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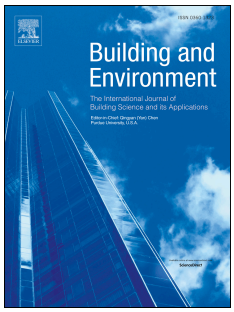

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Categories and Functionality of Smart Home Technology for Energy Management

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Abstract

Technologies providing opportunities for home energy management have been on the rise in recent years, however, it's not clear how well the technology - as it's currently being developed - will be able to deliver energy saving or demand shifting benefits. The current study undertakes an analysis of 308 home energy management (HEM) products to identify key differences in terms of functionality and quality. Findings identified opportunities for energy savings (both behavioural and operational) as well as load shifting across most product categories, however, in many instances other potential benefits related to convenience, comfort, or security may limit the realisation of savings. This is due to lack of information related to energy being collected and presented to users, as well as lack of understanding of how users may interact with the additional information and control provided. While the current study goes some way to identify the technical capabilities and potential for HEM products to deliver savings, it is recommended that further work expand on this to identify how users interact with these technologies in their home, in both a standalone and fully integrated smart home environment to deliver benefits to both homes and the grid.

Keywords

Home Energy Management; Energy Efficiency; Smart Home; Home Automation; Internet of Things