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Development of a Suitable Model for Energy Storage in Residential Buildings in Ahvaz Using Energy Plus Software

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Abstract : This research tries to study the residential buildings in Ahvaz, the common materials used, and the impact of passive methods of energy storage (as one of the most effective ways to reduce energy consumption in residential complexes) in order to achieve patterns for construction of residential buildings in Ahvaz conditions to reduce energy consumption. In this research, after studying Ahvaz conditions, the components of an existing building were simulated in Energy Plus software, and the climatic data of Ahvaz station was introduced to software. Then to achieve the most optimal conditions of energy consumption in Ahvaz conditions, each of the residential building elements was optimized. The results of simulation showed that using inactive materials and design including double glass, outside wall insulation, inverted roof, etc. in the buildings can reduce energy consumption in the hot and dry climate of Ahvaz. Among the parameters investigated, the inverted roof was the most effective energy saving pattern. According to the results of simulation of the entire building with the most optimal parameters, energy consumption can be saved by a mean of 12.51% in buildings of Ahvaz, and the obtained pattern can also be used in similar climates.

Keywords : residential buildings, thermal comfort, energy storage, Energy Plus software, Ahvaz
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