

Comparative-experimental study of different roof types in a tropical climate [

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text (article)

Analítica

Introduction: The implementation of green roofs in buildings has become increasingly common, because it is an ecological construction alternative that provides great benefits, which range from reducing air pollution to improving air conditioning inside of the buildings. Objective: This article aims to evaluate whether extensive green roofs are an energy-valuable option in a tropical climate compared to a thermoacoustic, clay tile, and concrete roof. Methodology: An experimental study was carried out in summer (December) in a tropical climate, where the internal temperature of two identical small buildings was compared except for the roof type. Both small buildings were built with a low construction standard according to buildings of families with low income in this region. Data of internal temperatures and other climatic conditions were analyzed to compare the influence of the roof type on the inner shelter temperature. Results: In these experiments, the average inner shelter temperature of green roofs was lower than the same temperature for thermoacoustic, clay tile and concrete roof and resulted in average temperature differences of 1.8 C, 0.9 C and 1.5 C, respectively (depending on environmental conditions). Conclusions: It was possible to show that the green roof has a greater thermal inertia compared to the others. However, the temperature difference between the green roof and the other roof types was in the same range as in studies conducted in other climatic regions, therefore no special benefit of the green roof has been derived in a warm-tropical climate in this study. However, the low building standard can be of great interest for a final evaluation and the authors recommend to conduct further studies

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