

Foreword

Welcome to the May 2022 issue of the TightVent Europe newsletter!

In this edition we present some of the highlights of the 41st AIVC /ASHRAE IAQ – 9th TightVent – 7th venticool joint conference, held on 4-6 May 2022 in Athens (i.e., a summary of the topical sessions on airtightness).

Moreover, you will be informed on our past and upcoming events and more specifically the 42nd AIVC– 10th TightVent – 8th venticool joint conference to be held on 5 - 6 October 2022 in Rotterdam. The newsletter also includes news from the TightVent Airtightness Association Committee (TAAC) and product news from our partners, among others.

Finally, we would like to invite you all for an online meeting on Friday June 10, 2022 [14:00-15:30 CET] to discuss the major outcomes of TightVent Europe since its launch in 2011, and future challenges.

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

5 -6 October 2022 –10th TightVent- 42nd AIVC - 8th venticool conference in Rotterdam, Netherlands

The 10th TightVent conference: "Ventilation Challenges in a Changing World" will be held in Rotterdam, the Netherlands together with the 42nd AIVC and the 8th venticool conferences on October 5-6, 2022.

More than ever in the past, climate change and the transition to carbon neutrality are at the centre of many countries' policies and research programs. The building sector plays a crucial role in achieving these goals, considering the carbon emissions attributed to buildings' construction and operation, and its potential for better energy performance. At the same time the COVID-19 crisis has emphasized the need to improve indoor air quality (IAQ) and ventilation in our buildings to reduce the risks of airborne virus transmission. All these challenges require a transformation of the existing building stock that at the same time achieves better IAQ and lowers environmental impact.

In 2022 the Air Infiltration and Ventilation Centre organizes its first international conference since the beginning of the COVID-19 crisis. Therefore, the conference organizers want to pay specific attention to the role of ventilation and infiltration in building decarbonization, and improvement of indoor air quality including epidemic preparedness. How can design, construction and renovation practices, innovative and digital technologies help in today's challenges?

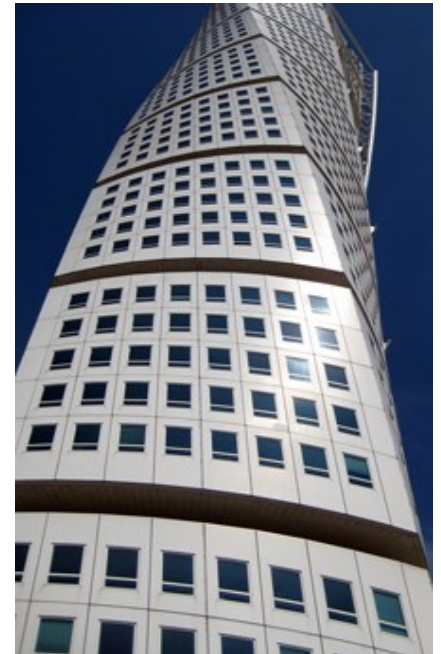
The conference will consist of 3 parallel sessions largely devoted to:

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

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

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 TNO.

For more information, please visit the conference website at:
<https://aivc2022conference.org/>.



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Feedback from the 41st AIVC – ASHRAE IAQ joint Conference – Summary of the topical sessions on airtightness

The 41st AIVC – ASHRAE IAQ joint Conference, co-organized by ASHRAE & AIVC, was held on 4-6 May 2022 in Athens. The event drew around 180 participants – academic researchers, engineering and consulting firms, industry representatives, people involved in standardisation, policy makers, manufacturers & stakeholders and international organizations.

During the event, two topical sessions dedicated to building and ductwork airtightness were organized.

The session “**Impact of Building and Ductwork Airtightness on Indoor Environmental Quality (IEQ): What Do We Know, What Do We Need?**”, aimed at discussing the impact of building and ductwork airtightness on IEQ. The objective of this session was to discuss the research needed in the field of building and ductwork airtightness and have a better view on their impact IEQ.

The first part of this session focused on ductwork airtightness. After a brief introduction by Valérie Leprince (INIVE) stressing the need for studies on this topic, Paul Francisco (University of Illinois and Colorado, USA) presented a study focusing on radon showing that the ratio of first floor-to-foundation radon levels rises as outdoor temperatures decrease. This implies greater mixing as the forced-air system runtime increases, which could only be due to some combination of duct and house leakage. Mark Modera (UC Davis, USA) then described how duct leakage can impact IEQ in different situations. These impacts range from direct pollutant entry through return duct leakage in single family residences, to impacts of supply duct leakage on building pressures, to zone-exhaust flow reductions due to

duct leakage.

The second part of the session focused on building airtightness. After a brief introduction by Iain Walker (LBNL, USA), Gaëlle Guyot (Cerema, France) discussed the impact of multizone air leakage on ventilation performance and indoor air quality in low-energy homes. It concluded that it is relevant to use detailed data on envelope and internal partition wall air leakage distribution to precisely assess ventilation performance on Indoor Air Quality (IAQ). Mark Modera (UC Davis, USA) completed the session with a presentation on the impacts of leakage on inter-apartment pollutant transport.

The session “**Better Quantifying and Locating Building Leakages**” dealt with the location and quantification of building air leakages. Air infiltration has multiple consequences on energy use and IEQ that depend on the location and distribution of leakage. Among others, pollutant infiltration and air draft are highly impacted by leakage distribution. In current practice, leakage detection is often performed together with airtightness tests. However, a recent study (Moujalled et al., 2019) showed that the airtightness level was not correlated with the number of leaks detected through visual assessment. This stresses the need for methods quantifying leakage through building components. In addition, such methods would help contractors to assess the quality of on-site execution, that is known as having a major impact on building airtightness. Therefore, the objective of this session was to present and discuss new methods to quantify building leakages. Three presentations were given.

Sylvain Berthault (CEREMA, France) presented a system developed to measure the airtightness of windows installed on site. The system can measure leakage through windows whose height and width lie between 0,7 and 2,2m, and 0,7 and 1,10m respectively. This device has been used in the context of the Durabilit'air

project, 5 windows have been tested 3 times each in a period of 3 years to evaluate the durability of their airtightness. Measurements have shown very little evolution of the windows airtightness over the 3-year period.

Benedikt Kölsch (DLR, Germany) presented the detection and quantification of leakage using microphone arrays. Acoustic methods allow to quantify single leaks without the need for pressure or temperature differences. The acoustic image obtained enables the visualization of primary sound sources coming through the building envelope and, therefore, the detection of leaks.

Experiments were conducted using white noise with an analysed frequency range of 0.25-40kHz. It has shown that the size of the leak can be estimated by varying the frequency range: large leaks are those transmitting the most sound at small frequency, while small leaks are those transmitting the most sound at high frequency.

Mark Modera (University Davis, USA) discussed the feasibility of using continuous short-term pressure measurements to determine building envelope leakage with MEMS sensor networks. The idea is to combine one-time measurements of outdoor air

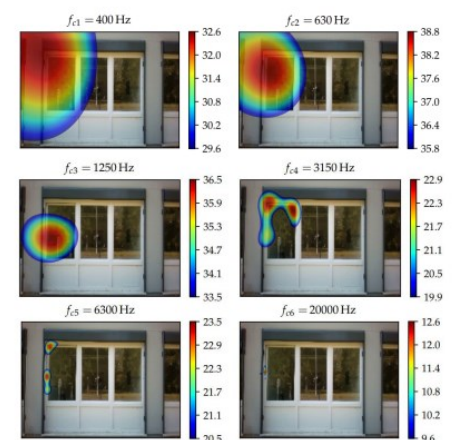


Figure 1: Acoustic Images (Benedikt Kölsch et al. 2022, “Detection of Air Leakage in Building Envelopes using Microphone Arrays”, 41st AIVC – ASHRAE IAQ – 9th TightVent/ 7th venticoal joint Conference, Athens Greece, 2022)

intake flows to HVAC equipment, with continuous pressure measurements over time periods of one day to one week. The idea is to avoid disrupting business operations, or testing in the evening, with a fan-pressurization door. Laboratory measurements and field test results associated with using both differential and absolute pressure transducers were presented.

TAAC news & latest activities

The TightVent Airtightness Association Committee (TAAC) continues to meet 4 times per year. Due to the COVID-19 pandemic, no physical meeting has been held since 2019 but the next one is now planned for October 2022 before the AIVC-TightVent-venticool joint Conference in Rotterdam!

During the last 4 TAAC meetings the group's discussions focused mostly on:

- Building airtightness measurements in high rise buildings, based on presentations by Christophe Delmotte (CSTC, BE), Stefanie Rolfsmeier (Blowerdoor GmbH, DE) and Valérie Leprince (INIVE, FR)
- Updates on airtightness and ventilation regulations in TAAC participants' countries (Belgium, Czech Republic, France, Germany, Greece, Netherlands, Spain, Switzerland & UK)
- New products such as the AeroBarrier presented by Simon Tölke (MEZ-Technik, DE), and the VentiFlow-mk2, the AirTightnessTester & Ultragraphy presented by Niek-Jan Bink (ACIN Instrumenten, NL)
- New acoustic methods to locate & quantify leakages presented by Benedikt Koelsch (DLR, DE).

The Air Infiltration & Ventilation Centre (AIVC) in collaboration with TightVent and TAAC are currently developing a series of Ventilation Information Papers (VIP)s to explain trends in

building and ductwork airtightness in various countries. There is also work in progress to assess the possibility of developing a European database on building airtightness.

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

TightVent Europe contributes to the new Proposal for the Revision of the EPBD

On March 30, 2022 TightVent Europe sent feedback to the European Commission's Proposal for a Recast of the Energy Performance of Buildings Directive (EPBD).

TightVent Europe has put forward some elements to be taken into account by the European Commission. TightVent's input to the EPBD revision, structured by remarks & proposals for amendments of the public consultation document, is available to read and download [here](#).

AIVC-TightVent Webinar "Inspection of ventilation systems in new regulations in European countries" – Recordings & Slides available

The recordings and the slides of the recent AIVC-TightVent webinar: "Inspection of ventilation systems in new regulations in European countries" held on November 30th, 2021, are available online [here](#).

The full collection of past events' recordings and slides can be found at: <https://www.aivc.org/events/webinars>

Check them out and subscribe to our [YouTube channel](#) to receive our latest video updates!

Join us for the TightVent 2022 partners' meeting!

TightVent Europe is organizing an online meeting to be held on Friday June 10, 2022 [14:00-15:30 CET] to discuss the major outcomes and future challenges of TightVent Europe, the building and ductwork airtightness, created in 2011.

The aim of the meeting is to inform you, together with other interested partners and organizations, of the objectives and activities of TightVent Europe and the possibilities for collaboration.

The agenda of the meeting is as follows:

- History of TightVent Europe and collaborations
- Major outcomes and envisaged activities of TightVent Europe
- Future challenges
- Role of partners in TightVent Europe

Attendance at the meeting is upon invitation only, so please contact us at: info@tightvent.eu if you wish to participate.

We hope to see you there!

Product news as provided by our partners

ACIN VentiFlow-mk2

The ACIN VentiFlow-mk2 is the instrument to measure, balance and commission the airflow of domestic ventilation systems. The VF-mk2 communicates via Bluetooth with a smartphone or tablet using an app. In the user-friendly app measurement projects can be created. The measurement of multiple dwellings is easy: create all valves for one dwelling and copy them to the next one. A measurement takes less than 10 seconds after which a measurement report can be sent from your phone. The VF-mk2 has a patented flow straightener to guarantee accurate measurements on a large collection of different supply and exhaust grilles. Measuring range is 10 to 100m³/h, accuracy 3.5m³/h. The VentiFlow comes in a case that also serves as a step. More information at: <https://acin.nl/en/air-measurement-instruments/balancen/ventiflow-mk2/>



BlowerDoor tests of tall buildings with heights of around 100 m

Worldwide, there is an increasing demand for testing the air tightness of high-rise buildings. Measurements on such buildings are still pioneering work. For the first time in Europe, a BlowerDoor test in a 125 m high building was carried out in 2021. Special challenges included establishing a uniform (fan generated) pressure distribution in the building and dealing with the high and fluctuating natural pressure differences at the building envelope due to stack effect and wind. For an exact overview of the pressure distribution during the measurement, additional differential measuring points were distributed in the building envelope. Find out how careful planning, preparation and exchange between experts from three countries made this challenging measurement a success: https://www.blowerdoor.com/services/newsletter-pages/high-rise-building?no_cache=1#c4830.

MEZ-TECHNIK and Partners carried out over 650 AEROSEAL®-Projects

The AEROSEAL® process reliably seals leakages in air duct systems from the inside. In contrast to conventional sealing methods, this means there is no need to search for the leakages first. That saves time, reduces costs and guarantees the achievement of the highest air tightness classes. Gaps of up to 15 mm can be sealed without any problems.

Our partner network has continued to grow since 2015, and we now have 38 partners in 18 European countries. These partners carry out the sealing jobs on their own and independently. Over this period, more than 650 projects have been carried out - more than 200 projects in 2021 alone. Our partner network grows by 8-10 partners per year. Get started today: <https://bit.ly/3wLK5vT>.



Send In Your Fan For Calibration

Retrotec's Calibration Chambers at our facility in the Netherlands are ready to receive your fan. Send in equipment now to avoid downtime in the queue. Don't use Retrotec? We can still calibrate your equipment.

Bonus: Calibration Certificate & Flow Parameter Upgrades

Calibration Certificate Lookup Services are included with your Calibration.

Retrotec equipment owners, authorities, & code officials can benefit from Retrotec's Calibration Certificate Lookup Service. Simply log onto portal.retrotec.com, click on Calibration Reports, and type in the serial number for a fan or gauge to view the electronic certificate.

Retrotec also provides calibration stickers on your fan or gauge, containing a QR code to the calibration certificate.

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