Parametric Studies on Screen-Splitted Air-Conditioned Room for Reduced Energy Consumption

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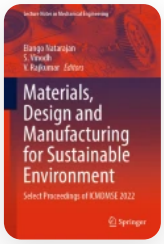

Materials, Design and Manufacturing for Sustainable Environment

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Abstract

Energy plays a vital role in modern society. Conventional fuel resources are depleting at a faster pace at present. In order to meet the future energy demands,

energy should be mainly produced from renewable resources and also by conserving the usage of energy. There are many household appliances which consume more amount of energy. Air conditioner is one of the most energy consuming appliances. It consumes almost half the energy in the household energy consumption. Many techniques such as cooling system using desiccant cooling, amount of refrigerant charge to be added, using multiple sensors, and control mechanism to ensure optimal energy savings are employed in air conditioner to increase the overall efficiency. Also, various other techniques have been experimented to reduce the overall power consumption. In this study, an effort is taken to reduce the power consumed by the air conditioner by making an enclosure around the bed. To ensure human comfort and safety, we used different materials to arrive at the minimum power consumption. Variation of relative humidity, temperature, and oxygen level inside the enclosure setup with different materials has been studied in comparison with the full room and to check whether the various parameters are in safe limit for human comfort.