



Newsletter

Air Infiltration and Ventilation Centre

Foreword



The date of the 40th AIVC Conference, celebrating AIVC's 40 years of existence anniversary, is approaching very quickly. It is a major event, not to be missed, taking place on 15-16 October in Ghent, Belgium.

Next year (between the 14th & 16th September 2020), the AIVC annual conference, jointly organized with ASHRAE will take place in Athens, Greece. Submission of abstracts is due **December 9, 2019**.

This edition of AIVC news provides updates on IEA EBC Annex 68 "Indoor Air Quality Design and Control in Low Energy Residential Buildings", as well as information about the new Article 19a in the European Performance of Buildings Directive and related activities.

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".

Enjoy your reading.

Peter Wouters, Operating Agent AIVC



no 16

September 2019

15 -16 October 2019 – 40th AIVC - 8th TightVent & 6th venticool conference in Ghent, Belgium

The 40th AIVC Conference "From Energy crisis to sustainable indoor climate – 40 years of AIVC", will be held on 15 and 16 October 2019 at 'Het Pand', the congress centre of Ghent University in Ghent, Belgium. It will also be the 8th TightVent conference and the 6th venticool conference.

The overview programme is now available at:

<https://www.aivc2019conference.org/uploads/files/Programme%40Glance.pdf>

There will be a total of 13 topical sessions:

1. 40 years of AIVC
2. Bedroom ventilation, IAQ and sleep
3. Better implementation of ventilative cooling (cooling of buildings using outside air as main source) in national (building) standards, legislation and compliance tools
4. Controlling moisture for improved IAQ
5. EPBD 2018/844/EU Article 19a feasibility study on the "inspection of stand-alone ventilation systems"
6. Ventilation design and control in residences - current challenges, innovative solutions and case studies gathered by IEA-EBC Annex 68
7. EBC Annex 78 - Supplementing Ventilation with Gas-phase Air Cleaning, Implementation and Energy Implications
8. EBC Annex 80 - Resilient Cooling
9. Integrating uncertainties due to wind and stack effect in declared airtightness results
10. Model based control and concepts for ventilation systems
11. Performance-based assessment methods for ventilation systems
12. IEA EBC Annex 79: What information do we need for occupant-centric building design and operation?
13. When the EPR hits the fan, or...the killing of the fan energy

In this issue

Foreword

15 -16 October 2019, Ghent, Belgium: 40th AIVC - 8th TightVent & 6th venticool conference: "From Energy crisis to sustainable indoor climate – 40 years of AIVC"

14 -16 September 2020, Athens, Greece: 41st AIVC - ASHRAE IAQ joint conference: "IAQ 2020: Indoor Environmental Quality Performance Approaches Transitioning from IAQ to IEQ"

News from IEA EBC Annex 68 Indoor Air Quality Design and Control in Low Energy Residential Buildings

News from EPBD Article 19a feasibility study on the "inspection of stand-alone ventilation systems"

New release! AIVC Contributed Report 18: Ventilation and Indoor Air Quality in New California Homes with Gas Appliances and Mechanical Ventilation

List of AIVC board members



Air Infiltration and Ventilation Centre

Keynote presentations & speakers include:

- Building for People & Performance. Achieving Operational Excellence, *Darryl K. Boyce, ASHRAE President, USA*
- Facing the global overheating through mitigation and adaptation technologies - the role of ventilation, *Mattheos Santamouris, UNSW, Australia*
- Curieuzeneuzen: Monitoring air quality together with 20.000 citizens, *Sam de Craemer, University of Antwerp, Belgium*
- Industry views on the future of ventilation, *Yves Lambert, EVIA, Belgium*
- IAQ and energy performance GHG emission: how to translate to occupiers and landlords, *Frank Hovorka, REHVA President, France*
- Ventilative Cooling– Time for large scale implementation, *Per Heiselberg, Aalborg University, Denmark*
- Evolution of ventilation strategies in air-conditioned buildings in Singapore – IAQ and Energy perspectives, *Chandra Sekhar, National University of Singapore, Singapore*

To proceed with your on line registration please visit: <https://www.aivc.org/40th-aivc>

For further information visit us at: <https://www.aivc2019conference.org>

14 -16 September 2020 – 41st AIVC - ASHRAE IAQ joint conference in Athens, Greece

The conference "IAQ 2020: Indoor Environmental Quality Performance Approaches Transitioning from IAQ to IEQ", organized by ASHRAE and AIVC will take place September 14-16, 2020 in Athens, Greece. The conference will also be the 9th TightVent and 7th venticool conference.

Indoor Air Quality (IAQ) has been the core of ASHRAE'S IAQ series of conferences for the past 30 years. This conference will expand from Indoor Air Quality to Indoor Environmental Quality (IEQ). IEQ includes air quality, thermal comfort, acoustics, and illumination and their interactions. The particular focus of this conference is on performance approaches including the metrics, systems, sensors and norms necessary to implement them.

Conference topics

- Health and Well-being: Appropriate technical and operational definitions
- Performance Metrics: For all aspects of IEQ
- Interactions: Interactions between IEQ parameters
- Occupant Behavior: How behavior impacts IEQ and how IEQ impacts behavior - psychological dimensions of IEQ
- Smart Sensors and Big Data: Sensor properties, data management, cybersecurity, applications
- Smart Controls: Equipment properties, commissioning, equivalence
- Resilience and IEQ: Responding to climate change and disasters
- Ventilation: Mechanical, passive, natural and hybrid systems
- Air Tightness: Trends, methods and impacts
- Thermal Comfort: Dynamic approaches, health impacts and trends
- Policy and Standards: Trends, impacts, implications

Call for Abstracts & Papers

Authors have the option to submit either a conference paper or an extended abstract and to state their preference for either an oral or poster presentation. Authors are invited to submit a 300-word or less abstract on a conference topic by **December 9, 2019**.

Decisions on abstracts will be made by January 8, 2020. Authors of accepted abstracts will have until February 17, 2020 to submit their conference paper or extended abstract. A template will be provided for the paper and extended abstract. Peer review of the papers will be conducted by the Scientific Committee. Papers requiring revisions should be re-submitted through April 2020.

Deadlines

- Submission of abstract, **December 9, 2019**
- Notification of decision on abstract, February 12, 2020
- Submission of complete manuscript, April 17, 2020
- Final acceptance, June 12, 2020

Abstract Submission

To submit an abstract please follow this link: <https://www.conftool.org/IAQ2020/>

For more information, please visit: <https://www.ashrae.org/conferences/topical-conferences/indoor-environmental-quality-performance-approaches>

or contact meetings@ashrae.org.

News from IEA EBC Annex 68 Indoor Air Quality Design and Control in Low Energy Residential Buildings

Carsten Rode, DTU, Denmark

After activity since 2016, the IEA EBC Annex 68 project is now coming to an end. The project, which has had contributions from researchers from 39 institutions and companies from 15 countries, has been distributed in five subtasks.

Subtask 1 started out Defining the metrics for the project by elaborating on the questions: "Is exposure to pollutants lower in low-energy buildings compared to non-low-energy buildings?", "What are the target pollutants in low-energy residential buildings?", "How to quantify IAQ?", and "Can we aggregate IAQ and energy into one index?". The subtask concluded in a report, which was published in 2017 together with the AIVC as Contributed Report, CR 17.

Subtask 2 on Pollutant loads in residential buildings has collected data on properties for transport, retention and emission of chemical substances in new and recycled materials in residential buildings under various temperature, humidity and airflow conditions. Furthermore, methods have been developed for data processing to estimate pollutant loads in residential buildings similarly to how heating/cooling loads are routinely estimated. Subtask 3 on Modelling - review, gap analysis and categorization made a survey of contemporary modelling possibilities and elaborated on gaps of the capabilities. Reference cases for simulation were developed in the form of so-called Common Exercises, and new standards for quality assurance of modelling were developed. Finally, the subtask gave recommendations of a modelling framework with tool coupling and co-simulation.



Air Infiltration and Ventilation Centre

Subtask 4 on Strategies for design and control of buildings addressed optimal and practically applicable design and control strategies for high IAQ in energy efficient residential buildings. Standards, national building codes, and guidelines with respect to design of IAQ and ventilation in residences were reviewed, and a survey was carried out with interviews of relevant stakeholders with respect to current IAQ design practices. The subtask will contribute with a key outcome of the whole project in the form of an Annex 68 Guide for practitioners outlining challenges, innovative solutions and case studies on IAQ design and control in residences. The Guide will be published together with the AIVC.

Alongside, Subtask 5 has collected information on Field measurements and case studies covering measurements strategies, controlled experiments and a collection of case study reports.

The final reports from Subtasks 2, 3, 4 and 5 are expected to be published before mid-2020.

For more information, contact Operating Agent Prof. Carsten Rode, Technical University of Denmark, car@byg.dtu.dk.

News from EPBD Article 19a feasibility study on the "inspection of stand-alone ventilation systems"

P. Wouters, INIVE, Belgium & F. Durier, INIVE, France

The EPBD Directive 2018/844/EU, as adopted in 2018, contains a new article 19a, which requires the European Commission to assess the relevance and feasibility to introduce EU provisions for the inspection of stand-alone ventilation systems (as well as a similar study for a building renovation passport).

Directive 2018/844/EU, articles 14 and 15, already extended the requirements of Directive 2010/31/EU on inspection of heating and air-conditioning systems to the inspection of combined heating and ventilation systems, and combined air-conditioning and ventilation systems. The feasibility study foreseen under Article 19a intends to investigate the need for a possible

further extension of inspection to include also stand-alone ventilation systems, or other possible measures. In this study, stand-alone ventilation systems are defined as ventilation systems whose sole function is to ventilate a building.

The European Commission has tendered a technical study on this topic (December 2018 – December 2019) and this study is carried out by INIVE EEIG (In particular, its members BBRI and CETIAT for the inspection of ventilation systems and BPIE for the building renovation passport). Information of this study can be found on www.epbd19a.eu.

Results until now include: a first report with a review of regulations, guidelines and standards on the inspection of stand-alone ventilation systems; a second report on the stock of ventilation systems in EU buildings and foreseen evolution; the outcome of the first stakeholders meeting, held on June 24 2019. A report will be published very soon about the relevance, feasibility and possible scope of measures for the inspection of stand-alone ventilation systems.

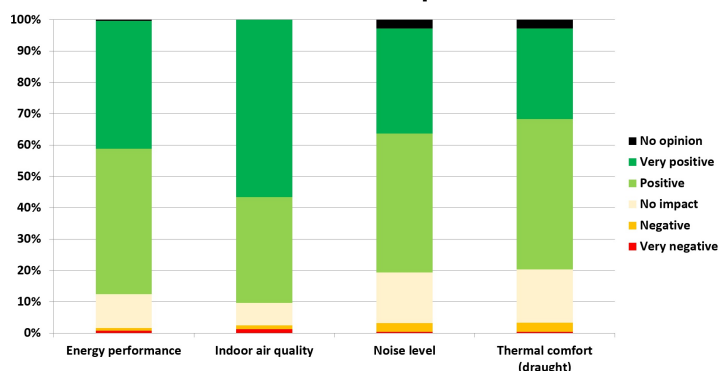
As part of this study, an on-line survey was

done in April with 245 respondents from 28 countries. The results were included in the presentations during the 1st stakeholders meeting on June 24. As an example of the results, figure 1 shows the opinions of the participants regarding the necessary improvements to be made. It is clear that the large majority is of the opinion that improvements are needed in terms of energy performance, indoor air quality, noise level and thermal comfort. With respect to the reasons for poor performances, figure 2 shows that there is a wide consensus of the fact that there is a wide range of possible reasons for such poor performances.

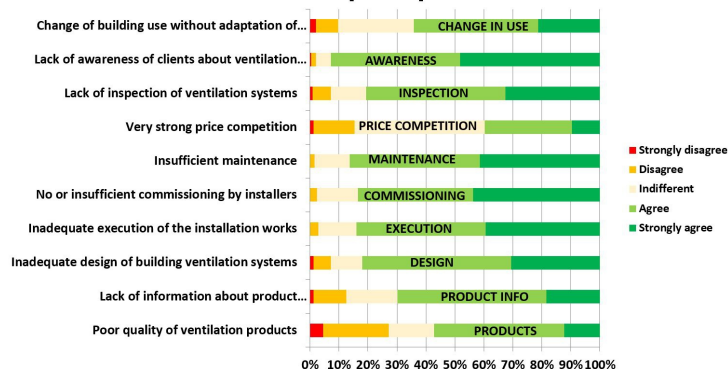
A 2nd stakeholders meeting is planned on November 28, 2019 in Brussels. Registration is free of charge.

If you want to be kept informed about the study, you can register your interest in the stakeholder engagement activities by sending an email to info@epbd19a.eu, indicating your full name, organisation, country, and topic of interest.

What should be improved?



Reasons for poor performance



EPBD 19a survey results in relation to the inspection of stand-alone ventilation systems



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New release! AIVC Contributed Report 18

We are pleased to announce the release of AIVC Contributed Report 18: Ventilation and Indoor Air Quality in New California Homes with Gas Appliances and Mechanical Ventilation!

Substantial energy is used to condition the air that enters California homes through leaks in the building envelope and ductwork - typically about a third of all heating and cooling. Reducing this through air sealing is essential to California achieving zero energy homes. However, this outdoor air also dilutes pollutants emitted inside homes and contributes to a healthy indoor environment and acceptable indoor air quality (IAQ). To address this IAQ issue, California's Title 24 Building Standards have required mechanical ventilation in new homes since 2008. This report presents a comprehensive study of the impacts of these requirements in recently constructed homes with natural gas appliances. The study included a survey about satisfaction and activities that impact IAQ; a field study of homes built to 2008 or later; and simulations assessing how various ventilation rates would impact chronic exposures to an indoor emitted pollutant as air tightness improves in California. The report focuses on the field study; the webbased survey and simulation elements are described in appendices.

The report is now available at:

<https://www.aivc.org/resource/cr18-ventilation-and-indoor-air-quality-new-california-homes-gas-appliances-and-mechanical>

AIVC • List of board members

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China: Guoqiang Zhang, Hunan University • Weijun Chen, Hunan Shinilion Energy Saving Sci. and Tech. Corp. Ltd

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France: François Durier, CETIAT • Nicolas Doré, ADEME

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

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

USA: Andrew Persily, NIST • Max Sherman, LBNL

Operating agent

INIVE EEIG, www.inive.org, info@aivc.org

Peter Wouters, operating agent • Maria Kapsalaki, consultant • Stéphane Degauquier

AIVC board guests

Francis Allard • Willem de Gids • Laszlo Fulop • Zoltan Magyar • Pawel Wargocki • Hiroshi Yoshino

Representatives of organisations

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

Jaap Hogeling, REHVA, www.rehva.eu

Jan Hensen, IBPSA, www.ibpsa.org

Ben Hughes, IJV, <https://www.tandfonline.com/loi/tjov20>

Carsten Rode, IEA EBC Annex 68, <http://www.iea-ebc-annex68.org/>

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