

## Foreword

Welcome to the December 2019 issue of the venticool newsletter!

In this edition, we are pleased to share highlights of our recent AIVC-venticool-TightVent joint conference "From Energy crisis to sustainable indoor climate – 40 years of AIVC" held on 15-16 October in Ghent, Belgium. Moreover, we provide feedback on CEN and ISO standardization projects on Ventilative cooling and Natural and Hybrid ventilation systems as well as updates on the recent activities of the IEA EBC annex 80 on resilient cooling.

As we look towards the new year, we would like to invite you to the AIVC – ASHRAE IAQ –venticool & TightVent joint conference "IAQ 2020: Indoor Environmental Quality Performance Approaches Transitioning from IAQ to IEQ" in September 2020 in Athens (abstracts submission is due **December 23**).

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 and look forward to seeing you in our future events!

The venticool team

@venticool



## IEA EBC Annex 80 on resilient cooling

Resilient Cooling is used to denote low energy and low carbon cooling solutions that strengthen the ability of individuals and our community as a whole to withstand, and also prevent, thermal and other impacts of changes in global and local climates. It encompasses the assessment and Research & Development of both active and passive cooling technologies of the following four groups: 1) Reduce heat loads to people and indoor environments; 2) Remove sensible heat from indoor environments; 3) Enhance personal comfort apart from space cooling; and 4) Remove latent heat from indoor environments.

IEA EBC Annex 80 "Resilient Cooling", is part of the Technology Collaboration Programme (TCP) Energy in Buildings and Communities (EBC) of the International Energy Agency (IEA). It has been approved for the working period 2019-2023.

The main objective of this annex is to support a rapid transition to an environment where resilient low energy and low carbon cooling systems are the mainstream and preferred solutions for cooling and overheating issues in buildings.

Currently 10 countries have officially confirmed their participation and more than 26 institutions are involved in the annex. The working phase started in July 2019 and runs until June 2022. The reporting phase will start in July 2022 and end in July 2023. Annex 80 Expert Meetings will be held every six months. More specifically:

- The 1<sup>st</sup> expert meeting took place on October 21<sup>st</sup> & 22<sup>nd</sup>, 2019 in Vienna
- The 2<sup>nd</sup> meeting will take place on April 20<sup>th</sup> & 21<sup>st</sup>, 2020 in London
- The 3<sup>rd</sup> Expert Meeting will take place on November 5<sup>th</sup> & 6<sup>th</sup>, 2020 in Brisbane

The annex is still open to participation. If you want to know more please visit the website <http://annex80.iea-ebc.org/> or contact: [resilient.cooling@building-research.at](mailto:resilient.cooling@building-research.at)

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# Feedback from the 40<sup>th</sup> AIVC & 6<sup>th</sup> venticool conference: Summary of the ventilative cooling & HVAC track

The AIVC – TightVent - venticool 2019 joint Conference “From Energy crisis to sustainable indoor climate – 40 years of AIVC”, co-organized by Ghent University and the International Network on Ventilation and Energy Performance (INIVE) on behalf of the Air Infiltration and Ventilation Centre (AIVC), the Building and Ductwork Airtightness Platform (TightVent Europe), and the international platform for ventilative cooling (venticool), was held on 15-16 October in Ghent, Belgium. The event drew just over 200 participants - researchers, engineers & architects, policy makers or regulatory bodies, manufacturers & stakeholders and international organizations from 28 countries.

The programme included 3 parallel tracks of structured sessions with around 160 presentations covering the main conference topics namely: Smart Ventilation, Indoor Air Quality (IAQ) and Health relationships; Airtightness; Ventilative cooling – Resilient cooling. A special session i.e. “90 seconds industry presentations” was also organized and devoted to the sponsors of the event. The Conference featured the official inauguration of the Indoor Environmental Quality Global Alliance (IEQ-GA) association during a ceremony held on the evening of the first day of the event. At the ceremony, the founding members celebrated with short speeches the establishment of the association and presented its mission and objectives to create a healthier indoor environment in the buildings sector. The event has also been a major discussion place for on-going or recently launched projects such as, the IEA EBC annex 68 “Design and Operational Strategies for High IAQ in Low Energy Buildings” (<http://www.iea-ebc-annex68.org/>), the IEA EBC annex 78 “Supplementing Ventilation with Gas-

phase Air Cleaning, Implementation and Energy Implications” (<http://annex78.iea-ebc.org/>), the IEA EBC annex 79 “Occupant-Centric Building Design and Operation” (<http://annex79.iea-ebc.org/>) and the IEA EBC annex 80 “Resilient Cooling” (<http://annex80.iea-ebc.org/>) .

The “Ventilative cooling & HVAC” track at the AIVC 2019 conference consisted of 30 presentations organized in 7 sessions, 5 of which were topical sessions with a number of invited presentations:

1. EBC Annex 80- Resilient Cooling
2. Better implementation of ventilative cooling in national building standards, legislation and compliance tools
3. Model based control and concepts for ventilation systems
4. Measurement and commissioning of ventilation systems and ductwork
5. IEA EBC Annex 79: What information do we need for occupant-centric building design and operation?
6. When the EPR hits the fan, or...the killing of the fan energy
7. Optimized HVAC design and operation

The article available [here](#) presents main trends, ideas, considerations and conclusions that emerged from the two days of the conference on this topic.

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

*Christoffer Plesner, VELUX A/S, Denmark*

*Jannick Roth, WindowMaster International A/S, Denmark*

There has been an overall lack of ventilative cooling integration, in existing European technical documents regarding “system design” and “performance” aspects, and therefore Pre work items (PWI's) relevant to ventilative cooling applications were approved and have now started up, since 2017, under CEN/TC 156 and ISO/TC 205 in

various working groups.

These CEN and ISO projects have the scope of making technical documents focusing on setting criteria and giving guidance to design and dimensioning of ventilation systems (natural, mechanical and hybrid) and of ventilative cooling systems.

Ventilative cooling is an air system that cools a building using ventilation air from outside at its actual temperature and humidity in which the air transfer may be by natural, mechanical or hybrid means.

Generally, ventilative cooling reduces the energy consumption of cooling systems while maintaining thermal comfort.

The objective of the documents is to give designers guidance on what to be aware of when designing these ventilation systems, while setting relevant criteria. Generally, there is good development in these projects, with a plan to coordinate among the working groups in CEN and ISO to eliminate overlaps, like for example on ventilation definitions.

The following projects relevant to ventilative cooling applications will be developed within 2-4 years in CEN:

### 1. Ventilative cooling systems

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

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

- Main focus: Indoor air quality
- Document type: A CEN Technical Specification
- Work started up in WG/20, CEN/TC 156

### 3. "Ventilation for buildings – Performance criteria, design and dimensioning of ventilation systems in residential buildings (Revision of EN 15665:2009 and CEN/TR 14788:2006)"

- Main focus: Indoor air quality
- Document type: Goal is to merge both documents into one document (e.g. EN standard)

- Aim is also to expand the sections on Natural and Hybrid ventilation systems by fully supporting Performance based design approaches
- Work started up in WG/2, CEN/TC 156

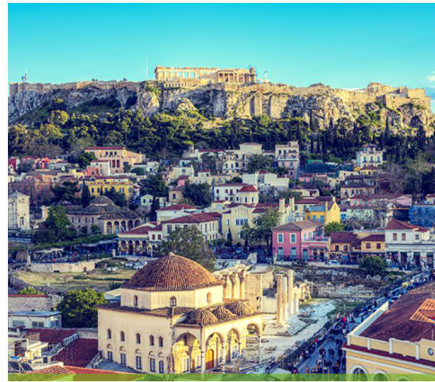
And the following project started in ISO:

#### 4. Design process of natural ventilative cooling for reducing cooling demand in non-residential buildings

- Main focus: Thermal comfort (reduce cooling loads and prevent overheating)
  - It has been decided recently to update the scope to also include hybrid solutions
- Document type: ISO standard
- Work started up in ISO/TC 205, WG/2, SC/2

These technical documents will describe how to design ventilative cooling, as well as natural and hybrid ventilation systems, and what to be aware of. The documents will probably include a better way of estimating the thermal comfort and potential of ventilative cooling systems early on, by including both the local climate and the building itself – possibly inspired by the "ventilative cooling potential tool" developed by the IEA EBC Annex 62 [1]. The outcome of the documents could potentially be the number of hours or % of time the ventilative cooling systems could be used depending on building and location. The initiated projects are foreseen to be released around year 2023 - and of course support but not overlap the content of the EPB(D) standards [2]. The technical documents are a good opportunity to define the criteria and design aspects of ventilative cooling and natural and hybrid ventilation systems on the European and International scene by applying findings from e.g. the Venticool platform [1] and the final deliverables of the IEA EBC Annex 62 reports [3].

[1] <https://venticool.eu/annex-62-publications/deliverables/>  
 [2] <https://epb.center/documents/>  
 [3] <https://venticool.eu/venticool-publications/reports/>



### IAQ 2020: Indoor Environmental Quality Performance Approaches

Transitioning from IAQ to IEQ

September 14-16, 2020 | Athens, Greece



## 14 -16 September 2020 – 41<sup>st</sup> AIVC-ASHRAE IAQ-9<sup>th</sup> TightVent & 7<sup>th</sup> venticool 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 take place September 14-16, 2020 in Athens, Greece. The conference will also be the 9<sup>th</sup> TightVent and 7<sup>th</sup> 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.

#### Conference topics

- **Health and Well-being:** Appropriate technical and operational definitions
- **Performance Metrics:** For all aspects of IEQ
- **Interactions:** Interactions between IEQ parameters
- **Occupant Behavior:** How behavior impacts IEQ and how IEQ impacts behavior - psychological dimensions of IEQ
- **Smart Sensors and Big Data:** Sensor

properties, data management, cybersecurity, applications

- **Smart Controls:** Equipment properties, commissioning, equivalence
- **Resilience and IEQ:** Responding to climate change and disasters
- **Ventilation:** Mechanical, passive, natural and hybrid systems
- **Air Tightness:** Trends, methods and impacts
- **Thermal Comfort:** Dynamic approaches, health impacts and trends
- **Policy and Standards:** Trends, impacts, implications

#### Call for Abstracts & Papers

Authors have the option to submit either a conference paper or an extended abstract and to state their preference for either an oral or poster presentation. Authors are invited to submit a 300-word or less abstract on a conference topic by December 23, 2019.

- Submission of abstract, **December 23, 2019**
- Notification of decision on abstract, February 12, 2020
- Submission of complete manuscript, April 17, 2020
- Final acceptance, June 12, 2020

To submit an abstract please follow this link:

<https://www.conftool.org/IAQ2020/>  
 For more information, please visit <https://www.ashrae.org/conferences/topical-conferences/indoor-environmental-quality-performance-approaches> or contact [meetings@ashrae.org](mailto:meetings@ashrae.org)

## Sustainable Energy for All (SEforALL)

Sustainable Energy for All (SEforALL) is an international organization working with leaders in government, the private sector and civil society to drive further, faster action toward achievement of [Sustainable Development Goal 7 \(SDG7\)](#), which calls for universal access to sustainable energy by 2030, and the Paris Agreement, which calls for reducing greenhouse gas emissions to limit climate warming to below 2° Celsius.

Sustainable Energy for All's (SEforALL) mission is to empower leaders to broker partnerships and unlock finance to achieve universal access to sustainable energy – as a contribution to a cleaner, just and prosperous world for all.

One of the organization's work areas is 'Cooling for All'. "Cooling is essential for everyday life – from the cold chain systems that deliver our

food and vaccines, to protection from extreme heatwaves. And yet 1.05 billion people worldwide are facing risks due to lack of cooling: limited access to nutritious food, essential health services like vaccines, and respite from rising temperatures. Cooling for All aims to identify and overcome the challenges to, and seize the opportunities of, providing access to affordable, sustainable cooling solutions for all. Given the increased demand for cooling and the social and environmental costs of a business as usual approach, this will be crucial to achieve the Paris Agreement and deliver on the Sustainable Development Goals (SDGs). We must scale up and speed up the delivery of sustainable access to cooling for all that will not increase emission and energy demand".

(<https://www.seforall.org/interventions/cooling-for-all>)

## 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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### Platform facilitator

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*venticool*  
the international platform for ventilative cooling

