

PRESS RELEASE

Next-gen rooftop solar panels achieve ground-breaking efficiency

Insolight's pre-production modules set a new efficiency standard of 29% for rooftop solar panels. Results were validated by the Solar Energy Institute of the Universidad Politécnica de Madrid (IES-UPM), setting the stage for large-scale industrialization.

Insolight is taking a whole new approach to creating high-efficiency solar modules for the rooftop market. Its patented optical system concentrates light onto an array of tiny space-grade multi-junction photovoltaic cells. While today's rooftop standard modules typically show an efficiency of 17-19%, Insolight's pre-production module has been validated at an impressive 29% by IES-UPM, two years after a first record on a lab prototype. The Swiss company based at the EPFL Innovation Park has taken a decisive step towards industrialization with its first pre-production full-size series, cost-effective and compatible with existing assembly equipment.

During the past 15 years, the average efficiency of commercial PV panel has increased by only 3.5%. As conventional technologies are slowly reaching their maturity, new approaches are needed. "For the rooftop market, the real challenge is not only to increase efficiency but to do so in a way that combines cost-effectiveness, ease of installation and durability", says Laurent Coulot, CEO of Insolight.

A versatile and efficient design

In order to reach such high efficiency, Insolight uses a unique design. The panel's protective glass embeds a grid of lenses which concentrate light by several hundred times. Under this optical layer, direct sunlight is focused on an array of high-performance space-grade solar cells.

To follow the sun's movement, the cell array shifts horizontally by only a few millimeters each day. The whole system is encased in a slim module, similar to standard solar panels, which keeps mechanical parts protected. Insolight's product has the same form factor and appearance as standard panels and can be easily mounted in the industry-standard configurations, on rooftops or on the ground.

Insolight's approach keeps the cost of energy down. Thanks to the optical concentration, less than 0.5% of the total surface has to be covered with cells to reach optimal performance. This enables the use of high efficiency space-grade solar cells for the mainstream market.

Successful testing at the IES-UPM Institute

In November 2018, [IES-UPM](#) has validated Insolight's pre-production module at a nominal peak efficiency of 29% in CSTC conditions. This technology demonstration formed a part of a European Open Science initiative *Fostering a Next Generation of European Photovoltaic Society through Open Science* ([GRECO](#)). Modules were also tested in real-life conditions for a whole year on a pilot installation at the Swiss Institute of Technology in Lausanne (EPFL) and successfully endured heat-waves, winter conditions, and storms.

Insolight concept was first tested on a lab prototype by Fraunhofer ISE in 2016, setting a record for a rooftop technology. “Over the last two years, our team has brought the product from a lab prototype to a full-size solar panel, connected to the grid and monitored 24/7. Our system has been extensively tested and we are now preparing an industrialization strategy for large-scale production”, says Mathieu Ackermann, CTO of Insolight.

Industrial readiness: Insolight to partner with manufacturers

Insolight’s system can be assembled as an overlay on top of a standard PV panel. This hybrid approach is especially effective in cloudy conditions, where concentration efficiency decreases, to maintain energy harvesting under diffuse sunlight.

In order to speed up its market entry, Insolight is now discussing with several solar manufacturers to license its technology. “Our technology involves a few extra assembly steps, which can be added at the end of existing production lines, taking leverage of production capabilities already in place”, says Coulot.

By significantly boosting the energy yield, Insolight’s panels will deliver more energy and higher investment returns compared with mainstream PV modules. “Our technology can reduce solar electricity costs by up to 30% on rooftops in sunny countries,” says Coulot, who expects to see the first Insolight product hitting the market by 2022.

Insolight is supported by several programs from the European Commissions (H2020, Solar-ERA.Net, Eurostars, Climate KIC), national programs (Innosuisse, Innovaud, SPEI, FIT, VentureKick, CleanTech Alps), the European Space Agency (ESA BIC) and EPFL (Inngrant).

About Insolight

Insolight is a Swiss company based at the EPFL Innovation Park in Lausanne, developing next-generation solar panels for the global market. The company has established strong partnerships with major industrial players as well as world-class research centers such as CSEM, Fraunhofer ISE, and UPM-IES. It is supported by private investors and several EU programs.

About IES-UPM

The IES-UPM is a center specifically devoted to research into the fundamentals and the practical application of photovoltaics. Over four decades the IES-UPM has received international recognition for its research, thanks to our philosophy to combine a passion for PV solar energy and scientific rigor in the face technological problems.

Contact

Instituto de Energía Solar - UPM

Email: info@ies.upm.es

More info: <https://insolight.ch/press-release-201902/>