

# Newsletter



Air Infiltration and Ventilation Centre

## Foreword



With the aim to maximise its impact on the dissemination of information on research and development in the fields of ventilation and air infiltration, the Air Infiltration and Ventilation Centre (AIVC) continues to "spread the word", through the organisation of conferences or thematic workshops, the production of technical notes, the cooperation with well-established organisations, the convergence with other information channels and so on.

In particular, we are very happy to announce the release of a new AIVC technical note on "Ventilation and Health". AIVC is also working on the 2020 research agenda for ventilation and infiltration, which will be discussed at the CLIMA 2016 conference in a specific session. Note also that other specific AIVC projects (which are listed on the AIVC website) will be discussed at the CLIMA 2016 conference and at the annual AIVC conference, organised this year in cooperation with ASHRAE.

This issue gives a glance at the Centre's contribution to the communication of knowledge in the ventilation and air infiltration community, through its various information tools. Feel free to visit our website to find out more and mark your agenda for the following upcoming events:

> 12th REHVA World Congress- CLIMA 2016 Conference on May 22-25, 2016 in Aalborg, Denmark, with 3 specific sessions held with the support of AIVC

> 37th AIVC-ASHRAE- IAQ joint Conference on September 12-14, 2016 in Alexandria, VA, USA



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Peter Wouters, Operating Agent AIVC



## AIVC launches new Technical Note on residential ventilation and health

The new TN68 Residential Ventilation and Health is now available.

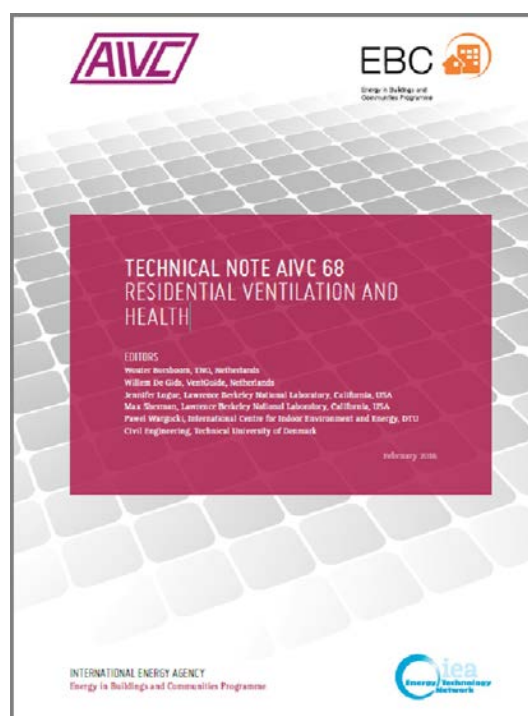
This Technical Note summarises studies that prioritise pollutants in the indoor environment and presents a summary of pollutants driving the health risks indoors and their sources. It also describes methods to reduce exposures of contaminants using different control strategies with a special emphasis on the role of ventilation.

TN68 is freely available for registered users to AIRBASE service. Click here to download the publication:

<http://www.aivc.org/resource/tn-68-residential-ventilation-and-health>

Conditions for on-line access to AIVC publications are explained at:

<http://www.aivc.org/how-to-subscribe>



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## Feedback from 2015 AIVC Madrid conference

Around 160 participants attended the joint 36th AIVC - 5th TightVent – 3rd venticool conference held in Madrid, Spain September 23-24, 2015. The event brought together experts from 27 countries and international organisations. The programme consisted of 3 parallel sessions with over 120 presentations covering topics from ventilative cooling and thermal comfort, ventilation in relation to IAQ and health, air infiltration through leaks in the building envelope and ductwork.

It has also been a major discussion place for on-going projects and initiatives such as the TightVent Europe ([www.tightvent.eu](http://www.tightvent.eu)) and venticool platforms ([www.venticool.eu](http://www.venticool.eu)), the Indoor Environmental Quality – Global Alliance ([www.ieq-ga.net](http://www.ieq-ga.net)), the QUALICheck project and platform ([www.qualicheck-platform.eu](http://www.qualicheck-platform.eu)), the IEA EBC annex 62 ([www.venticool.eu/annex-62-home/](http://www.venticool.eu/annex-62-home/)), the IEA EBC annex 68 ([www.iea-ebc.org/projects/ongoing-projects/ebc-annex-68/](http://www.iea-ebc.org/projects/ongoing-projects/ebc-annex-68/)) etc., based on presentations of results and perspectives as well as interactions with the audience.

The ventilative cooling track of the conference consisted of 5 sessions with 20 papers and one poster session with 15 papers. The article available here summarises the presentations and attempts to group them according to Technology Readiness Levels (TRL).

The airtightness track of the conference consisted of 5 sessions with 23 presentations. The article available here summarises the main trends and conclusions.

## 36th AIVC Conference, 2015: Best paper, best poster award

Paper and poster awards were given during the closing session of the joint 36th AIVC, 5th TightVent and 3rd venticool Conference held in Madrid, Spain on 23-24 September, 2015.

1. **Best paper award:** “Field trialling of a new airtightness tester in a range of UK homes” by Edward Cooper, Xiaofeng Zheng, Christopher Wood, Mark Gillot, David Tetlow, Saffa Riffat, Lia De Simon from University of Nottingham, UK

2. **Best poster award:** “Air change rate measurements using indoor/outdoor ratio of PM2.5” by Lingshan Li, Xiaofeng Li, Pok Lun Cheng from Tsinghua University, China

The full papers are available for download at:  
> [www.aivc.org/resource/field-trialling-new-airtightness-tester-range-uk-homes](http://www.aivc.org/resource/field-trialling-new-airtightness-tester-range-uk-homes)

and

> [www.aivc.org/resource/air-change-rate-measurements-using-indooroutdoor-ratio-pm25](http://www.aivc.org/resource/air-change-rate-measurements-using-indooroutdoor-ratio-pm25)



Best paper award, Edward Cooper et al. - 36th AIVC - 5th TightVent - 3rd venticool joint conference

## September 12-14, 2016: 37<sup>th</sup> AIVC – ASHRAE – IAQ joint conference Alexandria, VA, USA

The 2016 AIVC conference will be organised in collaboration with ASHRAE. It will be held in the Crowne Plaza hotel in Alexandria (10 km from Washington DC). The Conference title is “ASHRAE IAQ 2016 Conference – Defining Indoor Air Quality: Policy, Standards and Best Practices.”

This joint conference will provide a unique opportunity for dialogue among attendees to facilitate understanding of current indoor air quality policies, standards and best practices with themes such as regulatory vs. voluntary compliance for achieving Indoor Air Quality (IAQ), the role of IAQ in sustainable building programs and the relationship between IAQ and Indoor Environmental Quality (IEQ), etc.

The conference programme will include internationally acclaimed keynote speakers, original peer reviewed papers, the latest in indoor environmental quality control, plus workshops and panel discussion.

This conference will guide the researchers, experts, policy makers, building owners and operators, engineers, designers, IAQ professionals, commissioning agents, architects and other interested participants about what works and what really doesn't work when tackling major improvements in indoor air quality. Target facilities include residential and non-residential buildings. Please visit the conference website for more information.



Best poster award, Lingshan Li et al. - 36th AIVC - 5th TightVent - 3rd venticool joint conference



## Workshops at Clima conference

The joint CLIMA 2016 and the 12th REHVA Conference (<http://www.clima2016.org>) will be held in Aalborg, Denmark on 22-25 May 2016. Specific sessions dealing with ventilation & air infiltration, building & ductwork airtightness, ventilative cooling and quality & compliance are scheduled. The list below gives a brief overview of these workshops organised by the AIVC, the TightVent Europe & venticool platforms and the QUALICheck project.

### **WORKSHOP “2020 agenda for ventilation and air Infiltration: knowledge gaps, research priorities and the need for innovation”**

**Objective:** To look into the future needs concerning ventilation and air infiltration, including comfort and health and considering all building types and climates.

**Expected results:** An outline of a research agenda, considering the inputs from the audience.

### **WORKSHOP “Building and ductwork airtightness: what has changed in the past 5 years, what is likely to change in the next 5 years?”**

**Objective:** To discuss the major developments regarding building and ductwork airtightness in the past five years and the expected changes in the near future

**Expected results:** A report will summarise the key outcomes of the discussions, with particular attention to research needs and policy measures in the field of building and ductwork airtightness.

### **WORKSHOP “Perspectives for assessing ventilative cooling potential in Energy Performance regulations”**

**Objective:** To discuss the status, needs, and perspectives on developments to consider ventilative cooling in energy performance assessment methods.

**Expected results:** A short report will give the major outcomes of the discussions. The workshop is expected to identify ways to better account for ventilative cooling in energy

performance regulations.

### **WORKSHOP “How to improve the quality of the works and compliance of Energy Performance Certificates?”**

**Objective:** To address quality and compliance challenges for NZEB requirements.

**Expected results:** Enrich the results gathered within QUALICheck and to test the relevance of the approaches proposed by QUALICheck with audience. A short report will give the major outcomes of the discussions.

For more detailed information please visit the Clima website at:

<http://www.clima2016.org/workshops.aspx>

## ASHRAE funds projects on natural ventilation and airtightness

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has been awarding research in the field of natural ventilation as well as airtightness, among others. Specific on-going or completed projects are listed and briefly described below:

### **1. RTAR-1744**

**Project title:** “Guidelines for accurate CFD modeling of natural ventilation

**Sponsoring TC:** TC 4.10 (Indoor Environmental Modeling)

**Status:** On-going

**Description:** Addressing the conundrum of delivering good indoor air quality at minimum energy cost is currently a focus for ASHRAE. A possible solution is to use natural (or hybrid) ventilation which requires computer modeling at the design stage in order to ensure acceptable fresh air distribution and ventilation rates. This project would provide detailed guidelines on how to use computational fluid dynamics techniques for accurately modeling natural ventilation by developing a series of benchmark test cases not currently available.

### **2. RTAR-1748**

**Project title:** “Assess and implement natural and hybrid ventilation models in whole-building energy simulations (phase 2)”

**Sponsoring TC:** TC 4.7 (Energy Calculations)

**Co-Sponsoring TC:** TC 4.10 (Indoor Environmental Modeling)

**Status:** On-going

**Description:** Natural ventilation through operable windows is probably the oldest known method to cool a building. Hybrid ventilation refers to combining natural ventilation with mechanical cooling for better environmental control while lowering energy use. These two ventilation strategies clearly have a large potential for minimizing the need for mechanical cooling. However, engineers need reliable and easy-to-use modeling tools before they can incorporate such systems into their HVAC designs.

### **3. RP-1478**

**Project title:** “Measuring air-tightness of mid- and high-rise non-residential buildings”

**Sponsoring TC:** TC 4.3 (Ventilation Requirements and Infiltration)

**Status:** Project was completed in September 2014. Final report is available for free download to members.

**Description:** Despite the importance of building airtightness and its impact on IAQ, moisture, comfort, and energy use, there is little actual airtightness performance data available for mid- and high-rise buildings in the literature. 1478-RP, measuring Air-Tightness of Mid- and High-Rise Non-Residential Buildings, measured airtightness of 16 non-residential buildings between 4 and 14 stories tall in zones 2-7 of the IECC Climate Zone Map. A subset of these buildings meets the LEED requirements. Researchers created an airtightness testing protocol based on ASTM E779 and the U.S. Army Corps of Engineers Protocol, specifically for mid-rise commercial buildings, that can be used for other studies. The final report compares and details the results, examines and characterizes various leakages.



## BUILD UP: promote yourself

BUILD UP is the European portal for energy efficiency in buildings and has recently launched its new website. The current website offers improved navigation, a new layout and mobile-friendly design.

BUILD UP, an initiative of the European Commission, is a comprehensive database of information. It covers news, events, case studies, webinars, links to publications, and other resources on energy efficiency in buildings, including information on ventilation, airtightness and indoor climate.

BUILD UP has recently organised a live webcast on the latest findings of Concerted Action EPBD.

You can post your organisation's news, events, publications, case studies, and the like. To submit content, please create a profile.

You can find BUILD UP at [www.buildup.eu](http://www.buildup.eu) and on Twitter at @EU\_BUILDUP. You can contact BUILD UP at [pr@buildup.eu](mailto:pr@buildup.eu).

## BUILD UP



## AIVC • List of board members

Belgium: Arnold Janssens, University of Ghent • Jean Lebrun, University of Liege

Czech Republic: Miroslav Jicha, Brno University of Technology • Karel Kabele, Czech Technical University

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

Finland: Hannu Koskela, Finnish Institute of Occupational Health • Risto Kosonen, Aalto University

France: François Durier, CETIAT • Pierre Héran, ADEME

Germany: Hans Erhorn, Fraunhofer Institute for Building Physics • Heike Erhorn-Kluttig, Fraunhofer Institute for Building Physics

Greece: Mat Santamouris, NKUA University of Athens

Italy: Lorenzo Pagliano, Politecnico di Milano

Japan: Shigeki Nishizawa, Building Research Institute • Takao Sawachi, NILIM

Netherlands: Kees De Schipper, VLA • Wouter Borsboom, TNO

New Zealand: Manfred Plagmann, BRANZ

Norway: Peter Schild, SINTEF Byggforsk

Poland: Tomasz Mróz, Poznan University of Technology • Andrzej Górka, Poznan University of Technology

Republic of Korea: Yun Gyu Lee, Korea Institute of Construction Technology • Jae-Weon Jeong, Hanyang University

Spain: Pilar Linares Alemparte, The Eduardo Torroja Institute for Construction Science - CSIC • José Antonio Tenorio Ríos, The Eduardo Torroja Institute for Construction Science - CSIC

Sweden: Paula Wahlgren, Chalmers University of Technology

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

USA: Andrew Persily, NIST • Max Sherman, LBNL

### Operating agent

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Peter Wouters, operating agent • Rémi Carrié, senior consultant • Maria Kapsalaki, consultant • Samuel Caillou • Stéphane Degauquier

### AIVC board guests

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

### Representatives of organisations

Andreas Eckmanns, IEA EBC, [www.iea-ebc.org](http://www.iea-ebc.org)

Jaap Hogeling, REHVA, [www.rehva.eu](http://www.rehva.eu)

Jan Hensen, IBPSA, [www.ibpsa.org](http://www.ibpsa.org)

Martin Liddament, IJV, [www.ijvent.org.uk](http://www.ijvent.org.uk)

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