

A good start-up year for TightVent Europe

A major reason behind the launching of TightVent Europe was the need to increase communication, networking and awareness raising on airtightness since, for most countries, airtightness related issues represent major challenges for the wide-scale implementation of nearly zero-energy buildings.

Our achievements during this first year show that TightVent was really needed. These include the attendance to the webinars as well as to the joint AIVC-TightVent conference (over 160 participants) where 26 experts gladly accepted our invitation to give talks on specific topics such as the definition of airtightness requirements, quality systems, or the development of air leakage databases... We also have initiated several projects with key international experts and expected deliverables to be presented periodically in webinars, workshops and conferences in 2012 and beyond, ... so stay tuned!

Peter Wouters, *Manager INIVE EEIG*

Regulatory requirements for ductwork leakage in Portugal: reasons behind and lessons learnt

- Based on presentation at the 2011 AIVC-TightVent conference by Eduardo Maldonado, University of Porto, Portugal

Ductwork airtightness is often considered to be an issue in cold or mild climates only in Europe, although there has been a significant amount of work in hot climates in particular in the US that demonstrates the great energy savings potential by reducing duct leakage.

One interesting exception is Portugal where mandatory requirements have been included in the regulation since 2006, as part of the implementation of the EU directive 2002/91/EC (EPBD). Requirements for new HVAC systems included for the first time a set of mandatory tests that must be carried out during commissioning, before the building receives its use permit. These requirements apply to buildings larger than 1000 m². The aim of the tests is to demonstrate that the installation is functioning as designed, in operational terms, but also meeting the minimum energy efficiency and indoor air quality (IAQ) targets set in the legislation.

Tests on the ventilation system include verifications of airflow rates, cleanliness, and airtightness. To pass the test on airtightness, ductwork leakage may not exceed 1.5 l/s.m² under a static pressure of 400 Pa. Airtightness tests should be carried out using a

procedure similar to that described in the AMA requirements* in Sweden.

It is too early to say if the new regulations have been successful: the data regarding the actual performance of the few buildings constructed with the new requirements has not been analyzed yet.

However, there is proof that the market adapted to the regulations. The share of pre-fabricated round ductwork with quality seals between ductwork components increased significantly (from less than 5% in 2006 to 30% in 2010). For rectangular ducts, the technology evolved to achieve better seals along duct sections and at unions between two consecutive sections, namely at the corners, representing now 20% of the market (extract ducts carrying air that is not recirculated, e.g., from toilets and wet-zones, are still usually low-quality ducts). Welded and screwed joints disappeared since then. In parallel, "a dozen" specialized companies now offer duct leakage testing services in the market (there were none in 2006).

* See for instance, Carrié, F.R., Andersson, J., and Wouters, P. 1999. Improving Ductwork - A Time for Tighter Air Distribution Systems, Report, EU Project SAVE-DUCT, Brussels 1999. ISBN 1902177104. Available at <http://www.aivc.org/>.



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Mark your calendar for two key AIVC-TightVent events



Airtightness Workshop "Achieving relevant and durable airtightness levels: status, options and progress needed"

Brussels, 28-29 March 2012

The objective of this workshop is bring key experts together to discuss three specific issues:

- The philosophy for setting airtightness requirements: recommendations and pros and cons of various approaches
- The durability of seals and bonds: what we know and where we need to go
- How to deal with airtightness in the construction process: lessons learnt and potential for quality management approaches.

More [information](#) and [registration](#).

Optimising Ventilative Cooling and Airtightness for [Nearly] Zero-Energy Buildings, IAQ and comfort

Copenhagen 10-11 October 2012

The conference will include at least two tracks, one focusing to a large extent on ventilative cooling, and the other one to a large extent on airtightness issues.

More information to come at www.aivc.org and www.tightvent.eu

TightVent partner Soudal wins 'Entrepreneur of the year 2011' Award in Flanders, Belgium

With this award, the organizer Ernst & Young rewards successful Belgian companies for their outstanding growth and sense for innovation, entrepreneurship, strategy, sustainability and management.

You can find more info on this award on <http://www.ey.hu/BE/nl/Home>.

BUILD AIR International Symposium

Stuttgart, 11-12 May 2012



Information at <http://www.buildair.de/homepage.html?Itemid=42>

In collaboration with TightVent and AIVC.

Positive feed-back from the 1st Webinar

The first national webinar entitled "Airtightness and Ventilation perspectives in Romania: European context, regulation changes and progress needed" was held June 21.

Over 60 participants attended the meeting. Most attendees were from Romania but many parts of the world were represented. This made our discussions even more interesting.

The first two presentations were given by Peter Wouters and François Rémi Carrié on the European context, the reasons behind TightVent Europe, and the potential impacts of envelope and ductwork leakage.

Ioan Dobosi (REHVA) gave an interesting overview of the regulatory context in Romania with regards to ventilation and airtightness and insisted on the steps to be taken to reach NZEB targets.

Next Webinars



Encouraging professionals to achieve better airtightness Recent French initiatives.

Check www.tightvent.eu for future announcement"

Missed the event?

All presentations are available online in pdf format. Soon you will be able to watch the recording of the event, and therefore listen to the presenters' speeches and discussions.

Webinar recordings:

www.tightvent.eu/events/recordings

Horia Petran gave very interesting information on the status and progress needed with detailed concrete data on energy performance and building stock at Romanian level but also from specific programmes and studies. He highlighted the bottlenecks, namely for the renovation of multi-family buildings from the Thermal Rehabilitation Program and for improving indoor air quality in educational buildings.

The main point highlighted within these presentations is that, with an annual heating energy use in a region of 100-300 kWh/m², over 8 million dwellings and 230 thousands of non-residential buildings, there exists significant room for improvement where ventilation and airtightness should play a major role, both to reduce energy use and avoid major mistakes resulting in degraded indoor air quality.

Growing awareness for the significance of air infiltration in American houses

- by Brett Welch, Knauf Insulation, North America

An increasing number of people within the building industry understand the impact that air infiltration has on the buildings being constructed. They understand the "house as a system approach" and realize that making upgrades to air sealing the building envelope can have a beneficial impact on the comfort, durability, indoor air quality and energy efficiency of a home while reducing the typical installed cost for HVAC equipment. Voluntary third party rating programs have adopted envelope tightness standards and many of them are becoming more stringent; some U.S. state building codes may even be updated to reflect the necessity to air seal.

The two most recognizable home certification programs in the U.S. are Energy Star and LEED for Homes. These are voluntary programs in which builders have an opportunity to differentiate their homes by means of energy efficiency upgrades. Each of their current iterations, Energy Star Version 2 and LEED for Homes 2008, have maximum envelope air leakage levels that must be met in order to be certified. The current levels of air sealing required for certification have been a fairly small hurdle. Those numbers will be getting a bit tighter with the new versions being introduced in 2012. Energy Star Version 3 will be rolled out January 2012 and LEED for Homes will implement their new guidelines later in the year. The new maximum air infiltration rates for each of those programs are listed in the following table.

Perhaps the most exciting new movement towards reducing infiltration rates is the new International Energy Conservation Code. IECC 2012 was designed to be a 30% energy efficiency improvement over IECC 2006, and requires that houses be verified by an approved third party to comply with maximum air leakage rates. The adoption of this standard

into state government building codes is optional, however, it would mark the first time in the U.S. that infiltration commissioning would be mandatory, not just an element of voluntary programs.

An often overlooked aspect of home construction is the provision of mechanical ventilation. As building envelopes are made tighter, proper ventilation levels are vital to the health of occupants. The American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) has developed standard 62.2-2010 to address indoor air quality and

minimum ventilation rates in residential buildings. Following this guideline will ensure that once a house is "built tight" it will be "ventilated right."

Minimizing air infiltration is an essential step in building an energy efficient house, but the benefits of doing so extend well beyond increased energy efficiency. Proper air sealing can lead to increased comfort, improved indoor air quality and greater building durability. Builders should air seal houses as tightly as possible and ensure that adequate fresh air is provided through the use of controlled mechanical ventilation.

Climate zone	Maximum Air Leakage Rates (ACH ₅₀ or n ₅₀) for the United States								
	Voluntary Programmes						IECC Codes		
	Energy Star V 2.0	Energy Star V 3.0	LEED for Homes 2008			LEED for Homes 2012		IECC 2009	IECC 2012
		Certified	2 Pts	3 Pts	1 Pt	2 Pts	7.0 or visual inspection of air barrier	5.0 3.0	
1-2	7.0	6.0	7.0	5.0	3.0	4.25			3.0
3-4	6.0	5.0	6.0	4.25	2.5	3.5			2.5
5-7	5.0	4.0	5.0	3.5	2.0	2.75			2.0
8	4.0	3.0	4.0	2.75	1.5	2.0	1.5		

Climate Zones, 1 = semi-tropical and 8= extreme northern, for more information consult IECC

ISO 9972 revision status

- by Hiroshi Yoshino, Tohoku University, Japan


Given the revived interest for airtightness measurements throughout the world, the need for revision of ISO 9972 'Determination of air permeability of buildings — Fan pressurization method' has been approved as a new work item together with the revision of EN 13829. ISO TC163/SC1/WG10 is leading this work.

The current standard can be ambiguous with regard to the building preparation, which has been identified as a major source of discrepancy in recent reproducibility studies. In fact, this may depend on country-specific ventilation devices as well as on the calculation method in which the measurement result is used.

Another concern lies in the calculation of the building volume, floor area, or other building characteristics which are used to obtain the derived values (n₅₀, q_{p50}, w₅₀) and can be the source of major discrepancies.

Several other issues are examined, including uncertainties, averaging of several measurements, symbols, etc.

The revised standard should be distributed as a draft in April 2012.



Newsletter
subscribe

If you want to regularly receive the TightVent Europe news, visit www.tightvent.eu and subscribe to the TightVent Europe newsletter

TightVent is very pleased to welcome BlowerDoor GmbH and Retrotec, experts in air leakage measurement, as new members

Since 1989, [BlowerDoor GmbH](#) has been a pioneer in the fields of airtightness, especially airtightness measurements, and BlowerDoor product design in Europe. Synergies in engineering, product development and training have made the Minneapolis BlowerDoor a high quality device for air tightness measurements all over the world. BlowerDoor GmbH actively supports TightVent to achieve a good and durable quality in building air tightness as one important criterion to reach the ambitious goals of the Energy Performance of Buildings Directive (EPBD) recast.



Since 1980, [Retrotec](#) has pioneered the manufacture of advanced air permeability measurement equipment and analysis software. Retrotec has for many years been actively involved in the development of new standards for ISO and NFPA fire suppressant containment standards and large building testing standards for the US Army Corps of Engineers. With its renown experience and high-quality systems used in over 60 countries around the world, Retrotec looks forward to contributing its expertise to help reach TightVent's ambitious goals.



TightVent founding partners

The [Buildings Performance Institute Europe \(BPiE\)](#) is an independent, non-profit organisation based in Brussels. BPiE supports the development of ambitious but pragmatic building-related policies and programs at both EU and Member State levels. We timely drive the implementation of these policies by teaming up with relevant stakeholders from the building industry, consumer bodies, policy and research communities. With the TightVent Europe Platform, our ambition is to play a key role in implementing policies on building and ductwork airtightness, bearing in mind ventilation needs.



The [European Climate Foundation](#) aims to promote climate and energy policies that greatly reduce Europe's greenhouse gas emissions and helps Europe play an even stronger international leadership role in mitigating climate change. ECF supports the TightVent platform in its mission to create support for proper implementation of the new Energy Performance of Buildings Directive (EPBD) and to help policy makers, industry, developers and other stakeholders in the deployment of low-energy buildings.



[Eurima](#) is the European Insulation Manufacturers Association. Eurima members manufacture mineral wool insulation products. We actively support TightVent to develop knowledge and application of efficient airtightness solution for a successful implementation of the recast of the EPBD. This requires a good coordination between strong insulation and well-functioning ventilation in order to guarantee both energy efficiency and good indoor air quality.



[INIVE](#) is a registered European Economic Interest Grouping (EEIG) that brings together the best available knowledge from its member organisations in the area of energy efficiency, indoor climate and ventilation. INIVE strongly supports and acts as facilitator of TightVent Europe because it clearly fits within the objectives of our grouping, namely, fostering and structuring RTD and field implementation of energy-efficient solutions and good indoor climate in new and existing buildings.



[Lindab](#) is an international group that develops, manufactures, markets and distributes products and system solutions primarily in steel for buildings and indoor climate. With TightVent Europe, we learn more about the process of building airtight and energy efficient buildings; we fine-tune our product range by networking with suppliers confronted with the same issues. Our ambition is to transfer this knowledge all the way to building owners, architects/consultants, construction companies and workers.



[Soudal](#) NV is Europe's leading independent manufacturer of sealants, PU-Foams and adhesives. The company, established in 1966, proudly remains family owned. Soudal serves professionals in construction, retail channels and industrial assembly and has 45 years of experience with end-users in over 100 countries worldwide. Since sealing, bonding and insulating is our business, we actively support the Tightvent platform. And with 7 manufacturing sites on 4 continents and 35 subsidiaries worldwide, we hope to contribute to a wide-scale implementation of nearly-zero energy buildings.



[Tremco illbruck](#) has a leadership position in the sealants and building protection market throughout Europe, Africa and the Middle East. Our efforts are focused on Window, Façade, Coatings, Fire Protection, Insulating Glass and non-construction industries. Through TightVent Europe, we share our experience and expertise in the airtight connection of building components to reach ambitious goals and to improve knowledge of building professionals by implementing training programs in the EU.



[Wienerberger](#) is the world's largest producer of bricks and No. 1 on the clay roof tiles market in Europe with 245 plants in 27 countries. TightVent Europe enables us to further develop and optimize the sustainable building solutions we offer to our customers. Moreover, we want to transfer knowledge to our customers (both builders, renovators and building professionals such as architects, engineering agencies, contractors, etc.) by means of theory- and practice-oriented training courses, seminars, workbooks, etc.

