

Abstract

Nermine H Hassan

Retrofit Architectural Strategies for Heritage Buildings

In the coming years, it is anticipated that if humans continue with the same pace of energy consumption, communities will continue to face those major challenges a mounting increase in the energy demands, climate change, pollution and global warming. On local scale, Egypt is experiencing one of its most serious energy crises in decades.as the energy consumed in indoor cooling and heating is the biggest portion of total energy consumption in existing buildings stock. Therefore the research focuses on energy retrofitting of the existing building stock, with a special focus on the heritage buildings as they present the legacy of the society that is inherited from past generations, maintained in the present and given for the benefit of future generations. The research proposes energy-efficient retrofit strategies focusing on the building envelope with low carbon impact with a purpose to develop a methodological approach for energy assessment and retrofitting of the building envelope of heritage buildings in Egypt in order to ensure the desirable balance between improvement of their energy requirements and preservation principles. Moreover the research aimed to develop representative simulation building energy data sets and benchmark model for heritage buildings built in the 1930s in Egypt thorough on site field monitoring. The main objective of this research is to evaluate and optimize building envelope retrofit strategies for heritage buildings to reduce their energy cooling loads through summer period in order to reach the most effective retrofit scenarios that are applicable in Egypt through a calibrated simulation approach. Key words: Energy-efficient retrofit strategies, heritage buildings, building envelope retrofit, energy consumption savings.