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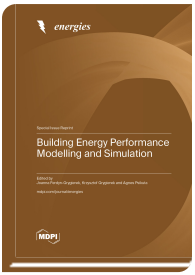
Special Issue Reprint

Building Energy Performance Modelling and Simulation



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ISBN 978-3-7258-5999-3 (Hardback)
ISBN 978-3-7258-6000-5 (PDF)

Rising global temperatures, changing climate conditions, and increasing expectations regarding indoor comfort have intensified the demand for more accurate tools to predict and optimise the performance of buildings. As the construction sector remains one of the largest energy consumers, understanding the complex interactions between buildings, their systems, and occupant behaviour is essential for reducing energy use and improving indoor environmental quality. Advances in information technology and simulation methods offer new possibilities for analysing building behaviour under dynamic real-world conditions.

This Reprint focuses on recent developments in building performance simulation and indoor environmental quality modelling. It presents research addressing energy demand, thermal comfort, thermal sensation, airflow behaviour, and the environmental impact of buildings. The contributions demonstrate a variety of modelling approaches, including whole-building simulation, airflow modelling, and computational fluid dynamics, as well as studies on calibration, validation, and optimisation of building systems. The Reprint provides an overview of current methods and tools used to analyse and improve the energy efficiency and indoor environment of contemporary buildings.

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