

Accepted Manuscript

Title: IEA EBC Annex 66: Definition and Simulation of Occupant Behavior in Buildings

Authors: Da Yan, Tianzhen Hong, Bing Dong, Ardeshir Mahdavi, Simona D'Oca, Isabella Gaetani, Xiaohang Feng



PII: S0378-7788(17)31882-0
DOI: <https://doi.org/10.1016/j.enbuild.2017.09.084>
Reference: ENB 8003

To appear in: *ENB*

Received date: 29-5-2017
Revised date: 11-9-2017
Accepted date: 26-9-2017

Please cite this article as: Da Yan, Tianzhen Hong, Bing Dong, Ardeshir Mahdavi, Simona D'Oca, Isabella Gaetani, Xiaohang Feng, IEA EBC Annex 66: Definition and Simulation of Occupant Behavior in Buildings, Energy and Buildings <https://doi.org/10.1016/j.enbuild.2017.09.084>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

IEA EBC Annex 66: Definition and Simulation of Occupant Behavior in Buildings

Da Yan^{1*}, Tianzhen Hong^{2*}, Bing Dong³, Ardeshir Mahdavi⁴, Simona D'Oca², Isabella Gaetani⁵,
Xiaohang Feng¹

¹ School of Architecture, Tsinghua University, China

² Building Technology and Urban Systems Division, Lawrence Berkeley National Laboratory, USA

³ Department of Mechanical Engineering, University of Texas San Antonio, USA

⁴ Department of Building Physics and Building Ecology, Vienna University of Technology, Austria

⁵ Department of the Built Environment, Technische Universiteit Eindhoven, Netherlands

* Corresponding D. Yan, yanda@tsinghua.edu.cn; T. Hong, thong@lbl.gov, 1(510)486-7082.

Highlights

- Employed multidisciplinary approaches to occupant behavior research
- Developed quantitative description and simulation methods of occupant behavior
- Developed occupant behavior modeling tools enabling co-simulation with BPS programs
- Developed methods to evaluate occupant behavior models and a fit-for-purpose application guide
- Case studies demonstrated applications of occupant behavior insights in the building life cycle

Abstract

More than 30% of the total primary energy in the world is consumed in buildings. It is crucial to reduce building energy consumption in order to preserve energy resources and mitigate global climate change. Building performance simulations have been widely used for the estimation and optimization of building performance, providing reference values for the assessment of building energy consumption and the effects of energy-saving technologies. Among the various factors influencing building energy consumption, occupant behavior has drawn increasing attention. Occupant behavior includes occupant presence, movement, and interaction with building energy devices and systems. However, there are gaps in occupant behavior modeling as different energy modelers have employed varied data and tools to simulate occupant behavior, therefore producing different and incomparable results. Aiming to address these gaps, the International Energy Agency (IEA) Energy in Buildings and Community (EBC) Programme Annex 66 has established a scientific methodological framework for occupant behavior research, including data collection, behavior model representation, modeling and evaluation approaches, and the integration of behavior modeling tools with building performance simulation programs. Annex 66 also includes case studies and application guidelines to assist in building design, operation, and policymaking, using interdisciplinary approaches to reduce energy use in buildings and improve occupant comfort and

Download English Version:

<https://daneshyari.com/en/article/4918820>

Download Persian Version:

<https://daneshyari.com/article/4918820>

[Daneshyari.com](https://daneshyari.com)