Special Issue

The Influence of Over-Ventilation and Occupant Behavior on Energy Consumption in Smart Buildings

Message from the Guest Editors

Buildings account for a considerable portion of global energy consumption and GHG emissions. Smart buildings aim to reduce building energy demand, especially wasted energy due to ad hoc occupant behavior or avoidable baseloads. In the past few years, during the COVID-19 pandemic, a new layer of complexity has been added to building energy performance: health and safety measures, such as social distancing between employees, increased outdoor air intake, and increased fan operating schedules, which led to increased energy demand in many cases. This Special Issue aims to shed light on smart building energy performance and find innovative methods to reduce the energy as well as carbon footprints of buildings, while ensuring that the new health and safety measures are met. Potential topics include but are not limited to: Implications of COVID-19 and other potential ad hoc shutdowns on building energy performance; Building peak load shifting; Occupant behavior; Climate-resilient buildings; Building thermal storage; Building electrochemical storage; Demand response; Building-integrated renewable energy.

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About the Journal

Message from the Editor-in-Chief

Current urban environments are home to multi-modal transit systems, extensive energy grids, a building stock, and integrated services. Sprawling neighborhoods are composed of buildings that accommodate living and working quarters. However, it is expected that the cities and communities of the future will face complex and enormous challenges, including maintenance, interconnectivity, resilience, energy efficiency, and sustainability issues, to name but a few. A smart city uses advanced technologies and a digital infrastructure to improve the outcomes in every aspect of a city's operations. A smart building optimizes the experience of occupants, staff, and management by using a modern and connected environment. Innovations in technology that can bring dramatic improvements to design, planning, and policy are critical in developing the cities and buildings of the future.

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