ENERGY PERFORMANCE AND CHARACTERIZATION TEST

MEZeroE
Measuring Envelope systems for Zero Energy buildings

Heliatek

Product: HeliaFilm

Heliatek's organic solar films are lightweight, flexible, and easy to install on façades, roofs, and curved surfaces. They generate up to 65W/m² and have a low carbon footprint, making them ideal for sustainable energy solutions.

Heliatek modules outdoor shadowing test.

Pilot Measurement & Verification Line 3

Managed by: LIETAT

PM&VL3

PM&VL3 focuses on modeling and validating active energy components, covering key aspects of PV-integrated building envelope elements under various environmental conditions, and analysing product stability and degradation.

INTERACTION

EFFICIENCY

Which is the need covered by this service?

This service fulfills the need for comprehensive testing and validation of BIPV modules, assessing their performance and durability under diverse environmental conditions. It helps manufacturers understand how factors like shading, temperature changes, and prolonged light exposure affect product efficiency and stability.

Design of Experiments

The testing plan for HeliaFilm involves:

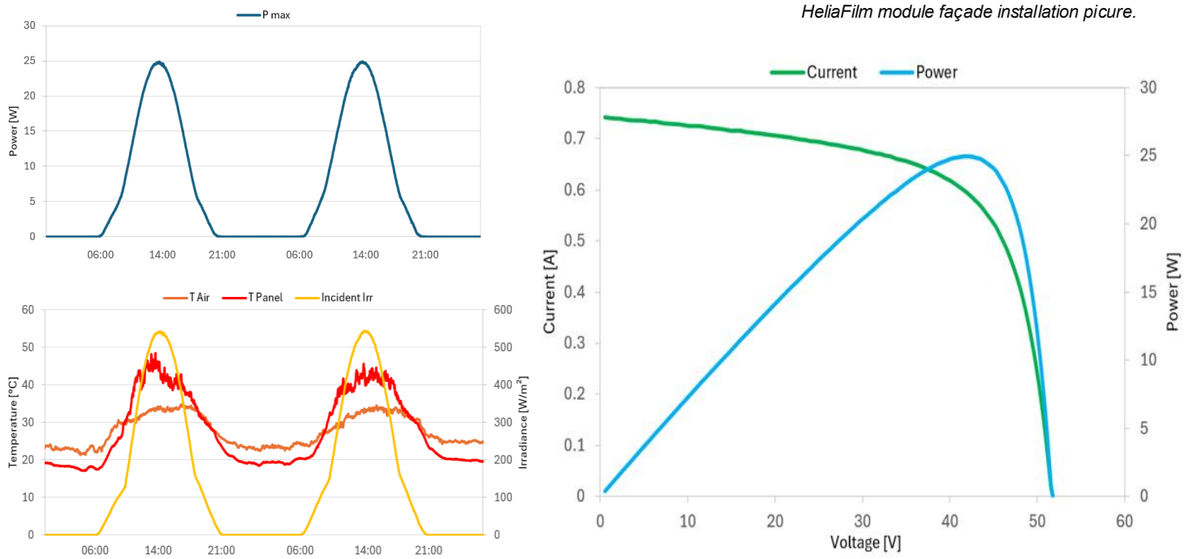
- Conducting outdoor performance tests to track energy output and stability over time in natural conditions.
- Performing product characterizations, including IV curve measurements and thermal imaging before and after testing, to evaluate efficiency and identify potential hotspots.

Indoor and outdoor tests of HeliaFilm modules, and image of their thermal Characterization.

Results

The tests conducted on HeliaFilm effectively highlighted its robust performance attributes. In outdoor settings, the film demonstrated a commendable performance rate of 6.7% under real conditions, underscoring its efficiency in energy conversion. The evaluation process was comprehensive, incorporating IV curve measurements and thermal imaging to meticulously assess the product's efficiency and pinpoint potential hotspots. Additionally, the testing regimen included monitoring the energy output and stability over extended periods in natural conditions, ensuring a thorough appraisal of HeliaFilm's behaviour in real-world scenarios.

HeliaFilm module façade installation picure.



IV curve at maximum power output and daily weather data plots for a large HeliaFilm panel installed vertically, simulating a real-world, south-facing building facade installation.

Conclusions

The testing and validation of Heliatek's HeliaFilm product offered valuable insights into its performance across different environmental conditions and outdoor exposure. The tests emphasized the durability and energy output of the product, particularly in building-integrated photovoltaic (BIPV) applications. These findings confirm HeliaFilm's effectiveness as a sustainable energy solution, meeting the necessary standards for long-term efficiency and reliability in nearly Zero Energy Buildings (nZEBs).

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