

Foreword

New standardization projects relevant to ventilative cooling applications have officially been initiated under Technical Committees (TC) in the European Committee for Standardization (CEN/TC 156) and the International Organization for Standardization (ISO/TC 205) since 2017. These projects aim to make technical documents focusing on design aspects and setting criteria for ventilative cooling, and natural & hybrid ventilation systems in residential and non-residential buildings.

In the meantime, following the successful completion of the International Energy Agency's Energy in Buildings and Communities Programme (IEA- EBC) Annex 62 Ventilative Cooling after a four-year working period, the new Annex 80 Resilient Cooling is now in its preparation phase underlining the need for intelligent strategies for the reduction of overheating which at the same time are as cost-effective, energy-efficient and low-carbon solutions.

The 40th AIVC and 6th venticool conference to be held in Ghent, Belgium on 15-16 October 2019 will be the dissemination channel for annex 80 & other EBC projects and the central place to discuss building ventilation challenges and opportunities related to Indoor Environmental Quality (IEQ).

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

The venticool team

 @venticool

Feedback from the 39th AIVC & 5th venticool conference: Summary of the ventilative cooling track

More than 200 participants attended the joint 39th AIVC – 7th TightVent – 5th venticool conference held in Juan-Les-Pins, France on September 18-19, 2018. The programme consisted of 3 parallel sessions with contributions from 27 countries and international organisations. Around 150 presentations were given covering the main conference topics namely: Smart Ventilation, Indoor Air Quality (IAQ) and Health relationships; Ventilation and (building) Airtightness; Ventilative cooling - Resilient cooling.

It has also been a major discussion place for on-going or recently launched projects and initiatives such as the Indoor Environmental Quality – Global Alliance (<http://ieq-ga.net/>), the IEA EBC annex 80 “Resilient Cooling” (<http://annex80.iea-ebc.org/>) and the IEA EBC annex 78 “Supplementing Ventilation with Gas-phase Air Cleaning, Implementation and Energy Implications” (<http://annex78.iea-ebc.org/>).

The “Ventilative Cooling-Resilient Cooling” track at the AIVC 2018 conference consisted of 14 presentations organised in 3 sessions:

1. Ventilative Cooling
2. Improving the efficiency of ventilative cooling
3. IEA EBC Annex 80 on Resilient Cooling (topical session)

The article available here provides a summary of the main trends and conclusions addressed during the presentations and discussions on the topic of ventilative & resilient cooling.

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15 -16 October 2019 – 40th AIVC & 6th venticool conference in Ghent, Belgium

The 40th AIVC Conference “From Energy crisis to sustainable indoor climate – 40 years of AIVC” will be held on 15 and 16 October 2019 at ‘Het Pand’, the congress centre of Ghent University in Ghent, Belgium. It will also be the 8th TightVent conference and the 6th venticool conference.

Conference Scope & Concept

In the past 40 years, since the first oil crisis in the seventies, energy and climate goals have been shaping many countries’ policy and legislative agendas. The building sector plays a crucial role in achieving these goals, considering the energy use attributed to buildings and its huge potential for improved energy performance. Whereas in the past most of the focus was on reducing the energy consumption, it is now clear that better performing buildings must ensure an acceptable Indoor Environmental Quality (IEQ), by providing higher Indoor Air Quality (IAQ) and comfort levels for their occupants. Building ventilation entails both challenges and opportunities to achieve this goal. In 2019 the AIVC completes its 40th year of existence and the conference organisers thought that it would be good to pay a particular interest to the evolution during these 40 years. This is the context defining the core theme of the joint 40th AIVC, 8th TightVent and 6th venticool Conference as: “From Energy crisis to sustainable indoor climate – 40 years of AIVC”.

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

- Smart ventilation, Indoor Air Quality (IAQ) and health relationships;
- Airtightness;
- Ventilative cooling - Resilient Cooling.

The conference programme will include well-prepared and structured sessions focused on the conference

topics, invited speakers, long and short oral presentations arising from the call, as well as 90 seconds industry presentations.

Call for Abstracts & Topical Sessions

This year, there are 2 new features:

- 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

Detailed information & important deadlines for the 2 calls for abstracts can be obtained here. Authors interested in the peer review of their papers should submit their abstracts by **December 14, 2018** the latest (deadlines are strict - no extension is foreseen). The deadline for abstracts for which the author does not want a peer review of the paper is **March 20, 2019**.

Detailed information & important deadlines for the call for topical sessions can be obtained here. The deadline for submitting your proposal for topical sessions is **December 14, 2018**.

For further information and updates visit our website and download the conference flyer.

The recently adopted IEA EBC Annex 80 on Resilient Cooling

Peter Holzer, Institute of Building Research & Innovation, Austria

An inexorable increase in energy consumption for the cooling of buildings, and the increase in overheating of buildings is caused by urbanisation and densification, climate change, elevated comfort expectations, and inappropriate architectural design practices. Meeting this challenge requires further development and application of low energy and low carbon cooling solutions on a large scale. In order to expedite the transition of our new-build and existing building stock to nearly zero energy building (nZEB) and nearly zero carbon building (nZCB) status we have to take immediate action.

To work on this important matter a

new Annex has been approved by the IEA EBC Executive Committee at the Stockholm meeting in June and the Annex 80 Preparation Phase has officially been launched. During this one-year period scientists from participating countries will gather to further develop the research programme for the upcoming three-year working phase.

The main topic is Resilient Cooling for Residential and Small Non-Residential Buildings. Research efforts will be structured in four subtasks. Subtask A “Impact Assessment” will assess available technologies across all participation countries which facilitate Resilient Cooling. The goal is to investigate potential benefits, costs and other impacts of resilient cooling technologies and systems in different countries to increase multilateral transfer of knowledge. Furthermore appropriate Key Performance Indicators (KPI) will be developed and agreed on to evaluate resilience of cooling systems using a holistic approach that includes affordability, life cycle cost effectiveness, energy efficiency, carbon intensity.

Subtask B “Solutions” will carry out specific research towards improvements and new developments of resilient cooling and overheating protection solutions. Complementary to technological research it will furthermore develop recommendations for the way in which these systems should be integrated with other building design features and sub-systems.

Subtask C “Field Studies” will showcase the opportunities and benefits of resilient cooling through analysis and evaluation of well-documented applications of different low energy and low carbon technologies. The field studies will synthesise examples of specific technologies and solutions rather than focussing on specific buildings. It will examine the performance gap of existing cooling applications, with special concern at socio-technological interaction as well as control strategies.

Subtask D “Policy Actions” will deal with policy related endeavours promoting energy efficiency and

resilience in cooling. This subtask seeks to advance product labelling programmes, AC minimum energy performance standards (MEPs) as well as the implementation of sustainable building codes in national, European and international standards.

The annex will yield instructions for the improvement of existing systems and their control strategies as well as for the implementation of new resilient cooling solutions for residential buildings and small non-residential buildings. It will generate guidelines for resilient cooling solutions allowing for the reduction of overheating risks as well as the cost-effective, energy-efficient and low-carbon coverage of cooling demands. It will also produce recommendations for labelling programmes, the integration of resilient cooling in legislation, standards on national, European and international levels as well as in design briefs and in energy performance calculation and verification methods.

The Annex 80 is open to all interested scientific and industrial researchers as well as governmental stake holders of countries within the IEA EBC programme. For further information please visit the website <http://annex80.iea-ebc.org/meetings> or contact Peter Holzer, operating agent of EBC Annex 80 at: peter.holzer@building-research.at

Ongoing standardization projects on ventilative cooling, and natural & hybrid ventilation systems

Christoffer Plesner, VELUX A/S, Denmark

Jannick Roth, WindowMaster International A/S, Denmark

New standardization projects relevant to ventilative cooling applications (an air system that cools a building taking ventilation air from outside at its actual temperature and humidity and shall not have any mechanical pre-cooling based on

refrigeration process) have officially been initiated under Technical Committees (TC) in the European Committee for Standardization (CEN/TC 156) and the International Organization for Standardization (ISO/TC 205) since 2017. The scope of this work is to make technical documents focusing on design aspects and setting criteria for ventilative cooling, and natural & hybrid ventilation systems in residential and non-residential buildings. The aim is to help designers designing these ventilation systems in order to fulfil the set criteria for indoor air quality (IAQ) and thermal comfort.

The projects are progressing well and content has started to emerge into actual drafts. Some of the projects are further in the process than others, e.g. item #1 and #2 below where the 1st working drafts has been sent to CEN/TC 156 for information and final draft is due by June 2019. Subsequently a voting-procedure is performed by CEN-members. The initiated projects are planned as CEN Technical Specifications, an EN standard under CEN/TC 156, and as an ISO standard under ISO/TC 205.

More specifically, four projects relevant to ventilative cooling applications, have already started:

1. Ventilative cooling systems

- Main focus: Thermal comfort (reduce cooling loads and prevent overheating)
- Document type: A CEN Technical Specification
- Work initiated: In CEN/TC 156, WG/21

2. Natural and hybrid ventilation systems in non-residential buildings

- Main focus: Indoor air quality
- Document type: CEN Technical Specification
- Work initiated: In CEN/TC 156, WG/20

3. “Revision of EN 15665:2009 and CEN/TR 14788:2006” (focus to expand information on Natural and Hybrid ventilation in residential buildings)

- Main focus: Indoor air quality

- Document type: Aim is one EN Standard
- Work initiated: In CEN/TC 156, WG/2

4. Design process of natural ventilation for reducing cooling demand in energy-efficient non-residential buildings

- Main focus: Thermal comfort (design process to prevent overheating)
- Document type: ISO standard
- Work initiated: In ISO/TC 205, WG/2

In this work it is important to make clear which inputs are needed to make the performance calculations for the ventilation systems. Further it is important to give the designer different options without pointing to only one solution or value by providing a classification of different categories. More specifically in e.g. item #1 the aim is to split the document into natural, hybrid and mechanical ventilative cooling, where each system should be designed with following steps:

- Find your criteria
- Conceptual design (simple evaluations, e.g. simple equations)
- Detailed design (detailed evaluations, e.g. simulations)
- Design validation

Many of these technical documents are entering a new territory and will be the first of its kind, as no documents are currently available at CEN level describing natural and hybrid systems as well as ventilative cooling.

Furthermore, this is a good opportunity to define the design and calculation methods to achieve the given criteria for ventilative cooling, and natural & hybrid ventilation systems in buildings on the European and International scene. Content for this work may be found from international projects e.g. by applying findings from the recent IEA EBC Annex 62 publications on ventilative cooling found here.



International Energy Agency

Status and recommendations for better implementation of ventilative cooling in standards, legislation and compliance tools

Energy in Buildings and Communities Programme
September 2018



EBC is a programme of the International Energy Agency (IEA)



IEA EBC Annex 62 releases its final report on ventilative cooling

IEA-EBC Annex 62 has just released its final deliverable! The summary report Status and recommendations for better implementation of ventilative cooling in standards, legislation and compliance tools, presents insights on recommendations into how ventilative cooling is integrated in EN

standards, ISO standards, national standards, national legislation and national compliance tools. The information presented derives from feedback by IEA EBC Annex 62 experts of 11 countries who have completed a questionnaire, providing a high level of insight into the current status, and thereby the recommendations to be given on the basis of this knowledge. The summary report is intended for building designers, builders and experts working with building energy performance standards, legislation and compliance tools. It aims at helping these target groups with concrete recommendations for a better future implementation of ventilative cooling.

The Venticool background report on recommendations is the background for this IEA EBC Annex 62 summary report and should be seen as supplementary material for the State-of-the-Art Review (SOTAR). The report can be found here.

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.

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To join venticool please visit: <http://venticool.eu/venticool-contact/>

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