

YOUR PV MODULES CAN GENERATE UP TO **42% MORE ENERGY** IN SUBOPTIMAL LIGHT CONDITIONS

Deliver unmatched efficiency, greater reliability and substring independence in your PV modules by integrating the Zodiac system into your PV modules, an integrated power electronics solution by Daanaa.



MAXIMIZED ENERGY

Superior performance with up to 42% more energy in extreme shade or light-obstructed conditions when compared to conventional PV systems.



ENHANCED RELIABILITY

Elimination of single points of failures reducing system downtime and prevention of hotspots.



SIMPLIFIED O&M

No external power electronics. Advanced monitoring and diagnostics.

About Zodiac

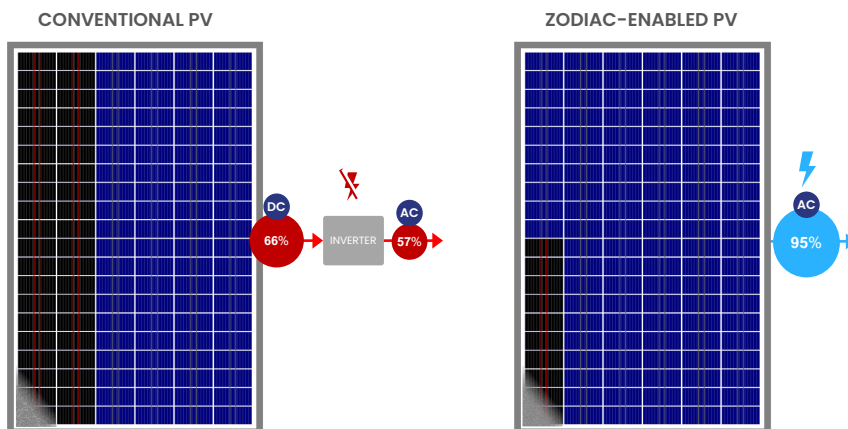
Zodiac is a power electronics solution integrated into PV modules that includes DC optimization, power conversion/inversion, rapid shutdown, and diagnostic functions for shorter substrings of PV cells.

The solution significantly increases energy production while its integrated functionalities eliminate the need for external DC optimizers, inverters, microinverters, bypass diodes, and their associated failures due to clipping. The distributed electronics remove single points of failure and prevent hotspots, enhancing system reliability.



Independent third-party validated analysis and performance results.

*compared to conventional PV in extreme shade conditions.



Percentages are for exemplification purposes. Exact numbers depend on multiple factors.

The Zodiac system offers a range of PV module design options based on the desired number of cells per substring and is compatible with shingles, BIPV, VIPV, and more.

KEY FEATURES

- Independent substring performance.
- Converts low voltage inputs to optimized high voltage output.
- Applicable to different cell sizes and types.
- Ultra-fast MPPT convergence.

compatible with
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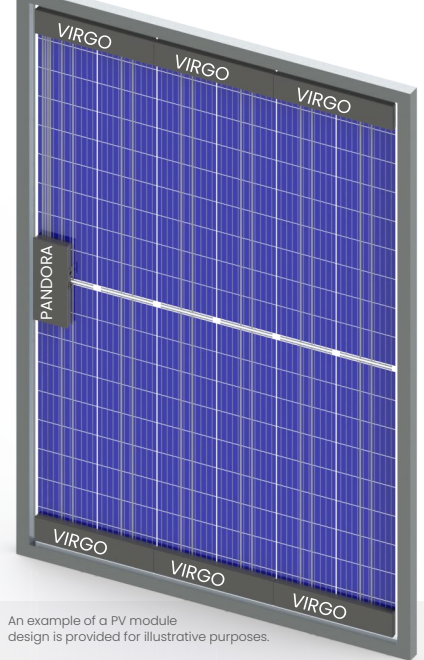
Zodiac Components

Zodiac consists of two types of power electronics modules:

Virgo: This module connects to solar cell substrings for DC optimization, inversion to high voltage AC, rapid shutdown, and substring-level monitoring and diagnostics at a deeper level.

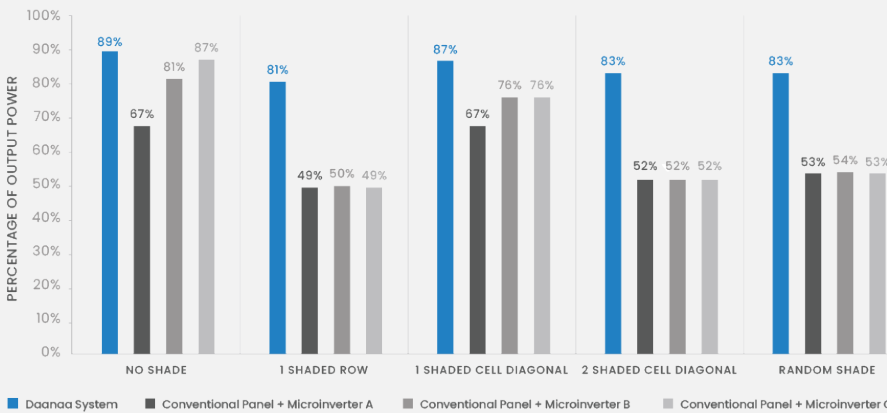
Pandora: This module aggregates AC power from the Virgos, delivers a single AC output to the grid, and serves as a communication interface with external gateways and servers.

The Zodiac system is placed at the back of the panel, resulting in a single output connector that ensures seamless installation. It offers a range of design options based on the desired number of cells per substring.



An example of a PV module design is provided for illustrative purposes.

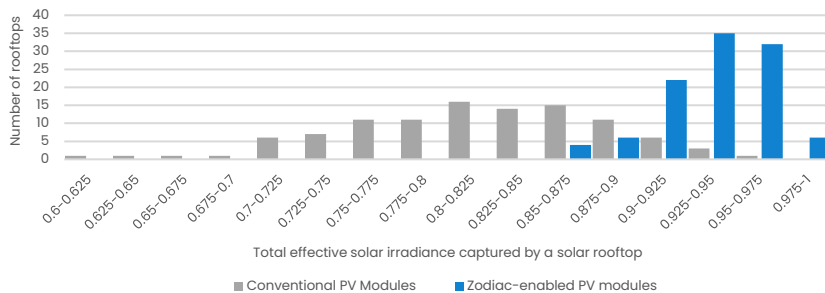
Test Results



An accredited third-party laboratory conducted solar testing of the effective performance of a PV module equipped with Zodiac. Zodiac-enabled PV modules outperformed PV modules with competing microinverter models in both shaded and unshaded scenarios resulting in a significant increase in the overall energy production.

Extra Energy Potential Validation

The benefits of the Zodiac approach were quantified through detailed analysis and validated at the IEEE PVSC. It demonstrates that reducing the substring size significantly enhances energy harvest, with rooftops under extreme shading potentially achieving up to 42% more energy. See the comparison below. The analysis is available on [IEEE Explore](#).



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CONTACT



Udi Daon
CEO

partnerships@daanaa.com

+1 888 342 3122