



Foreword

During the past few months, venticool has pursued its efforts to raise awareness, exchange information and discuss issues on ventilative cooling, namely in collaboration with IEA EBC Annex 62 and QUALICheck.

Here is a snapshot of our latest joint achievements:

- *January 2016.* REHVA releases a special issue on ventilative cooling based on the experience and contributions from IEA EBC Annex 62 participants.
- *March, 2016.* The 2nd QUALICheck workshop takes place in Athens and focuses on sustainable summer comfort technologies & ventilative cooling.
- *April, 2016.* Annex 62 meets in Cork for the 5th expert meeting and organises a seminar on Ventilative Cooling & Overheating Risk.
- *May 2016.* A specific session on ventilative cooling is organised in the framework of the joint CLIMA 2016 and 12th REHVA Conference.

We hope this issue will give you a good overview of these activities. We wish you a pleasant reading.

The venticool team



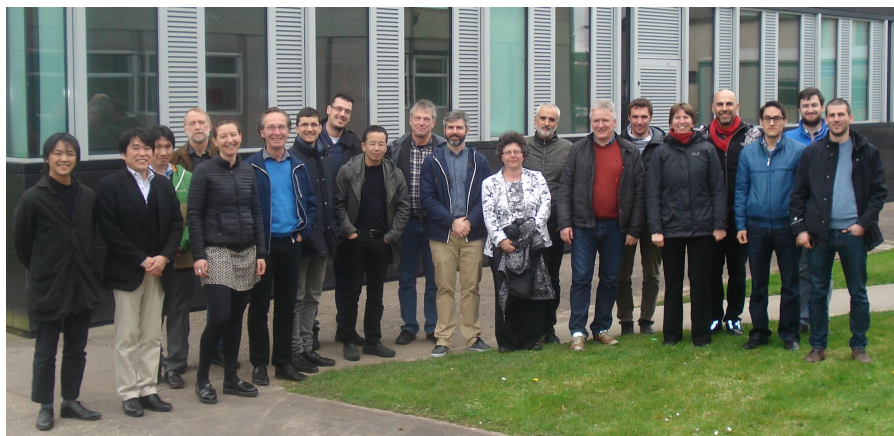
IEA-EBC Annex 62 Ventilative cooling met in Cork

21 experts attended the 5th annex 62 meeting in Cork, Ireland on 18-19 April 2016.

The meeting focused on the following objectives:

- Present and discuss research work performed in all subtasks since last expert meeting
- Plan research work for the coming half year in all subtasks
- Discussion and planning on Annex deliverables:
 - a. Extended outline of “Guidelines for Ventilative Cooling Design”
 - b. Extended outline of “Ventilative Cooling Source Book”
 - c. Extended outline of background report for “Recommendations for Legislation and Standards”

The next meeting will be held in Vienna, Austria, October 12-14, 2016.



IEA EBC Annex 62 – Ventilative Cooling – 5th Expert Meeting, Cork, Ireland

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Ventilative cooling in energy performance regulations. Summary from the ventilative cooling workshop at Clima 2016

Ventilative cooling can be very effective to reduce the cooling energy demand in buildings in summer or mid-season conditions. Although energy simulation tools can be used to assess ventilative cooling potential, finding the appropriate trade-off between accuracy and simplicity for regulatory Energy Performance methods remains very challenging.

Ventilative cooling is the use of natural or mechanical ventilation strategies to cool indoor spaces. Together with solar shading and thermal mass utilisation, it gives a range of options to address the overheating risk and avoid energy and aesthetics issues associated with the installation of active cooling units in existing buildings. Despite its effectiveness, there are significant barriers to consider this technology in regulatory energy performance assessment methods.

To address these concerns, venticool, IEA Annex 62, AIVC and QUALICheck supported the organisation of a 90-minute workshop during the Clima 2016 conference. Discussion was based on the analysis of answers to prepared questions asked to the audience, preceded by a series of short presentations to introduce those questions. Answers were collected instantaneously with a voting system and are briefly summarised below.

Outcomes of a survey amongst 9 countries

The major outcomes of a survey performed in September 2015 on the ability of EP-regulations to consider ventilative cooling in 9 European member states (AT, BE, DK, FI, FR, GR, IE, IT, UK) were presented. Respondents were experts contacted through the IEA Annex 62 and venticool networks. At the time of the survey, two countries (DK, IT) did

not have thermal comfort criteria in their energy performance assessment method; three (IT, IE, UK) did not account for any ventilative cooling strategy in residential buildings; five had monthly calculation methods, three (AT, FI, UK) had simplified hourly methods, one (FR) had a full-year hourly method. Most countries did not have airflow models based on building parameters such as window sizes, vent characteristics, etc.

The participants confirmed their concerns about these key aspects to properly consider ventilative cooling in EP-regulations. All participants agreed that monthly methods cannot fairly consider ventilative cooling; a full-year hourly method is necessary according to 75% of the participants.

Some major elements missing

Considering ventilative cooling in an energy simulation entails interactions between physical models or input data accounting for: climatic data; building characteristics; building occupancy and operating conditions; control options and algorithms; airflow rates, heat transfer by infiltration and ventilation; and building energy need (see FprCEN TR 16798-10).

Although several standards cover all of these aspects, the participants agreed that some key elements are missing, in particular, control algorithms for airing. The majority (57%) thought worthwhile including a pick list of about 10 identifiers to define major control types and associated algorithms, similarly to what is done in the French regulation. 60% considered appropriate to use temperature limits using adaptive comfort to contain overheating risks, but the subsequent discussion suggested this should be combined with some form of penalty (e.g., increased energy use).

The participants also discussed the absence of methods to consider the draught rate and humidity but did not have clear views on how to tackle these problems.

About two thirds the participants thought that the new set of EPBD standards would at least partially be

used in their country to consider ventilative cooling in the EP-regulation.

Airflow rates through airing

Part of this workshop focussed on ventilative cooling achieved with natural airflow rates through windows. The participants discussed the changes included in FprEN 16798-7 (which will replace EN 15242 in the new set of EPBD standards). The presenters gave results of cross-comparisons between models (both in cross and single-sided ventilation) and with experimental data (in single-sided ventilation). The analyses show very limited risks of overestimating airflow rates to remain conservative with ventilative cooling potential assessment. Despite these developments, only 50% of the participants thought that their country would use FprEN 16798-7 to consider ventilative cooling through airing in their EP-regulation.

Standard or guideline developments

All participants agreed that there is a need to develop guidance for natural ventilative cooling systems, but it was not clear whether this should be done at national or European level, or whether standard or guidelines should be developed to fill this gap. Most participants (86%) also identified a clear need for trainings to improve the skills of designers to implement ventilative cooling systems.

Conclusions and perspectives

In summary, ventilative cooling is poorly accounted for in most EP-regulations in Europe. There is an array of methods in existing standards or in the new set of EPBD standards that could overcome barriers often cited, for instance, to calculate airflow rates through window airing. Nevertheless, there remain key challenges, in particular with control strategies, which need to be addressed.

Presentations and voting results of this session are available on the REHVA website.

REHVA Journal 01/16: Special issue on ventilative cooling

IEA EBC Annex 62 participants have contributed to the REHVA Journal special issue on ventilative cooling of January 2016.

Featured articles include:

- Will the outcome of COP21 stimulate the EU member states to accelerate the building and HVAC sector towards a carbon-free build environment? *Jaap Hogeling*
- Experiences with Ventilative Cooling in Practical Application. *Peter Foldbjerg, Karsten Duer*
- Natural ventilative cooling in school buildings in Sicily. *M. Cellura, F. Guarino, S. Longo, M. Mistretta*
- Design of a new nZEB test school building. *Hilde Breesch, Barbara Wauman, Ralf Klein, Alexis Versele*
- Ventilative cooling in shopping centres' retrofit. *Annamaria Belleri, Marta Avantaggiato*
- Single-sided ventilative cooling performance in a low energy retrofit. *Paul D O'Sullivan, Adam O'Donovan, Michael D Murphy, Maria Kolokotroni*
- Overheating assessment of energy renovations. *Theofanis Psomas, Per Heiselberg, Karsten Duer*
- Ventilative cooling of a seminar room using active PCM thermal storage. *Maria Kolokotroni, Thiago Santos, Nick Hopper*
- Control of indoor air quality by demand controlled ventilation. *Alexander L. Naumov, Iuri A. Tabunshchikov, Dmitry V. Kapko, Marianna M. Brodach*
- ISO 11855 – The international Standard on the Design, dimensioning, installation and control of embedded radiant heating and cooling systems. *Jae-Han Lim, Kwang-Woo Kim*
- Retrofitting of the HVAC plant of an elderly people residential care home. *Marco Noro, Giacomo Bagarella*
- Effects of Different Heat and Cold Generation Scenario (Heat Pump versus District Heating and Chiller) in a Building with Variable Air Volume versus Demand Controlled

- Ventilation Systems. *Petra Vlydkova, Francesco Errico, Michele de Carli, Markus Kalo*
- Acoustic Evaluation of Floating Floors with Housekeeping Pads. *Mete Oguc, Deniz Hadzikurtes, Okan Sever*
- The Cold Climate 2015 conference and the Industrial Ventilation conferences in China during 19-28.10.2015. *Guangyu Cao, Risto Kosonen*

To download and read the full journal please visit:

<http://www.rehva.eu/publications-and-resources/rehva-journal/2016/012016.html>



Cover page of REHVA Journal Special issue on IEQ & ventilative cooling (January, 2016)

Assessing ventilative cooling potential in Energy Performance regulations- Webinar recordings now available

venticool has initiated a new webinar series on ventilative cooling in cooperation with AIVC, EBC IEA Annex 62, INIVE, and QUALICHeCK. The principal objective of this webinar series is to give the status, needs, and perspectives on developments to consider ventilative cooling in energy performance assessment methods in several

countries.

Two webinars were held in December 2015 with contributions from Austria, Belgium, Denmark, Estonia, France and Greece.

The recordings and the slides of the QUALICHeCK webinar: "Ventilative cooling potential and compliance in Energy Performance regulations — Status and perspectives in Belgium, Estonia, Greece" organised in cooperation the IEA project on ventilative cooling "EBC IEA Annex 62", venticool and the Air Infiltration and Ventilation Centre are now available online at: <http://venticool.eu/venticool-events/webinars-2/>

QUALICHeCK Workshop: Voluntary and regulatory frameworks to improve quality and compliance of solar control, cool roofs and ventilative cooling

The 2nd QUALICHeCK Workshop took place in Athens, Greece, on 9-10 March 2016, and focused on sustainable summer comfort technologies. Within the context of compliance and quality, topics covered included solar control, developments in cooling technologies and potential for advanced cooling, status on ventilative cooling, cool roofs and more. In addition, summer comfort was examined from the perspectives of energy, climate change and energy poverty.

The workshop presentations are now available at the QUALICHeCK website <http://qualicheck-platform.eu/>



2nd QUALICHeCK workshop, Athens, Greece, 9-10 March 2016

Technical Seminar – Ventilative Cooling & Overheating Risk

55 participants attended the technical seminar: “Ventilative Cooling & Overheating Risk” which took place on April 20, 2016 in Cork Ireland. The half day event, was organised by the Cork Institute of Technology in collaboration with IEA EBC Annex 62 – Ventilative Cooling and presented state of the art in utilising ventilation for reducing cooling energy demand and addressing the risk of overheating in low energy buildings. Speakers included both national and international researchers and practitioners showcasing various tools, techniques and projects related to ventilative cooling, presenting their most recent findings from the state of the art.



Ventilative cooling & Overheating risk seminar, Cork, Ireland, April 20 2016

September 12-14, 2016: 37th AIVC –ASHRAE-IAQ joint conference Alexandria, VA, USA

This joint conference will provide a unique opportunity for dialogue among attendees to facilitate understanding of current indoor air quality policies, standards and best practices with themes such as regulatory vs. voluntary compliance for achieving Indoor Air Quality (IAQ), the role of IAQ in sustainable building

programmes and the relationship between IAQ and Indoor Environmental Quality (IEQ), etc. The conference programme will include internationally acclaimed keynote speakers, original peer reviewed papers, the latest in indoor environmental quality control, plus workshops and panel discussions. This conference will guide the researchers, experts, policy makers, building owners and operators, engineers, designers, IAQ professionals, commissioning agents, architects and other interested participants about what works and what really doesn't work when tackling major improvements in indoor air quality. Target facilities include residential and non-residential buildings.

The event will cover the following themes and topics among others:

- Definitions and metrics
- Regulatory vs. voluntary compliance for achieving IAQ
- IAQ certification programs
- Low energy/high performance buildings and IAQ
- IAQ in sustainable building programmes
- Interactions—IEQ, climate change, energy efficiency
- Monitoring
- Best practices
- Ventilation and infiltration
- Residential IAQ standards and policies
- IAQ in Developing Economies
- IAQ in mobile environments—aircraft, trains, ships, motor vehicles

For further information please visit the event's website at: <https://www.ashrae.org/membership--conferences/conferences/ashrae-conferences/iaq-2016>

What is ventilative cooling?

Ventilative cooling refers to the use of natural or mechanical ventilation strategies to cool indoor spaces. This effective use of outside air reduces the energy consumption of cooling systems while maintaining thermal comfort. The most common technique is the use of increased ventilation airflow rates and night ventilation, but other technologies may be considered as well. Ventilative cooling is relevant in a wide range of buildings and may even be critical to realize renovated or new NZEB.

What is venticool?

venticool is the international ventilative cooling platform launched in October 2012 to accelerate the uptake of ventilative cooling by raising awareness, sharing experience and steering research and development efforts in the field of ventilative cooling. The platform supports better guidance for the appropriate implementation of ventilative cooling strategies as well as adequate credit for such strategies in building regulations. The platform philosophy is to pull resources together and to avoid duplicating efforts to maximize the impact of existing and new initiatives.

Disclaimer

Conclusions and opinions expressed in contributions to the venticool Newsletter represent the author(s)' own views and not necessarily those of venticool partners.

venticool
the international platform for ventilative cooling

