Effect of occupant behaviour related influencing factors on final energy end uses in buildings

Different aspects are investigated in order to highlight the causes of increased energy consumption in buildings: in particular, the ongoing project IEA ECBCS Annex 53 groups the "influencing factors" into seven major categories empathising the role of occupant behaviour on energy consumptions. In fact, although building envelope and systems characteristics are known to have a significant effect on energy consumption, their performances can be already assessed in the design phase: and their energy performances have significantly increased in recent years for new and retrofitted buildings thanks to regulations and policies. At the same time, there has been a shift in the direction of research related to energy and environmental performance of buildings towards a focus on human-centred concerns. One key reason is a greater awareness that these concerns of human well-being are key parameters in the performance of buildings, as highlighted by the huge gap between real and predicted energy consumptions depending on actual use of the buildings. Based on a dedicated literature review, the effect of the occupant behaviour on the energy consumptions is here firstly introduced. Then, the influencing parameters affecting final energy end uses (heating, cooling, ventilation, lighting) are presented and critically discussed in order to show the importance of a better description of occupant behaviour in energy prediction tools.

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