BOZEN-BOLZANO
19.–21.06.2019

BSA 2019

Building
Simulation
Applications

4th IBPSA-ITALY CONFERENCE

PROGRAM

unibz

Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

IBPSA Italy
International Building Performance Simulation Association

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BSA2019 PROGRAM

Wednesday June 19th

	2nd Students School on Building Performance Simulation Applications
9.00-10.30	*State of the art of indoor lighting simulation: a retrofit case-study of the Vittorio Veneto military base in Bolzano - Room F6* *Giovanni Pernigotto*
10.30-13.00	*Workshop on building simulation* *IES.VE*
13.00-14.00	**lunch break (lunch is not provided)**
14.00-17.00	*New trends in building acoustics numerical simulations - Room F6* *Marco Caniato, Paolo Bonfiglio*
17.00-18.30	**Meeting of the local BS 2019 Organizing Committee - Room F6.2**
18.30-19.30	**Welcome aperitif - Room F6**

Thursday June 20th

8.30-9.00 **Participant registration**

9.00-9.30 **Welcome speeches - Room D1.02**

9.30-10.15 **Thursday Keynote Speech - Room D1.02**

Building Performance Simulation – Future Trends and the Role of IBPSA

Dr. Lori McElroy, IBPSA President - Building Research Establishment, United Kingdom

10.15-10.45 **Coffee Break**

10.45-12.30 **Technical Sessions (in parallel)**

A1 - HVAC system and control (chair: Prof. Adolfo Palombo) - Room D1.01

50 *Control strategies to increase the photovoltaic self-consumption of air-source heat pump systems*
Maria Pinamonti, Alessandro Prada, Paolo Baggio

40 *Building integrated photovoltaic thermal collectors: modelling and experimental investigation of two novel cost-effective prototypes*
Cesare Forzano, Giovanni Barone, Annamaria Buonomano, Adolfo Palombo

7 *Dynamic modelling and control system optimization of a reversible air-to-water heat pump with heat recovery for domestic hot water production*
Matteo Dongellini, Luigi Belmonte, Gian Luca Morini

27 *Energy and Exergy Analysis of a HVAC System having a Ground Source Heat Pump as Generation System*
Paolo Valdiserri, Michael Lucchi, Marco Lorenzini

11 *Dynamic energy simulation of low temperature radiant systems in highly energy efficient prefabricated modules*
Fabrizio Giorgio, Davide Brasile, Enrico Fabrizio

4 *Evaluation of energy flexibility from residential district cooling*
Alice Mugnini, Fabio Polonara, Alessia Arteconi

B1 - IEQ and integrated simulation (chair: Prof. Francesca Cappelletti) - Room D1.02

47 *Acoustic Refurbishment on a Temporary Auditorium: BIM design and interventions influences*
Marco Caniato, Federica Bettarello, Matteo Bellè, Andrea Gasparella

41 *A psycho-acoustical experiment using a stereo dipole for spatial impression of music signals*
Benedetto Nastasi, Massimiliano Manfren, Vincenzo Vodola, Lamberto Tronchin

36 *Experiences and potentials of different Levels of Integration of thermal and acoustic Simulation in the Creative architectural design process*
Bernhard Sommer, Galo Patricio Moncayo Asan, Ulrich Pont, Benjamin Wade James, Ardeshir Mahdavi

49 *Simulation-assisted evaluation of lighting levels in home offices: A case study*
Ceren Sarikaya, Ulrich Pont, Ardeshir Mahdavi

13 *Analysis Of Two Shading Systems In A Glazed-Wall Physiotherapy Center In Bolzano, Italy*
Luca Zaniboni, Giovanni Pernigotto, Andrea Gasparella

12.30-13.45 **Buffet lunch**

13.45-15.30 **Technical Sessions (in parallel)**

A2 - Building envelope (chair: prof. Matthias Schuss) - Room D1.01

5 *Dynamic characterisation of thermal bridges in historic balconies in Palermo*
Roberta Zarcone, Maurizio Brocato

34 *Implementation of vacuum glazing into existing and new windows: A report on recent research and development efforts*
Ulrich Pont, Peter Schober, Magdalena Wölzl, Matthias Schuss, Ardeshir Mahdavi

17 *Numerical and experimental characterization of the thermal behavior of Complex Fenestrations Systems under dynamic conditions*
Ingrid Demanega, Giuseppe De Michele, Martin Hauer, Stefano Avesani, Giovanni Pernigotto, Andrea Gasparella

31 *The potential of PCM materials as an overheating mitigation measure: A simulation-based case study*
Nedim Hodzic, Ulrich Pont, Ardeshir Mahdavi

52 *Prediction of the acoustic and thermal performance of a multilayer partition*
Manuela Neri, Mariagrazia Pilotelli, Edoardo Alessio Piana, Adriano Maria Lezzi

39 *The Ecohouse – Development of an ecological and sustainable building concept for the Gaza region*
Matthias Schuss, A. Muhaisen, F. Herzog, E. Tsankova, Ardeshir Mahdavi

B2 - Urban scale simulation (chair: Prof. Ardeshir Mahdavi) - Room D1.02

12 *Wind and urban spaces. Evaluation of a cfd parametric framework for early-stage design*

Viola Maffessanti

59 *Calibration of an UMI simulation model for a neighborhood in Bolzano, Italy*
Federico Battini, Giovanni Pernigotto, Andrea Gasparella

10 *A Citysim urban energy simulation for the development of retrofit scenarios for a neighborhood in Bolzano, Italy*
Fahad Haneef, Federico Battini, Giovanni Pernigotto, Andrea Gasparella

14 *Assessing solar radiation in the urban area of Bolzano, Italy, by means of SEBE simulations*
Gianluca Pappaccogli, Giovanni Pernigotto, Alessandro Prada, Andrea Gasparella

16 *Sensitivity analysis of SEBE model using different meteorological input: A case study in Bolzano, Italy*
Gianluca Pappaccogli, Giovanni Pernigotto, Alessandro Prada, Andrea Gasparella

20 *Morphological urban-scale parameters and building energy models: a case study in Turin*
Roberto Boghetti, Jérôme Kämpf, Guglielmina Mutani, Giacomo Salvadori, Valeria Todeschi

15.30-16.00 **Coffee Break**

16.00-17.30 **Technical Sessions (in parallel)**

A3 - Heat and Mass Transfer (chair: Prof. Paolo Baggio) - Room D1.01

19 *Safety at chimney-roof penetration: a numerical investigation*
Manuela Neri, Mariagrazia Pilotelli

3 *A new tool for the hygrothermal evaluation and simulation of building components*
Carlotta Dolzani, Martina Demattio, Ulrich Klammsteiner, Marco Larcher

9 *Numerical Evaluation of Moisture Buffering Capacity of Different Inner Casing*
Enrico Baschieri, Anne Friederike Goy

15 *Numerical And Experimental Study On The Impact Of Humidity On The Thermal Behaviour Of Insulated Timber Walls*
Maja Danovska, Michele Libralato, Giovanni Pernigotto, Alessandra De Angelis, Onorio Saro, Paolo Baggio, Andrea Gasparella

33 *Static vs dynamic hygrothermal simulation for cellulose-based insulation in existing walls: a case study comparison*
Matteo Bilardo, Fabrizio Giorgio, Enrico Fabrizio, Francesco Prizzon

38 *Design and Evaluation of Extreme Moisture Reference Years for Moisture-Related Risk Assessments*
Michele Libralato, Giovanni Pernigotto, Alessandro Prada, Alessandra De Angelis, Onorio Saro, Andrea Gasparella

B3 - Special lecture for PhD Students - Room D1.02
Some lateral thoughts on building performance simulation
Prof. Ardeshir Mahdavi, Technische Universität Wien, Austria – Department of Building Physics and Building Ecology

17.45-18.45	**IBPSA Italy General Meeting - Room D1.02**
20.00-22.30	**Conference dinner**

Friday June 21st

8.45-9.30 **Friday Keynote Speech - Room D1.02**

Energy Performance Assessment of Buildings in a Legal Context: New Standards and National Trends

Prof. Vincenzo Corrado, Politecnico di Torino, Italy – Department of Energy

9.30-11.00 **Technical Sessions (in parallel)**

A4 - Building Acoustics (chair: Dr. Marco Caniato) - Room D1.02

26 *Literature review of the prediction methods used in building acoustics for airborne and structure-borne sound transmission*
Andrea Santoni, Patrizio Fausti, Paolo Bonfiglio

43 *Numerical simulation of complex multilayer structures using a simplified finite element method*
Marco Caniato, Federica Bettarello, Paolo Bonfiglio, Andrea Gasparella

18 *Modelling the sound insulation of mass timber floors using the finite transfer matrix method*
Federica Morandi, Luca Barbaresi, Marco Caniato, Andrea Gasparella, Olivier Robin, Patrice Masson, Noureddine Atalla

28 *Double-layer gypsum panels: prediction of the sound reduction index using the transfer matrix method*
Nicola Granzotto, Edoardo A. Piana

21 *Use of the ISO 12354 standard for the prediction of the sound insulation of timber buildings: application to three case studies*
Francesca Di Nocco, Federica Morandi, Luca Barbaresi, Antonino Di Bella

51 *Sound reduction index of clay hollow brick walls*
Nicola Granzotto, Edoardo Piana, Antonino Di Bella

B4 - BIM and calculation methods (chair: Prof. Cristina Cornaro) - Room D1.03

22 *Testing the Revit–EnergyPlus interoperability by the use of Ladybug tools*
Laura Pompei, Giulia Spiridigliozzi, Livio De Santoli, Cristina Cornaro, Fabio Bisegna

58 *Analysis of the surroundings impact on the building energy performance by means of a BIM analytical model coupled with dynamic simulation*
A. Maiolatesi, A. Prada, F. Luce, G. Massari, P. Baggio

35 *Assessing overheating risk and cooling demand: Comparing regression-based methods to detailed simulation*
Ameer Wadi, Mahmoud Alhayek, Ulrich Pont, Ardeshir Mahdavi

29 *Comparison of real energy consumption and certificate based energy demand for heating in existing residential buildings.*
M. Schuss, M. Fleischhacker and A. Mahdavi

55 *Comparison between the EN ISO 52016-1 hourly calculation method and a detailed full dynamic simulation*

Ilaria Ballarini, Giovanna De Luca, Mamak P.Tootkaboni, Vincenzo Corrado

53 *Implementing the sustainable energy (and climate) action plans: quasi-steady state or dynamic building modeling approach?*
Concettina Marino, Antonino Nucara, Giorgia Peri, Matilde Pietrafesa, Gianfranco Rizzo, Gianluca Scaccianoce

11.00-11.15 **Coffee Break**

11.15-13.00 **Technical Sessions (in parallel)**

A5 - Room Acoustics (chair: Prof. Lamberto Tronchin) - Room D1.02

24 *An attempt to rank Italian historical opera houses basing on numerical simulation*
D'Orazio Dario, Rovigatti Anna, Morandi Federica, Garai Massimo

46 *The acoustic simulation of performing area in the auditorium: some examples in Italy*
Vincenzo Vodola, Benedetto Nastasi, Massimiliano Manfren, Lamberto Tronchin

45 *Acoustics and spatial sound distribution in the Theatre Comunale in Bologna, Italy*
Massimiliano Manfren, Benedetto Nastasi, Vincenzo Vodola, Lamberto Tronchin

48 *Complete Acoustic Numerical simulation and calibration of a classroom*
Marco Caniato, Margret Sibylle Engel, Federica Morandi, Andrea Gasparella

42 *On the use of 3D auralisation to evaluate room acoustic enhancement in auditorium restoration*
Benedetto Nastasi, Massimiliano Manfren, Vincenzo Vodola, Lamberto Tronchin

44 *Acoustic comfort for spaces used by people with cognitive impairment: a starting point for the application of Acoustic Event Detection and Sound Source Recognition systems*
Marco Caniato, Federica Bettarello, Giuseppina Scavuzzo, Andrea Gasparella

B5 - Simulation uncertainty in design and retrofit (chair: Dr. Ulrich Pont) - Room D1.03

37 *COGENT - Construction Generation and Assessment: The role of simulation*
Ulrich Pont, Ardeshir Mahdavi

30 *Accuracy assessment of calculated air changes - A case study with single sided ventilation*

M. Schuss and A. Mahdavi

1 *The impact of occupancy-related input data uncertainty on the distribution of building simulation results*
Christiane Berger, Elisa Primo, Vincenzo Corrado, Ardeshir Mahdavi

32 *Resilience to Occupancy Profiles of Office Buildings Energy Performance and Potential Energy Savings from Smart Controls*
Gianluca Pilati, Giovanni Pernigotto, Farhang Tahmasebi, Andrea Gasparella, Ardeshir Mahdavi

6 *Multi-stage multi-level calibration of a school building energy model*
Ilaria Pittana, Alessandro Prada, Francesca Cappelletti, Andrea Gasparella

56 *On the thermophysical performance of Italian schools of the 60s: a case-study in Ostia*
Francesco Asdrubali, Luca Evangelisti, Lucia Fontana, Claudia Guattari, Ilaria Montella, Pietro Prestininzi, Ginevra Salerno, Chiara Tonelli, Valeria Vitale

57 *On the parasitic heat transfer between dwellings in case of individual heating. First results by simulation across the EU*
Viola Iaria, Carlo Mazzenga, Vincenzo A. Spena

13.00-13.30 **Student Award and Closing Ceremony - Room D1.02**

13.30-14.30 **Buffet lunch**

14.30-17.30 **IBPSA Italy Round Table for Designers and Practitioners - Room D1.02 (in Italian)**

La simulazione delle prestazioni degli edifici nella professione: riflessioni e prospettive per farne una risorsa

Sono riconosciuti crediti professionali dall'Ordine degli Architetti

Anche a seguito delle ultime disposizioni, la modellazione energetica è la sola che trova un certo impiego in fase di progetto, spesso per esigenze legate alle procedure per il conseguimento di determinate certificazioni. Tuttavia l'uso della simulazione non sembra trovare una giusta valorizzazione in termini economici, se si esclude il caso di progetti di grandi dimensioni o con particolari esigenze prestazionali, non esclusivamente di tipo energetico, che richiedono soluzioni tecniche non sempre convenzionali.
Anche quando viene impiegata, non è infrequente che i risultati non vengano correttamente apprezzati, sia perché spesso non producono vantaggi economici rilevanti, sia perché la prestazione reale talvolta non rispecchia quella attesa.

Se la simulazione rappresenta un potente strumento a supporto del professionista, è necessario comprendere quali sono le opportunità e gli ostacoli alla realizzazione di tale potenziale.
La tavola rotonda si propone di analizzare il contesto in cui il professionista si trova ad operare, individuando le strategie necessarie e i livelli di intervento per aumentare l'efficacia e la diffusione della simulazione a servizio della professione, per avviare azioni concrete e concertate.
Si tratta di una delle tappe iniziali di un percorso che IBPSA Italia intende promuovere per valorizzare la professione e il ruolo del progettista, potenziandone le competenze e favorendo l'evoluzione del mercato verso nuovi modelli di business, in preparazione del workshop che si terrà a Roma il 4 settembre 2019 nell'ambito della conferenza internazionale Building Simulation BS2019.

Intervengono

Paolo Baggio, Università di Trento
Enrico Baschieri, Ecodesign, Scandiano (Reggio Emilia)
Vincenzo Corrado, Politecnico di Torino
Norbert Klammsteiner, Energytech, Bolzano
Fabio Viero, Manens Tifs, Verona
Marco Ricci, R2M, Politecnico di Milano

(Moderazione)
Francesca Cappelletti, Università IUAV di Venezia,
Andrea Gasparella, Libera Università di Bolzano

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5	*Dynamic characterisation of thermal bridges in historic balconies in Palermo*	A2
6	*Multi-stage multi-level calibration of a school building energy model*	B5
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13	*Analysis Of Two Shading Systems In A Glazed-Wall Physiotherapy Center In Bolzano, Italy*	B1
14	*Assessing solar radiation in the urban area of Bolzano, Italy, by means of SEBE simulations*	B2
15	*Numerical And Experimental Study On The Impact Of Humidity On The Thermal Behaviour Of Insulated Timber Walls*	A3
16	*Sensitivity analysis of SEBE model using different meteorological input: A case study in Bolzano, Italy*	B2
17	*Numerical and experimental characterization of the thermal behavior of Complex Fenestrations Systems under dynamic conditions*	A2
18	*Modelling the sound insulation of mass timber floors using the finite transfer matrix method*	A4
19	*Safety at chimney-roof penetration: a numerical investigation*	A3
20	*Morphological urban-scale parameters and building energy models: a case study in Turin*	B2
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27	*Energy and Exergy Analysis of a HVAC System having a Ground Source Heat Pump as Generation System*	A1
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