

A conceptual review on residential thermal comfort in the humid tropics

Abstract

In the era of increasingly expensive fuel and with the theoretical complication and the limitation of comfort prediction in naturally ventilated buildings based on thermal balance approach, researchers were motivated to go beyond heat balance approach to predict occupants' thermal comfort using statistical approach known by adaptive models. The most established recognized model was developed mostly from the worldwide database recorded in office buildings. This poses validity problem when the model is applied for residential buildings. From a practical point of view using this model for the determination of neutral temperature in residences is likely to leads to errors in prediction which in turns are likely to have detrimental effect on occupants' satisfaction, not to mention the potential effect in terms of energy consumption. This paper presents a conceptual review on indoor thermal comfort based on heat balance and adaptive models. The validity of international thermal comfort standards for residential buildings for neutral temperature prediction specifically in the hot-humid tropics is addressed. The need of database from field studies in residential buildings is emphasized.