



Newsletter

Air Infiltration and Ventilation Centre



Foreword

The March 2023 issue of the AIVC newsletter is dedicated to sharing information on our past and future events, new publications and more!

Mark your agendas for the following upcoming major events:

- The [AIVC 2023 International Workshop](#) "Towards high quality, low-carbon ventilation in airtight buildings" on 18-19 May 2023 in Tokyo, Japan
- The [43rd AIVC Conference](#) "'Ventilation, IEQ and health in sustainable buildings'" on 4-5 October 2023 in Copenhagen, Denmark. Submit your abstracts by **March 20!**

Download and read our newly released Ventilation Information Papers:

- Trends in building and ductwork airtightness in the [Czech Republic](#)
- Trends in building and ductwork airtightness in [Belgium](#)
- Trends in building and ductwork airtightness in [Latvia](#)
- Trends in building and ductwork airtightness in [France](#)

We wish you a pleasant reading and look forward to seeing you in our future events. We would also like to encourage you to visit our [website](#), follow us on [twitter](#) and [LinkedIn](#) and subscribe to our monthly newspaper "[Energy Efficiency and Indoor Climate in Buildings](#)".

Arnold Janssens & Peter Wouters, Operating Agents, AIVC



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October 2023 – 43rd AIVC - 11th TightVent- 9th venticool conference in Copenhagen, Denmark

The 43rd AIVC conference "Ventilation, IEQ and health in sustainable buildings" will be held on 4 & 5 October 2023 in Copenhagen, Denmark together with the 11th TightVent conference and the 9th venticool conference. The conference will take place at Aalborg University Copenhagen.

The conference will consist of 3 parallel sessions largely devoted to:

- Smart ventilation, Indoor Air Quality (IAQ) and health
- Building and ductwork airtightness
- Ventilative cooling – Resilient cooling

The conference will consist of a mixture of presentations from the call for papers and presentations upon invitation, organized in well prepared and structured sessions focused on the conference theme and topics. Some sessions will consist of presentations from the call for papers only, other sessions will be topical sessions with presentations proposed by a session organizer and by the organizing committee. The conference is combined with an exhibition by industry partners.

The conference is an initiative from:

- the International Network on Ventilation and Energy Performance ([INIVE](#)) on behalf of the Air Infiltration and Ventilation Centre ([AIVC](#)), [TightVent Europe](#) (the Building and Ductwork Airtightness Platform), and [venticool](#) (the international platform for ventilative cooling); and
- [Aalborg University Copenhagen](#)

Abstract submission is still open. Authors should submit their abstracts by **March 20, 2023**.

Detailed information & other important deadlines for the call for abstracts can be found [here](#).

For further information and updates visit our [website](#).

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18-19 May 2023, AIVC Workshop, Tokyo, “Towards high quality, low-carbon ventilation in airtight buildings”

NILIM and BRI of Japan, together with the Air Infiltration and Ventilation Centre (AIVC) organise a workshop entitled “Towards high quality, low-carbon ventilation in airtight buildings” to be held on 18-19 May 2023 in Tokyo, Japan. The workshop will take place in at Bellesalle Mita Garden (3-5-19 Mita, Minato-ku, Tokyo/Tokyo Mita Garden Tower 2F (Room B+C).

The 2-day workshop provides the opportunity to Japanese researchers and engineers, as well as international experts visiting Japan, to present and discuss recent developments in relation to ventilation and airtightness. The workshop is organized in 5 thematic sessions.

In the opening session, a representative of the ministry in charge of Japanese policies toward zero carbon buildings in 2030 and 2050 will describe the latest concrete policy measures including energy efficiency. Latest evolutions in regulations and standards on energy performance and ventilation in Europe and the US are also presented.

In the session for IEA EBC Annexes (international collaborative R&D projects), which are relevant to ventilation, latest outputs from 1) technologies for gas-phase air cleaning (Annex 78), 2) side-by-side management methods of indoor air quality and energy efficiency (Annex 86) and 3) personalized environmental control system technologies (Annex 87) will be introduced.

Airtight building envelope is essential especially in order to avoid heat loss due to air leakages. In non-residential buildings, in addition to wind and stack effects, air pressure caused by HVAC systems may worsen the heat loss due to the air leakages. However, it seems that reality nor effective techniques for improving the airtightness in non-residential buildings has not yet been shared enough among building engineers and researchers. Some existing trials in Europe, North America and Japan and future perspectives for standardisation will be discussed in the airtightness session.

In the session on approaches to search for more energy efficient and reliable ventilation systems, the latest standards for testing heat recovery effectiveness in laboratories will be reviewed with test examples, in which key characteristics of products influential on the actual effectiveness have been demonstrated. Characteristics of the Japanese market of energy recovery ventilators and improvements in the latest products will be analyzed. Performance assessment of other energy efficient ventilation strategies and smart ventilation is also discussed.

In the session on the role of ventilation in infection control, a government proposal in July 2022 on effective ventilation to avoid infections by large aerosol and small floating aerosol diffusion will be reviewed with some actual infection case studies, and the characteristics of aerosol transmission route of respiratory pathogens and their mitigation strategies will be discussed by building physics researchers, who have been collaborating with medical experts in the committee dedicated to the Japanese infection control strategies. Other presentations discuss new developments in ventilation standards and regulations, and advances in measurement techniques.

Participation to the workshop is **free** but requires you to [register](#) for the event. Participation is possible in person or online.

For further information on registration, programme etc. please follow this [link](#).

Guidance to avoid health risk caused by energy saving measures in homes

Authors: *Wouter Borsboom, TNO and Carsten Rode, DTU, Jaap Hogeling, REHVA*

Due to extreme increases in energy prices in European countries (as well as other non-European countries), building users may be tempted to take energy saving measures because they can no longer pay their energy bills. This in turn may have adverse effects on the indoor air quality - especially in older and badly insulated homes. This article gives some elementary advice on what people should and shouldn't do in cold and temperate climates where indoor heating is normally needed in winter.

The point is that energy savings can be achieved, and adverse consequences avoided, if a few sensible recommendations for housekeeping are followed.

Do's and don'ts to reduce health risks and mould while saving energy:

- Keep the indoor temperature as homogenous as possible, with 15°C minimum and no more than 5°C difference between rooms in the same dwelling.
- Minimize sources of moisture and pollution in the indoor environment. Avoid drying laundry in living rooms, keep wet outdoor clothing out of the living rooms, use an extraction hood when cooking, and avoid using candle lights.
- Use continuous ventilation at all times.

Additionally, periodically air the rooms by opening windows and possibly doors to create a cross-flow draft for 5 minutes after events with high production of moisture or cooking. At the least, airing out the rooms should be done three times per day, as it refreshes the air without cooling the building significantly.

Alternatively, in buildings with balanced mechanical ventilation systems with heat recovery units, it is best to keep them running at least on the minimum required ventilation levels.

In buildings with exhaust only ventilation systems from the kitchen and the bathroom, keep them running whenever the rooms are polluted due to their intended use. It is important to take care that the relative humidity stays below 65%.

- Beware of dew formation on the inside of windows, as this is an indication of too high indoor humidity and/or too little ventilation.

Measure the indoor relative humidity and take measures to avoid lengthy time periods with relative humidity over 65%.

- As far as possible, exterior walls should be well-insulated and free of cold bridges. Avoid putting indoor furnishing such as clothing cabinets, heavy furniture and wall carpets up against exterior walls and corners, which may not be adequately insulated. This measure is done to avoid mould growth which is not visible on surfaces of walls, and inside walls.
- For the use of wood-burning stoves, a good



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supply of outdoor air is essential to make sure that enough outdoor air comes into the rooms to reduce airborne contaminants from the stove – even when it is cold.

For further explanations and reasoning behind the recommendations, click [HERE](#).

Summaries from the 42nd AIVC conference: "Ventilation Challenges in a Changing World" available

The AIVC – TightVent - venticool 2022 joint Conference "Ventilation Challenges in a Changing World", organized by the International Network on Ventilation and Energy Performance (INIVE) on behalf of the Air Infiltration and Ventilation Centre (AIVC), the Building and Ductwork Airtightness Platform (TightVent Europe), the international platform for resilient ventilative cooling (venticool) & the Dutch Organization for Applied Scientific Research (TNO), was held on 5-6 October in Rotterdam, the Netherlands. The event drew just over 140 participants - researchers, engineers & architects, policy makers or regulatory bodies, manufacturers & stakeholders and international organizations from 22 countries.

The programme included 3 parallel tracks of structured sessions with around 130 presentations covering the main conference topics namely: Smart Ventilation, Indoor Air Quality (IAQ) and Health; Building & Ductwork Airtightness; Ventilative cooling – Resilient cooling. A special session i.e., "90 seconds industry presentations" was also organized and devoted to the sponsors of the event.

The event has also been a major discussion place for on-going international projects such as, the IEA EBC annex 87 "Energy and Indoor Environmental Quality Performance of Personalized Environmental Control Systems", and the IEA EBC Annex 80 "Resilient Cooling of Buildings").

The **Smart Ventilation, Indoor Air Quality (IAQ) and Health** track at the AIVC 2022 conference consisted of 50 presentations organized in 9 sessions, 4 of which were topical sessions with a number of invited presentations:

- Post-pandemic building ventilation: what have we learned and what is next?
- Designing buildings ventilation to reduce the risk of airborne pathogens
- Towards "Smart Ventilation" in Mid-sized buildings
- Smart ventilation strategies for residences - practical applications

The **Airtightness** track at the AIVC 2022 conference consisted of 24 presentations organized in 4 sessions of which 2 were topical sessions with a number of invited presentations. Three main topics were discussed:

- What are the national regulations regarding building and ductwork airtightness?
- How to check the implementation? and
- What about the building airtightness durability over time?

The **Resilient Ventilative Cooling** track at the AIVC 2022 conference consisted of 30 presentations organized in 5 sessions, 3 of which were topical sessions with a number of invited presentations:

- Ventilative cooling & climate change
- Resilient cooling in a changing climate
- Ventilative & resilient cooling
- New IEA EBC Annex 87 on Personalized Environmental Control Systems (PECS)
- Ventilative cooling to reduce overheating in buildings in ventilation related standards and legislation in the context of well-being, sustainability and energy

The main topics covered by the speakers varied from resilience (future weather data development, assessment, design), over new technologies & control to legislation & standardization.

Download the resilient ventilative cooling track summary [here](#).

Download the airtightness track summary [here](#).

Podcast - Regulating Indoor Contaminants with Benjamin Jones

Benjamin Jones, Dr.Eng. (AIVC Board member), spoke with ASHRAE's Technical Editor Rebecca Matyasovski about a

proposed addendum to Standard 62.2 that considers harm as a basis of regulating contaminants in homes. He also talked about how this type of addenda could be used in other indoor spaces and by other organizations—and why you should always turn on your range hood.

The podcast is available [here](#).

AIVC's latest publications

The AIVC is pleased to announce the release of 4 new AIVC publications!

AIVC's Ventilation Information Paper no 45.3: Trends in building and ductwork airtightness in the Czech Republic (December 2022).

This paper summarizes current knowledge on trends in building and ductwork airtightness in the Czech Republic.

AIVC's Ventilation Information Paper no 45.4: Trends in building and ductwork airtightness in Belgium (January 2023).

This paper summarizes current knowledge on trends in building and ductwork airtightness in Belgium.

AIVC's Ventilation Information Paper no 45.4: Trends in building and ductwork airtightness in Belgium (January 2023).

This paper summarizes current knowledge on trends in building and ductwork airtightness in Belgium.

AIVC's Ventilation Information Paper no 45.6: Trends in building and ductwork airtightness in France (January 2023).

This paper summarizes current knowledge on trends in building and ductwork airtightness in France.

All documents are freely accessible [here](#).





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42nd AIVC Conference, 2022: Best paper, best poster & student competition awards

Paper, poster & student competition awards were given during the closing session of the joint 42nd AIVC – 10th TightVent – 8th venticool conference: “Ventilation Challenges in a Changing World” held in Rotterdam, the Netherlands on 5-6 October 2022.

The jury for the **best paper award**, consisting of Hilde Breesch (KU Leuven, BE), Benjamin Jones (UoN, UK), Valérie Leprince (Cerema, FR) & Andy Persily (NIST, USA) nominated the papers listed below:

- [Air Leakage Detection in Building Façades by Combining Lock-In Thermography with Blower Excitation](#), Benedikt Kölsch, et al. (German Aerospace Center (DLR), DE)
- [Urban microclimate impact on ventilation and thermal performance of multifamily residential buildings: two case studies in different climates and urban settings](#), Agnese Salvati (UPC, ES) & Maria Kolokotroni – Brunel Uni London, UK)
- [Real-life ventilation filter performance: final results of an in-depth study](#), Joris Van Herreweghe, et al. (Buildwise, BE)

The best paper award was then given to Joris Van Herreweghe (Buildwise, BE).

The jury for the **best poster award**, namely Jaap Hogeling (REHVA) & Pilar Linares (IETcc-CSIC, ES), awarded the poster “[Integration of Domestic Ventilation Systems with Vertical Axis Wind Turbine Ventilation Technology](#)”, Jirayut Sitthipuk (Edinburgh Napier University, Edinburgh).

The jury for the **student competition award**, awarding a paper based upon a bachelor or master’s thesis, were Wouter Borsboom (TNO, NL), Maria Kolokotroni (Brunel Uni, UK) & Iain Walker (LBNL, USA). They gave the award to Hanne Vanwynsberghe et al. (UGent, BE) for her paper: “[Evaluating thermal resilience to overheating in a Belgian apartment in shock scenarios](#)”.

More information is available [here](#).

Note: Cited papers are available on [AIVC’s AIRBASE](#)

AIVC • List of board members

Australia: Mat Santamouris, University of New South Wales • Riccardo Paolini, University of New South Wales

Belgium: Hilde Breesch, KU Leuven • Samuel Caillou, Buildwise

China: Guoqiang Zhang, Hunan University • Zhengtao Ai, Hunan University

Denmark: Bjarne Olesen, Technical University of Denmark • Alireza Afshari, Danish Building Research Institute, Aalborg University

France: Laure Mouradian, CETIAT • Gaëlle Guyot, CEREMA

Greece: Dimitris A. Charalambopoulos, ASHRAE Hellenic Chapter • Alkis Triantafyllopoulos, ASHRAE Hellenic Chapter

Italy: Lorenzo Pagliano, Politecnico di Milano

Ireland: James McGrath, National University of Ireland, Galway • Marie Coggins, NUI Galway

Japan: Takao Sawachi, Building Research Institute • Yoshihiko Akamine, NILIM

Netherlands: Wouter Borsboom, TNO

New Zealand: Manfred Plagmann, BRANZ • Yu Wang, BRANZ

Norway: Kari Thunshelle, SINTEF Byggeforsk

Republic of Korea: Yun Gyu Lee, Korea Institute of Construction Technology

Spain: Pilar Linares Alemparte, The Eduardo Torroja Institute for Construction Science - CSIC • Sonia García Ortega, The Eduardo Torroja Institute for Construction Science - CSIC

Sweden: Jan-Olof Dalenbäck, Chalmers University of Technology

UK: Benjamin Jones, University of Nottingham • Maria Kolokotroni, Brunel University London

USA: Andrew Persily, NIST • Iain Walker, LBNL

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AIVC board guests

Francis Allard • Willem de Gids • Laszlo Fulop • Zoltan Magyar • Max Sherman • Hiroshi Yoshino

Representatives of organisations

Takao Sawachi, IEA EBC, www.iea-ebc.org

Pawel Wargocki, IEA EBC Annex 78, <https://annex78.iea-ebc.org/>

Peter Holzer, IEA EBC Annex 80, <http://annex80.iea-ebc.org/>

Jelle Laverge, IEA EBC Annex86, <https://annex86.iea-ebc.org/>

Carsten Rode, IEA EBC Annex 86, <http://annex86.iea-ebc.org/>

Simon Jones, AIVC Industry Advisory Board Chair

Jaap Hogeling, REHVA, www.rehva.eu

Donald Weekes, IEQ-GA, <https://ieq-ga.net/>

Jan Hensen, IBPSA, www.ibpsa.org

Jianshun “Jensen” Zhang, IJIV, <https://www.tandfonline.com/loi/tjov20>