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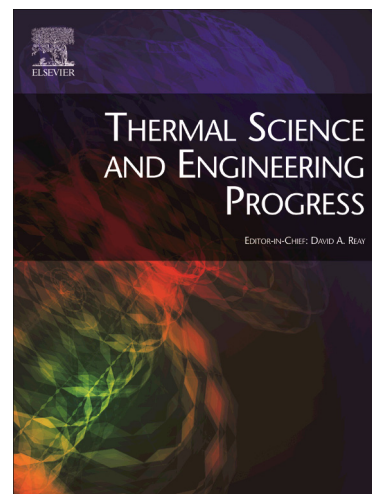
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Unit cost analysis for Sodha Bers Complex (SBC): An Energy Efficient Building

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Abstract

This paper presents performance evaluation of an energy efficient building named SODHA BERS COMPLEX (SBC) for composite climate of India. SBC is a four story energy efficient building built at Varanasi (U.P.), India. Most of the cooling concepts like orientation, modified Trombe wall, earth shelter, cross ventilation, day lighting, wind tower, wind channel etc. have been incorporated in the design of SBC. The total embodied energy, CO₂ emission, annual energy saving of SBC has been evaluated. Further, energy matrices namely energy payback time (EPBT), energy production factor (EPF) and life cycle conversion efficiency (LCCE) based on an overall annual thermal energy have been evaluated. It has been found that the SBC is most economical from thermal energy point of view due to low grade thermal energy and carbon credit earned. Unit cost has been evaluated for two cases having different interest rate, salvage value and life of SBC building and found to be minimum for 5% of interest rate, 30% salvage value and 300 years of life that is 2.52 ₹ /kWh (0.039 \$/kWh) and 2.22 ₹ /kWh (0.034 \$/kWh).

Keywords: Carbon mitigation, Day lighting, Embodied Energy, Passive building, Unit cost

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