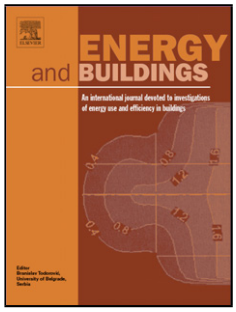

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Occupants' thermal comfort: State of the art and the prospects of personalized assessment in office buildings

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Highlights

- A comprehensive literature review was carried out on state of the art of thermal comfort models.
- An extensive analysis of methodologies applied during the last decade was performed on the thermal comfort determination and evaluation.
- An analysis of the funding granted to European research projects on thermal comfort is presented.
- The growing importance of putting the occupants' personal background in the epicentre of comfort perception emerges as a significant goal of on-going research.

ABSTRACT

The last decade is marked by an exponential growth of the research interest in comfort assessment in office buildings. The extensive interest can be linked with the appreciation of the impact of comfort on health, well-being and productivity, but also with the establishment of a series of European Directives and international and European Standards, aiming at the improvement of the buildings' energy and environmental performance, without decreasing the occupants' comfort. This interrelation is not new, as a variety of models have been established over the years aiming to determine the parameters that affect comfort and its subcategories. Since 1970 and Fanger's model, a series of methodological approaches are implemented and models have been established.

Still, the call for nearly Zero Energy Buildings sets tight restrictions to comfort parameters, whilst on the other hand knowledge gained and new technologies in Heating, Ventilation and Air Conditioning (HVAC) allow for a much more analytical determination of conditions. It is within this line of approach that during the last decade a great portion of work has been published based on comfort in office buildings, evaluating the occupants' perspective. The most popular methodological approach presupposes the gathering of both qualitative and quantitative findings, making the identification of both personal and environmental characteristics possible.

This paper aims to monitor and discuss the evolution of methodological approaches regarding the determination of comfort. The methodological approach is based on the analysis of published literature and on the funding of dedicated research projects, in order to highlight the research focus over the last decade. As demonstrated from the research, the need of working towards personalized assessment of comfort, putting the occupants' perspective in the epicenter and highlighting the key issues that have still to be tackled in that direction, is an innovative approach that needs further analysis.

Acronyms

HVAC: Heating, Ventilation and Air Conditioning