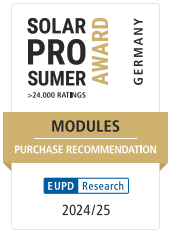
LUXOR
solar module manufacturer

BIFACIAL TECHNOLOGY

ECO LINE GLASS-GLASS BIFACIAL
THE „ADDITIONAL YIELD MODULES"



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BIFACIAL I GLASS-GLASS
THE HIGH-GAINS MODULE

EUPD RESEARCH
TOP BRAND PV
MODULES
GERMANY
2025

Combining three technologies in terms of modular architecture, Luxor Solar is expanding its portfolio with an additional premium solar module.
By using bifacial cell technology resulting in an increase in performance of the half-cell architecture and the longevity of a glass-glass solar module, Luxor Solar generates significantly more yield.

Bifacial solar modules use both direct radiation on the front and indirect light on the back to generate electricity. A glass pane on the rear side of the module enables both unused light that passes through the module and reflected light from the surroundings to be captured by the cells on the back.

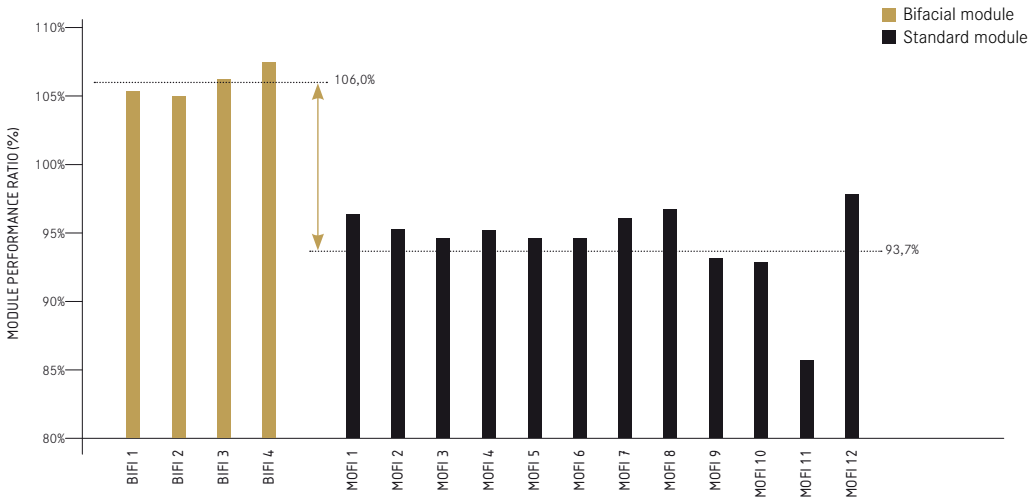
Factors such as the so-called albedo (retroreflective power) comprised with the distance between the module and the surface greatly influence how high the additional generated yield is at the rear end.

Depending on the nature of the reflective surfaces and the installation height of the module, the yield can be up to 25% higher.

In general, the higher the albedo and the greater the distance between the module and surface, the higher the additional yield. Especially in the mornings and evenings, the back provides the greatest contribution.

+ Bifacial
+ Half-Cell Architecture
+ Glass-Glass Technology

ENERGY YIELD PERFORMANCE OF BIFACIAL PV MODULES(1)



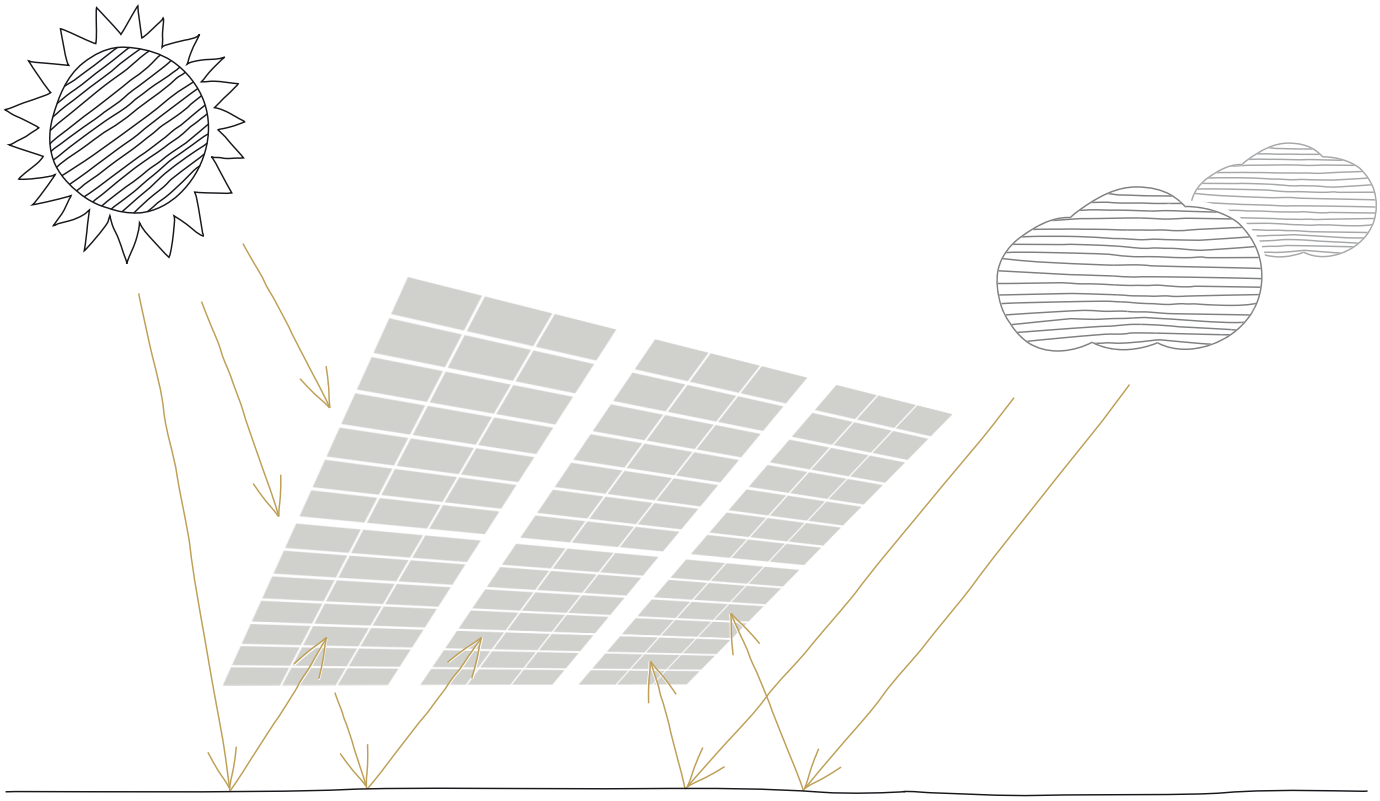
(1) TÜV Rheinland - Dr. Herrmann, bifiPV Workshop, Konstanz, 2017

BIFACIALITY

HIGHER POWER PRODUCTION = SECURE YIELDS

In the case of a bifacial solar cell, the back surface field, which is normally covered entirely with aluminium, is printed with an aluminium grid approximately at the front of the solar cell. The application of this grid enables indirect light from the solar cell to be picked up on the back and converted into electrical current.

The bifacial additional yield is dependent on the area of reflection. The higher the albedo, the greater the reflected radiation. An additional yield of up to 25% can be achieved. With an albedo of 30%, an 11% higher yield was achieved within one year. (1)



ALBEDO* (2)

High in [m]**	Concrete	Grass	White gravel	Sand	Bright roof slab	Bright roof film
Max	16.0%	23.0%	27.0%	40.0%	56.0%	80.0%
0	1.2%	1.7%	2.0%	3.0%	4.2%	6.0%
0.1	2.3%	3.3%	3.9%	5.8%	8.1%	11.6%
0.2	3.1%	4.4%	5.2%	7.7%	10.8%	15.5%
0.3	3.6%	5.2%	6.1%	9.1%	12.8%	18.2%
0.4	4.0%	5.8%	6.8%	10.1%	14.1%	20.2%
0.5	4.3%	6.2%	7.3%	10.8%	15.1%	21.5%

* Albedo is a measure of the retro-reflectivity of diffuse reflection, i.e. non self-illuminating surfaces.

** Solar module installation height above reflection surface

In comparison, the water surface of lakes reflect up to 10%.

(1) TÜV Rheinland - Dr. Herrmann, bifiPV Workshop, Konstanz, 2017
(2) ISES, R. Satpathy, Additional Energy yield using Bifacial Solar PV Modules, Freiburg, 2017

GLASS-GLASS TECHNOLOGY INCREASED DURABILITY = LOWER MAINTENANCE COSTS

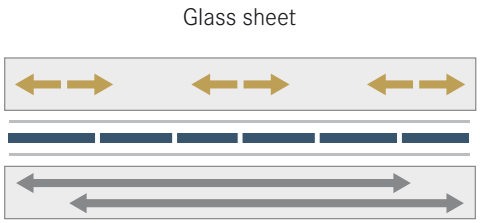
GLASS-GLASS MODULES ARE PARTICULARLY RESISTANT

The back glass of the module, unlike a foil, cannot cloud over. Clouding of the film can be caused by UV radiation, which means that less light falls on the solar cells. Glass-glass solar modules offer more stability compared to a module with a backsheet foil. In addition, glass offers a higher fire safety than plastic and a high resistance to moisture and other environmental influences.

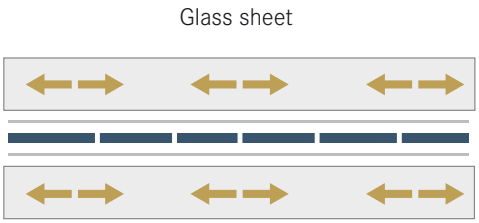
THERMAL EXPANSION

Consistent expansion and contraction

In contrast to standard modules, in glass-glass modules identical materials are used on the front and the back. Thanks to the identical physical conditions, the module can withstand higher stress caused for example by temperature fluctuations, heavy loads and strong winds. Properties which singinficantly extend the lifespan of glass-glass modules, especially in hot and humid climates.



CONVENTIONAL PV MODULE.
VARIABLE THERMAL EXPANSION
BETWEEN GLASS AND POLYMER FILM.

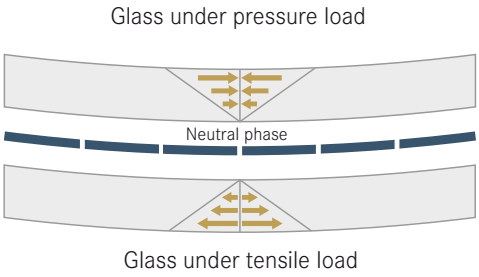


LUXOR GLASS-GLASS PV MODULE
EQUAL THERMAL EXPANSION
ON FRONT AND BACK GLASS.

MECHANICAL EXPANSION

Solar cells in neutral phase

Compressive and tensile loads, caused for example by snow and wind, place mechanical stress on solar modules. The glasses of the glass-glass modules on the front and back have the same material thickness, which means that the cell image is in the neutral phase. In this phase, very low tensile and compressive loads act, this means significantly less stress for the cells and slows down the degradation of performance.



RELIABLE RESISTANT

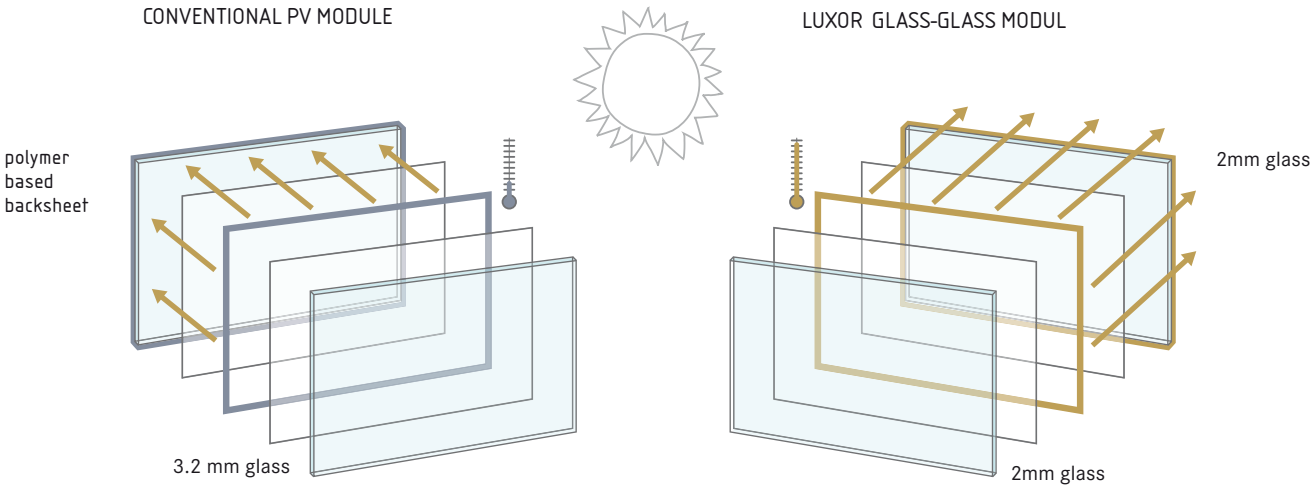
Ultra-thin front glass

The front glass used in the Bifacial line is only 2 mm. thick. The glass is therefore more translucent, which results in up to 2% higher yield compared to conventional solar modules with a front glass of 3.2mm.

Heat dissipation

The double-glass technology leads to a better heat transfer coefficient than with glass-film modules. This means more efficient heat dissipation and, as a result, more yield of up to 2%.(4)

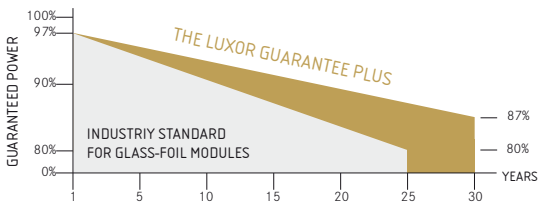
HEAT EXHAUST FROM A LUXOR BIFACIAL LINE MODULE



SECURITY, YIELD & GUARANTEES

The advantages of the Luxor ECO Line Bifacial are many. A premium class solar module for safety and environmentally conscious customers who appreciate excellent quality.

+ Higher yield
+ Maximum longevity
+ Combination of the latest technologies
+ Long guarantees, high security
+ Withstands extreme environmental conditions
+ For translucent applications such as carports or conservatories



1: The specific warranty conditions are given under www.luxor-solar.com/de/downloads.html

(4) Frauenhofer ISE, Mittag M., Thermal Modelling of PV Modules, 36th EUPVSEC, Marseille, 2019

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