Special Issue

Prefabrication and Modularized Construction

Message from the Guest Editors

Construction is still a largely manual process. The building sector has not experienced similar productivity gains as other industries have. Controlled fabrication processes, as in prefabrication and modularized construction, favor the economical use of resources and can increase productivity while reducing construction costs. The building sector is already one of the largest consumers of resources and contributors to climate change. Therefore, increasing productivity must go hand-in-hand with decarbonizing the entire life cycle of buildings, from material sourcing and fabrication to operation and reuse. Given the demands of a circular economy, prefabrication and modularized construction can cause additional sustainable effects. Examples of modularization and serialization in the building sector have not always gained social acceptance. Then, as now, attempts were made to counteract the housing shortage through incentives on the political level, the housing industry, developers, etc., to provide quick solutions. To avoid the deficits of the past, solutions must consider the planning, manufacturing, and social levels in order to achieve sustainable buildings.

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Deadline for manuscript submissions

closed (15 October 2023)

Buildings

an Open Access Journal by MDPI

Impact Factor 3.1
CiteScore 4.4

mdpi.com/si/144760

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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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