

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

Topical sessions provisional programme

The joint '33rd AIVC Conference' and '2nd TightVent Conference' will be held in downtown Copenhagen (Denmark), **Wednesday 10 and Thursday 11 October 2012.**

The conference aims to focus on ventilation and infiltration in nearly zero-energy buildings and more particularly on challenges and perspectives for ventilative cooling (the use of ventilation systems to cool indoor spaces), on the rationale and solutions for better building and ductwork airtightness, as well as on developments of ventilation requirements based on health

The provisional programme includes presentations of invited world-renowned and key experts as well as 75 papers selected from the call for abstracts for long- and short-oral presentations. Topical sessions are 60- to 90-minute sessions addressing a specific topic mostly with invited speakers and allowing significant time for discussion with the audience. This year's topical session are:

Ventilative cooling	Building and ductwork airtightness	Ventilation, health and comfort	Ventilation technologies and site implementation
International initiatives on ventilative cooling	Philosophy and approaches for building airtightness requirements	Health and comfort in highly energy efficient buildings	Demand-controlled ventilation (Clear-Up project)
Ventilative cooling in residences	Quality and building airtightness	Health-Based Ventilation Guidelines for Europe (HealthVent project)	Quality of domestic ventilation systems
Advanced ventilative cooling concepts in Nearly Zero-Energy Buildings	Quality of ductwork systems	Ventilation and thermal comfort in school renovations (SchoolVentCool project)	Multi-zone airflow simulations
Ventilative cooling in building regulations		European Policies on Indoor Air Quality	

The conference is organized by the International Network on Ventilation and Energy Performance (INIVE) on behalf of the Air Infiltration and Ventilation Centre (AIVC) and TightVent Europe (the Building and Ductwork Airtightness Platform) with support from the VELUX group.

In cooperation with



Ventilative cooling topical sessions

International initiatives on ventilative cooling (60 min)

Chairpersons: Mattheos Santamouris (Greece) and Per Heiselberg (Denmark)

Synopsis: Ventilative cooling is achieving increased interest in many countries. The session presents two new initiatives to initiate and coordinate international cooperation in field. The overall goal of the platform is to increase communication, networking and awareness raising regarding a more effective implementation of ventilative cooling strategies while the focus of the Annex is to initiate and coordinate a new strong research effort.

- Presentation of the Ventilative Cooling Platform (Peter Wouters, Belgium)
- Presentation of new IEA ECBCS Annex proposal on Ventilative Cooling (Per Heiselberg, Denmark)

Ventilative cooling in residences (90 min)

Chairpersons: Mattheos Santamouris (Greece) and Per Heiselberg (Denmark)

Synopsis: With the increased insulation and airtightness levels in new and renovated buildings summer comfort has become an important challenge in residences. The session will address summer comfort requirements and design methods as well as the potential of ventilative cooling.

- Title to be confirmed (Fergus Nicol and Susan Roaf, United Kingdom)
- Simplified hourly based method to ensure summer comfort in dwellings (Lone Hedegaard Mortensen, Denmark)
- Addressing summer comfort in low-energy housings using the air vector: a numerical and experimental study (Axel Cablé, France)
- Potentials, Limitations and Design Implementation of Night Flush Cooling in Residences (Peter Holzer, Austria)

Advanced ventilative cooling concepts in NZEB (90 min)

Chairpersons: Mattheos Santamouris (Greece) and Per Heiselberg (Denmark)

Synopsis: New advanced solutions are needed to improve the effectiveness of ventilative cooling and make it a more competitive technology. The session will describe different developments to improve ventilative cooling.

- H-NAC-Wall System. Natural/Hybrid Air Conditioning modular system for nearly zero-energy buildings and retrofitting (Chiesa Giacomo, Italy)
- Ventilative cooling using concrete decks with PCM (Michal Pomianovski, Denmark)
- Night cooling energy balance (Jerome Le Dreau, Denmark)
- Innovative facade ventilation concepts and Demand-controlled ventilation for nordic climates (Matthias Haase, Norway)

Ventilative cooling in building regulations (60 min)

Chairpersons: Mattheos Santamouris (Greece) and Per Heiselberg (Denmark)

Synopsis: The way goals for thermal comfort are defined and the possibility to verify the performance of ventilative cooling are essential to the exploitation and spread of the technology. The session will address these issues.

- The simulation of natural ventilation and passive cooling is no more a privilege of experts (Flourentzos Flourentzou, Switzerland)
- Adaptive thermal comfort requirements in EN 15251 and ASHRAE standard 55. (Atze Boerstra, Netherlands)

Building and ductwork airtightness topical sessions

Philosophy and approaches for building airtightness requirements (60 min)

Chairperson: Peter Wouters (Belgium) and Willem de Gids (Netherlands) (to be confirmed)

Synopsis: Because of the significant impact of air infiltration on energy use, there are a number of countries that have implemented measures to encourage better envelope airtightness. The purpose of this session is to give an overview and discuss the pros and cons of these approaches.

- Structured discussion

Quality and building airtightness (90 min)

Chairperson: Rob Coxon (UK) (to be confirmed)

Synopsis: Improving building airtightness represents a great challenge for the building industry because it entails profound changes in design and site implementation as well as on the overall building process. This session will address specifically testing and site implementation issues, with a focus on the quality frameworks that have been developed or that are under development.

- Overview of operational competent testers schemes for building airtightness (Rémi Carrié, France)
- The FliB certification scheme for craftsmen (Oliver Socher, Germany)
- Proposal for an update of French regulation concerning airtightness measuring equipment calibration (Florent Boithias, France)
- Overview of selected training initiatives in France (Andrés Litvak, France)

Airtightness of ductwork systems (60 min)

Chairperson: Johnny Andersson

Synopsis: Scandinavian countries have a long experience with the implementation of quality ductwork systems. This session will give an overview of the instruments developed in Sweden to urge proper design, installation and maintenance of ductwork systems. We will also discuss how this inspires other countries.

- Swedish experience with air tightness testing: overall scheme, test protocol, and practical examples (Johnny Andersson, Sweden)
- Recent steps to stimulate ductwork airtightness in the French regulation and the Effinergie+ label (Michael Blazy, France)
- Open discussion

Ventilation, health and comfort topical sessions

Health and comfort in highly energy efficient buildings

Chairpersons: Pawel Wargocki (Denmark) and Peter Wouters (Belgium)

Synopsis: Highly energy efficient buildings should ensure that the low use of energy does not compromise conditions for the users of buildings. This session will identify and discuss research issues that need to be prioritized to ensure that a built environment in highly-efficient energy buildings (and older buildings undergoing the energy retrofit) is safe and comfortable with no health hazards for its users neither due to poor design and construction, nor due to poor operation, maintenance or performance. The identified research issues will address broad areas related to basic human requirements, technical solutions, policies and training programmes supporting implementation.

- Structured discussion

Health-Based Ventilation Guidelines for Europe (HealthVent project)

Chairpersons: Pawel Wargocki (Denmark) and Thomas Hartmann (Germany)

Synopsis: At present ventilation standards and guidelines define ventilation rates in non-industrial buildings to meet comfort requirements of building occupants. It is reasonable to enquire what should the ventilation rates be if they are based on health requirements. This is one of the goals of the HealthVent project attempting to define health-based ventilation guidelines for Europe. The purpose of this session is to communicate and discuss the results obtained so far by the project team.

- Principles of health-based ventilation guidelines (Pawel Wargocki, Denmark)
- Evidence on ventilation effects on health (Paolo Carrer, Italy)
- Impact of ventilation on energy requirements (Hugo Santos, Portugal)
- Health impact of the HealthVent guidelines (Otto Hanninen, Finland)
- Implementation of the guidelines, current ventilation standards and qualitative HealthVent guideline (Olli Seppänen, European organization)
- Discussion (Thomas Hartmann/Pawel Wargocki to lead)

Ventilation and thermal comfort in school renovations (SchoolVentCool project) (60 min)

Chairpersons: Christian Hviid (Denmark) and Pawel Wargocki (Denmark)

Synopsis: The currently running European SchoolVentCool project aims to examine high performance retrofit measures for schools, including prefabrication and modular design, which will promote high indoor environmental quality through improved ventilation and cooling, and in parallel will secure high energy efficiency. The purpose of this session is among others to present and discuss the solutions examined by the Danish partners in the project consortium as well as to communicate the potential economic consequences of poor air quality in classrooms.

- Thermal comfort analyses in classrooms (David Venus, Austria)
- Experimental study of diffuse ceiling ventilation in a classroom (Christian Hviid, Denmark)
- Influence of different ventilation strategies on classroom temperature and air quality, and perceptions of pupils (Pawel Wargocki, Denmark)
- The performance of ventilation systems in existing schools classroom (Christian Hviid, Denmark)
- Socio-economic consequences of better air quality in schools, a Danish example (Pawel Wargocki, Denmark)

European Policies on Indoor Air Quality

Chairpersons: Stylianos Kephelopoulos (European Commission) and Lara-Grazia Passante (European Commission)

Synopsis:

- EU funded projects and actions on Indoor Air Quality in FP6 and FP7: major outcomes and future challenges for the European policy (Lara-Grazia Passante, European Commission)
- Integrating full chain risk modeling with European IAQ-BoD assessment (INTERA platform with IAIAQ update) (Matti Jantunen, Finland)
- Policies on Energy and IAQ in Buildings and Climate Change (Eduardo de Oliveira Fernandes, Portugal)
- Plenary discussion

Ventilation technologies and site implementation

Is VOC the right answer to demand controlled ventilation? (Clear-Up project) (90 minutes)

Chairpersons: Luk Vandaele (Belgium) and Willem de Gids (Netherlands)

Synopsis: The aim of this session is to discuss the relevance to control the ventilation airflow rate provided to a building based on the actual needs and more specifically using volatile organic compounds sensors.

- Quality of indoor environment and Demand Controlled Ventilation. Jakub Kolarik (Denmark)
- Intelligent, energy efficient indoor air quality monitoring using metal oxide semiconductor gas sensor technology (Simone Herberger, Germany)
- Ventilation strategies based on VOC sensing (Bruno Illi, to be confirmed)
- General discussion on DCV in general

Quality of domestic ventilation systems (60 min)

Chairpersons: Miimu Airaksinen (Finland) and Karel Kabele (Czech Republic)

Synopsis: While it is generally accepted that a ventilation—whether natural, mechanical or hybrid—is needed to provide acceptable indoor air quality and prevent building damage, there are debates about the actual performance of these systems and how the deviations observed affect the overall buildings performance. In addition, the envelope airtightness is an important factor with respect to real ventilation system performance. In this session, we will give feedback from field campaign and practice and discuss ways to explore to improve the situation.

- Residential system performance: outcome of a field study in the Netherlands (Atze Boerstra, Netherlands)
- Performances of ventilation systems: on site measurements related to energy efficiency, comfort and health (Samuel Caillou, Belgium)
- Ventilation and airtightness in Estonian dwellings (Targo Kalamees, Estonia)

Multi-zone airflow simulations (60 min)

Programme to be confirmed