

Boosting Bifacial Module Performance with SolarEdge



Bifacial technology is here to stay

Driven by PV stakeholders seeking ways to improve commercial system yield while lowering LCOE, the global demand for bifacial solar modules has grown significantly in recent years. Bifacial module market share is on course to reach 17% of all global installations by 2024¹.

By producing energy from the rear as well as the front side of the module, there's a clear advantage when installing bifacial modules on ground-mounted arrays, flat rooftops or floating PV systems, compared to traditional mono-facial modules. In addition to other factors such as module placement and height, the greater the surface albedo (the amount of light reflected off the ground that then hits the module backside), the greater the power gain of each module.

¹ Source: Wood Mackenzie Power and Renewables 2019

More energy with MLPE

Compared to string inverters, MLPE solutions such as SolarEdge power optimizers are able to harvest more power from virtually any installation by optimizing energy production of individual modules. And by mitigating power losses due to a variety of module performance mismatch – an issue common to both mono and bifacial modules – MLPE can further enhance PV system output and improve ROI.

Common module mismatch sources

Power losses due to various sources of module mismatch are unavoidable in both mono and bifacial module installations.



Transportation damage



Different tilt & orientation



Thermal mismatch



Partial shading



Soiling



Manufacturing tolerance

However, there are additional mismatch losses caused by non-uniform rear-side irradiance that can impact bifacial module deployments:

- // Self-shading of individual modules or shading caused by other modules, racking obstructions
- // Reduced surface albedo due to obstructions or soiling of area directly under the modules
- // Difference in irradiance between modules on edge of rows compared to centrally-placed modules
- // Waves causing varying module orientations and tilts in floating PV installations

/ Overcoming Bifacial Module Mismatch with SolarEdge

By adjusting the current and voltage to the specific requirements of each individual module, SolarEdge power optimization technology guarantees that modules work at their maximum capacity at all times, regardless of the performance of other modules in the PV string.

This is a significant advantage over traditional inverter systems, where the weakest modules in the PV array drag down overall performance.

Adding SolarEdge power optimizers to bifacial modules can eliminate power losses caused by reduced surface albedo, shading, obstructions or other factors. This ultimately results in the entire SolarEdge system producing solar energy to its maximum potential.



More than just added energy

The benefits of SolarEdge DC-optimized technology extend beyond just added energy, providing greater safety, design flexibility and module-level monitoring for higher system uptime.



Built-in advanced safety – protect people and assets with embedded arc detection and automatic reduction of high DC voltage to safe levels during inverter or grid shutdown



Flexible site design – install longer strings for reduced BOS costs, with 2:1 module to power optimizer ratio further lowering system overheads



Free module-level monitoring for 25 years – reduce O&M costs and site visits through remote troubleshooting, pinpointed alerts, and system upgrades



Future compatibility – easily replace faulty modules by installing new models on the same string as old ones



Long-term warranties – gain peace of mind with industry-leading product warranties