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Energy Efficiency Potential in Tropical Buildings – Perspective of an Enclosed Transitional Zone

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Abstract

The enclosed transitional spaces in buildings are subjected to certain building services requirements which contribute to the increase of energy consumption. This paper reports on the energy efficiency potential of the enclosed lift lobby of an educational institution in Malaysia via evaluation of existing environmental comfort factors and human thermal sensation. The method applied was by using field survey which consists of field physical measurement and subjective (questionnaire) assessment. For energy efficiency purpose, the indoor air temperature was maintained at 26°C together with a fixed air velocity of 0.15 m/s. A total of 113 sampling votes were collected and the human perception of thermal comfort in the enclosed lift lobby was then studied. This study shows the importance of air velocity in the enclosed transitional space in sustaining thermal comfort of occupants, and the factors which affected the thermal sensation and preference of occupants are highlighted. Besides, a significant saving of energy consumption can be obtained by maintaining the indoor temperature and air velocity at the prescribed values. These findings suggest an additional opportunity for energy efficiency improvement in tropical buildings.

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