



HEALTHY BUILDINGS

EUROPE 2015

CONFERENCE PROGRAMME

18-20 May 2015 Eindhoven, The Netherlands



PROGRAM OVERVIEW SESSION KEYNOTES

Session	Day	Time	Theme	Room	Theme	Room	Theme	Room
G1	Monday	13:30-15:15	OPENING	BZ				
		Break						
1	Monday	15:45-17:15	A	AUD12	B	SZ	E.1	ZD
	Monday	17:15-18:00	Poster viewing					
		18:00-19:30	Informal get together (KOE/Vertigo Plaza)					
G2	Tuesday	8:30-9:30	Keynotes	BZ				
2	Tuesday	9:30-10:30	C	BZ	F	SZ	E.2	AUD10
		Break						
3	Tuesday	11:00-12:30	D	BZ	Workshop in SZ		E.1	ZD
		Break - ISIAQ AGM (SZ)						
4	Tuesday	13:30-15:00	C	BZ	F	SZ	E.1 / E.2	ZD
		Break						
5	Tuesday	15:45-17:15	D	BZ	F	SZ	E.2	AUD11
		18:30-23:00	Conference diner					
G3	Wednesday	8:30-9:30	Keynotes	BZ				
6	Wednesday	9:30-10:30	A	BZ	F	SZ	E.2	AUD11
		Break						
7	Wednesday	11:00-12:30	D	BZ	Workshop in SZ		Sloan	ZD
		Break - Studium Generale (BZ)						
8	Wednesday	13:30-15:00	D	BZ	E / F	SZ	Sloan	ZD
G4	Wednesday	15:00-15:30	CLOSING	BZ			Workshop in ZD	

Rooms (abbreviations)

BZ	Blauwe Zaal
SZ	Senaatszaal
ZD	Zwarte Doos (Filmzaal)
AUD04	Auditorium 4
AUD09	Auditorium 9
AUD10	Auditorium 10
AUD11	Auditorium 11
AUD12	Auditorium 12

Themes

A.	Design & technology
B.	Politics, policy & law
C.	Behaviour & environmental psychology
D.	Energy & sustainability
E.	Sources & exposure
	E.1 source control
	E.2 exposure reduction
F.	Physical responses & physiology

Meetings

Mon	10:00-12:15	Student Workshops (ZD)
Tue	12:30-13:30	ISIAQ AGM (SZ)
Wed	12:30-13:30	Studium Generale (BZ)

PROGRAM OVERVIEW SESSION WORKSHOPS

Session	Day	Time	Theme	WS	Room	Theme	WS	Room	Theme	WS	Room	Theme	WS	Room
G1	Monday	13:30-15:15												
		Break												
1	Monday	15:45-17:15	D	WS14	AUD11	C	WS3	BZ						
	Monday	17:15-18:00												
		18:00-19:30												
G2	Tuesday	8:30-9:30												
2	Tuesday	9:30-10:30												
		Break												
3	Tuesday	11:00-12:30	E	WS15	AUD11	D	WS2	AUD12	F	WS8	AUD10	C	WS16	SZ
		Break - ISIAQ AGM (SZ)												
4	Tuesday	13:30-15:00	E	WS4	AUD11	D	WS5	AUD12						
		Break												
5	Tuesday	15:45-17:15												
		18:30-23:00												
G3	Wednesday	8:30-9:30												
6	Wednesday	9:30-10:30												
		Break												
7	Wednesday	11:00-12:30	E	WS11	AUD11	B	WS6	AUD12	F	WS12	AUD09	A	WS1	SZ
		Break - Studium Generate (BZ)												
8	Wednesday	13:30-15:00	A	WS7	AUD11	C	WS10	AUD12	B	WS9	AUD04	Slean	WS13	ZD
G4	Wednesday	15:00-15:30												



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WELCOME MESSAGE

From the President of Healthy Buildings 2015 Europe

Dear all, welcome to Eindhoven, welcome to Healthy Buildings 2015 Europe!

Healthy Buildings 2015 Europe is the first example of a new concept to continue the renowned ISIAQ Healthy Buildings conference series at a different pace and parallel at different places around the world, bringing it more close to regional issues and practice.

We, the organizing committee, are proud to host this first one of the new series. The timeline was very short, but within less than a year and with the help of many volunteers (thank you!; and also to the sponsors) the job was done. Compact in the timeline, but also compact in its format that has been the intention. With the amount of abstracts received (over 360) and with over 270 papers accepted it clearly shows the need for having available a venue at regular intervals to discuss the latest developments in IEQ research and practice. Not only in technical sessions, but certainly also in the interactive workshops. With these numbers, being 'compact' provides some challenges. For example with respect to the time available for presentations and poster sessions. With the normal activities ongoing at the University, your time will be filled with activities, swift and vibrating and we hope you will enjoy that.

Besides compact we also wanted to stress the multidisciplinary found and required in arriving at healthy buildings. We defined themes to assure that the multidisciplinary is clearly dealt with. The keynotes, the technical sessions and the workshops cover the themes and intend to structure the conference. Though the division in themes cannot always be made that clear-cut, we do hope it will allow you to widen your view on the topic of healthy buildings. It truly will need multidisciplinary actions to continue to make steps towards (re)creating healthy buildings! It is this great and rewarding outcome that we should all continue to strive for!

I wish you all the best with that and hope Healthy Buildings 2015 Europe can provide a good stop on your and our journey!

Also on behalf of the organizing committee

Marcel Loomans,
President Healthy Buildings 2015 Europe
Eindhoven University of Technology



WELCOME MESSAGE

From the Dean of the Department of the Built Environment

On behalf of the Eindhoven University of Technology, I wish you a warm welcome at our university and at the International Conference Healthy Buildings 2015 Europe that we are proud to host!

The Eindhoven University of Technology is positioned in the center of one of the smartest regions in the world. In addition, the city of Eindhoven is an important venue for Dutch Design and its promotion. With Health, Energy and Smart Mobility as the strategic areas of our University, it is clear that our Department of the Built Environment is rightly placed.

At our department we have a long tradition in teaching the integral design approach for designing buildings. In this approach, architecture is (just) one of the disciplines that (re)create buildings. Building physics in general and energy and the indoor environment specifically are major contributors to this design as well. In The Netherlands and Europe, sustainability, often with a focus on building energy use reduction, has received and still receives a lot of attention. The goals set for the near future are clear. However, we also see a shift in practice from just energy and costs to more attention to the indoor environment as created for the (individual) occupants of buildings and their needs and expectations. Of course these expectations do not stop when the drawing leaves the design table. The building-in-use has become part of our attention as well, in research and education. Learning from buildings, and maybe even more important, learning from its occupants will help us in (re)designing better buildings.

Your presence and the expertise you bring along will hopefully provide a fruitful contribution to all the challenges that are still at stake. I hope this conference will enable us to jointly take the next steps on the path to creating sustainable buildings of which health is a very important subject, for the building and its occupants! I wish you good luck with that and hope you will enjoy your stay at our campus and in Eindhoven! Thanks for coming.

Prof. Elphi Nelissen
Dean of the Department of the Built Environment
Eindhoven University of Technology

WELCOME MESSAGE

From the President of ISIAQ

Greetings to participants of Healthy Buildings Europe 2015! As President of the International Society of Indoor Air Quality and Climate (ISIAQ), I am looking forward to meeting many of you here in beautiful Eindhoven. I am especially grateful to the organizers: Marcel Loomans, Lisje Schellen and Atze Boerstra. They sacrificed much time to create a program that is rich with thought-provoking presentations and workshops.

Healthy Buildings Europe 2015 is the first of our conferences to be organized with a focus on the challenges and solutions unique to Europe. Each Healthy Buildings conference helps me re-connect to the practice of indoor air quality while engaging my scientific curiosity and energizing my creativity. I wish the same for you and for all participants. ISIAQ is a highly multidisciplinary organization that promotes the free exchange of ideas, technical expertise and scientific discovery. I hope to continue our long-standing tradition of providing members opportunities for learning from one another, developing collaborations and enlightening the world about the challenges and advances in improving indoor air quality and climate. How, you may ask, can I get more involved? Consider joining one of the ISIAQ Scientific and Technical Committees, mentor a younger ISIAQ member, or start early and plan your technical submission for next-year's Indoor Air conference. Your contributions make a difference!

With best regards,

Glenn Morrison
President of ISIAQ
Missouri University of Science and Technology, USA



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ORGANISATION

National

Marcel	Loomans	Eindhoven University of Technology
Lisje	Schellen	Maastricht University
Atze	Boerstra	BBA Binnenmilieu

International

Pawel	Wargocki	Technical University of Denmark
Hal	Levin	Building Ecology Research Group
Glenn	Morrison	Missouri University of Science and Technology

Support

Ep	Marinus	Karep arbeidsomstandigheden advies
Froukje	van Dijken	BBA Binnenmilieu
Lada	Hensen	Hensen-Consult
Marije	te Kulve	Maastricht University
Ineke	Thierauf	ISIAQ.nl, TVVL
Roel	Loonen	Eindhoven University of Technology
Chrit	Cox	Nelissen B.V.
Jacob	Verhaart	Eindhoven University of Technology
Michal	Vesely	Eindhoven University of Technology
Study Assoc.	Mollier	Eindhoven University of Technology

Scientific core committee

Helianthe	Kort	Eindhoven University of Technology
Philo	Bluysen	Delft University of Technology
Piet	Jacobs	TNO
Lisje	Schellen	Maastricht University
Marcel	Loomans	Eindhoven University of Technology

INTERNATIONAL SCIENTIFIC COMMITTEES

dr.	M.	Abadie	La Rochelle Univ, France
prof.dr.	O.	Adan	Eindhoven University of Technology
prof.dr.	T.	Akimoto	Shibaura Institute of Technology
ms.	M	Ala-Juusela	VVT
dr.	M.	Almeida	Lisboa Univ
dr.	G.	Bekö	Danmark Technical University
ir.	P.	Bergen van	DGMR
prof.	P.	Blondeau	La Rochelle Univ, France
dr.	R	Bogers	RIVM
dr.	C.G.	Bornehag	Karlstad university
dr.	N.	Boschi	Bovis Lend and Lease
dr.	G.	Boulanger	ANSES, France
dr.	M.	Braubach	WHO
dr.	L	Brotas	London Metropolitan University
prof.	B.	Brunekreef	Universiteit Utrecht
prof.	S.	Burge	Birmingham Heartlands Hospital
prof.	P.	Carrer	Univ. Milano
prof.	C.	Chau	Honkong University
prof.dr.	G.	Clausen	Danish Technical University
prof.dr.	D.J.	Clements-Croome	Reading University
dr.	B.	Collignan	CSTB
prof.	D.	Crump	Cranfield Univ, UK
prof.	E.	de Oliveira Fernandes	Porto University
ir.	F.	Dijken van	BBA Binnenmilieu
dr.	F.	Duijm	GGD Nederland
ms.	V.	Földváry	Slovak University of Technology
dr.	F.	Forejt	Honeywell International s.r.o.
dr.	F.	Franchimon	BAM
dr.	A.	Frijns	Eindhoven University of Technology
dr.	M.C.	Gameiro da Silva	University of Coimbra
dr.	P.	Gloennec	EHESP, France
heer	E.	Goelen	VITO



dr.	B.	Hanoune	Universite Lille (Rijssel)
dr.	J.	Havermans	TNO
prof.dr.	R	Hellwig	National University of Singapore
dr.	J. van	Hoof	Fontys University of Applied Sciences
dr.	A.	Hyvarinen	Department of Environmental Health
prof.dr.	K.	Kabele	Technical University Prague
dr.	K.	Kalimeri	UOWM, Greece
Mr.	J	Kanters	Lund University
dr.	B	Kingma	Maastricht University
dr.	H.N.	Knudsen	Aalborg University
dr.	J.	Kolarik	Danmark Technical University
dr.	K.	Kumagai	Lawrence Berkeley National Laboratory
prof.dr.	J.	Kurnitski	Tallin University of Technology
mr.	S.	Kurvers	Delft University of Technology
dr.	J.	Laverge	Universiteit Gent
prof.	Y.	Li	University of Hongkong
mr.	D.	Licina	Danmark Technical University
ms.	A.	Lipczynska	Silesian University of Technology
mr.	R.	Loonen	Eindhoven University of Technology
prof.	P.G.	Luscuere	TU Delft
prof.dr.	B.	Olesen	Danmark Technical University
dr.	J.	Madureira	Porto Univ
dr.	C.	Mandin	CSTB / OQAI
prof.dr.	W.	van Marken Lichtenbelt	Maastricht University
dr.	G.C.	Morrison	Missouri Univ. of Science and Tech.
prof.dr.	D.	Muller	RWTH Aachen
prof.dr.	B.	Muller	Univ. of Applied Sciences Berlin
prof.	F.	Nicol	London Metropolitan University
prof.dr.	P. V.	Nielsen	Aalborg University
prof	J.	Niu	Hong Kong Polytechnic University
ms.	H	Pallubinsky	Maastricht University
dr.	G.	Raw	GR People Solutions
prof.dr.	T.	Reponen	University of Cincinnati
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dr.	P.	Roelofsen	Grontmij

prof.dr. C.-A.	Roulet	EPFL
prof.dr. O.	Seppanen	Helsinki University Techn. / REHVA
dr. R.	Shaughnessy	Univeristy of Tulsa
dr. I.	Silviu Doboci	REHVA
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prof.dr. J.	Sundell	Danish Technical University
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dr. M.	Taubel	THL
ms. M.	te Kulve	Maastricht University
dr. I	Thierauf	ISIAQ.nl
dr. J	Toftum	Danmark Technical University
prof.dr. C	Treeck van	RWTH Aachen
prof. P	van Wesemael	Eindhoven University of Technology
mr. J.	Verhaart	Eindhoven University of Technology
mr. M.	Vesely	Eindhoven University of Technology
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dr. A.	Wierzbicka	Lund University
dr. P	Wouters	BBRI
dr. D.P.	Wyon	Danish Technical University
dr. B.	Yang	Umea University
prof.ir. W.	Zeiler	Eindhoven University of Technology
prof.dr. J.	Zhu	Health Canada
ms. L.	Zuská	Czech Technical University



CHAIRMEN

2-BZ	Runa	Hellwig	National Univ. of Singapore
3-BZ	Aonghus	McNabola	Trinity College Dublin
	Maral	Rahimi	Aalborg University
4-BZ	Marcel	Schweiker	Karlsruhe Institute of Technology
	Marianne	Sinoo	Univ. of Applied Sciences Utrecht
5-BZ	Veronika	Földvály	Slovak Univ. of Tech. in Bratislava/ Tech. Univ. of Denmark
	James	McGrath	National Univ. of Ireland, Galway
6-BZ	Peter	Foldbjerg	VELUX A/S
7-BZ	Sebastian	Wolf	Institute in Energy Efficient Building
	Rick	Kramer	Eindhoven Univ. of Technology
8-BZ	Henrik	Knudsen	Danish Building Research Instit., Aalborg University
1-SZ	Marc	Lor	VITO
	Caroline	Widdowson	Markes International
2-SZ	Dirk	Muller	RWTH Aachen University
4-SZ	Jan	Sundell	Tsinghua University
	Susanne	Urlaub	University of Stuttgart
5-SZ	Bjarne	Olesen	Tech. Univ. of Denmark
	Hannah	Pallubinsky	Maastricht University
6-SZ	Jelle	Laverge	Ghent University
8-SZ	Bartzis	Ioannis	University of Western Macedonia
	Paolo	Carrer	University of Milan

1-AUD12	Peter V. Jacob	Nielsen Verhaart	Aalborg University Eindhoven university of Technology
2-AUD10	Khoury	Cheryl	Health Canada
5-AUD11	Kalliomäki	Petri	Finnish Institute of Occupational Health
	Sadrizadeh	Sasan	KTH Royal Institute of Technology
6-AUD11	Stabile	Luca	University of Cassino and Southern Lazio
1-ZD	Glenn Birte	Morrison Mull	Missouri Univ.of Science & Tech. BAM Federal Institute for Materials Research and Testing
2-ZD	Afshari	Alireza	Danish Building research institute/AAU
3-ZD	Maupetit Larsson	Francois Lennart	CSTB Lund University
4-ZD	Wierzbicka	Aneta	Lund University
5-ZD	Schoemaecker	Coralie	PC2A laboratory
6-ZD	Levin	Hal	Building Ecology Research Group
7-ZD	Levin	Hal	Building Ecology Research Group



CONFERENCE STRUCTURE

Indoor air science from the start has been multidisciplinary. This is why we added as central theme for the Healthy Buildings 2015 Europe conference: 'Stepping beyond traditional borders'. With this central theme, we hope that during the conference you also can and will tune into knowledge from adjacent scientific fields that normally may be somewhat outside the radar of the general Healthy Buildings conference attendant. With (re) creating healthy buildings we also want to point at the fact that not only new buildings are of interest, but also renovation of those buildings.

Six fields (themes) have been selected that we will focus on in the conference, see the Core diagram on the right page.

These 6 themes find some further division into subthemes. They also relate to issues that are or will be high on the political and scientific agenda in EU countries. The main themes are used as reference for the sessions (keynote/technical/workshop) and are also intended to allow you to obtain a quick overview of the topic of attention.

The keynotes are presented by renowned speakers from the different research fields (themes). They provide you with a swift overview of the activities and challenges to arrive at healthy buildings. The technical sessions provide the major overview of the papers submitted to the conference. We had to distinguish in Oral and Poster presentations because of the compactness of the conference. Though in the sessions more time is reserved for the oral presentation, we also provide room for short presentations of the posters. In addition to that we have the posters located centrally for the whole period of the conference. We invite you to meet with the authors at the posters during the breaks. Finally, we have the interactive workshops. Starting with some workshop topic related presentations, the second part will ask active input from you in the hopefully lively discussions led by the moderators!



A.	DESIGN & TECHNOLOGY
	A.1 human centred design solutions
	A.2 sensors and actuators
B.	POLITICS, POLICY & LAW
	B.1 compliance to requirements
	B.2 labeling
C.	BEHAVIOUR & ENVIRONMENTAL PSYCHOLOGY
	C.1 man-environment interaction
	C.2 IEQ awareness and expectations

D.	ENERGY & SUSTAINABILITY
	D.1 energy and IEQ
	D.2 energy and health
E.	SOURCES & EXPOSURE
	E.1 source control
	E.2 exposure reduction
F.	PHYSICAL RESPONSES & PHYSIOLOGY
	F.1 Diseases and disorders
	F.2 Health assessment (incl. Thermal comfort)



PANEL DISCUSSION

We will start with a panel discussion to discuss the step from knowledge to practice in future buildings.

Panel members:

David Frise

Head of sustainability B&ES / GCP Europe (Association of European Building Services Engineers), United Kingdom

Nadia Boschi

Head of sustainability Bovis Lend Lease Europe / Middle East / North-Africa, Italy

Gerard McCreanor

Managing principal and lead designer at McCreanor Lavington Architects, The Netherlands

Pawel Wargocki

Associate professor Technical University of Denmark (DTU), Department of Civil Engineering, Section of Indoor Environment, Danmark

Marie-Louise Luther

Ombuds(wo)man Indoor Environment Swedish Asthma and Allergy Association, Sweden

Moderators:

Atze Boerstra

BBA Binnenmilieu

Marcel Loomans

Eindhoven University of Technology

KEYNOTES

The keynotes at Healthy Buildings 2015 Europe are starting points to get up-to-date and trigger your thoughts. We invited speakers from different scientific fields to allow you to learn from adjacent scientific fields

Adrian Leaman, Usable Buildings Trust, United Kingdom.

Title: Deconstructing building performance: with emphasis on needs, perceived health and productivity



Adrian Leaman has been running Building Use Studies (BUS) since 1987. He is specialized in the management and application of feedback from building occupants about their needs and requirements. The results of his studies are available to property specialists, building designers and managers in briefs and strategic plans for the future. Furthermore, he is an accomplished speaker at conferences, advanced courses and universities in Britain and around the world, and a widely-cited author, with more than 160 publications. He runs the popular website Usable Buildings (www.usablebuildings.co.uk) for the Usable Buildings Trust.

Wouter van Marken Lichtenbelt, Maastricht University, The Netherlands

Title: To comfort or not to comfort



Wouter van Marken Lichtenbelt is Professor Ecological Energetics and Health at the Department of Human Biology, NUTRIM School of Nutrition and Translational Research in Metabolism, Maastricht University Medical Center+, Maastricht, The Netherlands. He obtained his PhD at the University of Groningen on ecological energetics of green iguanas. Twenty years ago his research switched from animals to humans, and from the tropical to the indoor environment. Main emphasis is on individual differences in whole body energy metabolism, thermoregulation and health, the underlying mechanisms, and numerical modeling of human thermoregulation. Much attention is given on how indoor conditions relate to (thermal) comfort, long-term health and prevention of overweight and diabetes.



Christoph van Treeck, RWTH Aachen, Germany

Title: What does 'Healthy Building' mean in terms of energy efficiency?



Christoph van Treeck is full professor for energy efficient and sustainable building at RWTH Aachen University in Germany. Before he joined RWTH in 2012, he was head of the Simulation Group of the Department Indoor Environment at the Fraunhofer Institute for Building Physics in Germany and associate professor (Privatdozent) at the Technische Universität München. He has a Ph.D. in computational civil engineering, and is specialized in the fields of computational fluid mechanics, thermal comfort related issues, building performance simulation, and building information modeling. In 2009, van Treeck received the Fraunhofer Attract Award. He is member of several international standardization committees at DIN and ISO level, member of buildingSmart, member of the European Energy Research Alliance (EERA) within the Smart Cities Joint Program.

Miia Pitkäranta, Vahanen Group, Finland

Title: Molecular Tools and Microbial Ecology of Buildings - A Practitioner's View (Sloan sponsored)



Dr. Miia Pitkäranta, currently working as a specialist for healthy buildings at the Building Physics Expert Services unit of Vahanen Group in Finland, is a Finnish building microbiologist with a background in molecular microbiology and genetics. She earned her PhD at the University of Helsinki in microbiology where she worked in the DNA Sequencing and Genomics Laboratory of the Institute of Biotechnology. Being among the first ones to apply molecular sequencing tools on indoor samples, her research was a cornerstone for studies of the indoor microbiome and provided very first insights into the vast diversity of fungi and bacteria in buildings. After finishing her PhD she studied building sciences and became a practitioner in the building investigations industry. Through this work she developed a comprehensive view on the connection between building physics and microbial ecology of the built environment.

Séverine Kirchner, CSTB le futur en construction, France
Title: Improving indoor environment : survival kit for action



Séverine KIRCHNER has a PhD in atmospheric pollution chemistry and environmental geophysics and graduate from the School of Public Health on “Assessment and management of environmental health risks”. She is Deputy Director for Research in Health & Comfort Department

at CSTB (Scientific and Technical Center for Building). Author of several publications in this field, she led, in 2011, the publication of the book gathering the 10 years of research conducted by OQAI “Indoor Air Quality, quality of life. 10 years of research to breathe better.” At an international level, she participates in several European projects and is a Member of the WHO Steering Committee “Development of WHO Guidelines for Indoor Air Quality”.



MONDAY

MONDAY

13:30 - 15:15

BLAUWE ZAAL

OPENING SESSION

WELCOME MESSAGES

<i>Marcel Loomans</i>	President Healthy Buildings 2015 Europe
<i>Lisje Schellen</i>	President of ISIAQ.nl
<i>Glenn Morrison</i>	President of ISIAQ
<i>Elphi Nelissen</i>	Dean of the Department of the Built Environment, Eindhoven University of Technology
<i>Rob van Gijzel</i>	Mayor of Eindhoven

Panel discussion from knowledge to practice in future buildings

PANEL MEMBERS:

A.

David Frise
Nadia Boschi
Gerard McCreanor
Pawel Wargocki
Marie-Louise Luther

MODERATORS:

Marcel Loomans
Atze Boerstra

Deconstructing building performance: with emphasis on needs, perceived health and productivity.

KN **ADRIAN LEAMAN**

C.



MONDAY **15:45 - 17:15** **AUDITORIUM 12**

Orals **SESSION 1** **A.**

Nielsen, Peter v. **Aalborg University**

Verhaart, Jacob **Eindhoven University of Technology**

The effect of a ceiling based cooling jet on work performance and thermal comfort - A laboratory study.

417 **MAULA, H.** **A.1**

Diffuse ceiling ventilation and the influence of room height and heat load distribution.

413 **NIELSEN, P.** **A.**

Case study on the actual design and operation of a radiant cooling and heating system in japan.

476 **MIYASHITA, Y.M.** **A.1**

Thermal perception differences in a precinct and implication for building outdoor environment design.

405 **LIU, L.J.L.** **A.1**

A measurement setup to test instruments for detecting sweat.

590 **VERHAART, J.** **A.2**

MONDAY	15:45 - 17:15	AUDITORIUM 12
Posters	SESSION 1	A.
	Efficient local personal cooling with fluctuating airflows.	
634	BAKKER, L.G.	A.1
	Verifying the validity of facade design strategy through optimization of digital modeling tools.	
471	NAGOSHI, M.N.	A.1
	Use of a stereothermometer for measuring in open plan offices during summer period.	
480	ZUSKÁ, L.	A.2
	VOC or CO2: are they interchangeable as sensors for demand control?	
491	LAVERGE, J.	A.2
	Design in the workplace - the biophilia imperative.	
587	ARKEL, J.G. VAN	A.1
	Benchmark and requirement to comfort levels by use of active house tools.	
593	ERIKSEN, K.E.E.	A.
	Enhance total heat recovery for ventilation with flash evaporative cooling.	
556	FANG, F.L.	A.1
	Basic study on the lawn schoolyard and the school accidents ..-Study on the data collected in tokyo metropolitan elementary schools during 2005~2009-..	
416	IWASHITA, G.I.	A.1



MONDAY	15:45 - 17:15	SENAATSZAAL
Orals	SESSION 1	B
Lor, Marc	VITO	
Widdowson, Caroline	Markes International	
Indoor air quality in green building certifications.		
368	WEI, W.J.	B.
New developments in the assessment of hazardous substances from products used indoors.		
529	LOR, M.L.	B.
Influence of residential environment on residents' health promotion		
536	KAWAKUBO, S.	B.
Harmonising analysis of VOCs from Spray Polyurethane Foam Insulation.		
578	WIDDOWSON, C.	B.
Summer thermal comfort compliance assessment in apartment buildings.		
615	SIMSON, R.S.	B.
Housing, equity, energy and climate change.		
621	BRAUBACH, M.	B.

MONDAY**15:45 - 17:15****SENAATSZAAL****Posters****SESSION 1****B.**

Setting indoor air quality guidelines in france: 10 years of expert assessments.

464 KEIRSBULCK, M. K.**B.**

Proposal of relevant substances for the labeling of emissions from furniture.

472 LEROUX, C.L.**B.**

Discussion on the performance evaluation of air cleaning devices- based on the china gb/t 18801 standard.

524 KE, A.**B.**

New developments of the emission classification of building materials in finland.

530 SARIOLA, L.S., SÁTERI, J.**B.**

Assessment tool for building materials.

543 LIMA VASCONECELOS, S.L.V. DE**B.**

Introduction of the european commission's 7th environmental action programme for vehicle interior air quality - VIAQ.

577 WIDDOWSON, C.**B.**

Proposal of the cements' eco-labelling criteria extension.

613 ESTOKOVA, A.E., KRIDLOVA BUDROVA, E.**B.**

MONDAY**15:45 - 17:15****ZWARTE DOOS****Posters****SESSION 1****E.1**

Reduction of aldehydes and terpenes in pine wood by microbial activity.

371 **WIDHALM, B.**

E.1

Does release position of bacteria-carrying particles influence contaminant distribution in an operating room?

376 **SADRIZADEH, S.**

E.1

Phthalate partitioning to cotton fabrics.

404 **MORRISON, G.**

E.1

Concentration of bis(2-ethyhexyl) phthalate on the surface of polyvinyl chloride flooring.

415 **KIM, H.Y. KIM**

E.1

Volatile organic compounds during and after the construction in new built single-family house.

430 **HYTTINEN, M.**

E.1

Particulate matter size distribution measurements and estimation of the particle deposition in the lung of people working in modern offices in athens - officair project.

433 **SAKELLARIS, I., BARTZIS, J.**

E.1

Measurements of VOCs in a low energy building using PTR-ToF-MS: comparison of indoor and outdoor BTEX measurements.

565 **WARD, M.K.M.**

E.1

Sensory evaluation of the odour retaining effect of sealant on heat-treated wood.

447 **KLINKE, H.B.K. BENDSTRUP**

E.1

Sensoric odour testing according to DIN 16000-28 for the evaluation of building products - first results.

570 **HOFMANN, H.H.**

E.1



TUESDAY

TUESDAY

8:30 - 9:30

BLAUWE ZAAL

KEYNOTES

F / D

To comfort or not to comfort.

KN WOUTER VAN MARKEN LICHTENBELT

F

What does 'Healthy Building' mean in terms of energy efficiency?

KN CHRISTOPH VAN TREECK

D



TUESDAY **9:30 - 10:30** **BLAUWE ZAAL**

Orals **SESSION 2** **C.**

Hellwig, Runa **National University of Singapore**

Relationships between socioeconomic factors and indoor air quality in French dwellings.

397 **BROWN, T.P.** **C.1**

Results from post-occupancy evaluation in four single-family houses.

528 **CHRISTOFFERSEN, J.E.C.** **C.1**

Indoor climate and user satisfaction in classrooms after energetic retrofitting.

503 **HACKL, M.K., HELLWIG, R.** **C.2**

Indoor air quality in Educational Establishments: A Proposed framework for Engagement and Empowerment.

510 **HØISKAR, B.A.K.H.** **C.2**

Fact finding survey on the regional environment and the physical activity and exercise habits of Japanese children.

496 **OMI, S.** **C.1**

TUESDAY**9:30 - 10:30****SENAATZAAAL****Orals****SESSION 2****F / D****Muller, Dirk****RWTH Aachen University**

Association between CO2 concentration and air change rate in Danish day-care centres and short term sick leave among children.

380 KOLARIK, B.A.K. F.1

Nonspecific building-related symptoms of office employees and indoor air quality of the work environment: a surveillance study for their relevance in office buildings in Japan.

424 AZUMA, K. F.1

Age correction is necessary when applying computer distributed questionnaires for children's evaluation of school indoor environment.

501 HOLØS, S. B. F.2

Psychosocial work environment and building related symptoms.

461 RODA, C. R. F.

Measurements of the perceived air quality in shopping centers.

584 MÜLLER, D. D.1



TUESDAY	9:30- 10:30	AUDITORIUM 10
Orals	SESSION 2	E.2
Khoury, Cheryl	Health Canada	

From risk assessment to exposure reduction.

389 **KHOURY, F.** **E.2**

Air quality performance of ductless personalized ventilation in conjunction with displacement ventilation: impact of walking person.

458 **BOLASHIKOV, Z.D.B.** **E.2**

Experimental analysis of single-sided ventilation through a centre pivot roof window.

559 **IQBAL, A.H.I.** **E.2**

A model full-scale experiment for natural ventilation in a cubic structure: The ReFRESH project.

560 **GOUGH, H.L.** **E.2**

Prediction of pollutant dispersion in buildings: analysis of the gradient-diffusion hypothesis.

612 **HOOFF, T. VAN** **E.2**

TUESDAY **9:30 - 10:30** **ZWARTE DOOS****Orals** **SESSION 2** **E.1****Afshari, Alireza** **Danish Building research institute/AAU**

Migration of PCBs from sealants to adjacent material.

500 **ANDERSEN, H.V.A.** **E.1**

We are not alone! - Microbiomes in controlled and uncontrolled built environments.

419 **MAHNERT, A.M.** **E.1**

Impact of thermal retrofit on indoor radon exposure concentration, first results of a measurement campaign in Brittany, France.

398 **COLLIGNAN, B.** **E.1**

Evaluation of mould sampling methods in assessment of a building.

497 **ENGH, I. B.** **E.1**



TUESDAY **11:00 - 12:30** **BLAUWE ZAAL**

Orals **SESSION 3** **D.**

McNabola, Aonghus **Trinity College Dublin**

Control and prevention of ice formation and accretion on heat exchangers for ventilation systems.

392 **RAHIMI, M.** **D.**

Coupled thermodynamic and biologic modeling of Legionella Pneumophila proliferation in domestic hot water systems.

442 **VAN KENHOVE, E.V.K.** **D.2**

Full-scale assessment of the performance of an aspiration efficiency based pollution control device for building hvac systems.

448 **MCNABOLA, A.** **D.1**

Evaluation of simultaneous control of window system and air-conditioner in smart house.

450 **EBE, M.E.** **D.2**

CFD analysis of ventilative cooling in a generic isolated building equipped with ventilation louvers.

646 **KOSUTOVA, K.** **D.1**



TUESDAY	11:00 - 12:30	ZWARTE DOOS
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Orals	SESSION 3	E.1
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Maupetit, Francois	CSTB	
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Larsson, Lennart	Lund University	
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Quantifying the impact of environmental parameters on the formation of secondary reaction products from terpene/ozone reactive chemistry under controlled atmospheres.

554	MAES, F.M.	E.1
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VOC emissions from ozone initiated surface reactions with PVC flooring from a classroom.

566	WARD, M.K.M.	E.1
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Analysis of total cell count in building material - a new way to assess microbial contamination after water damages - determining the microbiological total cell count in building material, using fluorescence microscopy with acridine orange.

583	MEIDER, J.M.	E.1
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Characterization of volatile compounds emissions during incense burning.

635	MAUPETIT, F.	E.1
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Improving the indoor air quality by efficient exposure reduction: the surface emissions trap.

436	LARSSON, P.	E.1
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TUESDAY **11:00 - 12:30** **ZWARTE DOOS****Posters** **SESSION 3** **E.1**

Comparison of portable air cleaner removal efficiencies for bioaerosols between the decay method and the single-pass method.

508 **YAMATANI, Y.** **E.1**

Index of indoor airborne fungal spores pollution in Brussels habitat.

551 **CHASSEUR, C.C.** **E.1**

Determination of radon exhalation from building materials in dynamically operated test chambers by use of commercially available measuring devices.

552 **HOFMANN, M.H.** **E.1**

Assessing the relationship between outdoor air pollution and indoor air quality in naturally ventilated classrooms...A case study from Chile ..

555 **CACERES-ARAYA, C.C.A., ALTAMIRANO-MEDINA, H.** **E.1**

Organic compounds in residential buildings.

434 **MECIAROVA, L.M., VILCEKOVA, S.V.** **E.1**

Indoor Air Quality in 34 nurseries in Brussels.

588 **BLADT, S.** **E.1**

Requirements and testing to secure indoor air quality - malodorous polypropylene foil - a method study.

600 **JÖNSSON, M.** **E.1**

Review of dermal exposure factors concerning the phthalates in consumer products.

616 **MIZUKOSHI, A.M. DR.** **E.1**

Development of a novel sampling method for nicotine in secondhand tobacco smoke.

627 **NOGUCHI, M.N.** **E.1**

Secondary organic aerosol composition formed from volatile organic compounds on various environmental conditions.

644 **ARAI, M.A.** **E.1**

**TUESDAY** **13:30 - 15:00** **BLAUWE ZAAL****Orals** **SESSION 4** **C.****Schweiker, Marcel** **Karlsruhe Institute of Technology**
Sinoo, Marianne **University of Applied Sciences Utrecht**

Subjective experiments on relationships between indoor environment and arousal state and between arousal state and work performance.

575 **GOTO, T.** **C.1**

The psychology of thermal comfort: influences of thermo-specific self-efficacy and climate sensitiveness.

596 **HAWIGHORST, M.H.** **C.2**

On the effect of the number of persons in one office room on occupants physiological and subjective responses under summer conditions.

625 **SCHWEIKER, M.S.** **C.1**

Perceived control over indoor climate and its impact on Dutch office workers.

628 **BOERSTRA, A.C.** **C.1**

The effects of light and visual environment in office support spaces on fatigue, sleepiness, and workplace productivity through the autonomic nervous system.

499 **OGAWA, S.** **C.1**

TUESDAY **13:30 - 15:00** **BLAUWE ZAAL****Posters** **SESSION 4** **C.**

Occupants' performance in office buildings and indoor environmental quality.

481 **BUDAIOVA, Z.B., VILCEKOVA, S.V.** **C.1**

The role of surfaces in the transmission of bioaerosols from source to patient in hospital single and multi-bed rooms.

562 **KING, M.F.K.** **C.1**

A case study of air quality and ventilation habits in a school / office building with natural ventilation.

567 **KRAJCÍK, M.** **C.1**

The role of design in healthy buildings - an actornetwork perspective.

568 **OEIEN, T.B.O.** **C.1**

Subjective experiment on causal relationship between indoor temperature and occupants' performance mediated by arousal state.

576 **GOTO, T.** **C.1**

Development of an environmental observation scale for the indoor visual environment.

605 **SINOO, M.M.** **C.1**

Empowering students to improve their indoor school environment with the help of low-cost air quality sensors -CITI-SENSE project.

519 **ROBINSON, J.A.R.** **C.2**

The methods for evaluation of indoor air quality.

580 **DOBIÁŠOVÁ, L.D.** **C.1**

The influence of lunch breaks on afternoon productivity.

488 **ITOH, I.** **C.**



TUESDAY **13:30 - 15:00** **SENAATSZAAL**

Orals **SESSION 4** **F.2**

Sundell, Jan **Tsinghua University**

Urlaub, Susanne **University of Stuttgart**

Field studies on the effect of the indoor thermal environment on sleep in summer and winter.

435 **OHASHI, C.** **F.2**

Investigating the effect of total thermal environment and its variation on sleep.

449 **MIYAKE, E.M.** **F.2**

The influence of the indoor environment on sleep quality.

650 **URLAUB, S.** **F.2**

Measurements of blood flow and blood pressure under different indoor temperature and body postural conditions, and development of a new human simulation model.

437 **SAKAMOTO, H.** **F.2**

TUESDAY	13:30 - 15:00	SENAATSZAAL
Posters	SESSION 4	F.
509	YANG, J.H. Characteristics of thermal comfort at elderly care centre in Seoul, Korea.	F.2
411	JIAO, Y., YU, H. The effects of different transition spaces thermal environment on elderly people's comfort, physiological parameter and behaviour.	F.2
422	NAGASAWA, N. Longitudinal study of housing for the promotion of health and well-being ..-Analysis of the causal relationship between living environment and health-..	F.2
546	HOU, J., SUNDELL, J. On associations between exposure to household chemical products and asthma and allergies among children in tianjin, china.	F.2
429	ALMEIDA, R.M.S.F. Assessing thermal comfort in Portuguese educational buildings: measurement vs. pupil perception.	F.2
440	NAKAJIMA, H.N. Influence of outdoor temperature on the accidental risk in Elementary schools considered with saturation level of air conditioners into classrooms in Tokyo.	F.2
444	KULVE, M. TE The influence of LED lighting on thermal comfort, health and energy.	F.2
522	TANISHITA, T. Evaluation of thermal comfort based on EEG and physiological reaction by subject experiments.	F.2
412	YANG, Y. A questionnaire survey on sleeping environment under different cooling modes in multi-story residential buildings of Singapore.	F.2
557	SCHMIDT, M.S. The assessment of odour annoyance in indoor environment - a new concept using statistically derived acceptance limits.	F.2
533	LIPCZYNSKA, A. Impact of personalized ventilation combined with chilled ceiling on sbs symptoms intensity.	F.2
366	BRÄUNER, V. Long-term exposure to residential radon and risk of skin cancer.	F.1



TUESDAY	13:30 - 15:00	ZWARTE DOOS
Orals	SESSION 4	E.1
Wierzbicka, Aneta	Lund University	

Factors affecting endotoxin concentrations in indoor air – a review

383 SALONEN, MRS E.1

Vapor as a carrier of toxicity in a health troubled building.

526 SALO, M.J. E.1

'Monitoring and modelling emerging indoor air pollutants'

455 KRUZA, M. E.1

Predictive modelling of indoor formaldehyde and semi-volatile organic compounds based on air sampling and descriptive questionnaire data.

470 DALLONGEVILLE, A. E.1

Improving indoor aerosol exposure assessment by excluding non-occupancy data sequences.

629 WIERZBICKA, A. E.1

TUESDAY **13:30 - 15:00** **ZWARTE DOOS****Posters** **SESSION 4** **E.2**

Behaviour of a photocatalytic oxidation (PCO) layer applied on the walls and the ceiling of a real test room: impact of some key factors.

381 **ALESSI, F.A.** **E.2**

Adapting dwellings to protect residents from excess heat.

408 **EZRATTY, V.** **E.2**

Ventilation effectiveness comparison between extract ventilation and balanced ventilation in a scale model.

438 **CREMERS, B.E.** **E.2**

On-line monitoring of volatile organic compounds in a low energy building: the roles of material emissions, outdoor sources and ventilation.

446 **VERRIELE, M.** **E.2**

Sensor controlled ventilation control strategies: a review.

502 **TANG, J.** **E.2**

Method for accurate measurement of capture efficiency of commercial kitchen hoods considering recapture conditions.

505 **HORI, T.H.** **E.2**

Insufficient air supply rates in new built apartments with energy efficient ventilation - including aspects of human perception and behavior.

549 **NORDQUIST, B.N.** **E.2**

Improving air tightness of structures to improve indoor air quality.

572 **LAINE, K.L.** **E.2**

Radon equilibrium factor measurements in an air-conditioned auditorium.

579 **POLEDNIK, P.B., DUDZINSKA, D.M.** **E.2**

Changes of radon and its decay product concentrations in an air-conditioned auditorium.

585 **BILSKA, I.B., SIUTA-OLCHA, A.** **E.2**

**TUESDAY** **15:45 - 17:15** **BLAUWE ZAAL****Orals** **SESSION 5** **D.1**

Földváry, Veronika **Slovak University of Technology**
Technical University of Denmark

McGrath, James **National Univ. of Ireland, Galway**

Incorporating occupant's thermal comfort into simulations of indoor air pollutant transfer throughout the residential environment.

456 **MCGRATH, J.A.** **D.1**

Seasonal variation in indoor environmental quality in non-renovated and renovated multifamily dwellings in slovakia.

474 **FÖLDVÁRY, V.** **D.1**

Improving the energy- & IAQ performance of ventilation systems in Dutch residential dwellings.

504 **HOLSTEIJN, R.C.A. VAN** **D.1**

The value of comfort and energy in a renovation, a case study.

534 **KHADEMAGHA, P.** **D.1**

Evaluating the consequences of retrofitting residential multi-family buildings on indoor environmental quality, comfort, health and user satisfaction.

542 **KLUIZENAAR, Y. DE** **D.1**

Bedroom environmental conditions in airtight mechanically ventilated dwellings.

548 **MCGILL, G.M.** **D.1**

POSTERS **D.1 / A.1**

Energy efficient modernization of housing stock: demonstration of impacts on indoor environmental quality in Northern Europe.

538 **MARTUZEVICIUS, D.** **D.1**

Environmental assessment of indoor environmental quality in new building - case study.

521 **VILCEKOVA, MS., KRIDLOVA BUDROVA, E.** **D.1**

Renovation of a single family house in a social housing garden city in Brussels as private-public collaboration: Ambitious targets for energy, indoor climate and post-occupancy monitoring.

525 **FOLDBJERG, P.** **A.1**

Pollution prediction for a group of planning hospital buildings by CFD.

453 **QIU, J.Y.** **A.1**

Effects of the locations of air cleaner, air supply, exhaust, and human on clean air amount inhaled by the human; a computational study.

640 **ABOLFAZL, MR** **A.1**

TUESDAY **15:45 - 17:15** **SENAATSZAAL****Orals** **SESSION 5** **F.****Olesen, Bjarne** **International centre for Indoor
Environment and Energy****Pallubinsky , Hannah** **Maastricht University**

Effects of an indoor thermal environment created by heating systems in Japan based on skin moisture content and thermal comfort.

451 **SAKURAI, Y.S.** **F.**

Local cooling in a mild hot environment.

513 **PALLUBINSKY, H.** **F.**

The effect of high air temperature and co2 concentration on human subjective responses.

506 **LIU, L.** **F.**

Assessment of overheating risk in dwellings.

367 **HAMDY MOHAMED, M.H.** **F.**

Thermal adaptation of occupants in an atrium with environmental preference.

483 **IKEDA, N.I.** **F.**

Thermal comfort of displacement ventilation in environments with different temperature gradients.

553 **MÖHLENKAMP, M.** **F.****POSTERS** **F.**

Building for health; beyond satisfaction.

614 **KORT, H.S.M.** **F.**

Taking thermal regulation models from the lab to the world. Are current views ready for the challenge?

511 **VESELÁ, S.** **F.2**

Comparison of two human thermoregulation models under stable and transient conditions.

636 **OGATA, O.** **F.2**

Operative temperature drifts and occupant satisfaction with thermal environment in three office buildings using radiant heating/ cooling system.

581 **KOLARIK, J., OLESEN, B.** **F.2**

Influence of a breathing process on distribution of air from a personal ventilation outlet.

610 **BOGDAN, A.B.** **F.2**

**TUESDAY 15:45 - 17:15 AUDITORIUM 11****Orals SESSION 5 E.2****Kalliomäki, Petri Finnish Institute of Occupational Health****Sadrizadeh, Sasan KTH Royal Institute of Technology**

Cross-infection in a hospital wardroom with individual return openings.

374 SADRIZADEH, S. E.2

Performance assessment of a ventilated mattress for pollution control of the bed microenvironment in healthcare facilities.

633 BIVOLAROVA, M. P. B. E.2

An alternative ventilation system for operating theatres: an experimental and CFD study on the performance of a local ventilation device.

372 LOOGMAN, J.G.H. E.2

An alternative ventilation system for operating theatres: a full-scale experimental study on the performance of a local ventilation system.

545 VISSER, I.M. DE E.2

Airflows through single hinged and single sliding doors during door operation in isolation rooms.

489 KALLIOMÄKI, P.K. E.2

Assessing the near-patient infection risk in isolation rooms.

537 BEATO ARRIBAS, B. E.2**POSTERS E.2**

Impacts of particle penetration coefficient and deposition rate in building as a stable condition.

647 LEE, B.H.L. E.1

Controlling pollutants during new construction to reduce exposure upon occupancy.

648 GRIMES, C.E.G. E.1

Infiltration induced contaminant transmission and cross-infection intra single residential building.

370 WU, Y. E.2

Measurements of capture efficiency of range hoods in homes.

594 SIMONE, A. E.2

Exposures in homes, schools and commuting microenvironments: the significance of traffic-related air pollutants for children..

601 BATTERMAN, A. E.2

Advanced air distribution method combined with deodorant material for exposure reduction to bioeffluents contaminants in hospitals.

632 BIVOLAROVA, M. P. B. E.2

TUESDAY**15:45 - 17:15****ZWARTE DOOS****Orals****SESSION 5****E.****Schoemaeker, Coralie****PC2A laboratory**

Influence of pupil activities and cleaning products on indoor air quality in schools.

639 NICOLAS, M.N. E.1

IAQ determinants in a low energy school through time-resolved measurements: outdoor and indoor contributions to the indoor chemistry.

532 SCHOEMAECCKER, C., BLOQUET, M. E.1

Home environment and asthma in Portuguese schoolchildren: a case-control study.

393 MADUREIRA, J. E.1

Gas-sensors networks: relevant tools for real-time indoor air quality indicators in low energy buildings.

431 CARON, A. E.1

Evaluation of environmental surface contamination in medical examination rooms using an ATP measurement system.

462 MATSUMURA, M. E.1

Optimization of air curtain performance by particle image velocimetry measurements and computational fluid dynamics simulations: turbulence model validation.

643 KHAYRULLINA, A. E.2

POSTERS**E1.**

CO₂ concentrations measured in 400 classrooms of Elementary/Secondary Schools in Tokyo.

439 IGUCHI, K.I. E.1

Role of outdoor biogenic emissions in indoor secondary organic aerosol formation in offices.

487 CARSLAW, N., PASANEN, P. E.1

Determination of fungal contamination using total fungal biomass.

495 MENSAH-ATTIPOE, J., PASANEN, P. E.1

A study on the behaviour and control of microbes in air conditioning system.

507 WATANABE, R. E.1

Fully automated, on-line micro-scale chamber method for determination of volatile organic compound emissions from building products.

531 NIE, Y.N. E.1

Adsorption characteristics of semi-volatile organic compounds on settled dust.

641 NOMURA, K.N. E.1



WEDNESDAY



WEDNESDAY	9:30 - 10:30	BLAUWE ZAAL
Orals	SESSION 6	A / C
Foldbjerg, Peter	VELUX A/S	

Results from objective and subjective measurements of indoor environmental quality in five single-family houses occupied by families: daylight, thermal comfort, indoor air quality and subjective health

423 **FOLDBJERG., CHRISTOFFERSEN, J.** **A.**

Workers' sensation, comfort for indoor environments in offices prior and subsequent to the earthquake..-Through the experience of the great east japan earthquake in 2011-

486 **UTSUMI, K.U.** **C.2**

Creating a net zero energy house in japan.

477 **MATSUNAGA, T.M.** **A.**

House of Tomorrow Today, sustainability analysis.

479 **LICHTENBERG, J.J.N.** **A.1**

WEDNESDAY	9:30 - 10:30	SENAATSZAAL
Orals	SESSION 6	C / F
Laverge, Jelle	Ghent University	

Comparison of thermal comfort and sensation scales – a case study.

515 **VESELÝ, M.** **F.1**

Estimating human thermal sensation regarding inhomogeneous indoor environments using local energy balance equations: a new approach.

571 **SCHMIDT, C.** **F.**

What is the most appropriate method to assess thermal comfort in housing?

391 **ORMANDY, D.** **F.**

How physiology shapes the neutral thermal environment.

512 **KINGMA, B.R.M.** **F.2**

A coupled BES-zonal model to predict stratification in a large building.

490 **DE BACKER, L., LAVERGE, J.** **F.**



WEDNESDAY	9:30- 10:30	AUDITORIUM 11
Orals	SESSION 6	E.2
Stabile, Luca	University of Cassino and Southern Lazio	

Ventilation rate in dwellings and its association with children's health in Tianjin, China.

473 **HOU, J., SUNDELL, J.** **E.2**

Ventilation rates in naturally ventilated Italian classrooms through pressurization test.

535 **STABILE, L.S.** **E.2**

Air exchange rates and migration of VOCs in basements and residences.

599 **BATTERMAN, A.** **E.2**

Ventilation effectiveness and contaminant distribution in an occupied space conditioned with low exergy ventilation technologies in the tropics.

427 **MAHMOUDI SABER, E.M.S.** **E.2**

WEDNESDAY	9:30 - 10:30	ZWARTE DOOS
Orals	SESSION 6	SLOAN
Levin, Hal	Building Ecology Research Group	

Revolution/evolution–dna sequencing to identify indoor micro-organisms.

540 PECCIA, J.P.

Moisture and the Indoor Microbiome.

561 SIEGEL, J.A.

Assessment of moisture and mold problems - the Finnish example.

517 HYVÄRINEN, A.

Microbial growth and interactions on indoor surfaces - microbial secondary metabolites and mycotoxins.

457 NIELSEN, K.F.N.



WEDNESDAY **11:00 - 12:30** **BLAUWE ZAAL**

Orals **SESSION 7** **D / C**

Wolf, Sebastian **Institute in Energy Efficient Building**

Kramer, Rick **Eindhoven University of Technology**

Towards predicting the satisfaction with indoor environmental quality in building performance simulation.

386 **LOONEN, R.** **D.1**

Towards temperature limits for museums: a building simulation study for four museum zones with different quality of envelopes.

485 **KRAMER, R.P.** **D.1**

Comparison of control strategies of venetian blinds regarding visual and thermal comfort in summer in classrooms.

493 **TSCHAKROW, E., HELLWIG, R.** **D.1**

Revisiting validation methods of occupant behaviour models.

597 **WOLF, S.W.** **C.1**

WEDNESDAY	11:00 -12:30	BLAUWE ZAAL
Posters	SESSION 7	D.
	Thermal environment in finnish low-energy and conventional houses.	
378	HOLOPAINEN, A. R. V.	D.1
	INSUALtE project - building assessment as a part of assessment impacts of energy efficiency on indoor environmental quality and health.	
523	LEIVO, V.	D.1
	Health assessment aspect on energy efficiency renovations.	
527	TURUNEN, M.	D.2
	Development of an assessment protocol: the impact of energy retrofits on indoor environmental quality and public health in the existing building stock.	
544	DU, L.	D.1
	Methodology for optimization of energy efficiency, indoor climate and economy targets in municipal building projects.	
516	VINOKUROV, M.V.	D.1
	The effect of energy performance legislation on overheating of Dutch office buildings: exploratory study of field study data of the last 15 years.	
637	BEUKER, T.C.	D.1
	The feasibility of ventilation tower to enhance cross-ventilation performance in a detached house located in urban area.	
619	KAMIOKA, H.K.	D.1
	Indoor air quality vs. energy use in a beer brewery: assessment of ventilation methods and systems using CFD.	
608	HOOFF, T. VAN	D.1
	An analysis of integrated exterior shading and indoor lighting control from operation level.	
589	SUN, SUN J.T.	D.1
	Full scale test of office room with suspended chilled beam integrated with radiant panel in heating mode.	
454	MUSTAKALLIO, P.M.	D.1



WEDNESDAY

11:00 - 12:30

ZWARTE DOOS

Orals

SESSION 7

SLOAN

Levin, Hal

Building Ecology Research Group

Microbial sampling in building surveys: what and why are we sampling?

382 NUNEZ, M.N.

Microbial sampling in building surveys: how to choose a sampling method?

387 REPONEN, T.

Quantitative PCR in microbial assessments of indoor spaces.

518 TÄUBEL, M.

A perspective on leveraging new generation sequencing for bioaerosol assessments of the built environment: differences and commonalities of processing pipelines and databases.

604 HERNANDEZ, T.

A practical database approach for leveraging catalogues of fluorescent signatures for real-time bioaerosol assessments of the built environment.

603 BAUMGARTNER, D., HERNANDEZ, T.

WEDNESDAY

12:40 - 13:30

BLAUWE ZAAL

Orals

STUDIUM GENERALE

Healthy Buildings

BLUYSSSEN, PHILOMENA

**WEDNESDAY****13:30 - 15:00****BLAUWE ZAAL****Orals****SESSION 8****D.****Knudsen, Henrik****Danish Building Research
Institute, Aalborg University**

EP-OP method for cost-benefit analysis of improved indoor climate and reduced energy consumption in office buildings: case studies.

406 JURELIONIS, A.J. D.1

Effect of thermal environmental control in summer on energy consumption and sleep.

418 HONDA, E. D.2

Comparison of workplace environment and energy consumption in green building by improving operation during summer.

469 AOKI, G.A. D.2

Impact of sensor position in a room on the energy performance of space heating and cooling systems.

563 RÖSLER, M.R. D.1

House owners' experience and satisfaction with Danish low-energy houses.

631 KNUDSEN, H. D.1

WEDNESDAY	13:30 - 15:00	SENAATZSAAL
Orals	SESSION 8	F / E
Bartzis, Ioannis	University of Western Macedonia	
Carrer, Paolo	University of Milan	

Effects of exposure to carbon dioxide and human bioeffluents on human subjective responses.

403 **ZHANG, X.J., WARGOCKI, P.** **F.2**

Olfactometric determination of the odour detection threshold and the identification threshold of Naphthalene.

569 **LISOW, W., KÖHLER, M.K.** **F.**

Relationship between health symptoms and indoor air qualities of different age groups.

626 **BHATTACHARJEE, S., WACHTER, H.P.** **F.2**

An intervention study on indoor air pollution sources in modern office buildings: Results from the OFFICAIR Project.

623 **CARRER, P.** **F.1**

On the reduction of health effects from combined exposure to indoor air pollutants in modern offices: The OFFICAIR Project.

414 **BARTZIS, J.B.** **E.1**

Effect of partitioning furniture size on airborne infection risk in multi-bed ward.

452 **SUZUKI, M.S.** **E.2**



WORKSHOPS



MONDAY

15:45 - 17:15

AUDITORIUM 11

WORKSHOP 14

D.

Ventilative Cooling & Annex 62

The current trend in building energy efficiency towards nearly zero energy buildings creates a number of new challenges for building design and construction. One of the major challenges is the increased need for cooling in highly insulated and airtight buildings, which is not only required in summer and midseason periods, but can also be needed in winter, particularly in office buildings.

Ventilative cooling is the application of ventilation airflow to reduce the cooling loads in buildings. It utilizes the cooling and thermal perception potential of outdoor air.

Moderators:

Per Heiselberg, Aalborg University, Denmark

Marcel Schweiker, Karlsruhe Institute of Technology, Germany

Paper presentations:

(460) Residential ventilative cooling in national energy performance regulations: Properties and impact on energy consumption and overheating.

Ivan Pollet, Renson/Ghent University, Belgium.

(622) The impact of increased airflow rates on indoor temperatures of passive house in The Netherlands.

Rebeca Barbosa, CVUT Czech republic.

MONDAY

15:45 - 17:15

BLAUWE ZAAL

WORKSHOP 3

C.

IEQ and productivity, an Action Plan for Progress and Influence.

How should we plan to progress and translate the research to commercial influence and outcomes. Specific reference will be given to the much published World Green Building Council publication "Health, Wellbeing and Productivity in Offices: the Next Chapter for Green Building".

Moderators:

Vyt Garnys, CETEC, Australia

Pawel Wargocki, Technical University of Denmark, Denmark

Paper presentation:

(420) Indoor environmental quality and workers' productivity in electricity-saving offices...- through the experience of the great east japan earthquake in 2011.

Sayana Tsushima, Waseda University Japan.

TUESDAY**11:00 - 12:30****AUDITORIUM 11****WORKSHOP 15****E.**

Chemical pollutants and Health

Semi-volatile organic compounds (SVOCs) are of concern due to their established or suspected health effects and due to the widespread exposure through different environmental media and pathways

Moderators:

Corinne Mandin, CSTB, France

Ineke Thierauf, The Netherlands

Paper presentations:

(656) Nationwide Estimates of Semi-Volatile Organic Compounds Concentrations in settled dust and suspended particles in French Dwellings.

Corinne Mandin, CSTB, France.

(494) Neurotoxic semi volatile organic compounds in house settled dust: contamination and determinants. (Presenter: Gaelle Raffy, EHESP-School of Public Health, France)

Barbara Le Bot, Ehesp-School of public health, Rennes, Sorbonne Paris Cité, France.

TUESDAY**11:00 - 12:30****AUDITORIUM 12****WORKSHOP 2****D.**

Improving energy efficiency, IEQ and health

Within EU, Energy Performance of Buildings Directive (EPBD) is a major force aiming for reduction of energy consumption in the housing sector. Both new and existing buildings are targeted, promoting Nearly Zero-Energy Buildings (NZEB) and energy retrofits. The directive also aims to develop energy performance certificate (EPC) to become a real, active energy label of houses.

Moderators:

Ulla Haverinen-Shaughnessy, National Institute for Health and Welfare, Finland

Matthias Braubach, World Health Organization, Germany

Invited presentations:

Pawel Wargocki, Effective source control and ventilation strategies for better IEQ.

Ulla Haverinen-Shaughnessy, Finland: Insulate project and other research.

Linn Johnsen, European Commission Directorate General for Energy Efficiency, Brussels: EPBD recast and its effects on indoor environmental quality and health.

Matthias Braubach, Climate Change, housing, and health.

**TUESDAY****11:00 - 12:30****AUDITORIUM 10****WORKSHOP 8****F.**

Supporting biorhythm with the Circadian House concept

How should a residential house be designed, if the health and well-being of the inhabitants were the primary design criteria? Can the design of a building support the basic human circadian rhythm? Can the design promote a healthy and active lifestyle? How can we push towards sustainable and energy efficient constructions, without neglecting the health and well-being of the occupants?

Moderators:

Kartsen Duer, Danish Building Research Institute, Denmark
Koen Steemers, University of Cambridge, United Kingdom

Invited Presentations:

Koen Steemers, An Architect's understanding of how circadian principles can be applied in the design of houses.

Myriam Aries, Eindhoven University of Technology, Home design that bridges human behavior and needs with daylight

Fergus Nicol, Oxford Brooks University, The relation between thermal comfort, variability and contact to nature

TUESDAY**11:00 - 12:30****SENAATZAAAL****WORKSHOP 16****C.**

What is IEQ without acoustics?

Acoustics is an important issue in buildings. Research shows that poor acoustics ranks high in questionnaire. Good acoustics prevents irritation and provides good communication concentration. Acoustics is an essential part of healthy buildings

Moderators:

Carsten Svensson, Ecophon, Sweden
Ep Marinus, The Netherlands

Paper presentations:

(651) Psychoacoustic and people-centred approach.

Nigel Oseland, Workplace Unlimited, United Kingdom.

(652) Concrete core activation and suspended ceilings: designing for comfort, energy efficiency and good acoustics.

Martijn Vercammen, Peutz, The Netherlands: (Presenter: Guus Klamerek, Ecophon, The Netherlands)

(655) The challenge of meeting both acoustic and thermal comfort in 21st century school

Colin Campbell, Saint-Gobain Ecophon AB, Sweden. (Presenter: Guus Klamerek, Ecophon, The Netherlands).

TUESDAY**13:30 - 15:00****AUDITORIUM 11****WORKSHOP 4****E.**

Improving IAQ with air cleaners?

Air cleaning systems are a popular solution for reducing pollutant concentration in many indoor environments. Different air cleaning technologies are continuously being introduced to the market and their availability often precedes scientific information on their impact on indoor environments.

Moderators

Alireza Afshari, Aalborg University, Denmark

Marco Hofman, ISSO, The Netherlands

Paper/invited presentations

Jinhan Mo, Tsinghua University, China:

Evidence of health benefits of air cleaning by biomarkers in healthy adults

Alireza Afshari, Aalborg University, Denmark:

(547) Long Term Performance of Particulate Air-filter in an Office Environment

Stepán Lorencik, Eindhoven University of Technology, the Netherlands:

(539) Indoor Air Quality Improvement by Photocatalytic Oxidation

Jeffrey Siegel, University of Toronto, Canada:

Are we trading off energy and health with air cleaners?

TUESDAY**13:30 - 15:00****AUDITORIUM 12****WORKSHOP 5****D.**

Healthy and energy-efficient school buildings

Healthy and energy-efficient school buildings should combine a good indoor environment (light, acoustics, thermal comfort, air quality) with low energy use. When designing healthy and energy-efficient school buildings, conflicting choices arise from the different indoor environment quality (IEQ) factors and from indoor environment quality requirements and energy-efficiency. The co-operation in the design team, budget and planning also play a role.

Moderators:

Chrit Cox, Nelissen ingenieursbureau, the Netherlands

Marianne Stranger, VITO, Belgium

Paper presentations:

(468) Designing healthy and energy-efficient school buildings: coping with conflicting requirements.

Chrit Cox, Nelissen ingenieursbureau, the Netherlands.

(550) Improving school indoor air quality.

Marianne Stranger, VITO, Belgium.

(385) Indoor air quality in primary schools: preliminary results of the ARIA Project.

João Cavaleiro Rufo, INEGI, Portugal.



WEDNESDAY

11:00 - 12:30

AUDITORIUM 11

WORKSHOP 11

E.

Health effects of insulation materials and sealants.

This workshop will focus on health aspects of various insulation materials. The question will be addressed what steps stakeholders (science, industry, governments, consumers) can take to prevent health risks from insulation and building materials.

Moderators:

Rik Bogers, National Institute for Public Health and the Environment, The Netherlands
Miranda Mesman, National Institute for Public Health and the Environment, The Netherlands

Paper presentations:

(586) The optimisation of a new low volume air sampling method for the determination of flame retardants.

Boris Lazarov, VITO, Belgium.

(511) Laboratory tests of in situ methods of PCB extraction from contaminated building materials.

Marie Frederiksen, Danish Building Research Institute, Denmark.

WEDNESDAY

11:00 - 12:30

AUDITORIUM 12

WORKSHOP 6

B.

European IAQ standardization & EN 15251

EN15251 specifies how design criteria can be established and used for dimensioning of systems. The standard how to establish and the main parameters to be used as input for building energy calculation and long term evaluation of the indoor environment. Finally the standard identifies parameters to be used for monitoring and displaying of the indoor environment as recommended in the Energy Performance of Buildings Directive.

Moderators:

Jarek Kurnitski, Tallinn University of Technology, Estonia
Bjarne Olesen, Technical University of Denmark, Denmark

Paper/invited presentations:

Jaap Hogeling, ISSO, the Netherlands.

(602) Energy Conservation and Improved IAQ with Existing Ventilation Standards
Christopher Muller, Purafil, Inc., USA.

WEDNESDAY**11:00 - 12:30****AUDITORIUM 9****WORKSHOP 12****F.**

IEQ in housing for aging adults

Aged population is growing in most affluent societies of the western world, increasing in absolute and relative terms. This has a major impact on the delivery of health care, including acute and emergency services.

Moderators:

Helianthe Kort, Eindhoven University of Technology, The Netherlands

João Paulo Teixeira PhD, ISPUP-Porto University, Portugal

Papers/invited presentations:

Helianthe Kort, Eindhoven University of Technology, The Netherlands:

Teaser about IEQ and aging adults

(520) Visual discomfort measurements of healthcare professionals in nursing homes.

Emelieke Huisman, Hogeschool Utrecht, the Netherlands 0

(402) Elderly care centers indoor environments and health .

Ana Mendes, National Institute of Health Dr. Ricardo Jorge, Portugal ((Presenter:

JoãoTeixeira, ISPUP- Porto University, Portugal).

(645) A new and improved living environment for elderly with dementia.

Eline Vermeulen, BBA Binnenmilieu, the Netherlands.

WEDNESDAY**11:00 - 12:30****SENAATSZAAL****WORKSHOP 1****A.**

Healthy building with the Active House vision

Active House is a vision that aims for healthy buildings. The vision has the goal to improve the indoor climate and has developed specifications to help building owners to decide what levels to reach for in the performance of their building. But knowing what to aim for and how to do it is not enough. With what arguments can building owners or tenants invest in their building to make it into a healthy building? There has been research done for specific subjects within a better indoor environment that give positive results

Moderators:

Atto Harsta, Aldus Bouwinnovatie, the Netherlands

Kurt Emil Eriksen, Velux, Denmark

Paper presentation:

(492) Sleeping in an active house: the occupant's experience.

Jelle Laverge, Ghent University, Belgium.

**WEDNESDAY****13:30 - 15:00****AUDITORIUM 11****WORKSHOP 7****A.**

Indoor PM2,5 Measurement and evaluation

Fine particles in the indoor air are a major health concern. In a report published in the CAFÉ program in 2005 it is estimated 3.7 million years of life is lost annually inside the European Union due to particle pollution. This amount is equivalent to 348 000 premature deaths. The exposure to fine particles indoors can be significantly reduced by air cleaners and filtration of supply air.

Moderators

Piet Jacobs, TNO, The Netherlands

Jorma Säteri, Helsinki Metropolia University of Applied Sciences, Finland

Paper presentations:

(541) PM2.5 measurement protocol for offices.

Piet Jacobs, TNO, The Netherlands.

(574) Development of a new index for indoor PM2.5.

Jorma Säteri, Helsinki Metropolia University of Applied Sciences, Finland.

WEDNESDAY**13:30 - 15:00****AUDITORIUM 12****WORKSHOP 10****B.**

The future of IEQ sciences

IEQ sciences in Europe are becoming more and more energy and engineering. Engineers often forget about the people that spend their time indoors. Some of us sometimes wonder why we are still working on heating and ventilation if no one is paying attention to health, comfort and productivity. Not only in research, but also as a consultant. This discussion on the future of IEQ has been done quite often in restaurants, bars and other places where we usually meet after conference day is over. We think it's time to discuss this topic in a more serious environment.

Moderators:

Froukje van Dijken, BBA Binnenmilieu, The Netherlands

Barbara Kolarik, Danish Building Research Institute, Denmark

Paper presentations:

(390) Earth, Wind & Fire - Natural Air-conditioning.

Ben Bronsema, Bronconsult, the Netherlands.

(426) Monitoring and auditing of indoor air quality in European buildings: status and perspectives.

Eduardo Oliveira Fernandes, Porto University, Portugal.

WEDNESDAY**13:30 - 15:00****AUDITORIUM 4****WORKSHOP 9****B.**

IEQ related litigation increase

Within Europe the number of law suits related to indoor environmental quality and health & comfort is steadily growing. Traditionally IEQ problems were often solved without the involvement of lawyers and judges. But nowadays conflicts between end-users of buildings and their designers and developers all too often end up in court, with substantial financial damages involved.

Moderators:

Sue Roaf, Heriot-Watt University, United Kingdom
Atze Boerstra, BBA Binnenmilieu, The Netherlands

Paper presentations:

(653) Indoor environment quality: legislation and regulations implementation in the United Kingdom.

Paula Sassi, Oxford Brookes University, United Kingdom.

(654) IEQ Performance Gaps: Failure modes, litigation risks, and the need for quality.

Paul Touhy, University of Strathclyde, United Kingdom.

(649) Laws, regulations and their interpretation: The case of high indoor temperatures in Germany.

Runa Hellwig, National University of Singapore, Singapore.

WEDNESDAY**13:30 - 15:00****ZWARTE DOOS****WORKSHOP 13****(SLOAN SYMPOSIUM) E.**

Micro-organisms

The intent of the Sloan Symposium is to focus on the challenges practitioners face in using and interpreting molecular methods to characterize the indoor microbiome.

The Sloan Symposium begins with Pitkaranta's plenary lecture, followed by two technical sessions with invited presentations, then the proposed workshop. The technical session presentations will cover a range of topics to lay the ground work for applying the science to practice. The workshop, open to all conference attendees, will solicit input from the audience on the challenges practitioners face (or perceive to exist) for applying and interpreting the results of molecular methods to indoor microbiome studies.

Moderators:

Hal Levin, Building Research Group, Santa Cruz, California, USA.

Martin Täubel, National Institute for Health and Welfare, Finland.

Mark Hernandez, University of Colorado Boulder, USA.



PRACTICAL INFORMATION

Banking

ATMs can be found near the railway station and in the city center. There is one ATM at the campus. This is located in the MetaForum building (MF – link campus map).

Bulletin Board

Is located near the registration desk (main floor, close to the Blauwe Zaal and the Senaatszaal). Last-minute conference updates will be posted here. You can post general messages here as well.

Campus Maps

Maps of the Auditorium building and the Zwarte Doos building are provided in the program book. Digital versions of the campus map and information on getting to and around on the campus can be found on <https://www.tue.nl/en/university/about-the-university/accessibility-tue-campus/accessibility-route-and-map-tue-science-park/on-tue-science-park/>

Conference diner

If you have registered and paid for the conference diner, you should have received a ticket in your registration package. The conference diner will take place in the city center (Paradijslaan 2-8, Eindhoven; +31 40 23 66 196; <http://www.kazerne.com/en/>). You are requested to walk to the location yourself (5 min from the city centre; 15-20 min from the campus). You are welcome at 18:30 (don't forget your ticket).

Conference office

Registration desk / AUD 2.26, tel. +31 (0)40 247 4000, conferences@tue.nl.Conference

Conference Proceedings

Each registered participant will receive a USB stick with all conference papers presented. To reduce paper use, no hard copies are available.

Currency

The Netherlands is part of the many countries that use Euros.

Electricity

Electricity outlets in The Netherlands take type C and F type 220/240V plugs.

Emergency Medical and first aid

Please contact the Conference office if you have an emergency, medical or first aid need. The nearest hospital is less than 5 min by taxi/car. We have a volunteer available to help you in that case.

Emergency numbers

Police, fire and ambulance: 112

Language

The official language of the conference is English.

Lost and Found

Contact the conference office first: registration desk/ AUD 2.26, tel. +31 (0)40 247 4000, conferences@tue.nl.

Lunch

Daily lunch will be provided in the main hall and allows you to have a look at the posters and the sponsor presentation in the meantime. Please assure to wear your badge visible. We tried to provide for special requirements (clearly visible) as well, please ask the staff if you are uncertain. During the breaks of course coffee/tea and/or refreshments are served.

Mobile Phone

Please switch them off or have them in 'silent' mode while present at any of the sessions during the conference.

No smoking

Smoking is prohibited in all public buildings, restaurants and cafes, including the trains and railway stations.

Parking

The campus has parking spaces available for a fee. As the venue is located close to the railway station we advise you to use the public transport instead. Hotels generally are located at walking distance from the conference venue (15-20 min walk).



Refreshments

Refreshments (tea and coffee) are available for registered participants during the breaks.

Registration desk

The registration desk is open on Monday May 18th 12:00-18:00, Tuesday May 19th and Wednesday May 20th 8:00-14:00.

Social media

We plan to use Twitter during the conference.

Speaker's room

A speaker's room is available near the registration desk to upload your powerpoint file. However, we urge you to upload the presentation file before the start of the conference. This is obligatory for poster presentations (see the information provided to you by e-mail and the website). In case needed, you should upload your powerpoint file at least 4 hours before your presentation.

Time zone

Central European Time Zone + Daylight Savings Time (CEST; UTC+2 hours)

Tipping

Tipping generally is not expected in restaurants and cafes. Most commonly you would round up your bill. Of course if you experience good service you may tip more. For hotels tipping is not expected.

Transport options

The venue, the city center and the railway station all are located at walking distance. So within the city you most probably will not need any additional transportation. For travelling from Schiphol to Eindhoven the train normally will be your best option. Detailed information on buying train tickets is described in <http://www.amsterdamtips.com/tips/train-tickets-in-netherlands.php>. In your case most probably a Single-use ticket will be the best option. You need to go to a NS ticket machine with the blue sign and white NS logo across the top. Tickets can be bought with cash (coins), debit (Maestro) and credit cards (Mastercard/Visa). Direct trains from/to Schiphol to/from Eindhoven leave every half hour. This connection will take one-and-half hour and gives you a nice view on the Dutch country side! Single-way tickets costs around €20,-. More information can be found on <http://www.ns.nl/en/travellers/home>.

Umbrellas

Though we expect good weather we have prepared for rain and provide some umbrellas to switch between the conference room in the Zwarte Doos and the Auditorium. Please use these umbrellas but do not take them with you.

Visas

Please assure whether you, besides a valid passport, would need a visa to visit the Netherlands. Information can be found at: <http://www.government.nl/issues/visa-for-the-netherlands-and-the-caribbean-parts-of-the-kingdom/short-stay-visas-for-the-netherlands>. We provide invitation letters if required.

Weather

The Netherlands has a moderate marine climate. For May average daily maximum temperatures are around 17°C and minimum around 9°C. We aim for a nice spell during the period of the conference!

Wifi / Internet access

Wifi is available on the campus. They are currently changing the access procedure from an on paper provided code to SMS-sent access code. At the time of printing it was not yet clear when the change of procedure is foreseen. You will find latest information on the website.

Disclaimer

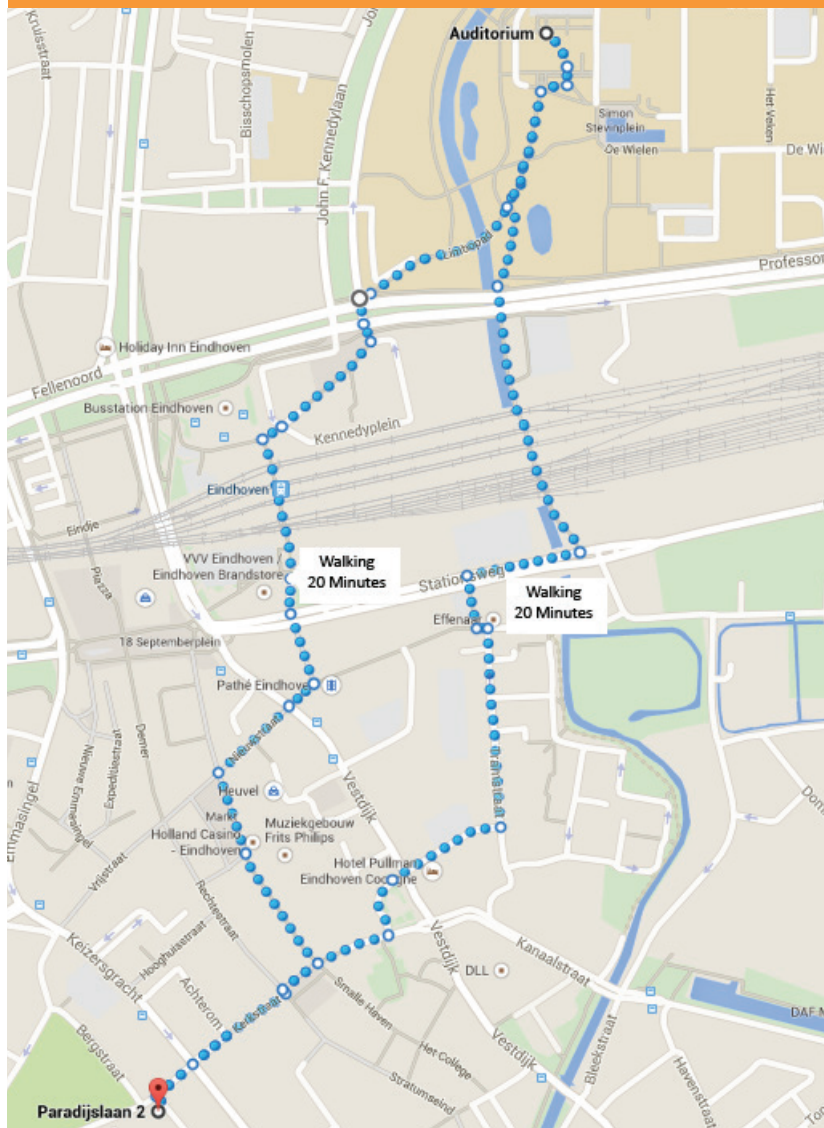
While we aim to ensure that all information provided is correct and the conference program will take as scheduled, the Organization reserves the right to make changes at any time if this is deemed necessary.

Liability

The Organization will not be liable for any personal accident and/or loss or damage to the property of participants during the Conference. Participants should make their own arrangements with respect to personal insurance.



MAP CONFERENCE DINNER



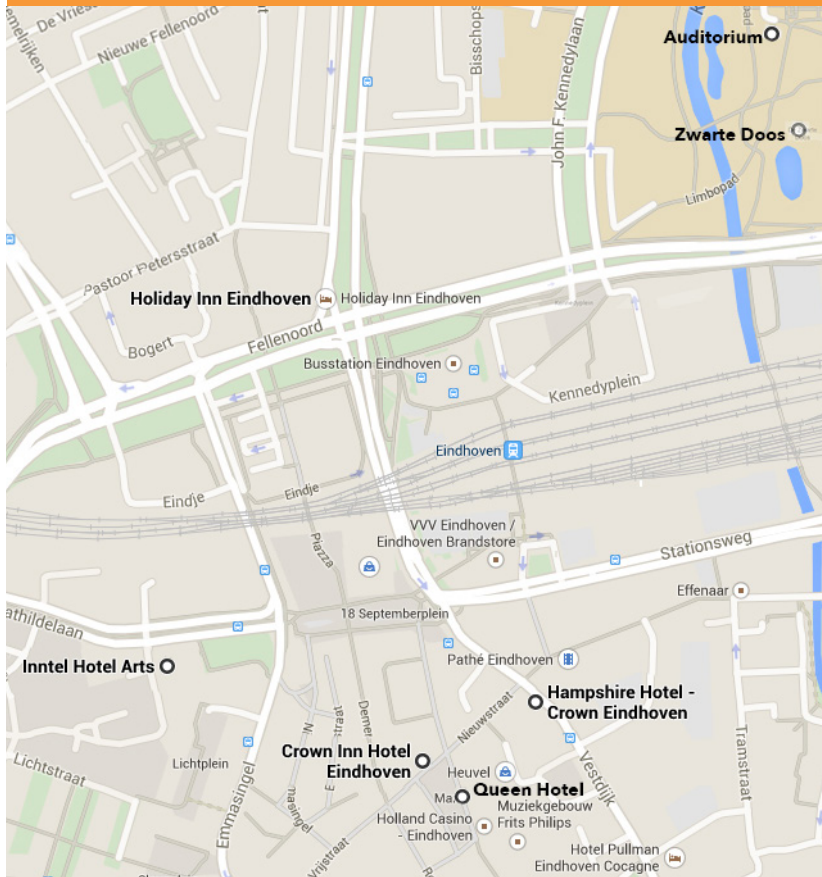
Restaurant "De Kazerne"

Paradijslaan 2-8

5611 KN Eindhoven

The Netherlands

MAP HOTELS



Holiday Inn

Hampshire Crown

Inntel Art Hotel Eindhoven

Crown Inn

Queen Hotel

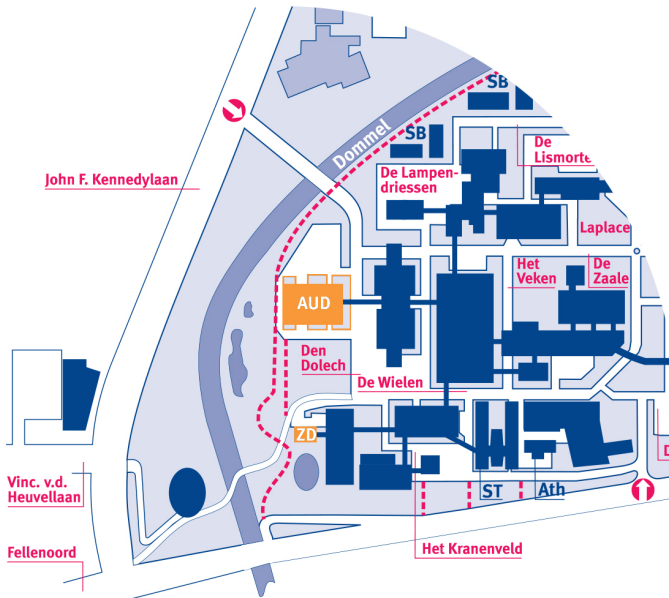
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Vestdijk 14-16

Mathildelaan 1

Markt 35

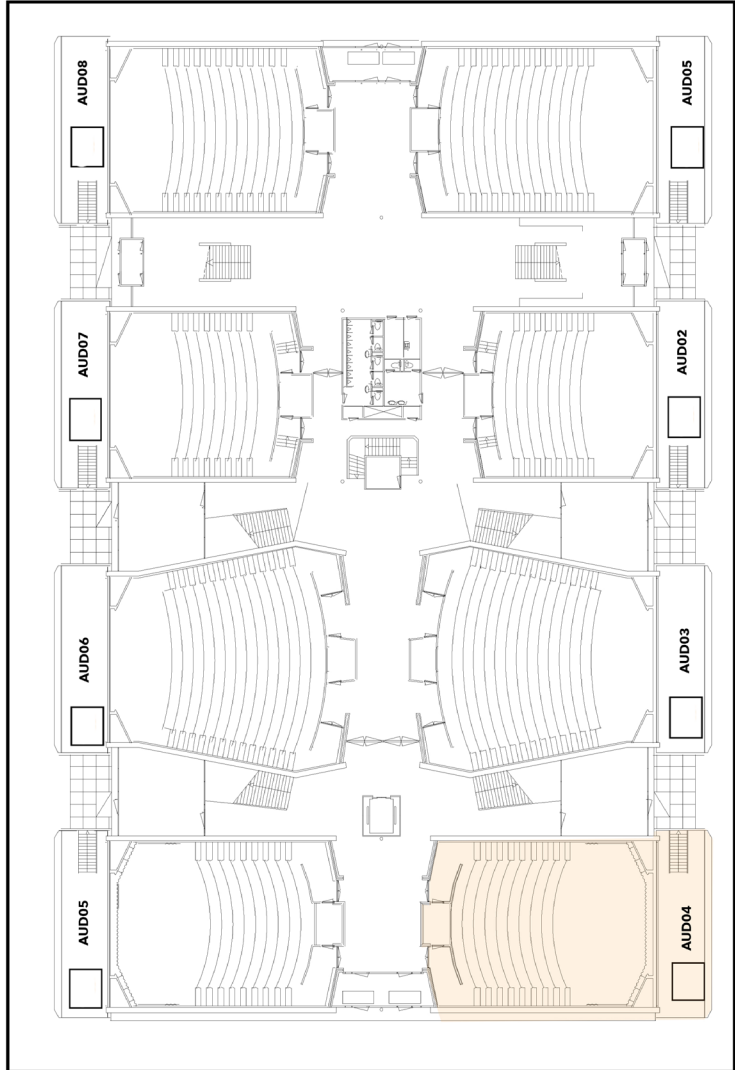
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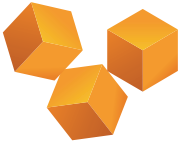




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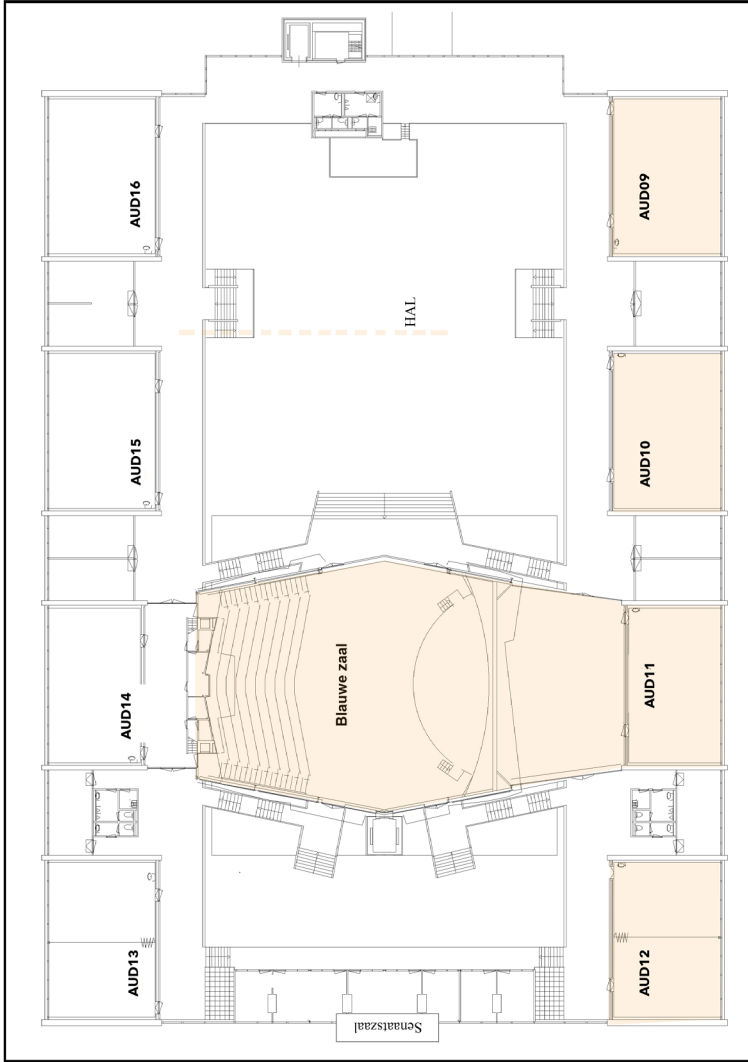
MAP AUDITORIUM NORTH SIDE (parking) LEVEL 0





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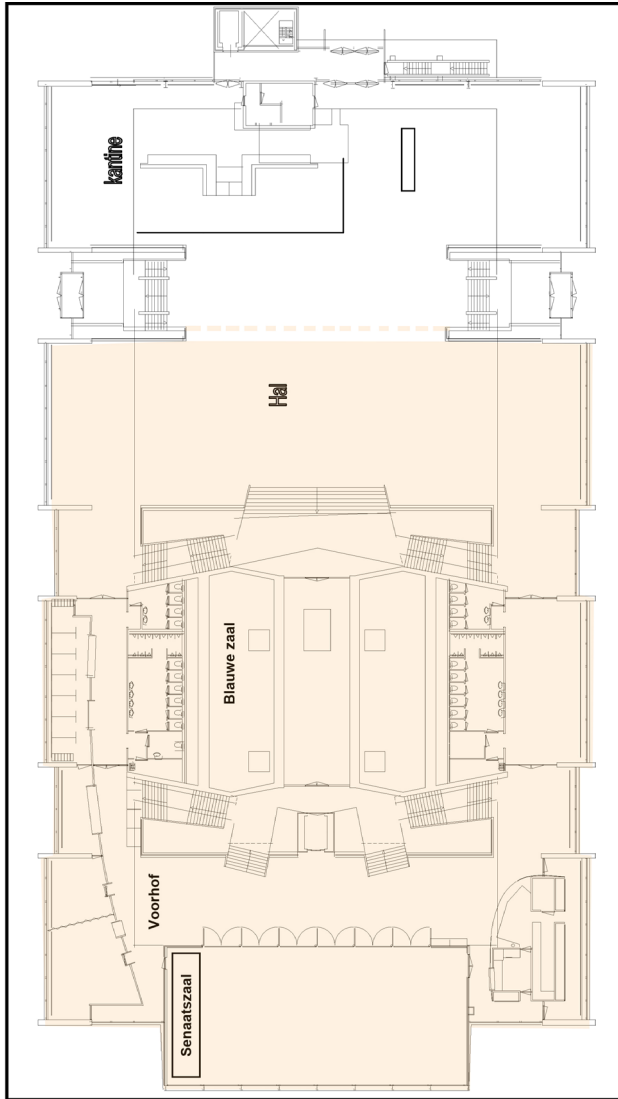
LEVEL 2



LEVEL 1

PARKING

MAP AUDITORIUM



An ISIAQ  HB conference