

The effectiveness of using some green architecture techniques towards a zero-energy housing to reduce energy consumption in Egypt

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Abstract

The research describe the growing electricity consumption problem with the expansion of the housing and utilities sector in Egypt as a result of the pobulation increase and the current urban boom, where the housing sector constitutes the largest proportion of electrical energy consumption in Egypt, which entails the need to provide practical and applicable architectural and urban solutions to preserve the gains that we have achieved in the energy production field in Egypt. Many studies and research have presented solutions and proposals to rationalize or generate energy in buildings towards fully or partially implement the concept of zero energy in the building. The research aims to identify the passive solar design applications of green architecture that are most effective, appropriate and applicable in Egypt to create low-energy housing and urban communities as a contribution to solving the problem of increasing energy consumption and achieving the Ministry of Housing's sustainability strategy in Egypt. Where the research imposes that there are applications of green architecture that are more effective and influential in reducing energy consumption in residential buildings, and more applicable than others. The research follows the descriptive methodology describing the current problem of energy consumption in residential buildings in Egypt, and defining the zero energy building concept. Then follows the inductive method to prove the effectiveness, efficiency, applicability and suitability of some green architecture techniques to reduce energy consumption in residential buildings than others in Egypt, based on local and cultural experiences, economic feasibility, or its capabilities in Egypt. Therefore, the research does not present new techniques or new strategies, but identify the most effective and applicable applications towards a "zero energy house" in Egypt

Keywords :

energy crises; zero-energy houses; renewable energy; sustainable strategy.