

## Foreword

Welcome to the June 2017 edition of the venticool newsletter.

You will find links and information related to our latest report summarizing outcomes of the initial working phase of IEA EBC Annex 62 'ventilative cooling' as well as a new tool developed by the annex to assess the potential effectiveness of ventilative cooling strategies. Further on, you will read about the 7th Annex 62 expert meeting and summer school held in Lisbon on 15-19 May.

This issue also outlines new work items recently proposed in the European Committee for Standardization (CEN) and International Organization for Standardization (ISO) with regard to ventilative cooling, and provides information on the research project: "Natural cooling and ventilation through diffuse ceiling supply and thermally activated building systems" which recently received the ELFORSK award 2017 at Energiens Topmøde.

A major venticool event is the upcoming 38th AIVC -6th TightVent & 4th venticool joint conference: "Ventilating healthy low-energy buildings" in Nottingham on 13-14 September 2017, focusing on issues related to thermal comfort & ventilative cooling, airtightness and the relationships between ventilation, indoor air quality and health. We hope to see you there.

If you would like to be kept informed, please visit: <http://news.inive.org/>  
We wish you a pleasant reading.

The venticool team

 @venticool

## IEA EBC Annex 62- Ventilative Cooling- 7th Expert Meeting, Lisbon, Portugal, May 15-17, 2017

*Per Heiselberg, Aalborg University*

19 delegates from 12 countries attended the 7th expert meeting. The host was University of Lisbon, Prof. Guilherme Carrilho da Graca, who in conjunction with the expert meeting also organized the "Ventilative Cooling Summer School" and a seminar for practitioners.

The most important issue at this meeting was to discuss dissemination of the results of the research activities. They will be presented in a Guide Book, a Source Book and in a book of Case Studies. The Guide book will include guidance on the design process, selection of strategies and technologies, calculation methods, control strategies and performance evaluation. The source book will include information about systems and technologies for ventilative cooling as well as reports on recent research findings. The book of case studies will include a 10 pages description of each of the 17 case studies and a summary of typical design consideration, technologies, etc. used as well as lessons learned. It is expected that all publications will be available at the end of 2017.

The next and final Annex 62 Expert Meeting will be in Gent, Belgium on October 24-25, 2017. The host of the meeting will be KU Leuven (Hilde Breesch). Prior to the expert meeting an International Seminar on Ventilative Cooling will be organized on October 23, 2017 in Brussels in cooperation with the venticool platform.

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## Work item proposals on ventilative cooling and natural and hybrid ventilation systems

*Christoffer Plesner, VELUX*

New work items (NWI's) relevant to ventilative cooling applications have recently been proposed in the European Committee for Standardization (CEN) and International Organization for Standardization (ISO) aiming at making descriptive technical documents focusing on design aspects of ventilation systems and design processes of ventilative cooling.

Three NWI's have already been approved:

1. Ventilative cooling systems (CEN/TC 156)
2. Natural and Hybrid ventilation systems in non-residential buildings (CEN/TC 156)
3. Design process of natural ventilation for reducing cooling demand in energy-efficient non-residential buildings (ISO/TC 205)

And, one is upcoming:

– Expansion of Natural and Hybrid ventilation in residential buildings in upcoming "Revision of EN 15665:2009 and CEN/TR 14788:2006" (CEN/TC 156)

The approved NWI's under CEN/TC 156 (Ventilation for buildings) are planned as "Technical Specifications" (normative documents of lower status than European Standards), whereas the one under ISO/TC 205 (Building environment design) is planned as an ISO Standard.

The technical documents are a good opportunity to define design aspects of ventilative cooling and natural/hybrid ventilation systems on the European and International scene e.g. applying findings from the venticool platform and IEA EBC Annex 62. Work should start in the last quarter of 2017, with a development track of 2 to 4 years.

## Feedback from the IEA EBC Annex 62 summer course on ventilative cooling design

*Guilherme Carrilho da Graça, University of Lisbon*

In the third week of May 2017, the Faculty of Sciences of the University of Lisbon organised a five-day summer course on ventilative cooling using a design case study approach. The course was taught by researchers that are currently participating in IEA Annex 62. In the end of an intense work week, twelve PhD and MSc students from five different countries presented their VC designs for a small school building and discussed the expected system performance (predicted using building thermal and airflow simulation).

The course was taught by: Per Heiselberg, Maria Kolokotroni, Hilde Breesch, Annamaria Belleri, Maria Justo Alonso, Guilherme Carrilho da Graça, Peter Holzer, Michal Pomianowski, Flourentzos Flourentzou, Paul O'Sullivan and Nuno Mateus.

## venticool releases new report on ventilative cooling

venticool released a new report, summarizing outcomes of the initial working phase of IEA EBC Annex 62 Ventilative Cooling based on the findings in the participating countries. It presents a summary of the first official Annex 62 report that

describes the state-of-the-art of VC potentials and limitations, its consideration in current energy performance regulations, available building components and control strategies and analysis methods and tools. In addition, the report provides 26 examples of operational buildings using VC ranging from domestic to offices and other non-domestic buildings such as schools and exhibition spaces and located in different outdoor climates. The report can be found here.

## SAVE THE DATE for the international workshop on ventilative cooling – 23 October 2017, Brussels

The workshop will be held on Monday October 23, 2017 at the BBRI offices (Boulevard Poincaré 79, 1060) in Brussels, Belgium. The participants will present and discuss the outcomes of IEA-EBC Annex 62 "ventilative cooling" as well as future challenges and possibilities for international collaboration. The workshop is an initiative of IEA-EBC annex 62 & venticool and is hosted by INIVE-BBRI & KU Leuven. Participation to the workshop is free. If you wish to pre-register please send an email to Stéphane Degauquier at: [sd@bbri.be](mailto:sd@bbri.be) If you want to be kept informed please subscribe at: <http://news.inive.org> More information to come at: [www.venticool.eu](http://www.venticool.eu)



*IEA EBC Annex 62 summer course on ventilative cooling*



# Free design guide and webinar on diffuse ceiling supply by awarded research project

Jannick K. Roth, WindowMaster

The research project titled *Natural cooling and ventilation through diffuse ceiling supply and thermally activated building systems*, recently received the *ELFORSK award 2017* at *Energiens Topmøde* arranged by the *Danish Energy Association in Denmark*. The award is given to the research project, which has produced remarkable results in the sense of energy research in Denmark.

**Project partners** include Aalborg University with Per Heiselberg in the lead, WindowMaster International A/S, Troldekt A/S and Spændcom A/S.

**About:** Despite the fact that the interest in the diffuse ceiling ventilation has been growing over the past couple of years, the technical experiences are quite limited. The development of this research project was mainly based on research and analysis of available information on diffuse ceiling ventilation, including experimental results from laboratory and field studies, as well as numerical simulations.

Diffuse ceiling ventilation is an innovative ventilation concept where the suspended ceiling serves as air

diffuser to supply fresh air into the room. Compared with conventional ventilation systems, diffuse ceiling ventilation can significantly reduce or even eliminate draught risk due to the low momentum supply. In addition, this ventilation system uses a ceiling plenum to deliver air and requires less energy consumption for air transport than full-ducted systems. There is a growing interest in applying diffuse ceiling ventilation in offices and other commercial buildings due to the benefits from both thermal comfort and energy efficient aspects.

**The outcome** has been a design guide for design engineers, architects and manufacturers of diffuse ceiling ventilation system summarizing many of the findings in the research project, beside two Ph.D. theses from Aalborg University,.

**The Free design guide** introduces the principle and key characteristics of room air distribution with diffuse ceiling ventilation. It provides an overview of potential benefits and limitations of this technology. The benefits include high thermal comfort, high cooling capacity, energy saving, low investment cost and a low noise level. The limitations include condensation risk and restrained room geometry. Furthermore, the crucial design parameters are summarized and their effects on the system performance are discussed. Download the design guide here.

**Results:** The system was tested with

a supply temperature down to  $-8^{\circ}\text{C}$  keeping an air change rate of 4/h in the room, and still performed without draught. In a normal office building an air change rate of 1-2/h is normally sufficient, meaning that the air supply temperature could be lower than the  $-8^{\circ}\text{C}$ .

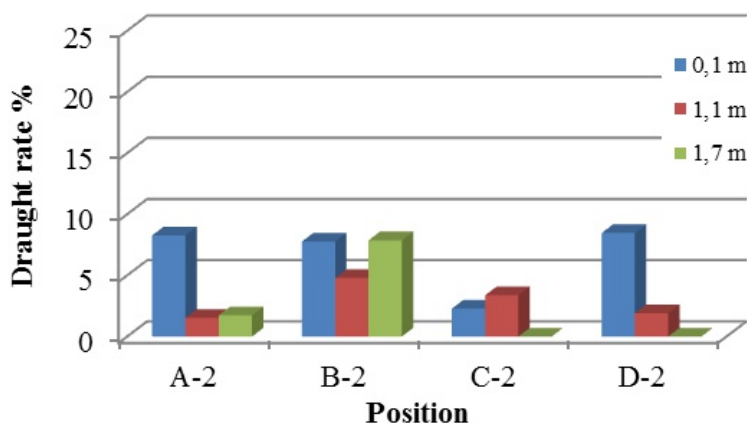
Because the system can work at a lowered air supply airflow the energy used for cooling can be reduced with up to 90% in a typical, new office building.

**Free webinar recording** about the natural cooling and diffuse ceiling supply projects and its findings by Per Heiselberg and WindowMaster. See webinar about natural cooling and diffuse ceiling supply.

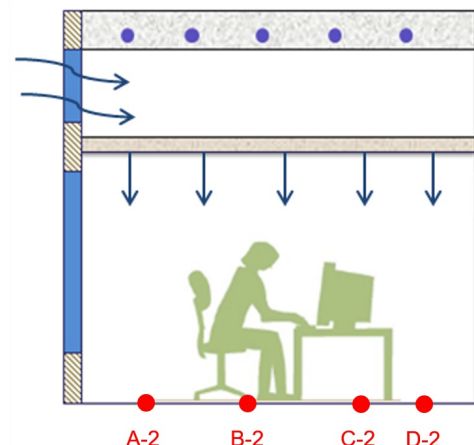
## IEA-EBC annex 62 launches tool to assess the ventilative cooling potential

A new tool developed within the framework of International Energy Agency (IEA) Annex 62-ventilative cooling project has been launched. The ventilative cooling potential tool (VC tool) aims to assess the potential effectiveness of ventilative cooling strategies by taking into account climate conditions, building envelope thermal properties, occupancy patterns, internal gains and ventilation needs.

The excel-based tool accompanied by a user guide are freely accessible and available at the [venticool-Annex 62 website](http://venticool-Annex 62 website).



Draught rate measurements in the room at air supply temperature of  $-8^{\circ}\text{C}$  and air change rate of 4 ach



# 13 -14 September 2017 - 38th AIVC & 4th venticool conference in Nottingham, UK

The 38th AIVC- 6th TightVent & 4th venticool conference "Ventilating healthy low-energy buildings" will be held on 13 and 14 September 2017 in Nottingham, UK, focusing on:

- thermal comfort and ventilative cooling (the application of ventilation to cool indoor spaces and reduce overheating risk in buildings);
- air infiltration through cracks in the building envelope and ductwork;
- the relationships between ventilation, indoor air quality and health.

Specific topics of interest on ventilative cooling include:

- Potential for ventilative cooling strategies;
- Ventilative cooling in energy performance regulations;
- Design approaches and control

- strategies for ventilative cooling and case studies;
- Thermal comfort and ventilation;
- Coupling of ventilation with cooling systems;
- Ventilative cooling technologies and components;
- IAQ and acoustical issues.

Keynote speakers:

- Sani Dimitroulopoulou, Public Health England
- Cath Noakes, University of Leeds
- Tadj Oreszczyn, the Chartered Institution of Building Services Engineers (CIBSE)
- Peter Rankin, Department for Communities and Local Government
- Paul Ruysevelt, University College London (UCL)
- Don Weekes, Indoor Environmental Quality Global Alliance (IEQ-GA)
- Ant Wilson, Aecom

For more information please visit the conference website at:  
<http://www.aivc2017conference.org>

## 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.

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*venticool*  
the international platform for ventilative cooling

