

A Comprehensive Review of Adaptive Building Energy Management Systems Based on Users' Feedback

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Abstract : Over the past few years, the idea of adaptive buildings and specifically, adaptive building energy management systems (ABEMS) has become popular. Well-performed management in terms of energy is to create a balance between energy consumption and user comfort; therefore, in new energy management models, efficient energy consumption is not the sole factor and the user's comfortability is also considered in the calculations. One of the main ways of measuring this factor is by analyzing user feedback on the conditions to understand whether they are satisfied with conditions or not. This paper provides a comprehensive review of recent approaches towards energy management systems based on users' feedbacks and subsequently performs a comparison between them premised upon their efficiency and accuracy to understand which approaches were more accurate and which ones resulted in a more efficient way of minimizing energy consumption while maintaining users' comfortability. It was concluded that the highest accuracy rate among the presented works was 95% accuracy in determining satisfaction and up to 51.08% energy savings can be achieved without disturbing user's comfort. Considering the growing interest in designing and developing adaptive buildings, these studies can support diverse inquiries about this subject and can be used as a resource to support studies and researches towards efficient energy consumption while maintaining the comfortability of users.

Keywords : adaptive buildings, energy efficiency, intelligent buildings, user comfortability

Conference Title : ICAASD 2020 : International Conference on Adaptive Architecture and Sustainable Design

Conference Location : Toronto, Canada

Conference Dates : September 21-22, 2020