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Practical Applications of Model Predictive Control and Other Advanced Control Methods in the Built Environment

Guest Editor:

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Deadline for manuscript submissions:
closed (31 May 2023)

Message from the Guest Editor

Model-based Predictive Control (MPC) and other advanced control methods such as model-based controls are widely acknowledged as effective solutions for improving building operation. Model-based controls rely on control-oriented models to make informed decisions. MPC relies on a control-oriented model used along with information forecasts such as weather or occupancy to predict building behaviour hours ahead and optimize heating and cooling system operations accordingly. The aim of this Special Issue is to collect and disseminate knowledge about the following: (a) experiences with practical MPC strategies and advanced controls implemented in actual buildings to improve performance; (b) and promising methodologies to facilitate the adoption of MPC and advanced controls in building control industry. Applications targeting the optimization of energy efficiency, peak demand, flexibility and total cost will be considered in addition to indoor air quality and thermal comfort.

For further reading, please follow the link to the Special Issue Website at:

https://www.mdpi.com/journal/buildings/special_issues/Model_Control

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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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