Quantifying and simulating human sensation: relating science and technology of indoor climate research

Abstract

In his doctoral thesis from 1970 civil engineer Povl Ole Fanger proposed that the understanding of indoor climate should focus on the comfort of the individual rather than averaged conditions in a room. Fanger put forward a mathematical expression for thermal comfort based on six climate parameters and developed a quantified index for thermal comfort. Later, this work has often been described as a major change in the understanding of indoor climate and international standards for indoor climate have been based on Fanger’s index. Alongside Fanger worked the inventor and mechanical engineer Thomas Lund Madsen, who developed equipment for measuring the climate parameters and thermal comfort. Amongst these are sensors which simulate the human body thermally. Prototypes and other archival material related to Lund Madsen’s efforts are preserved at the Technical University of Denmark and I have used these artefacts as the point of departure for my investigation. In this paper I will examine which factors the researchers perceived as important for human indoor comfort and how this understanding of human sensation was adjusted to technology. I will look into the construction of the equipment, what it measures and the relationship between theory, equipment and tradition.

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