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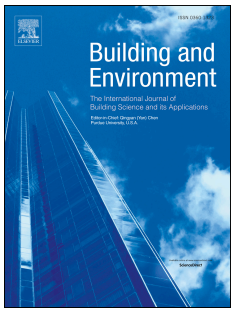

A satisfaction-range approach for achieving thermal comfort level in a shared office

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A satisfaction-range approach for achieving thermal comfort level in a shared office

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Abstract

A personal comfort assessment model predicts occupants' thermal comfort responses, specific to each individual, as an alternative to the mean response of a large population. However, current air conditioning systems rely on a fixed set-point based on the maximum occupancy assumptions which may cause discomfort for occupants. In addition, securing consistent comfort level for occupants in a shared space is challenging due to the difference of preference thermal comfort of individuals. This research proposes a method which is not only relying on individuals' survey participation but also utilizing the advantages of the comfort level modelling. Computational fluid dynamics (CFD) was used to evaluate thermal comfort through modelling of the predicted mean vote (PMV) and the predicted percentage dissatisfied (PPD) in several scenarios and the consequential thermal zones and their corresponding occupants were identified. A fuzzy-based approach is used to develop a personal thermal preference profile. Based on the