TightVent Europe
BUILDING AND DUCTWORK AIRTIGHTNESS PLATFORM

November 2021

Newsletter No 21

Foreword

The date of the 41st AIVC Conference /ASHRAE IAQ – 9th TightVent – 7th venticool joint conference, is now approaching very quickly. Five months after this major event - between the 5th & 6th October 2022- the 42nd AIVC– 10th TightVent – 8th venticool annual conference, will be held in Rotterdam, the Netherlands.

This edition of the TightVent newsletter is dedicated to sharing information on past and future events. In addition, we feature 2 articles, one by Andrés Litvak -Cerema, with updates on the DURABILITAIR2 project (2021-2024) and another one by Barry Cope-ATTMA, with a short analysis of the ATTMA Lodgement database.

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 – 42nd AIVC - 10th TightVent- 8th venticool conference in Rotterdam, Netherlands

The AIVC 2022 Conference “Ventilation Challenges in a changing world" is now accepting abstracts & proposals for topical sessions. The Conference will be held on October 5-6, 2022, at the Hilton Hotel, in Rotterdam, the Netherlands. It will be a joint event combined with the 10th TightVent and the 8th venticool conferences.

The conference programme will include well-prepared and structured sessions focused on the conference topics, invited speakers and long and short oral presentations arising from the call.

This year, there will be: 2 separate calls for abstracts & papers depending on whether the authors are interested in the peer review of their papers; a call for topical sessions; and a students’ competition.

Detailed information & important deadlines for the 2 calls for abstracts can be found at: https://aivc2022conference.org/call-for-abstracts-papers/

Detailed information & important deadlines for the call for topical sessions can be found at: https://aivc2022conference.org/call-for-topical-sessions/

Detailed information for the students’ competition can be found at: https://aivc2022conference.org/students-competition/

For further information and updates visit us at: https://aivc2022conference.org/

4 - 6 May 2022 – 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 be held in Athens, Greece on May 4-6, 2022. 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.

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

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Building airtightness improvements in the UK building stock, a short analysis of the ATTMA Lodgement database

Barry Cope, Group Managing Director, Building Compliance Testers' Association (BCTA).

ATTMA, the Air Tightness Testing & Measurement Association, has been analysing improvements in the new-build dwellings over the last 6 years using its specially designed Lodgement system.

ATTMA members are required to record information from each test by uploading the raw data files into ATTMA Lodgement which takes, analysis and issues certificates for each plot once the necessary checks are conducted. This allows ATTMA to look at not only the average air tightness results, but significantly more data.

So far, over 1 million lodgements have been recorded with significant amounts of data per lodgement. Typically, 3500 tests per week are recorded of which around 15% make up 'retests', where a test is repeated after initially failing to meet the maximum leakage rate.

AP50 Average

The UK uses AP50 ($m^3.h^{-1}.m^{-2}$@50Pa) as its performance metric. Interestingly, the average air permeability rate has consistently fallen every year, as shown in image 1. However, this fall has been around 3% per year which at the current rate, would take over 20 years to reach Passivhaus levels.

The average result in 2021 is 4.31 which is the same as 2020, showing that 2021 is the first year not to have the 3% reduction. Our theory is that, without change in legislation, the market has little or no requirement to build tighter. The last change in regulation was in 2010, which will have taken until 2012 to filter through to sites. Our theory is that it has taken a couple of attempts at different strategies before the industry has now settled on its requirements.

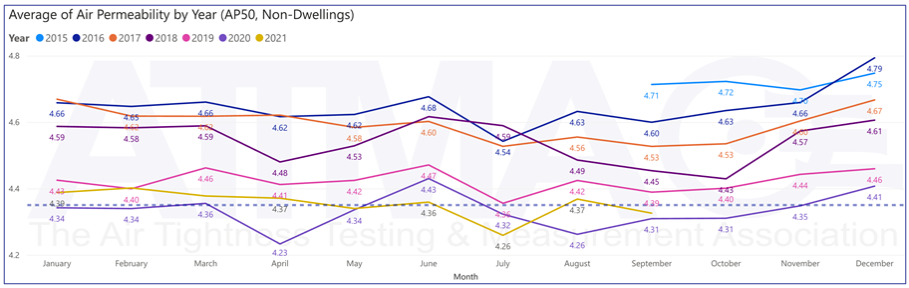
Construction Type

Most dwellings in the UK (around 70%) are built using block and brick construction, with concrete frame making up 14% and timber making up 8%. ATTMA can look at the average air permeability results from different construction types.

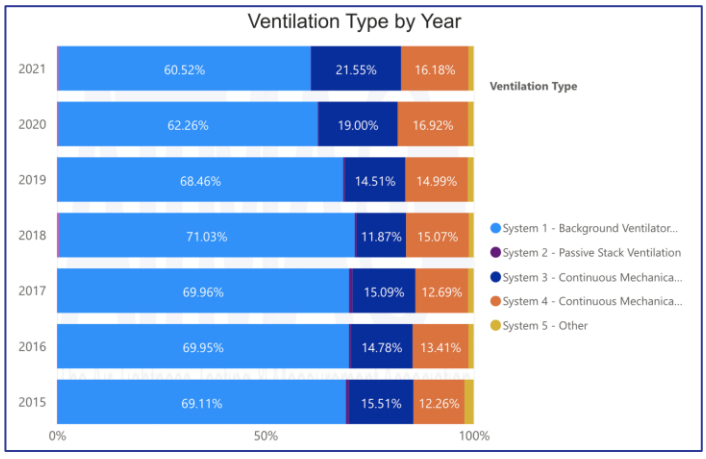
Some interesting conclusions can be drawn from the construction types, perhaps most notably that timber frame construction, which should in theory be utilising its internal airtight membrane, is not outperforming block and brick as much as expected. We also note that concrete frame buildings are achieving far above the national average, perhaps due to a significant proportion of the envelope being made from concrete frame.

Ventilation

The ATTMA Database records the type of ventilation used in new-build homes. This allows us to assess the ventilation strategies and analyse changes. Interestingly, the ventilation strategy is changing with a 10% reduction in the number of homes using 'natural' ventilation (which consists of openable windows and a timed mechanical ventilator in the bathroom) and a rapid growth in System 3 (Continuous Mechanical Extract Ventilation) and System 4 (Continuous mechanical ventilation with heat recovery).



Construction Type	Percentage Built	Average Result ($m^3.h^{-1}.m^{-2}$@50Pa)
Block and Brick	70%	4.64
Concrete Frame	14%	3.27
Timber Frame	8%	4.40
Steel Frame	5%	4.02
Internal Concrete Frame	<1%	3.63
Structurally Insulated Panels	<1%	3.54
Other	1%	3.93



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DURABILITAIR2: An experimental ongoing research study of the evolution of buildings' airtightness through field measurement and laboratory approaches

Andrés Litvak, CEREMA

As the energy performance of buildings, the indoor air quality and the preservation of buildings from constructive pathologies are based - in particular - on good airtightness of the envelope, the durability of the latter is recognized now as an issue of prior concern.

The project DURABILITAIR2 is a continuation of the DURABILITAIR project, carried out between 2016 and 2019 by Cerema, PLEIAQ, CETII and RESCOLL. DURABILITAIR has made it possible to highlight results recognized as particularly innovative and praised by the scientist international community in the 2017 and 2019 AIVC conferences, with Best Paper Awards at both conferences. Indeed, DURABILITAIR results have contributed to improving our knowledge on the on-site characterization of the evolution over time (i.e., the durability) of the airtightness of housing and on the definition of an accelerated aging test protocol under controlled laboratory conditions. It showed, among other things, that the airtightness of the envelope, although it can vary over time, it might mainly change during the first year of the building's life, and then stabilize. These conclusions were consistent with other similar studies carried out in the United States. All the results of DURABILITAIR have been presented in AIVC conferences and webinars (see references).

The major objectives of DURABILITAIR2, that will be carried out between 2021 and 2024, are:

1. to establish the possible factors degrading the airtightness of the envelope during the first year of occupation,
2. to provide concrete recommendations in order to limit or even eliminate these factors; in particular those relating to the conditions of use of airtightness products (depending on parameters such as temperature, humidity, dust, etc.)
3. to quantify the impact of these poor processing conditions on the durability of the airtightness.

To do this, various bibliographic and metrological approaches will be carried out both onsite in field measurement campaigns and in controlled conditions in the laboratory.

The first task of the project will consist in updating and completing the current bibliographic review (DURABILITAIR state of the art).

The second task will aim at quantifying and qualifying the very short-term evolution of the envelope airtightness of a sample of 12 French low energy detached new houses. For this, instrumented and visual inspections during stages of the construction sites will be carried out to identify the conditions of use of airtightness products related to the building envelope. Secondly, measurements of the air permeability of the envelope will be achieved on this sample at close periods (1, 3, 5, 7, 9, and 12 months) after acceptance of the site in order to precisely assess the change in air permeability during the first year of use of the building.

The DURABILITAIR laboratory test protocol will be adapted during the third task, depending on the nature of the samples. The main adjustments will concern the duration of the applied aging as well as certain conditions of aging cycles (temperature, hygrometry, pressure). Other experimental conditions will be studied such as the level dusting of the supports.

Last, DURABILITAIR2 partners will form a mirror group during the project, in order to obtain an advisory opinion from professionals on their research.

Any stakeholder (industry, researcher, etc.) interested in it can contact them to participate to the mirror group.

Support for this work is provided by ADEME, under contract n° 2104D0023 and by the French Ministry in charge of Construction (DGALN/DHUP).

Contacts: Andrés Litvak (Cerema, andres.litvak@cerema.fr), Valérie Leprince (PLEIAQ, valerie.leprince@pleiaq.net)

Upcoming Webinar! Inspection of ventilation systems in new regulations in European countries– 30 November 2021 (10:30 – 12:00 CET)

The Air Infiltration and Ventilation Centre and TightVent Europe are organizing the webinar "Inspection of ventilation systems in new regulations in European countries" to be held on November 30th, 2021 at 10:30-12:00 CET. The objective of this webinar is to present new regulation requirements in Ireland, Germany and France.

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

For further information on registration, speakers etc. please click here.

AIVC-TightVent Webinar "Impact of wind on airtightness test results" – Recordings & Slides now available

The recordings and the slides of the recent AIVC-TightVent webinar: "Impact of wind on airtightness test results" held on November 8th, 2021, are now available online!

The full collection of past events' recordings and slides can be found at: http://tightvent.eu/events/webinars

Check them out and subscribe to our YouTube channel to receive our latest video updates!

TightVent Europe

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Partners

Product news as provided by our partners

Determination of Extinguishing Gas Holding Times With BlowerDoor FireProtection: New Features

The BlowerDoor FireProtection software is used to determine the holding time of extinguishing gases. The latest upgrade includes ISO 14520:2015 and ISO 14520:2006, EN 15004:2019 and EN 15004:2008 standards, as well as VdS 2380:2019-03 and VdS 2381:2016-06 guidelines. The free multilingual program enables cloud-based use in German, English or French on multiple computers in a team or group of companies. The new pricing is demand-based and easily calculable by charging one token per project. The test report can be almost completely individualized and adapted to the corporate design of the company.

More information www.blowerdoor.com.

Introducing: Remote Data Logging with Retrotec's DM32 Digital Manometer

Retrotec's newest feature, Remote Data Logging with your DM32 gauge, is live and available for free! This cutting-edge update allows you to track and monitor air pressure on your DM32 from anywhere in the world. As long is the gauge has an internet connection via WiFi or ethernet, you can log on to see what your gauge has been reading with a detailed graphic display. Retrotec has decided to release this as a completely free upgrade for all users. Simply use the DM32 Configurator to update your DM32 Firmware to begin. A Video Walkthrough is available to assist with proper Firmware Installation. Once your firmware is updated, visit RemoteData.Retrotec.com to start logging.

New wireless room control system by Lindab

One of the latest innovations of Lindab is an upgrade of their high-tech product UltraLink with Bluetooth technology and wireless sensors, creating the Ultra BT room control system. The sensors that control CO2-levels, airflow, humidity, presence, and temperature connects to the Ultra BT system wirelessly, and is managed through a newly developed app named Lindab OneLink. The development is an important step to become even more energy efficient and since the sensors are wireless, it makes installations a lot faster and more efficient. Normally installing a ventilation system is time consuming, disruptive, as well as expensive, but with Ultra BT it becomes effortless, saving both time and money.

Climate Fund invests USD 22 million in Aeroseal

In order to reduce the high energy losses in air ducts, the climate fund Breakthrough Energy Ventures, supported by Bill Gates, has invested 22 million US dollars in Aeroseal. Buildings account for around 40 % of total energy consumption in the USA and Europe. A good 50 % is consumed by heating and cooling, and another "energy destroyer" is air handling and air duct systems, which lose up to 30% of the transported air through leaks, holes and poor connections. The investment makes it clear that improving the energy efficiency of buildings is one of the most effective ways to reduce greenhouse gas emissions and combat global warming.

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