

# **Solar container communication station hybrid energy semiconductor**





## Overview

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Can a molecular solar thermal system be combined with a PV cell?

This paper proposes a hybrid device combining a molecular solar thermal (MOST) energy storage system with PV cell. The MOST system, made of elements like carbon, hydrogen, oxygen, fluorine, and nitrogen, avoids the need for rare materials.

How efficient is a hybrid solar energy system?

To mitigate this issue, a hybrid device has been developed, featuring a solar energy storage and cooling layer integrated with a silicon-based PV cell. This hybrid system demonstrated a solar utilization efficiency of 14.9%, indicating its potential to achieve even greater efficiencies in future advanced hybrid photovoltaic solar energy systems.

Would a top UV-absorbing semiconductor cell have a high solar conversion efficiency?

Theoretically, a top UV-absorbing semiconductor cell could have solar conversion efficiencies of up to 8.8% at an energy band gap of  $E_g = 2.7$  eV, 49 but would require the integration and development of semi-transparent semiconductors and electrodes and efficient photon management.

How does a molecular solar thermal system work?

This layer employs a molecular solar thermal (MOST) energy storage system to convert and store high-energy photons—typically underutilized by solar cells due to thermalization losses—into chemical energy. Simultaneously, it effectively cools the PV cell through both optical effects and thermal conductivity.



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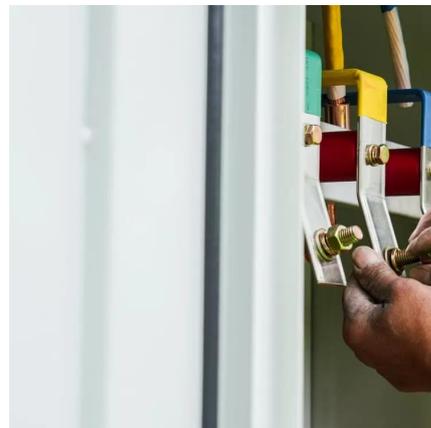


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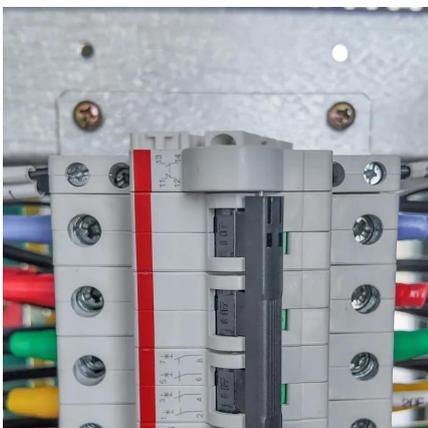


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Highjoule HJ-SG-R01 Communication Container Station is used for outdoor large-scale base station sites.

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