TightVent Europe
BUILDING AND DUCTWORK AIRTIGHTNESS PLATFORM

November 2020

Newsletter No 19

Foreword

We hope this newsletter finds you healthy and well during these unprecedented times.

Despite the COVID-19 pandemic, TightVent continues to operate and adjust its communication, networking and awareness raising activities in the field of building & ductwork airtightness. As usually, this edition rounds up our latest work & achievements followed by our partners product news.

Please visit our website, follow us on twitter and LinkedIn 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!

The TightVent team

13 -15 September 2021 – 41st AIVC & 9th TightVent - ASHRAE IAQ joint conference in Athens, Greece

After careful consideration by the Steering Committee and from input by authors, ASHRAE and AIVC have decided to postpone the conference, which was initially scheduled for September 14-16, 2020 in Athens, Greece.

The conference "IAQ 2020: Indoor Environmental Quality Performance Approaches Transitioning from IAQ to IEQ", organized by ASHRAE and AIVC, is being postponed by one year to September 13-15, 2021 as a face-to-face conference 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.

The Steering Committee has decided to make environmental impacts of COVID19 a part of the conference (see the topics list). Because of the postponement, a new call for submissions has been opened. Already accepted abstracts and submitted papers will be kept valid for the new conference dates.

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; Role of ventilation and building airtightness in epidemic preparedness; Filtration and disinfection options to control COVID19; Face-covering impacts on indoor air quality; HVAC and IEQ in a post-COVID world

Call for new abstracts & papers: Submission of new abstract: **December 21, 2020**; Notification of decision of abstract: February 15, 2021; Submission of complete manuscript: April 19, 2021; Final paper acceptance: June 14, 2021

For more information, please visit https://www.ashrae.org/conferences/topical-conferences/indoor-environmental-quality-performance-approaches or contact hblauridson@ashrae.org.

In this issue

TightVent Europe
BUILDING AND DUCTWORK AIRTIGHTNESS PLATFORM

30 November 2020 - Webinar "Better Quantifying and Locating Building Leakages"

Air infiltration in buildings has multiple consequences on energy use and indoor environmental quality which depend on the location and distribution of leakages. Among others, pollutant infiltration and air draft are highly affected by leakage distribution. In current practice, leakage detection is frequently performed together with an airtightness test. Leakage detection methods allow to identify the locations of the leakages, but in most cases do not allow to quantify the amount of leakage corresponding to each identified leakage. This stresses the need for methods quantifying leakages through individual building components. In addition, such methods would help contractors to assess the quality of on-site execution, known to have a major impact on building airtightness.

The objective of this webinar is to discuss existing methods to measure the airtightness of individual buildings components.

This webinar is organised with the support of TightVent Europe (www.tightvent.eu) and the Air Infiltration and Ventilation Centre (www.aivc.org). Both initiatives are facilitated by INIVE (www.inive.org).

Presentations and Speakers:

- Building component performances as an answer for airtightness issues –existing quantification methods, Martin Prignon, UCLouvain, Belgium
- Uncertainty of effective leakage areas determination through reductive sealing technique, Vitor Cardoso, FEUP, Portugal
- Bias and precision errors in the measurement of building component airtightness with direct component test, Martin Prignon, UCLouvain, Belgium
- Comparison of airflow and acoustic measurements for evaluation of building air leakage paths in a laboratory test apparatus, Benedikt Kölsch, DLR, Germany

Participation to the webinar is **FREE** but requires you to REGISTER for the event.

For further information please download the flyer.

SAVE THE DATE - 19 January 2021 - Webinar "Improvements in building airtightness of the building stock"

TightVent Europe and the Air Infiltration and Ventilation Centre are organizing the webinar "Improvements in building airtightness of the building stock - Analysis of European databases" to be held on Tuesday January 19th, 2021 at 10:00-11:15 CET.

Foreseen speakers: Barry Cope (ATTMA, UK), Maarten de Strycker (BCCA, BE), Adeline Melois (Cerema, France) & Irene Poza Casado (University of Valladolid, ES).

More information on registration & detailed agenda will follow soon so stay tuned!

TAAC news

The TightVent Airtightness Association Committee (TAAC) continues to meet 4 times per year, but its originally planned physical meeting in September 2020 was held remotely due to the COVID-19 pandemic.

The objectives of TAAC is to compare and share knowledge on:

- building airtightness competent testers schemes and building airtightness test protocols;
- inspection of ventilation systems; and
- ductwork airtightness tests.

The September 2020 TAAC meeting focused mostly on "news from participants' countries". Discussions involved:

- the airtightness level required in the new Spanish regulation
- the upcoming French regulation RE2020 that will require an inspection of ventilation systems at commissioning
- the use of q50 instead of n50 in the new Czech regulation
- the new EP-regulation in Germany.

TAAC meetings are also an occasion to present on-going research, e.g. during the September meeting, Jaanus Hallik (Tallin University, Estonia) presented his work on "Air Leakage of Joints Filled with Polyurethane Foam".

The TAAC meeting in June was dedicated to ductwork airtightness. Valérie Leprince (PLEIAQ, France) presented AIVC's Ventilation Paper 40: Ductwork airtightness - A review, Lars-Åke Mattsson (Lindab, Sweden) talked about future ISO standard projects and Mark Modera (WCEC/UC DAVIS, US) gave a presentation of MEMs sensors.

In the context of TAAC, the TightVent webinar: "Improvements in building airtightness of the building stock - Analysis of European databases" is foreseen to be held on January 19th, 2021 with presentations from Spain, Belgium, UK and France. Please mark this date in your calendars.

In case you are interested to obtain further information and/or join us, please visit our website at: https://tightvent.eu/taac or send us an email at info@tightvent.eu.

TightVent Europe
BUILDING AND DUCTWORK AIRTIGHTNESS PLATFORM

Building airtightness tests in high-rise buildings

Valérie Leprince, INIVE

For an ideal building airtightness test, the pressure difference between the inside and outside should be constant over time and uniform along the entire building envelope, so that all leakages are equally considered and the test results do not depend on the test conditions.

Because of the stack effect and possibly also the pressure loss through stairwells, in high-rise buildings it is usually not possible to have a uniform pressure difference along the building's envelope. The wind is also a major obstacle to this, as it is usually unsteady, and it creates over-pressure on the external windward façades and under-pressure on the external leeward façades.

In high-rise buildings it is sometimes impossible to fulfil the ISO 9972 criteria for the zero-flow pressure difference (below 5 Pa).

The Belgian Construction Certification Association (BCCA) developed a new note to give some advice to perform tests in high-rise buildings. It will soon be released at: https://www.bcca.be/en

It proposes three new criteria when the limit of 5 Pa for the zero-flow pressure cannot be met:

- The standard deviation of the zero-flow pressure measurements should be less than 5 Pa
- The tests should be performed in pressurization and depressurization and their results averaged
- It should be checked that the entire building is pressurized/depressurized with a margin of 10 Pa ensured by a first pressure point Pi,0 such that: |Pi,0 | > max (|P0,ground| ; |P0,top|) + 10 Pa

Other practical advices include:

- Limiting the temperature difference by carrying the test in mid-season, closing shutters and performing massive ventilation before the test
- Ensuring a good pressure homogeneity within the building, with a good location of the fan and by checking the pressure loss through stairwell and circulations.

Evolution of ductwork airtightness classes in Europe

Valérie Leprince, INIVE

Ductwork airtightness levels in Europe were defined by 4 airtightness classes, A, B, C & D. Class A was the leakiest one, class B was 3 times tighter than A, class C was 9 times tighter than A, and class D 27 times tighter than A. There were three issues with this classification:

- The first class "A" was not "leaky enough"; the French ductwork airtightness database has shown that 1/3 of on-site tested ductwork didn't even reach class A.
- The names of classes A, B, C, D were not intuitive: usually "A" is better than "D"
- Class D was not tight enough for certain products.

In 2017, a new classification for duct system airtightness was defined in the standard EN 16798-3: 2017: "Energy performance of buildings - Ventilation for buildings - Part 3: For non-residential buildings - Performance requirements for ventilation and room-conditioning systems" (replacing EN 13779:2007: " Ventilation for non-residential buildings - Performance requirements for ventilation and room-conditioning systems"). Since then, revised ductwork products standards refer to this new classification.

This new classification includes:

- a class ATC 1 which is 3 times tighter than class D/ATC 2 for extremely tight products
- a class ATC 6 which is 2.5 times leakier than class A/ ATC 6
- and a category ATC 7 for unclassified ductwork.

These airtightness classes can be used to classify ductwork components or systems in laboratory or ductwork installed on-site. As the implementation of the ductwork has a major impact on the airtightness, using a classified airtight system is not sufficient to guaranty that the installed system is airtight. As stated in EN 16798-3, the leakage class of the installed ductwork shall be verified through a test performed according to EN 12599.

Table 1: Classification of system airtightness class (Source: EN 16798-3: 2017: "Energy performance of buildings - Ventilation for buildings - Part 3: For non-residential buildings - Performance requirements for ventilation and room-conditioning systems")

Air tightness class		Air leakage limit (f_{max})
Old	New	$m^3\ s^{-1} \cdot m^{-2}$
	ATC 7	not classified
	ATC 6	$0{,}067\ 5 \times p_t^{0,65} \times 10^{-3}$
A	ATC 5	$0{,}027 \times p_t^{0,65} \times 10^{-3}$
B	ATC 4	$0{,}009 \times p_t^{0,65} \times 10^{-3}$
C	ATC 3	$0{,}003 \times p_t^{0,65} \times 10^{-3}$
D	ATC 2	$0{,}001 \times p_t^{0,65} \times 10^{-3}$
	ATC 1	$0{,}000\ 33 \times p_t^{0,65} \times 10^{-3}$

NOTE If no leakage is measured the default value for calculation will be $0{,}067\ 5 \times p_t^{0,65} \times 10^{-3}$.

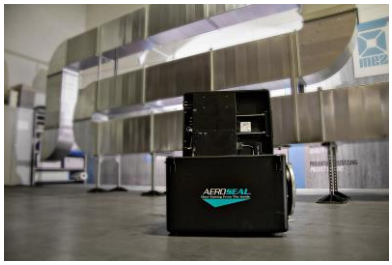
TightVent Europe

BUILDING AND DUCTWORK AIRTIGHTNESS PLATFORM

Partners

Product news as provided by our partners

MEZ-AEROSEAL – Development



The experience from more than 400 successful sealing projects in new buildings or retrofits throughout Europe has been incorporated into the further development of the AEROSEAL machines. The new generation of the machine features technical innovations as well as various adaptations of the AEROSEAL software. The integrated wand ensures a simplified handling and a lower maintenance effort. In addition, the adapted nozzle set up with improved compressed air and sealant pipes provides increased user-friendliness and optimized maintenance. Apart from the new machine generation, we have recently expanded our AEROSEAL business unit with two new employees for technical support and business development.

Get in touch with our experts and learn more about AEROSEAL: https://bit.ly/3oCCObu.

Introducing: Metric Online Training & Certification for Blower Door & Duct Testing

Retrotec's Blower Door & Duct Testing Online Training Courses are an industry staple. Now, Retrotec has re-released these courses tailored for Metric System users. Learn the principles of blower door testing or duct leakage testing including how to set up, operate, and troubleshoot your equipment. Upon successful course completion, technicians will receive Retrotec's "Manufacturer's Certificate" which qualifies them to operate a Retrotec residential blower door testing system or duct testing system.

Visit www.retrotec.com or contact us at salesEU@retrotec.com or +31 (0) 522 282941 for more information.

Passive House certified airtight sealing with Soudatight liquid membranes

Building airtight is important, but it's not easy. It depends both on the design of the building as on the craftmanship of the installer. We've got little influence on the first, so let's make it easy for the second. No more hazzle with carefully folding tapes around the corners of a window and its anchors or keeping stock of multiple versions and widths of these tapes. The Soudatight liquid membrane forms a completely jointless and elastic membrane that perfectly follows the shape of the surface to guarantee an excellent airtightness. Not only around windows, but for the entire building envelope. Recently the Passive House Institute certified both Soudatight LQ and Soudatight SP as official Passive House airtightness components of the highest class, phA.

More information? Visit www.soudalairtight.com.

Determination of Radon Concentration in Buildings

Not only air, but also the radioactive radon can penetrate rooms through leakages in the building envelope and accumulate there if ventilation is poor. Because increased radon concentration is the second most common cause of lung cancer, the EU has set a uniform reference value for the limitation of radon. So far, solid values could only be obtained with long-term measurements of 3 - 12 months. A reliable new method for the short-term inspection came with the Rn50 test. Therefor a BlowerDoor system is used to generate negative pressure in the part of the building to be examined and a constant radon concentration is determined via the supply air of the measuring fan with a suitable radon measuring device.

More information: info@blowerdoor.com

DIAMOND PARTNERS

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Learn more about TightVent founding partners and new partners.