BUILD UP
energy solutions
for better buildings

Web Seminar

Ventilative cooling

Keep cool and lower peak energy demand

venticool

Ventilative cooling

A hot topic!

Peter Wouters
Manager INIVE EEIG

Content of this presentation

- Ventilative cooling is not a new topic…
- … but new opportunities AND challenges
- The Venticool platform
- Conclusions

Natvent - 1994

A European project aimed to contribute a better understanding of the barriers and possibilities for applying natural ventilation in office buildings.

http://projects.bre.co.uk/natvent

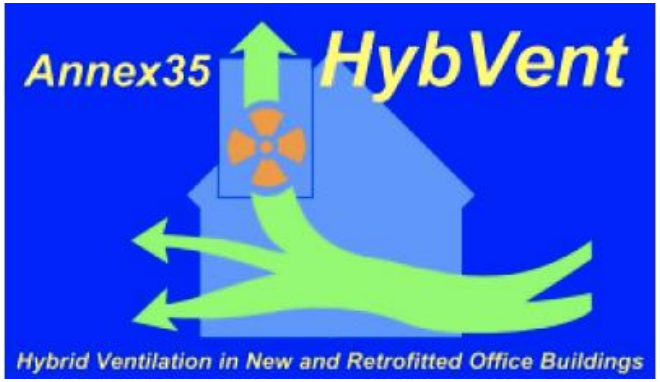
NatVent

IEA EBC Annex 35 HybVent - 1998

An IEA project aimed to:

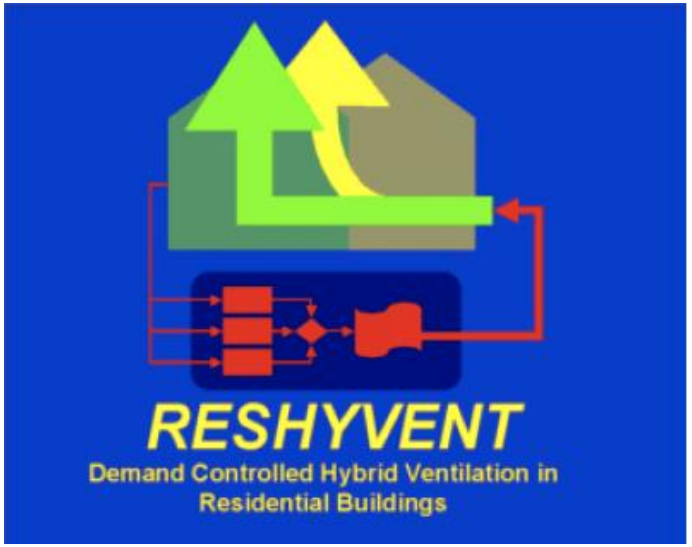
- develop control strategies for hybrid ventilation systems for office and educational buildings,
- develop methods to predict hybrid ventilation performance in hybrid ventilated buildings,
- promote energy and cost-effective hybrid ventilation systems in office and educational buildings and
- select suitable measurement techniques for diagnostic purposes in buildings with hybrid ventilation systems.

www.hybvent.civil.aau.dk/site_guide/index_site_guide.htm



RESHYVENT - 2002

EU project aimed to develop and to construct totally new advanced ventilation concepts for residential buildings based on demand control, hybrid technologies and integration of renewables



KEEPCOOL - 2005

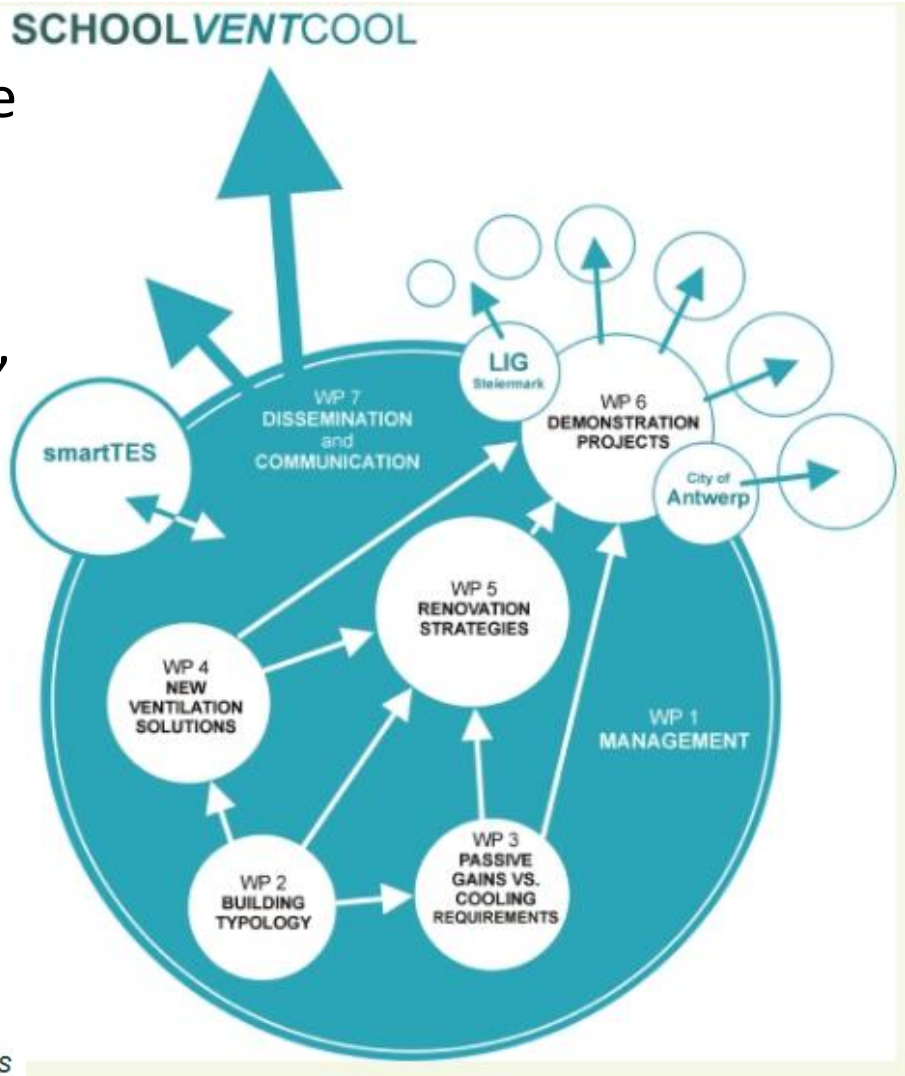
A European project aimed to propose intelligent ways of getting passive cooling to penetrate the market and to establish a new definition of sustainable summer comfort

www.iee-library.eu/images/all_ieelibrary_docs/keepcool_finalreport.pdf

SchoolVentCool - 2012

The EU project “School Vent Cool” developed different high performance renovation strategies for school buildings.

New solutions for ventilation systems, natural cooling and application of prefabricated modules were investigated.



www.schoolventcool.eu

SCHOOLVENTCOOL

Ventilation, cooling and strategies for high performance school renovations

A change in challenges…

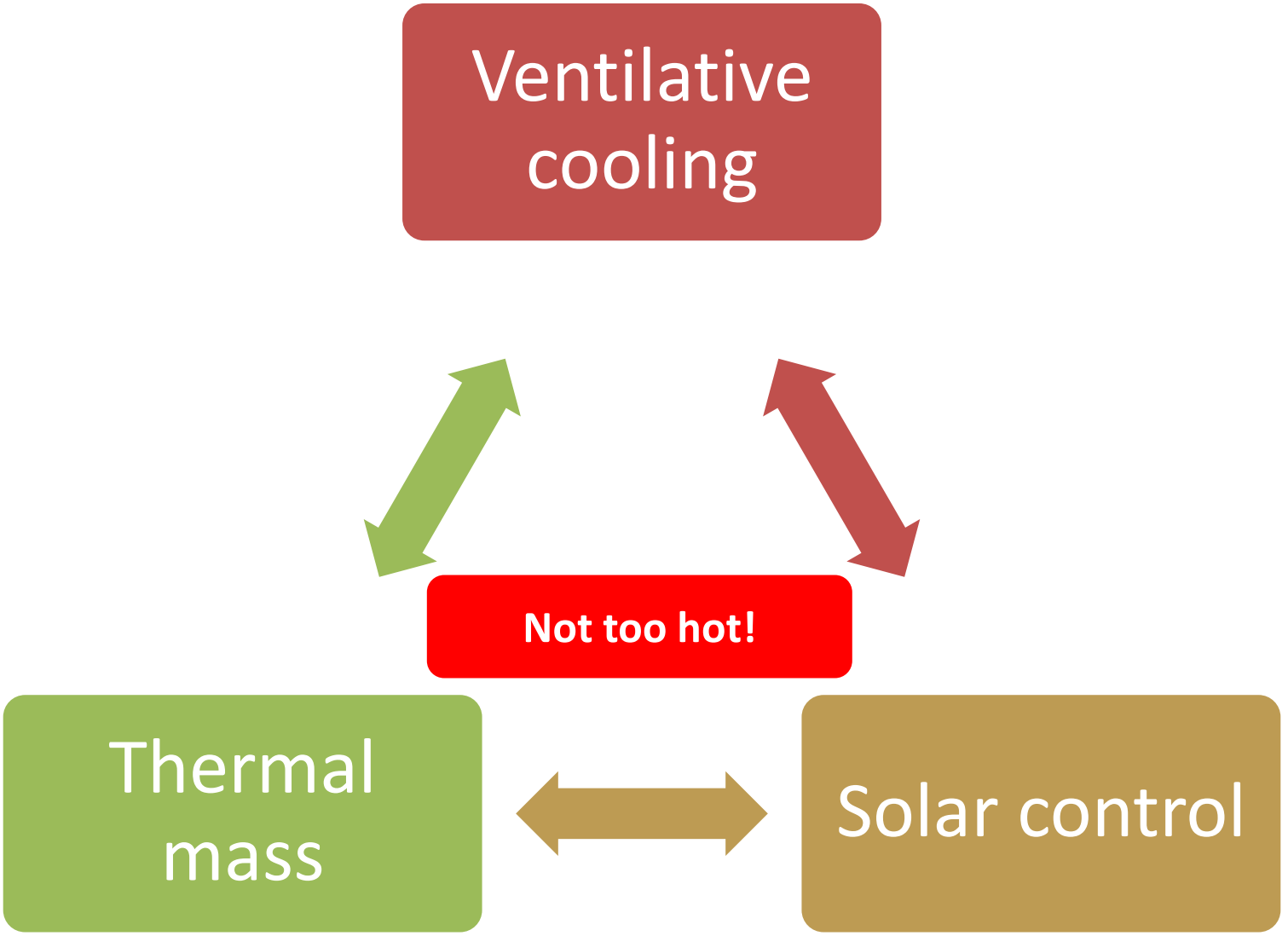
ENERGY

- Heating demand
- Energy consumption for heating
- Primary energy consumption (including cooling)

INDOOR CLIMATE

- Warm enough
- Good air quality
- Acoustics
- **Not too hot!**

Important elements in thermal comfort strategy



Content of this presentation

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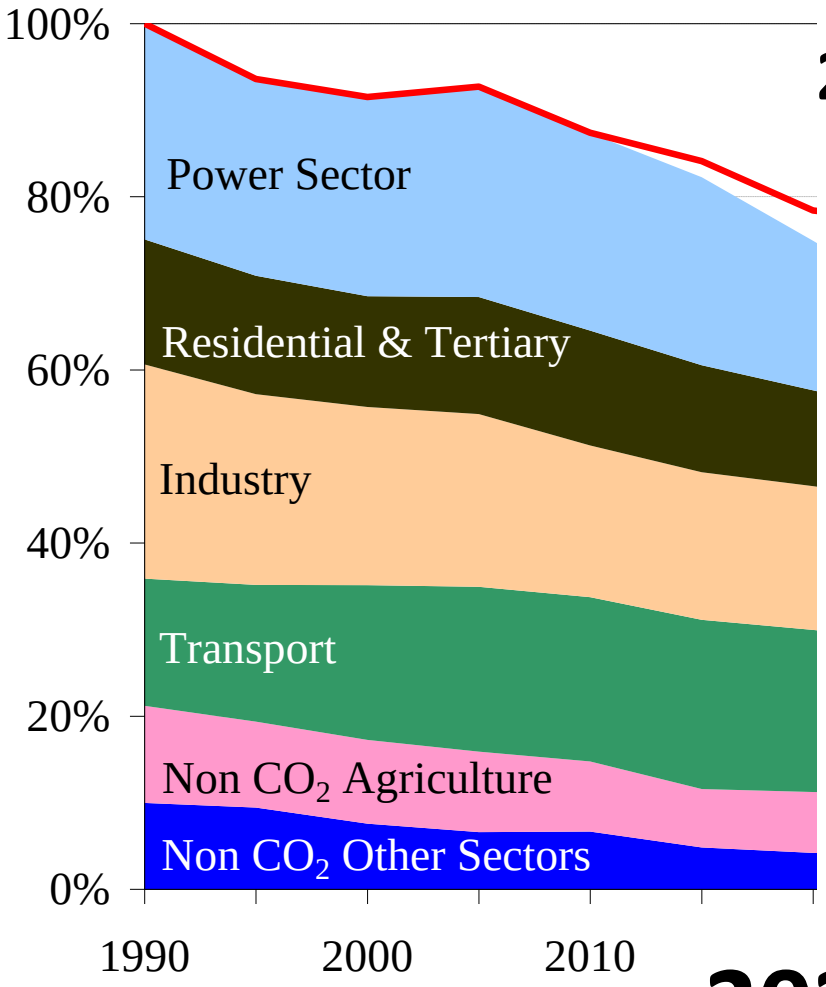
More challenges AND opportunities…

ENERGY	INDOOR CLIMATE	OUTDOOR CLIMATE
Heating demand	Warm enough	Ventilative cooling also during less hot periods
Energy consumption for heating	Good air quality	Noise
Extremely low primary energy consumption (including cooling)	Acoustics	Draught
Power management (smart grids)	Not too hot	Rain, … Burglary, …
		Fine dust

European Roadmap 2050

COM(2011)112



2020: Nearly-zero energy buildings

Short term: Cost optimal requirements

2020

Renewables and management of the grid!

EBC

Energy in Buildings and Communities Programme

2014-04-09

IEA EBC Annex on Energy Flexible Buildings

Annex Text

It is foreseen that the Energy Flexibility in buildings will play an important role in facilitating energy systems based entirely on renewable energy sources. Energy Flexibility of buildings will be necessary to control the energy consumption to match the actual energy production from varying energy sources such as solar and wind.

There is, however, at the moment no overview or insight into how much Energy Flexibility different building types and their usage may be able to offer to the future energy systems.

The aim of the Annex is thus to increase knowledge on and demonstrate the Energy Flexibility buildings can provide for the energy grids, and to identify critical aspects and possible solutions to manage this Energy Flexibility.

Contact person: **Søren Østergaard Jensen** - sdj@teknologisk.dk

Opportunities for ventilative cooling

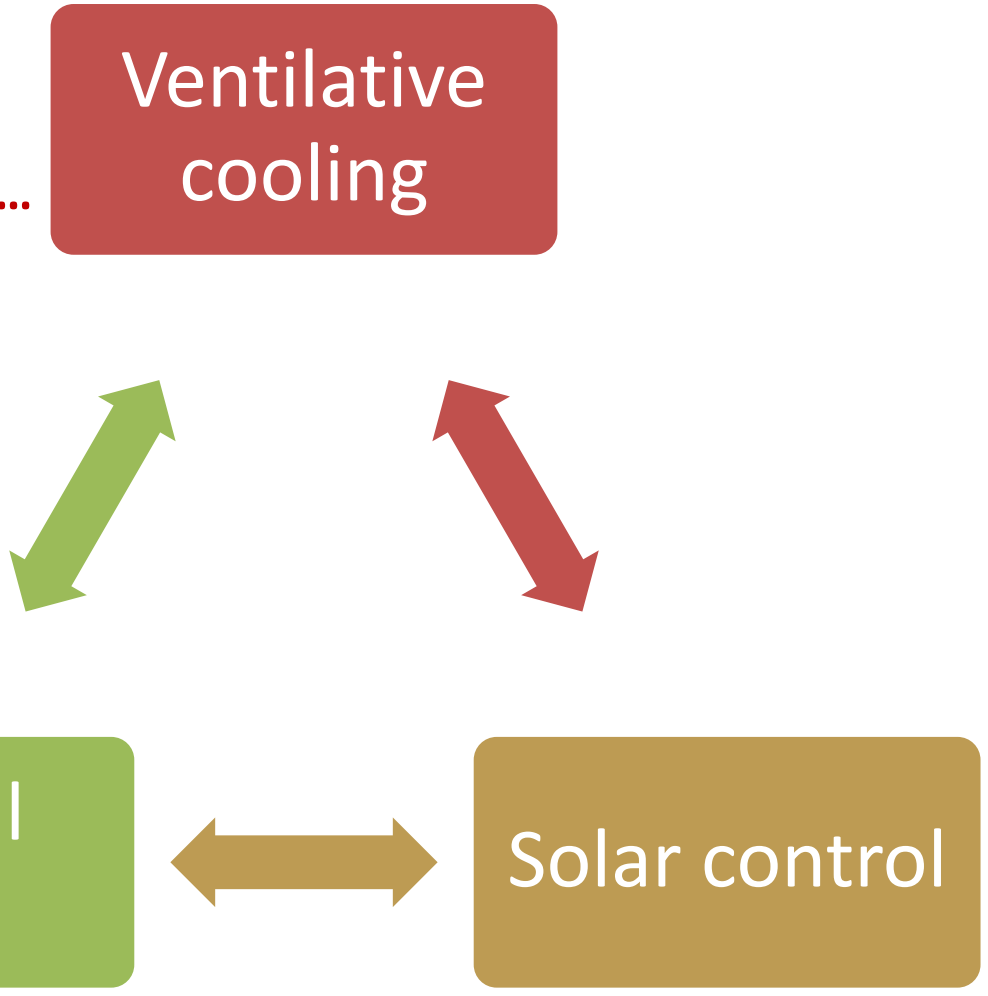
- In NZEB buildings more risks of overheating
- Ventilative cooling also an interesting strategy during less warm periods
- Ventilative cooling can be an efficient strategy for peak power management during warm periods
- Major advances in smart control strategies
- More attention for performance based approach (summer comfort)

Threats for ventilative cooling

- Role of regulations is growing whereby ventilative cooling often not well covered in standards and regulations
- More strict compliance schemes can be a barrier of ventilative cooling, if not well covered in procedures
- Energy requirements become so severe that little room for extra measures outside legal requirements
- More emphasis on indoor climate conditions (acoustics, fine dust,….)

Important elements in thermal comfort strategy

Often not well covered in standards and regulations , and complex to take into account…



Relatively well covered in standards and regulations or not too difficult to cover

Relatively well covered in standards and regulations , some remaining work

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Why venticool platform?

1. • Raise awareness about potential and challenges of ventilative cooling

2. • Raise awareness about interesting approaches

3. • Identify relevant activities and initiate actions

venticool

the international platform for ventilative cooling

Q&A

What is ventilative cooling?

What is natural ventilation?

What is night cooling?

What is hybrid (mixed mode) ventilation?

How does thermal comfort relate to ventilative cooling?

Is ventilative cooling more than openable devices?

Is ventilative cooling always achieved through natural ventilation?

Does ventilative cooling exclude active cooling?

What is the importance of legislation to ventilative cooling?

Are there demonstrated energy savings from ventilative cooling techniques?

★ June 6, 2014 | BUILD UP webinar on ventilative cooling!

Posted on 2014/04/14 by Maria Kapsalaki

presentations on ventilative cooling!

venticool
the international platform for ventilative cooling
Newsletter
No 3 • DECEMBER 2013

Foreword

The venticool platform was inaugurated in September 2012 in response to the needs felt to increase awareness regarding ventilative cooling and to foster exchanges on this topic both for practitioners and researchers. 15 months later, its relevance is clearly confirmed:

- The IEA EBC Annex 62 project on "Ventilative cooling" has been approved for a 4-year working phase and will use venticool as key communication partner;
- The 2012 and 2013 AIVC conferences, together with the March 2013 workshop have been major discussion places on this topic and key elements to develop the annex work plan;
- The Intelligent Energy Europe project "QualiChEck" recently approved will address ventilative cooling issues related to compliance and quality of the works in collaboration with venticool.

This opens a period of 4 to 5 years at least with great developments expected on ventilative cooling. We hope you will have a good taste of it with this newsletter.

Peter Wouters, Manager of INIVE EEIG

In this issue

2013 conference
Summary of the ventilative cooling track

By Maria Kapsalaki, INIVE and Per Heiselberg, University of Aalborg, Denmark.

Over 160 persons attended the joint 34th AIVC, 3rd TightVent, 1st venticool and 2nd Cool Roofs' Conference held in Athens, Greece on 25-26 September, 2013. The conference focused on research, technologies, policies and market transformation to employ in an optimal way proper mitigation and adaptation techniques with the aim to reduce the energy consumption of buildings and improve the urban microclimate. Furthermore, focus was set on the energy impact of ventilation and air infiltration while ensuring good indoor air quality and thermal comfort, as well as converging work on smart materials to reduce the carbon footprint of the building sector.

Ventilative cooling was one of the major themes since the potential of this technique is more and more considered to reduce the cooling energy demand in summer or mid-season conditions, depending on outdoor climate, building design and internal loads. The ventilative cooling track of the conference consisted of 4 sessions with 27 presentations covering the following topics:

- Ventilation for summer comfort – energy impacts
- Experience with ventilative and passive cooling
- Ventilation and cooling strategies
- Ventilative cooling in standards and regulations – Challenges for Annex 62

The paper available at venticool.eu/wp-content/uploads/2013/12/VC-summary_VF-2.pdf gives a bird's eye view of trends and conclusions that appeared in the presentations and discussions in the ventilative cooling track of the conference.

AGORIA
naventa

EUROPEAN SOLAR-SHADING ORGANIZATION
Energy Savings & Comfort

eurima
European Insulation Manufacturers Association

VELUX®

Window Master
Natural Ventilation

Energy conservation technologies for mitigation and adaptation in the built environment:
The role of ventilation strategies and smart materials

34th AIVC Conference

3rd TightVent Conference

2nd Cool Roofs' Conference

1st venticool Conference

25-26 September 2013

Divani Caravel Hotel

Athens, Greece

35th AIVC Conference

24-25 September 2014

Poznań, Poland

Ventilation and airtightness in transforming the building stock to high performance

4th TightVent Conference

2nd venticool Conference

Recent News

Highlighted News

35th AIVC conference in Poznań, Poland!

Announcement on the number of selected abstracts-Confirmed plenary session's speakers and...

> 02 June 2014 MORE

June 6, 2014 | BUILD UP webinar on ventilative...

BUILD UP Web Seminar | Ventilative cooling: Keep cool and lower peak energy demand

> 14 April 2014 MORE

Annex 62 "Ventilative cooling" met in Lausanne

IEA EBC Annex 62- Ventilative Cooling- 1st Expert Meeting Updates

> 02 June 2014 MORE

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Top events

September 24-25, 2014: 35th AIVC conference in Poznan, Poland

The 35th AIVC conference : 'Ventilation and airtightness in transforming the building stock to high performance' will be held in Poznan, Poland together with the 4th TightVent and the 2nd venticool

MORE

March 18-19, 2014: AIVC workshop on Quality of Methods for Measuring Ventilation and Air Infiltration in...

There is a trend to perform more ventilation and air infiltration measurements in buildings, either to strengthen commissioning procedures or to learn from field data.

MORE

November 14, 2013: Webinar – Airtightness testing part 1: status and trends in competent tester schemes in...

Over the past few years, there has been an increasing number of airtightness tests performed in Europe either for specific high performance buildings programmes or for a wide range of buildings in regulatory

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d you know?

Energy Impact of Ventilation?

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Key Publications

Securing the quality of ventilation...

This publication collects papers presented at one of the activities organized...

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AIVC Newsletter, Issue 05, January 2014

The fifth issue of the AIVC newsletter was out in January 2014. Its...

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INFORMATION ON VENTICOOL

Search Site

Dear visitor,

Welcome to this new and combined website of the **venticool platform** and of **IEA EBC Annex 62 – Ventilative Cooling**:

The **venticool platform** was launched in October 2012 and aims to increase communication, networking and awareness raising about ventilative cooling to mobilize the untapped potential in terms of energy savings and improved comfort. Information can be found in the left part of the menu.

The **Annex 62 'ventilative cooling'** of the 'Energy in Buildings and Communities Programme (EBC)' of the International Energy Agency (IEA) was approved in November 2013 for a 4 year working phase. Information can be found in the right part of the menu.

As the venticool platform will act as a key partner for dissemination of annex 62 and in order to optimize the communication, it was decided to have one single website for a both actions.

June 6, 2014 | BUILD UP webinar on ventilative cooling!

Posted on 2014/04/14 by Maria Kapsalaki

Recent updates

- June 6, 2014 | BUILD UP webinar on ventilative cooling!
- IEA EBC Annex 62- Ventilative Cooling- 1st Expert Meeting, Lausanne, Switzerland, April 23-24, 2014
- 3rd venticool newsletter now available!
- Summary of the 34th AIVC Conference 2013 – Ventilative Cooling Track
- IEA EBC Annex 62 on ventilative cooling approved!
- 35th AIVC – 4th TightVent – 2nd venticool Conference – Poznan, Poland – 24-25 September 2014!
- 34th AIVC- 1st venticool: 170 participants and more than 40 presentations on ventilative cooling!

Content of this presentation

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Conclusions

- There surely is a large potential for ventilative cooling
- Good design and control strategies is crucial
- Role of energy regulations is crucial and should correctly take into account ventilative cooling
- Venticool aims to contribute to progress on qualitative ventilative cooling