



Research on the Sustainable and Smart Energy Performances of Low-Carbon Buildings

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Message from the Guest Editors

Dear colleagues,

The energy consumption and carbon emissions of buildings during construction and operation account for a huge proportion of final energy usage. With various resources emerging as potential decarbonization options, the dynamics of energy systems continue to increase, and attributes such as energy flexibility, resilience and reliability are gaining significant importance. Energy system planning and operational optimization from a system perspective can better identify the appropriate technology candidates. On the basis of maintaining a low-carbon energy structure in buildings, enhancing the flexibility and resilience of building energy and achieving personalized smart energy management are the keys to solving the problem. Smart energy management strategies, active demand side participation and rapid fault response throughout the life cycle of building energy systems will have a positive impact on this.

The aim of this Special Issue is to discuss the sustainable and smart energy performances of green low-carbon buildings from an independent or integrated perspective of design, construction, operation and maintenance.

Guest Editors





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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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