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Editorial

Building Performance Analysis and Simulation: We've Come a Long Way

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Back in 1981, when I started doing building energy performance simulation for pre-design and energy efficiency retrofit work, building simulation was in its infancy. There were only a handful of building energy simulation programs, with DOE-2, ESP-II, BLAST, TRACE and MERIWHETHER being the most commonly used ones by consultants [1]. These programs required "mainframe" computers, so I used to prepare the input files on a Radio Shack TRS-80, send it over a telephone modem to a company in Toronto that ran the simulation on a mainframe computer overnight and shipped the printed output to me by courier in the morning. Each run had a turn-around time of almost 48 h, and the run-time and courier charges were about $100, almost as much as a day's salary for a young engineer.

The building performance analysis and simulation landscape is completely different now, with a wide range of building simulation software that run on desktop or laptop computers, at different levels of complexity and sophistication, and for a wide range of purposes including load estimation, whole building energy, air-flow and indoor air quality analysis, heating, ventilating, and air conditioning (HVAC) and lighting system design, code compliance, retrofit, renewable energy and economic analysis [2]. These software are widely and routinely used by practicing engineers as well as researchers.

Considering the ubiquity of "building performance and simulation" in the world of building engineering and research, this Special Issue of *Buildings* was conceived and I had the pleasure of acting as the special issue editor. Befitting a special issue, the articles cover a wide spectrum of original building performance and simulation research. The articles by Yang *et al.* [3], McKeen and Fung [4], Kraniotis *et al.* [5], Hamelin and Zmeurenau [6], and Mohammad and Shea [7] report on research conducted using simulation tools, the article by Ruuska and Hakkinen [8] report on an extensive literature review and a case study conducted using a comprehensive database, and the articles by Pozza *et al.* [9], Chow *et al.* [10] and Kanters *et al.* [11] report on newly developed software tools.

I wish all users and developers of "building performance and simulation" tools exciting days ahead with interesting and challenging projects.

Conflicts of Interest

The author declares no conflict of interest.

References and Notes

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