

Effect of Residential Block Scale Envelope in Buildings Energy Consumption: A Vernacular Case Study in an Iranian Urban Context

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Abstract : A global challenge which is of paramount significance today is the issue of devising innovative solutions to tackle the environmental issues, as well as more intelligent and foresightful consumption of and management of natural resources. Changes in global climate resulting from the burning of fossil fuel and the rise in the level of energy consumption are a few examples of environmental issues detrimental to any form of life on earth, which are aggravated year by year. Overall, energy-efficient designs and construction strategies can be studied at three scales: building, block, and city. Nevertheless, as the available literature suggests, the greatest emphasis has been on building and city scales, and little has been done as to the energy-efficient designs at block scale. Therefore, the aim of the current research is to investigate the influences of residential block scale envelope on the energy consumption in buildings. To this end, a case study of residential block scale has been selected in the city of Isfahan, in Iran, situated in a hot and dry climate with cold winters. Eventually, the most effective variables in energy consumption, concerning the block scale envelope, will be concluded.

Keywords : sustainability, passive energy saving solutions, residential block scale, energy efficiency

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