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Invitation to review for Energy & Buildings

1 message

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Reply-To: Energy & Buildings <support@elsevier.com>
To: Guillermo Barrios del Valle <gbv@ier.unam.mx>

Mon, Mar 4, 2024 at 3:29 AM

Manuscript Number: **ENB-D-24-00537**

Enhancing thermal comfort of older adults during extreme weather: combined personal comfort system and ventilated vest

Jaafar Younes; Minzhou Chen; Kamel Ghali; Risto Kosonen; Arsen Melikov; Simo Kilpeläinen; Nesreen Ghaddar

Dear Dr Barrios del Valle,

I would like to invite you to review the above referenced manuscript submitted by Professor Nesreen Ghaddar , as I believe it falls within your expertise and interest. The abstract for this manuscript is included below.

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Kind regards,

Ricardo Forgiarini Rupp

Associate Editor

Energy & Buildings

Abstract:

This study proposes using a personal comfort system (pcs) with a ventilated vest to improve the thermal comfort of older people in hot conditions at low energy requirements. a chair-based pcs that establishes a cool microclimate around body parts influential for thermal comfort is used with a ventilated vest that draws cool air from the established microclimate. the vest acts as an additional heat removal measure to provide adequate elderly thermal sensation (ts) with the chair pcs. the research methodology incorporates a ventilated vest model integrated with an elderly bioheat and ts models as well as computational fluid dynamics for predicting the flow and thermal fields of microclimate and space. models are validated by i) conducting experiments on a chair-based pcs with a vest on thermal manikin in a climatic chamber and ii) comparison with published data on elderly ts. the validated models are used to evaluate the effect of combining the vest and the chair pcs on improving elderly ts. the combined system reduced the elderly ts from 0.8 to 0.5 (between neutral and slightly warm) at 33 °c microclimate with a chair pcs supply flow rate of 21 l/s and a vest suction fan flow rate of 11 l/s. in contrast, achieving a ts of 0.5 using the chair pcs alone necessitate a supply flow rate of 34 l/s, which results in 19% higher energy consumption compared to the combined mode. using the vest with the chair pcs is a viable solution for elderly individuals in hot conditions.

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