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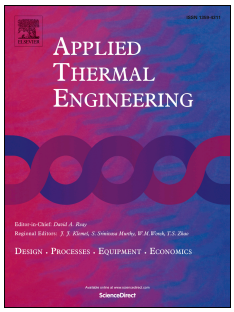

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Building integration of concentrating solar systems for heating applications

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Abstract

A new solar collection system integrated on the façade of a building is investigated for Dutch climate conditions. The solar collection system includes a solar façade, a receiver tube and 10 Fresnel lenses. The Fresnel lenses considered were linear, non-imaging, line - focused with a system tracking the position of the sun that ensures vertical incidence of the direct solar radiation on the lenses. For the heating system a double-effect absorption heat pump, which requires high temperature of the heating fluid, was used, working with water and lithium-bromide as refrigerant and solution respectively. The Fresnel lens system is connected with the absorption heat pump through a thermal energy storage tank which accumulates the heat from the Fresnel lens system to provide it to the high pressure generator of the absorption heat pump.

Keywords: solar façade, Fresnel lens, double-effect absorption heat pump, thermal energy storage

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