A Literature Review of the Trend towards Indoor Dynamic Thermal Comfort

Authors : James Katungyi

Abstract : The Steady State thermal comfort model which dominates thermal comfort practice and which posits the ideal thermal conditions in a narrow range of thermal conditions does not deliver the expected comfort levels among occupants. Furthermore, the buildings where this model is applied consume a lot of energy in conditioning. This paper reviews significant literature about thermal comfort in dynamic indoor conditions including the adaptive thermal comfort model and alliesthesia. A major finding of the paper is that the adaptive thermal comfort model is part of a trend from static to dynamic indoor environments in aspects such as lighting, views, sounds and ventilation. Alliesthesia or thermal delight is consistent with this trend towards dynamic thermal conditions. It is within this trend that the two fold goal of increased thermal comfort and reduced energy consumption lies. At the heart of this trend is a rediscovery of the link between the natural environments and human well-being, a link that was partially severed by over-reliance on mechanically dominated artificial indoor environments. The paper concludes by advocating thermal conditioning solutions that integrate mechanical with natural thermal conditioning in a balanced manner in order to meet occupant thermal needs without endangering the environment.

 ${\bf Keywords:} a {\rm daptive \ thermal \ comfort, \ allies thesia, \ energy, \ natural \ environment}$

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