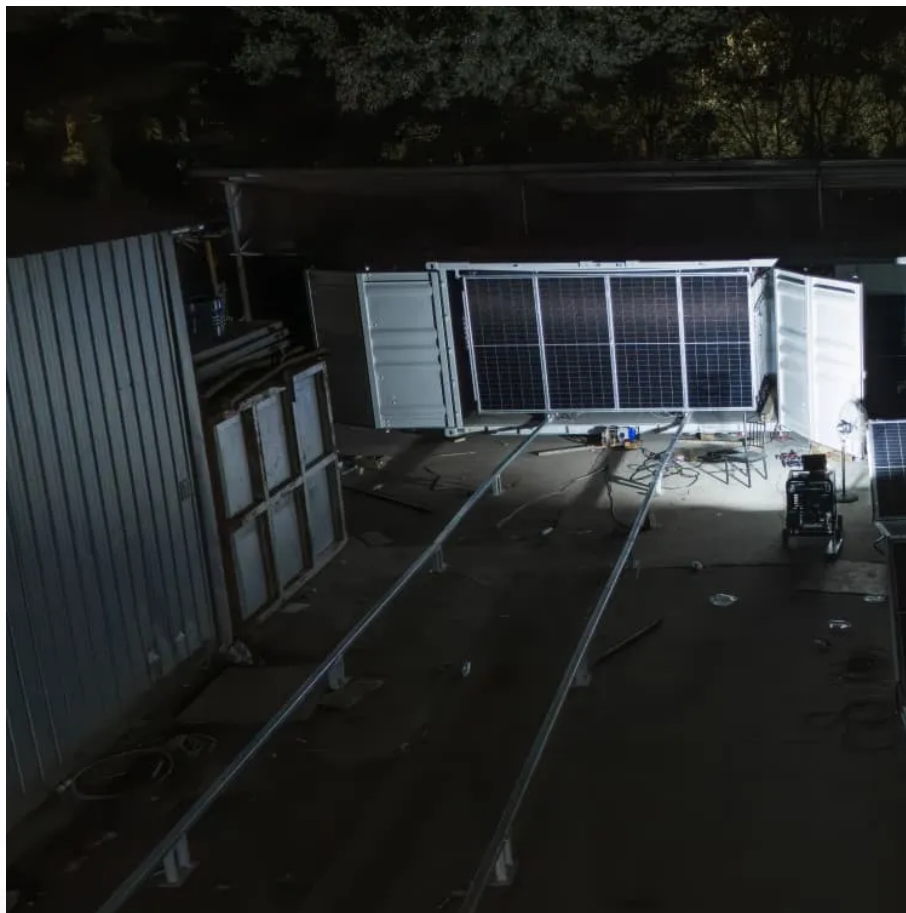


# **Solar thermal curtain wall solution**





## Overview

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Can transparent photovoltaic curtain walls reduce energy demand?

Building simulations showed up to 206.7 kWh/m<sup>2</sup>/year energy demand reduction. Transparent photovoltaic curtain walls provided dual functionality by generating energy while regulating indoor optical and thermal conditions, representing a promising solution for sustainable architecture, particularly in the near-infrared (NIR) region.

What is a photovoltaic curtain wall?

They enhance thermal comfort and help prevent the greenhouse effect. A standard curtain wall offers no return on investment. In contrast, a photovoltaic curtain wall not only insulates the building but also generates power for over 30 years. This reduces monthly electricity bills and ultimately pays for itself over time.

Are PSC-based curtain walls suitable for building energy applications?

This work presented a systematic study of PSC-based curtain walls for building energy applications. A semi-transparent perovskite solar cell (ST-PSC) with high infrared transmittance and PEAL surface passivation is developed for building-integrated photovoltaic (BIPV) fenestration structure.

Do curtain walls reduce energy consumption?

Despite recent efforts on heat loss mitigation (relying on additional glass panes, coatings or thermal breaks to framing elements) curtain walls remain a significant contributor to the energy consumption of such buildings.



## Solar thermal curtain wall solution

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