



Contribution ID: 437

Type: **Poster Presentation**

Adaptation of roof ventilators as micro-power generation units in homes

Tuesday, 8 July 2014 17:10 (1h 50m)

Abstract content
 (Max 300 words)
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Ventilation is one of the aspects that determine quality of the indoor environment. Traditionally residential construction greatly relied on air infiltration through the building envelope. More ventilation than necessary is normally expensive in terms of energy. The incorporation of energy efficiency measures can drastically reduce energy consumption without compromising thermal performance of the building. In most cases the use of natural ventilation is not adequate so the need of mechanical ventilation. The incorporation of a power generation roof ventilator (PGRV) is a promising solution in meeting the energy needs and maintaining a thermally comfortable indoor environment. Literature shows that researchers do appreciate that power can be generated from a roof ventilator at negligible performance degradation in terms of ventilation. However, the researches fall short of detailing whether performance degradation is uniform for all modes of operation or it is a variable in itself thereby calling for intensive studies on characterising performance degradation of the roof ventilator. A voltage generator added to the rotating ventilator is an additional load to the rotating component that reduces its rotational capabilities. That reduction in rotational capability therefore translates to reduced ventilation efficiency since both power output and ventilation depend on the size of the centrifugal force on the ventilator. The paper gives a critical review of the work done to date by different researchers on power generator roof ventilators and identifies areas of research that need more attention.

Apply to be considered for a student award (Yes / No)?

yes

Level for award (Hons, MSc, PhD)?

PhD

Main supervisor (name and email) and his / her institution

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Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

yes

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Session Classification: Poster1

Track Classification: Track F - Applied Physics