

Title: Windhoek Office Building solar Curtain Wall Project

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Are vacuum integrated photovoltaic curtain walls performance-driven?

The vacuum integrated photovoltaic (VPV) curtain wall has garnered widespread attention from scholars owing to its remarkable thermal insulation performance and power generation ability. However, there is a lack of in-depth, performance-driven optimal design that considers the mutually constraining functions of the VPV curtain wall.

Do VPV curtain walls save energy?

According to the literature review, VPV curtain walls exhibit significant potential for energy savings owing to their excellent thermal insulation performance. Furthermore, the shading effect of PV cells can alleviate discomfort glare and enhance occupants' visual comfort.

Which VPV curtain wall has the highest RNEH?

When aiming at the highest RNEH ($\theta_1 = \theta_2 = \theta_3 = 0.01, \theta_4 = 0.97$), the partitioned VPV curtain wall with 20%, 40%, and 90% PV coverages of the daylight, view, and spandrel sections achieved the highest RNEH of 64.7%. However, the corresponding glare index is as high as 29.4%.

Building-integrated photovoltaics (BIPV) are evolving beyond simple solar panels, with transparent solar cells and solar skin technologies that can be seamlessly incorporated into windows, ...

Discover how curtain walls enhance energy efficiency in commercial buildings, reduce energy costs, and meet sustainability goals with advanced features.

The construction activity at Momentum Metropolitan Namibia's landmark headquarters in Windhoek was not to add more ...

To address this issue, this study proposed a multi-function partitioned design method for VPV curtain walls aimed at reconciling the competing demand of different functions.

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