

Addressing Sustainable Building Design: Combining Energy and Structural Optimization

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Message from the Guest Editors

It is well-known that most existing buildings were constructed without any seismic provisions, in an era in which energy efficiency and environmental sustainability requirements were not a critical part of the design.

Within this frame, this Special Issue proposes a journey through different methodological approaches to address building design optimization combining multiple aspects (i.e., energy, sustainability and structural performances); thus, we invite contributions dealing with:

- Methodological papers and case studies concerning the optimization of building design integrating energy and structural aspects/techniques;
- Numerical and experimental studies addressing physical and mechanical interactions between energy-efficiency measures and building components' structural behavior;
- Numerical and experimental studies addressing digital fabrication to develop new building envelope components with enhanced thermal and structural behavior.



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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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