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Energy and Buildings

Volume 34, Issue 9, October 2002, Pages 933-940

Simulation-assisted control in building energy management systems

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[https://doi.org/10.1016/S0378-7788\(02\)00068-3](https://doi.org/10.1016/S0378-7788(02)00068-3)

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Abstract

Technological advances in real-time data collection, data transfer and ever-increasing computational power are bringing simulation-assisted control and on-line fault detection and diagnosis (FDD) closer to reality than was imagined when building energy management systems (BEMSs) were introduced in the 1970s. This paper describes the development and testing of a prototype simulation-assisted controller, in which a detailed simulation program is embedded in real-time control decision making. Results from an experiment in a full-scale environmental test facility demonstrate the feasibility of predictive control using a physically-based thermal simulation program.



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Keywords

Building energy management systems; Predictive control; Simulation-assisted control

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