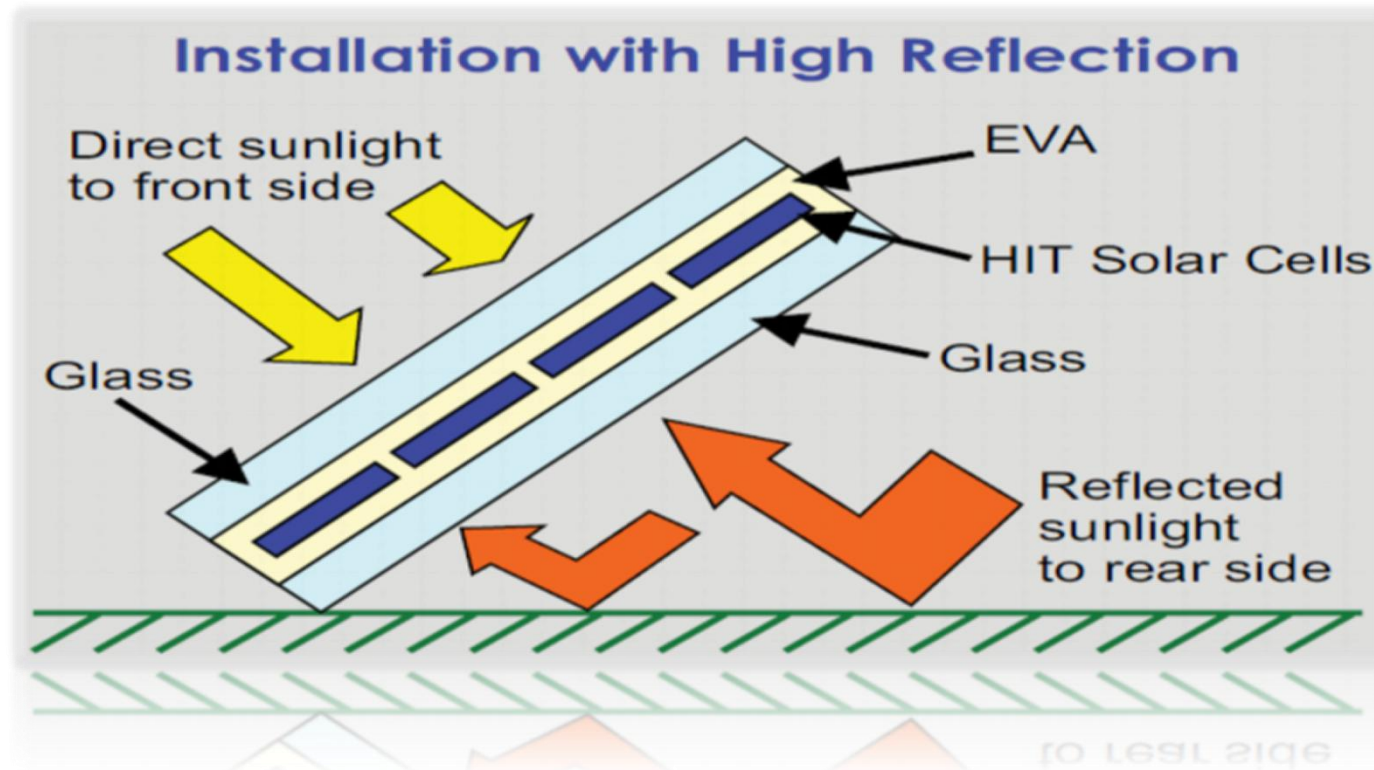
- Space applications:
 - First developed, high cost
- BIPV: "Building-integrated photovoltaics": photovoltaic materials that are used to replace conventional building materials in parts of the building envelope such as the roof, skylights, or facades"
- Vertical module, photovoltaic noise barriers
- Bifacial panels are best suited for commercial or utility-scale solar installations



Why Bifacial Solar Panel

Generates More Power & Higher efficiency

Bifacial panels have much more power output than conventional PERC panels, such as Mysolar Bifacial 320W, $320W + 320W * 0.7 (\text{our bifaciality}) * 15.5\% (\text{albedo rate from sand}) = 320 + 34.72 = 354.72Watt$. 34.72W is 11% MORE of conventional solar panels



Why Mysolar Baficial PV

1. Higher Efficiency - Front Side Up to 20.2% efficiency
2. Extra Power Gain - Rearside generates extra power output
3. Better PID Resistance - Double Glass protects panels better
4. Higher Fireproof level - Grade A fireproof
5. Longer Lifespan - up to 30 years warranty
6. Lower Degradation: 2.5% from 1st, 0.448% degradation from second year
7. Stronger Corrossion Resistance - Glass replaces conventional backsheet, better steam/water/acid/salt proof
8. Greater Installation Scenes - BIPV, Deserts, Strong wind/snow sections
9. Easier Maintenance - frameless panels are easier to be cleaned
10. Less cost - very competitive prices comparing with conventional PERC modules, less BOS cost (balance of system)



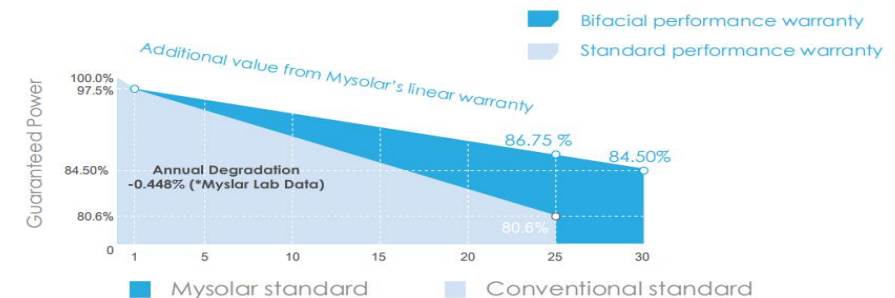
CLASS A FIRE-PROOF



EASIER MAINTENANCE

LINEAR PERFORMANCE WARRANTY

12 Year Product Warranty · 30 Year Linear Power Warranty



30 YEARS WARRANTY

Mamibot

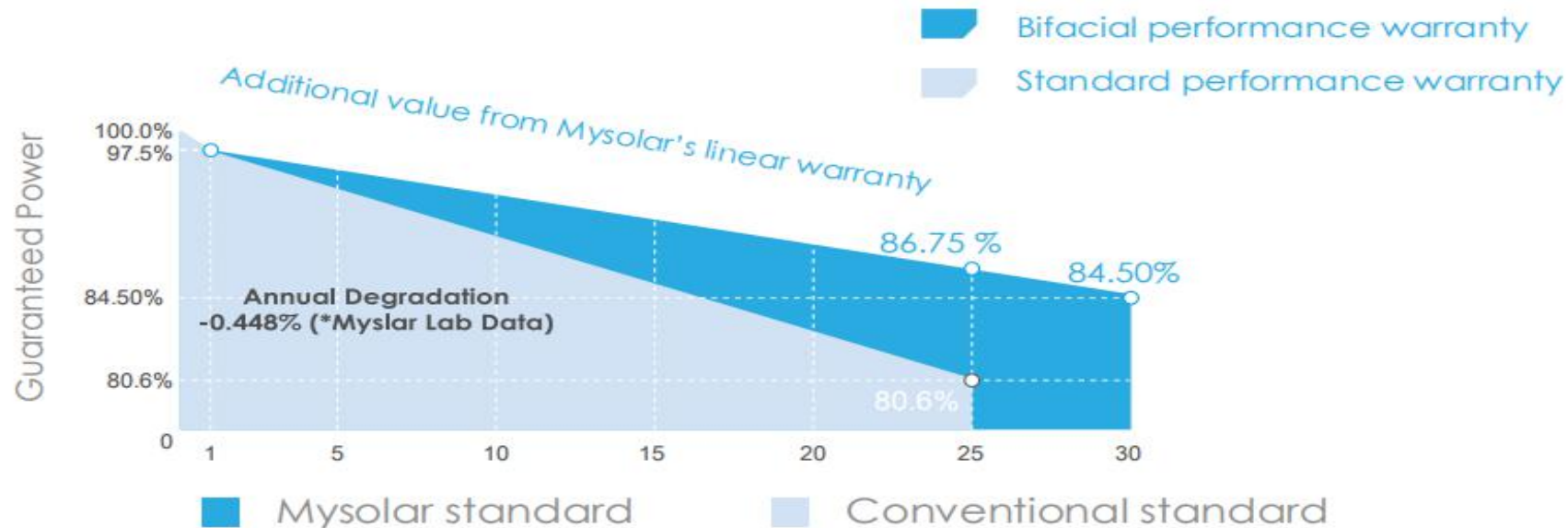
Degradation and Warranty

Lower Degradation - Longer Lifespan - up to 30 years warranty

2.5% from 1st, 0.448% degradation from second year.

LINEAR PERFORMANCE WARRANTY

12 Year Product Warranty · 30 Year Linear Power Warranty



Mysolar Bifacial Panels

Mysolar SUPO Bifacial series M144B

High-efficient **double glass bifacial mono** Perc solar panels (158.75mm PERC MONO cells) MS410M-DHBS 410W, MS405M-DHBS 405W, MS400M-DHBS 400W, with maximum efficiency up to 20.20% under mass production and rearside bifaciality of 70% above, extra power gain from 5% to 30%.

Mysolar SUPO Bifacial series M120B

High-efficient **double glass bifacial mono** Perc solar panels (158.75mm PERC MONO cells) MS330M-DHBS 330W, MS335M-DHBS 335W, MS340M-DHBS 340W, MS345M-DHBS 345W, with maximum efficiency up to 20.20% under mass production and rearside bifaciality of 70% above, extra power gain from 5% to 30%.

How much more power output can a bifacial panel get comparing with general MONO PERC panels? Take 310W mono perc for example:

General PERC PANEL: 310W

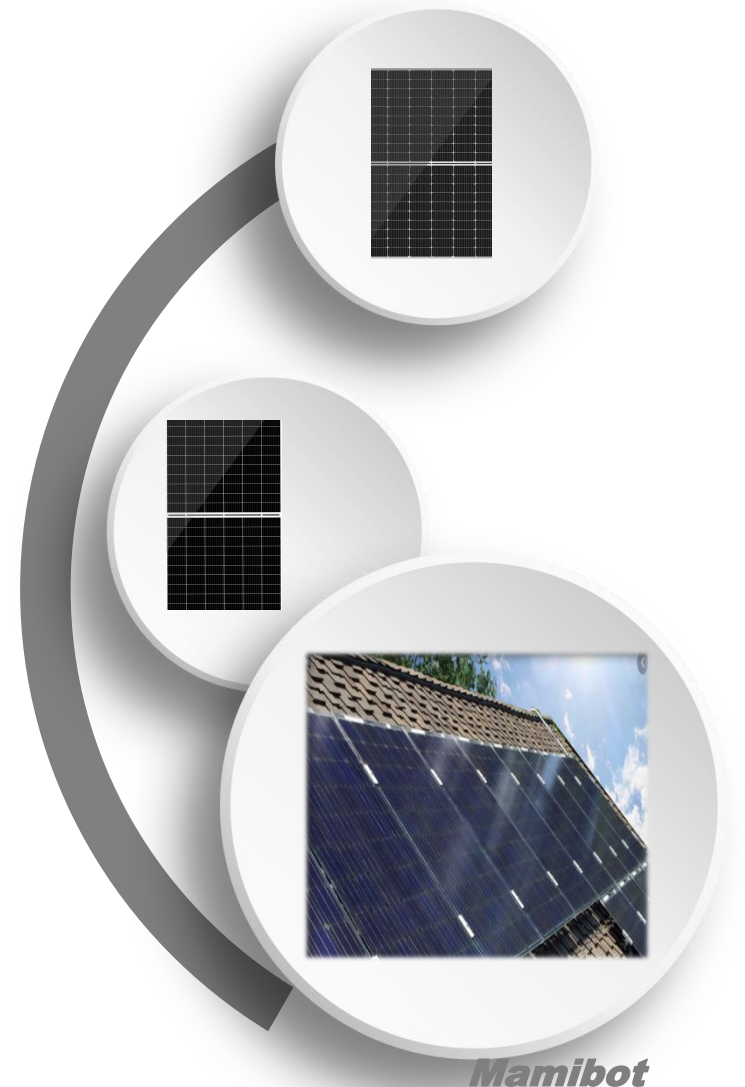
Bifacial 310W PERC PANEL:

If grounding part is grass/sand, the albedo rate is about 15%, bifaciality 70%

Then 310W bifacial panel's output = $310W + 310 \times 0.7 \times 0.15 = 310 + 32.55 = 342.55W$

If grounding part is white painted concrete, albedo rate is about 25%, bifaciality 70%

Then 310W bifacial panel's output = $310W + 310 \times 0.7 \times 0.25 = 310 + 54.25 = 364.25W$





Thank you!

