Special Issue

Advances in Energy-Efficient Building Design and Renovation

Message from the Guest Editor

Buildings are among the highest energy consumers due to the diversity and complexity of the systems and services they provide. While improving the energy efficiency of the various types of building stock is challenging, different design approaches and methodologies have been explored over the years. This Special Issue aims to expand the analysis on energy-efficient building design and renovation across diverse building types, focusing on (but not exclusively) the following key areas:

- Advancements in energy-efficient technologies;
- Sustainable building materials;
- Renewable energy applications in buildings;
- Daylighting and lighting designs for building applications;
- Energy-efficient (passive) design approaches;
- Energy data and simulation analyses;
- Cost-effective and energy-efficient designs, measures, and whole life-cycle assessment;
- Identification of technical and financial barriers to the implementation of energy-efficient measures;
- Affordability and security of future energy consumption;
- Methodological and analytical approaches to building energy;
- The role of artificial intelligence in advancing energyefficient building design and renovation.

Guest Editor

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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.

Editor-in-Chief

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manuscripts are peer-reviewed and a first decision is provided to authors approximately 14.9 days after submission; acceptance to publication is undertaken in 2.7 days (median values for papers published in this journal in the first half of 2025).