Evaluating the Energy Efficiency Measures for an Educational Building in a Hot-Humid Region

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Abstract : This paper assesses different Energy Efficiency Measures (EEMs) and their impact on energy consumption and carbon footprint of an educational building located in Islamabad. A base case was first developed in accordance with typical construction practices in Pakistan. Several EEMs were separately applied to the baseline design to quantify their impact on operational energy reduction of the building and the resultant carbon emissions. Results indicate that by applying these measures, there is a potential to reduce energy consumption up to 49% as compared to the base case. It was observed that energy efficient ceiling fans and lights, insulation of the walls and roof and an efficient air conditioning system for the building can provide significant energy savings. The results further indicate that the initial investment cost of these energy efficiency measures can be recovered within 6 to 7 years of building's service life.