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HUMAN COMPONENTS OF LOW ENERGY BUILDINGS

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Abstract

The concept of passive and low energy houses became fashionable in the last years and the European Parliament also initiated a proposal to build only near zero energy houses from 2018. The regulations already in force aim at low energy consumption (most likely influenced by the wide spreading of the “Passivhaus” concept in Europe) and by 2018 harmonized regulations and standards will require the near zero energy building. According to the concept of the Energy Performance of Building Directive, this means strict limitation of the integrated specific energy consumption (measured in primary energy), which includes a variety of operational energy consumption. Some components of this consumption depend exclusively on the users’ behaviors while others depend on the building and the user’s interactions. The concept of near zero operational energy means that the energy needed for the building is so low that it can be - fully or mostly - covered with renewables. In other terms, it means that, during most part of the winter the building will be in a free running regime thus without using mechanical or active heating systems. On one hand, decision makers and politicians may declare their wish or aim, while on the other hand it is questionable whether the expectation of the inhabitants and the requirements of the regulations coincide. In the followings, after a brief overview of the regulations, the assumed indoor thermal comfort conditions in free running regime and using limited back-up heating will be analyzed.

Key words: balance temperature, low energy building, transient comfort conditions

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