Abstract

Climate has a major effect on the performance of the building and its energy consumption. The traditional houses of Siddhpur, Gujarat located in the hot and dry zone represents a unique phenomenon with passive strategies capable to meet the comfort demand through environmentally well adapted design. However, these traditional forms of architecture are decreasing dramatically, being replaced by the new modern apartment buildings which witness thermal inefficiency and a shift towards mechanical devices for comfort. Thus in this study the traditional houses and the modern houses in Siddhpur are examined by comparing the thermal performance within the same outdoor condition and climatic region of Siddhpur. In this research, a simplified thermal comparison of traditional houses with the modern houses has been given by using the data derived from on site measurements and by simulation in IES software. The selected cases were evaluated in terms of design criteria such as orientation, plan shape, exposed surface to volume ratio, building façade and wall thickness. The results showed that the design of the modern house seemed to be inappropriate for the hot and dry climate. Finally, from the useful indicators provided by the traditional houses, passive design guidelines are given for future modern houses.