

Special Issue

Design and Prospect of Net-Zero Energy Buildings

Message from the Guest Editors

New concepts and implementations of Net-Zero and Positive-Energy buildings and communities have arisen as a result of the need to decarbonize communities and cities. Almost 20 years after the introduction of the Zero-Energy Buildings (ZEB) concept, it is time to evaluate its progress and impact on the built environment, especially in light of recent global challenges, such as climate change and the unforeseen energy crisis. There are several definitions for zero-energy buildings and complexes. The main difference between them is the system borders—the location of renewable energy sources. Under different definitions, the energy production source can be found within the building footprint or inside the plot/site boundary. However, building owners can also purchase "green" energy off site or import renewable energy sources for on-site energy production. This Special Issue will focus on (but is not limited to) zero-energy buildings and communities' design, challenges and limitations; case studies; renewable energy in high-density situations; planning regulations; and performance. Assist.

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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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