SOLAR PRO.

SolarTech Power Solutions

Sophia Solar Power System

Overview

Are Sophia tiles solar powered?

Sophia TILEs are solar powered. Earth observation imagery and sensor data downlinked to Earth currently suffer long analysis times due to bandwidth constraints. Sophia TILEs process that data in orbit and relay near–real-time results to defense and emergency responders.

Where can Sophia Systems be deployed?

Large scale SOPHIA like systems can be deployed in Southern Europe as the market analyses have shown. Deployment of stand-alone SOEC systems can be worldwide. EPFL is an important institute for education, training and PhD students in the field of system modelling, solar receiver modelling and fuel cell and electrolyser research.

How can Sophia improve a fuel cell & electrolyser?

As a general matter, all the numerical means developed in SOPHIA will be valorized through studies dedicated to the optimization of high temperature fuel cell and electrolyser. They allow to narrow the gap between the laboratory developments and the pre-commercial systems.

Can Sophia cells be operated at high current density?

In addition, the contact elements and sealing concept have been optimized for SOPHIA cells and validated in several 1-cell stacks. It was shown that at atmospheric pressure, the cell and stack can be operated at high current density ($\Delta i \Delta \geq 0.6$ A/cm^2) even at 700°C, which might help in ageing resistance.

What is a solar-to-fuel efficiency model?

The model allows for a direct comparison of the three approaches using performance criteria (e.g. solar-to-fuel efficiency) and economic criteria (e.g. hydrogen cost) under various design and operational conditions, and under

various material and device choices.

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