

Design and Thermal Analysis of a Concrete House in Libya Using BEopt

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Abstract : This paper presents an optimum designs and thermal analysis of concrete house in the hot climate of Libya. For this goal we have used BEopt software (building energy optimization) that provides capabilities for estimating residential building design and thermal analysis. The most area of the house that is exposed to the sunlight's is the roof leading to heat gain. Therefore, house cooling consumes high energy. The cooling energy consumption is three times the heating energy consumption. In order to maintain comfortable indoor conditions in a low-energy house, the entire building envelope needs to be perfectly insulated and prevented from air leakages. Insulated roof is selected to reduce cooling demand, and the paper presents details and BEopt simulation results. Designed house needs 12.02mmbtus/year. Furthermore, the modeling indicates that the designed house is close to achieving the Passive standard.

Keywords : concrete house design, thermal analysis, hot climate, BEopt software

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