TightVent Europe
BUILDING AND DUCTWORK AIRTIGHTNESS PLATFORM

November 2017

Newsletter No 13

Foreword

Welcome to the November 2017 issue of the TightVent Europe newsletter. In the current edition, Professor Arnold Janssens presents the highlights of the airtightness track at the 38th AIVC-6th TightVent-4th venticool joint conference held in Nottingham, UK on 13-14 September, 2017. Further on, Dr. Sylvain Courtey gives an overview of the newly launched Eurovent certification programme for Ventilation Ducts.

As in previous editions, this issue provides detailed information on upcoming events in the field of ventilation & airtightness. A major TightVent event is the upcoming 39th AIVC-7th TightVent & 5th venticool joint conference: “Smart ventilation for buildings” in Juan-les-Pins, France on 18-19 September 2018, with a specific track largely devoted to ventilation and (building) airtightness. Moreover, the AIVC is organising a workshop on ventilation & airtightness which will take place on March 19-20, 2018 in Wellington, NZ.

Please visit our website, follow us on twitter and Linked In and subscribe to our monthly newspaper "Energy Efficiency and Indoor Climate in Buildings" to find out more about our activities.

We wish you a pleasant reading and look forward to seeing you in our future events (see our Events Calendar on page 4).

The TightVent team

18 -19 September 2018 - 39th AIVC & 7th TightVent conference in Juan-les-Pins, France

The 39th AIVC- 7th TightVent & 5th venticool conference "Smart ventilation for buildings" will be held on 18 and 19 September 2018 in Juan-les-Pins, France. The conference will consist of 3 parallel tracks largely devoted to:

- Smart ventilation, Indoor Air Quality (IAQ) and health relationships
- Ventilation and Airtightness
- Ventilative cooling – Resilient cooling

It will consist of a mixture of well prepared and structured sessions focused on the conference topics, presentations on invitation and presentations arising from the call for papers.

Specific topics of interest on ventilation and (building) airtightness include:

- Energy rating of ventilation product and systems
- Innovative ventilation concepts and combined systems
- Fan energy demand
- Heat recovery issues (freezing, natural ventilation)
- Risks related to building airtightness
- Durability of building and ductwork airtightness
- Energy and IAQ impact of envelope and ductwork leakage
- Field data and case studies
- Infiltration measurement techniques and IR thermography
- Compliance schemes and barriers to innovation
- Ventilation in renovated buildings

Important dates

- Deadline for abstract submission: March 1, 2018
- Notification of abstract acceptance: April 1, 2018
- Deadline for full paper submission: June 10, 2018

The conference is organised by:

- CETIAT, the French technical centre for the heating, ventilation and air conditioning industries
- ADEME, the French environment and energy management agency
- INIVE, the International Network on Ventilation and Energy Performance on behalf of the Air Infiltration and Ventilation Centre (AIVC), TightVent Europe and venticool (the international platform for ventilative cooling).

For more information please visit: http://aivc2018conference.org/

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Feedback from the 38th AIVC & 6th TightVent conference: Summary of the airtightness track

Arnold Janssens, Professor of Building Physics, Ghent University, Belgium

The airtightness track at the AIVC 2017 conference consisted of 23 presentations organised in 5 sessions of which 3 were topical sessions with a number of invited presentations. Most of the airtightness topics in the call for papers for the conference were represented in the papers in the airtightness track:

- Durability of building and ductwork airtightness
- Energy impact of envelope and ductwork leakage
- Field data and case studies
- Infiltration measurement techniques
- Design and construction approaches for airtight buildings

A topical session discussed methods to assess the durability of airtightness. The session covered field measurements, accelerated ageing in laboratory, seasonal variations and also exposure loads of the air barrier. Valérie Leprince [1] presented a comprehensive review of studies dealing with durability of building airtightness and proposed an experimental protocol for artificial ageing. Her paper won the conference best paper award. A study by the Belgian Building Research Institute quantified the effect of different types of ageing (wind load, temperature and humidity variations) on the airtightness of both masonry and wood frame walls using laboratory tests. This type of information is very relevant for building practice.

Another topical session discussed recent work to integrate uncertainties due to wind and stack in declared building airtightness results. Guidelines were presented to reduce the experimental error both in situations with low and high wind speeds (> 6 m/s). Christophe Delmotte presented the weighted line of organic correlation as a more appropriate technique to take into account uncertainties in measured air flow rates and pressure differences (e.g. at zero-flow), compared to the ordinary least squares regression technique.

Several presentations in other sessions were dealing with the development and analysis of building air leakage databases. Building airtightness testing is mandatory in the UK, France, Ireland and Denmark. Field measurement data are available in 6 European countries. Most of the time, databases are managed by testers' qualification bodies and contain mainly data of new residential buildings. The large volume of data are used to identify trends and analyse failure rates compared to regulatory requirements or design targets for indoor air quality or energy use, as a study by the Air Tightness Testing and Measurement Association in the UK explained. The development of a new database characterising the airtightness of the existing housing stock has been launched in Spain.

Ductwork airtightness was receiving less attention than building airtightness. Adeline Bailly [3] presented a ductwork airtightness measurement scheme and database developed in France. She discussed figures regarding main characteristics of the buildings and ventilation systems in which ductwork airtightness measurements were performed, showing increasing application of tests in residential buildings.

1. Leprince, V., B. Moujalled and A. Litvak. 2017. Durability of building airtightness, review and analysis of existing studies. Proceedings of the 38th AIVC Conference, Nottingham UK, 1-14.
2. Delmotte, C. 2017. Airtightness of Buildings – Considerations regarding the zero-flow pressure and the weighted line of organic correlation. Proceedings of the 38th AIVC Conference, Nottingham UK, 770-779
3. Bailly Mélois,A. and B. Moujalled. 2017. About 1,000 ductwork airtightness measurements performed in new French buildings: database creation and first analyses. Proceedings of the 38th AIVC Conference, Nottingham UK, 310-317.

Summing up of airtightness track at the 38th AIVC - 6th TightVent – 4th venticool joint conference

Best paper award, Valérie Leprince et al. 38th AIVC-6th TightVent – 4th venticool joint conference

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AIVC Workshop on airtightness & ventilation, 19-20 March 2018, Wellington, NZ

New Zealand homes and apartments have become more and more airtight and have reached a level of airtightness that requires dedicated ventilation. Despite the fact that there is no airtightness requirement in the New Zealand Building Code, new homes regularly reach an airtightness level of 2-3.5 ACH50. This can be a welcome trend as it allows controlled ventilation and therefore control of the energy demand of the building. Many newly built homes, however, experience excess moisture and mould problems in living areas and/or roof cavities, due to a combination of occupant behaviour and a lack of ventilation. The goals of a healthy home environment and energy efficiency can sometimes pull in opposite directions, requiring us to find a trade-off between health and energy saving. Do we need dedicated airtightness and ventilation targets in the Building Code to reach an optimal set point for ventilation related energy use and health outcomes? How can this be achieved?

The objective of this workshop is to discuss and identify ways to improve the quality of our homes with respect to airtightness and ventilation, as well as discussing the impact suboptimal performance has on energy consumption and health of the occupants. Also of interest are the impacts of mandatory airtightness targets and how best to implement these, if at all.

Specific topics include:

- Indoor air quality in schools and residential buildings
- Ventilation and its impact on energy and health outcomes for occupants
- Airtightness of New Zealand buildings - trends and requirements

The workshop discussions will be based on detailed presentations from international and national researchers. Interaction between participants will allow exchange of ideas and experiences.

This workshop will be held on March 19-20, 2018 at the Museum of New Zealand Te Papa Tongarewa. The title of the workshop is: “Towards Higher Performing Homes: The Role of Ventilation and Airtightness”.

For further information please visit: https://goo.gl/hJYaju

Eurovent certification programme for ventilation ducts

Dr. Sylvain Courtey, Managing Director, Eurovent Certita Certification

Eurovent Certita Certification is pleased to announce the launch of a new certification programme for Ventilation Ducts (DUCT).

The DUCT programme has been developed in 2015-2016 with the support of a dedicated launching committee.

The first release of the Operational Manual (OM) and Rating Standards (RS) apply to rigid and semi-rigid ventilation ductwork systems divided into the following sub-programmes:

- Rigid metallic ductwork systems with circular cross-section (DUCT-MC)
- Rigid metallic ductwork systems with rectangular cross-section (DUCT-MR)
- Semi-rigid non-metallic ductwork systems predominantly made of plastics (DUCT-P)

All ranges of products that fall into the relevant sub-programme scope and are promoted by the Applicant/Participant shall be certified. The “certify-all” principle applies not only to Europe but to all markets.

The certification programme is based on product performance testing by independent laboratories as well as manufacturing facility auditing. The product performance testing will enable the verification of the following ratings accuracy:

- Air tightness class (all sub-programmes)
- Positive and negative pressure limits (all sub-programmes)
- Dimensions (DUCT-MC and DUCT-MR)
- Minimum and maximum service temperatures (DUCT-P)
- Resistance to external pressure (DUCT-P)

Air leakage and strength testing shall be conducted in accordance with EN 12237:2003 (DUCT-MC and DUCT-P) or EN 1507:2006 (DUCT-MR).

For tests related to service temperatures and resistance to external pressure (DUCT-P) the method is described in the Rating Standard RS 2/C/004P-2016.

Manufacturers of ventilation ducts are invited to contact ECC at apply@eurovent-certification.com for any further information.

Publication of certified data is available at www.eurovent-certification.com

Eurovent Certita Certification *is a major European certification body in the field of HVAC-R, operating 38 certification programmes and generating about € 12 million in turnover. Eurovent Certita Certification provides voluntary third part certification services on the full range of HVAC-R products, whatever their final use, either in residential domestic buildings or in industrial facilities for instance. Eurovent Certita Certification is offering various certification schemes tailored to the needs of manufacturers and stakeholders on their specific markets. It focuses on certifying products’ performances as well as data needed to implement regulations. The main quality marks currently proposed are the marks “Eurovent certified performance”, NF, CSTBat, and the European Keymark. On a market ever more demanding in terms of energy performances and environmental challenges, Eurovent Certita Certification supplies certified data at a European level and provides the needed confidence.*

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Partners

Impact of Energy Policies on Building and Ductwork Airtightness

A new Ventilation Information Paper (VIP), has been released by the Air Infiltration and Ventilation Centre (AIVC), which analyses both the policy instruments used (regulatory requirements and incentives, specific programme requirements, quality frameworks for testers and builders) and the changes observed in practice in terms of building and ductwork airtightness over the past 5 years, using as reference mostly publications from AIVC and TightVent Europe led events.

The review begins with the motivations for improving building airtightness, including energy use impacts, building durability, indoor air quality (IAQ) impacts, and safety of occupants. Mandatory building airtightness testing has come gradually into force in the United Kingdom, France, Ireland and Denmark. It is also considered in many other European countries, either as regulatory or programme requirements, mostly because of the increasing weight of building leakage energy impact on the overall energy performance of low-energy buildings. Because of legal and financial issues due to wrong tests, several countries have developed qualification schemes for building airtightness testers and also airtightness databases that prove to be very useful for monitoring policies and building stock.

As for ductwork airtightness, this issue is rarely addressed despite significant energy savings and/or IAQ impacts associated. The feedback as well as energy and IAQ analyses of the recently introduced Effinergie requirements in France would be very helpful to make progress on this issue.

The paper is available at: http://aivc.org/resource/vip-37-impact-energy-policies-building-and-ductwork-airtightness

Events Calendar

- **September 18-19, 2018**: 39th AIVC –7th TightVent-5th venticool joint conference "Smart ventilation for buildings", Juan-les-Pins, France.
- **March 19-20, 2018**: AIVC Workshop "Towards higher-performing buildings: The role of airtightness and ventilation", Wellington, New Zealand.

Product news from our partners

Minneapolis BlowerDoor: The innovative DG-1000 pressure gauge

The DG-1000 convinces with its intuitive use, clear structure, and modern design. Its high-resolution touch screen and intelligent micro-processor provide you with the functions of a modern mini-computer. Users can install the latest firmware updates free of charge at any time. The DG-1000 comes equipped with an integrated WiFi module and the Software TECTITE Express 5.1 for measurements according to ISO 9972 and EN 13829. It is compatible with all presently existing BlowerDoor Measuring Systems and may also be purchased as an upgrade.

In combination with the Minneapolis FlowBlaster System the DG-1000 allows the precise measurement of the air flow at supply and exhaust air valves to test the function of ventilation and air-conditioning systems. Further information is available at: www.blowerdoor.com

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