

Ventilation structure of solar curtain wall





Overview

Building integrated photovoltaic (BIPV) and air source heat pump (ASHP) technologies have emerged as promising solutions for building energy conservation. However, traditional solar building.

Can PV curtain wall systems reduce overheating and save energy?

To address overheating and save energy in air conditioning, this study proposed novel single- and dual-inlet ventilation PV curtain wall systems (SVPV and DVPV). In summer, the building exhaust is introduced into the channel to strengthen PV cooling, while incoming fresh air is used to preheat dew-point air.

How does a single-inlet ventilated PV curtain wall system work?

This section describes the operation of the single-inlet ventilated PV curtain wall system using a novel HR technique for fresh and supply air handling (SVPV), along with the dual-inlet one (DVPV), taking the conventional non-ventilated one without HR (NVPV) as a reference system.

Why is exhaust ventilation important for PV curtain wall?

Exhaust ventilation improves PV curtain wall's thermal and electrical performance. Using outlet exhaust for outdoor air handling reduces reheat energy. Heated/cooled exhaust as heat source/sink enhances heat pump COP. System achieves 17.05% higher annual energy efficiency than conventional.

What is a ventilated curtain wall?

In the ventilated curtain wall, the air inlet is situated at the bottom of the internal glazing, while the exhaust ducts are connected to the channel outlet and concealed within the ceiling. This configuration ensures both effective ventilation and preservation of aesthetics.



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Photovoltaic double-skin glass is a low-carbon energy-saving curtain wall system that uses ventilation heat exchange and airflow regulation to reduce heat gain and generate a ...



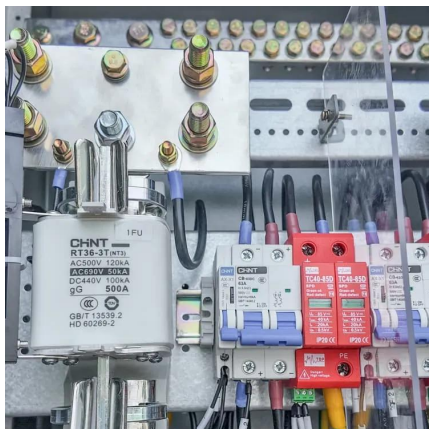
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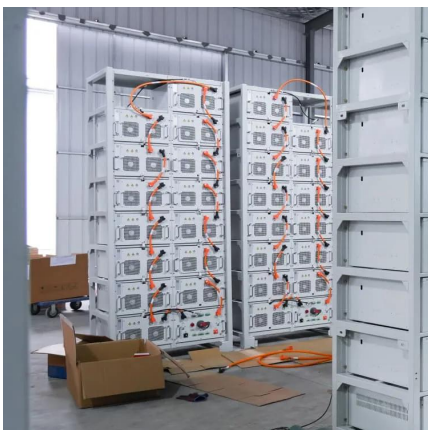
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Single

To address overheating and save energy in air conditioning, this study proposed novel single- and dual-inlet ventilation PV curtain wall systems (SVPV and DVPV). In summer, ...

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Innovative curtain wall with solar preheating of ...

This paper presents the design and development of an energy-efficient alternative to conventional curtain wall systems, achieving equivalent transparency and aesthetics with ...

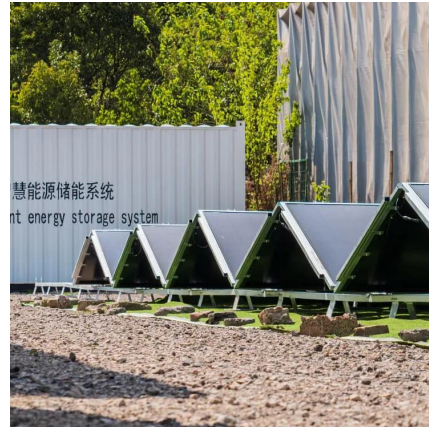
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