

Thermal Comfort in Zero Energy Buildings: State of the art and the prospects of personalized assessment

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Abstract:

The last decade is marked by an exponential growth of the research interest on thermal comfort assessment, especially as we move towards the goal of Zero Energy Buildings. Office. The extensive research interest in this area can be linked with the appreciation of the impact of comfort on health, well-being and productivity, but also with the establishment of a variety series of European Directives and international guidelines and standards, aiming at the improvement of the buildings' energy and environmental profile performance, without decreasing the occupants' comfort. In this line of approach, a variety of models have been established over the years aiming to determine the parameters along with their weight coefficients that affect comfort and its subcategories. Since 1970, and the introduction of Fanger's model, a series of methodological approaches were 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 HVAC allow for a much more analytical determination of conditions. It is within this line of approach,

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. Hence, the identification of both personal and environmental characteristics is possible.

This paper aims to monitor and discuss the historic evolution of milestones regarding comfort, in order to highlight the recent advances in research and to demonstrate the necessity to work towards a 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.

Brief Speaker Biography:

Graduated from the German School of Thessaloniki. He obtained his Diploma in Mechanical Engineering from the Aristotle University Thessaloniki in 1989, his Master of Science in Energy Conservation and the Environment from Cranfield University (UK), in 1991, and his Doctorate in Mechanical Engineering, specializing in solar systems, from the Aristotle University Thessaloniki in 1994.

Since 1998 he is Professor at the Department of Mechanical Engineering of the Aristotle University Thessaloniki, Greece. Since 2013 he is Director of the Process Equipment Design Laboratory at the same Department. His main research interests lie in the fields of (a) Energy efficiency and integration of RES

technologies in the built environment, (b) Development and evaluation of energy conservation technologies and materials and (c) Policies and regulatory issues on energy efficiency and RES.

He has supervised or co-supervised 21 PhD Theses, 4 post-Doc dissertations and more than 170 Diploma Theses; he has coordinated more than 60 national and international research projects and authored or co-authored more than 110 papers published in peer reviewed journals, 250 in conference proceedings and 17 chapters in text books and other publications.

He is Editor-in-Chief of the International Journal of Sustainable Energy, Vice Editor-in-Chief of the Advances in Building Energy Research journal and Editorial Board Member in several other journals. He has worked as an expert for a series of international consulting projects in Cyprus, Egypt, Georgia, Ukraine and Central Asia. Since 2010 he is Visiting Professor at the International Hellenic University and since 2015 at the TU Hamburg-Harburg, Germany.