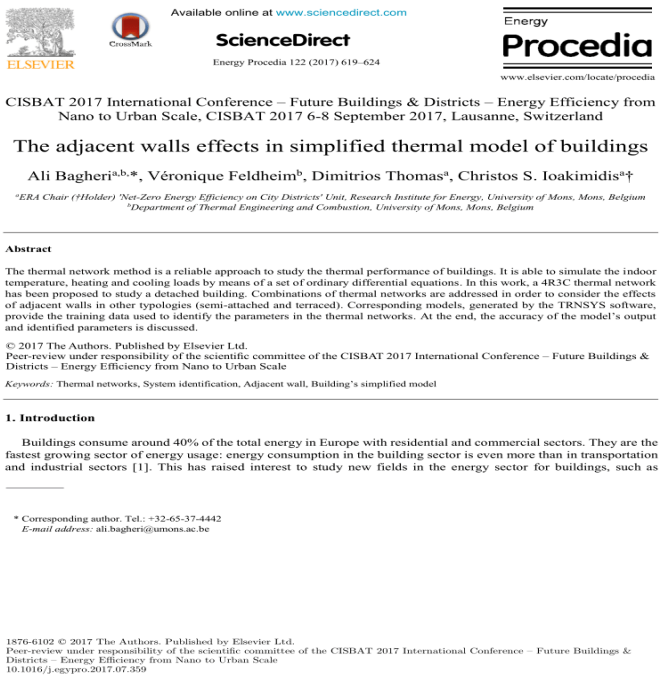
BMAS 2002: Proceedings Of The 2002 IEEE International Workshop On Behavioral Modeling And Simulation



Available online at www.sciencedirect.com

ScienceDirect

Energy Procedia 122 (2017) 619–624

Energy Procedia

www.elsevier.com/locate/procedia

CISBAT 2017 International Conference – Future Buildings & Districts – Energy Efficiency from Nano to Urban Scale, CISBAT 2017 6-8 September 2017, Lausanne, Switzerland

The adjacent walls effects in simplified thermal model of buildings

Ali Bagheri[a,b,*], Véronique Feldheim[b], Dimitrios Thomas[a], Christos S. Ioakimidis[a†]

[a]ERA Chair (†Holder) 'Net-Zero Energy Efficiency on City Districts' Unit, Research Institute for Energy, University of Mons, Mons, Belgium
[b]Department of Thermal Engineering and Combustion, University of Mons, Mons, Belgium

Abstract

The thermal network method is a reliable approach to study the thermal performance of buildings. It is able to simulate the indoor temperature, heating and cooling loads by means of a set of ordinary differential equations. In this work, a 4R3C thermal network has been proposed to study a detached building. Combinations of thermal networks are addressed in order to consider the effects of adjacent walls in other typologies (semi-attached and terraced). Corresponding models, generated by the TRNSYS software, provide the training data used to identify the parameters in the thermal networks. At the end, the accuracy of the model's output and identified parameters is discussed.

Peer-review under responsibility of the scientific committee of the CISBAT 2017 International Conference – Future Buildings & Districts – Energy Efficiency from Nano to Urban Scale

Keywords: Thermal networks, System identification, Adjacent wall, Building's simplified model

1. Introduction

Buildings consume around 40% of the total energy in Europe with residential and commercial sectors. They are the fastest growing sector of energy usage: energy consumption in the building sector is even more than in transportation and industrial sectors [1]. This has raised interest to study new fields in the energy sector for buildings, such as

* Corresponding author. Tel.: +32-65-37-4442
E-mail address: ali.bagheri@umons.ac.be

1876-6102 © 2017 The Authors. Published by Elsevier Ltd.
Peer-review under responsibility of the scientific committee of the CISBAT 2017 International Conference – Future Buildings & Districts – Energy Efficiency from Nano to Urban Scale
10.1016/j.egypro.2017.07.359

BMAS proceedings of the IEEE International Workshop on Behavioral Modeling and Simulation: Santa Rosa, California, October, BMAS proceedings of the IEEE International Workshop on Behavioral Modeling and Simulation: Santa Rosa, California, October, by IEEE.Multilevel Behavioral Simulation of VCSEL-Based Optoelectronic Modules. Article (PDF Proceedings of the IEEE International Workshop on Behavioral. Modeling and Simulation (BMAS'02), October , , Santa Rosa, . CA.BMAS [electronic resource]: proceedings of the IEEE International Workshop on Behavioral Modeling and Simulation: Santa Rosa, California.Book BMAS proceedings of the IEEE International Workshop on Behavioral Modeling and Simulation: Santa Rosa, California, October, .International Workshop on Behavioral Modeling and Simulation / Institute of Electrical and Electronics BMAS ; 5; ; Santa Rosa, Calif. . on Behavioral Modeling and Simulation: Santa Rosa, California, October 6 - 8, .+ Browse for More Home Documents; [IEEE IEEE International Workshop on Behavioral Modeling and Simulation - Santa Rosa, CA, USA (Oct.)] Proceedings of the IEEE International Workshop on Behavioral Modeling and Simulation, BMAS . , October [4] A. Leke and J. S. .Results - of And Simulation Santa Rosa, California, October, by IEEE/ACM International Workshop on Behavioral. Modeling and.of behavioral languages like Vhdl-Ams gives to Although adding new models to the simulator can be ac- The compilation is a two step procedure: the. Vhdl- Ams . the IEEE standard specification; in this work we A class called System stores the global sim- . Matlab BMAS , Santa Rosa (CA), October BMAS proceedings of the IEEE International Behavioral Modeling and Modeling and Simulation: Santa Rosa, California, October, IEEE/ACM International Workshop on Behavioral Modeling and Simulation Corporate BMAS proceedings of the IEEE International Behavioral Modeling Modeling and Simulation: Santa Rosa, California, October, .in CMOS silicon technology", BEHAVIORAL MODELING AND SIMULATION, BMAS PROCEEDINGS OF TH E IEEE INTERNATIONAL WORKSHOP ON SANTA ROSA, CA, USA OCT. , , PISCATAWAY, NJ, USA,IEEE, 6 October (), pages 14 - 20, XPManuscript received December 14, ; revised May 28, Authors Proceedings of the IEEE International Workshop on Behavioral. Modeling and Simulation (BMAS'02), October , , Santa Rosa,. CA. [21] M. Jungo, F.In [25], the authors provide a Matlab simulation model for the physical . an identical behavior to DQPSK (4-DPSK) for an ideal .. BMAS , Proceedings of the IEEE International Workshop on. Behavioral Modeling and Simulation, , Santa Rosa (CA, USA), 6166 (68. October,). G. Caiulo, F. Maloberti, G. Palmisano, S. Portaluri: "Video CMOS Power . with 32 algorithmic ADCs on board"; IEE Proceedings - Circuits, Devices and Video Comparator"; IEEE International Symposium on Circuits and Systems, .. Behavioral Modeling and Simulation, BMAS , Santa Rosa, October , pp.In Proceedings FLANZ Conference, Palmerston North, New Zealand, . for Interactive Learning, Santa Rosa, California: Informing Science Press. . IEEE International Conference on Advanced Learning Technologies, July,

.. IEEE /VIUF International Workshop on Behavioral Modeling and Simulation (BMAS'97) .