International Energy Agency

Ventilative Cooling

AIVC Literature List 34

2020 edition

Energy in Buildings and Communities Programme

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ZERO2020 building retrofit test-bed in cork institute of technology, Ireland

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Preface

The International Energy Agency

The International Energy Agency (IEA) was established in 1974 within the framework of the Organisation for Economic Co-operation and Development (OECD) to implement an international energy programme. A basic aim of the IEA is to foster international co-operation among the 29 IEA participating countries and to increase energy security through energy research, development and demonstration in the fields of technologies for energy efficiency and renewable energy sources.

The IEA Energy in Buildings and Communities Programme

The IEA co-ordinates international energy research and development (R&D) activities through a comprehensive portfolio of Technology Collaboration Programmes. The mission of the Energy in Buildings and Communities (EBC) Programme is to develop and facilitate the integration of technologies and processes for energy efficiency and conservation into healthy, low emission, and sustainable buildings and communities, through innovation and research. (Until March 2013, the IEA-EBC Programme was known as the Energy in Buildings and Community Systems Programme, ECBCS.)

The research and development strategies of the IEA-EBC Programme are derived from research drivers, national programmes within IEA countries, and the IEA Future Buildings Forum Think Tank Workshops. The research and development (R&D) strategies of IEA-EBC aim to exploit technological opportunities to save energy in the buildings sector, and to remove technical obstacles to market penetration of new energy efficient technologies. The R&D strategies apply to residential, commercial, office buildings and community systems, and will impact the building industry in five focus areas for R&D activities:

- Integrated planning and building design
- Building energy systems
- Building envelope
- Community scale methods
- Real building energy use

The Executive Committee

Overall control of the IEA-EBC Programme is maintained by an Executive Committee, which not only monitors existing projects, but also identifies new strategic areas in which collaborative efforts may be beneficial. As the Programme is based on a contract with the IEA, the projects are legally established as Annexes to the IEA-EBC Implementing Agreement. At the present time, the following projects have been initiated by the IEA-EBC Executive Committee, with completed projects identified by (*):

Annex 1: Load Energy Determination of Buildings (*)
Annex 2: Ekistics and Advanced Community Energy Systems (*)
Annex 3: Energy Conservation in Residential Buildings (*)
Annex 4: Glasgow Commercial Building Monitoring (*)
Annex 5: Air Infiltration and Ventilation Centre
Annex 6: Energy Systems and Design of Communities (*)
Annex 7: Local Government Energy Planning (*)
Annex 8: Inhabitants Behaviour with Regard to Ventilation (*)
Annex 9: Minimum Ventilation Rates (*)
Annex 10: Building HVAC System Simulation (*)
Annex 11: Energy Auditing (*)
Annex 12: Windows and Fenestration (*)
Annex 13: Energy Management in Hospitals (*)
Annex 14: Condensation and Energy (*)
Annex 15: Energy Efficiency in Schools (*)

Annex 16: BEMS 1- User Interfaces and System Integration (*)
Annex 17: BEMS 2- Evaluation and Emulation Techniques (*)
Annex 18: Demand Controlled Ventilation Systems (*)
Annex 19: Low Slope Roof Systems (*)
Annex 20: Air Flow Patterns within Buildings (*)
Annex 21: Thermal Modelling (*)
Annex 22: Energy Efficient Communities (*)
Annex 23: Multi Zone Air Flow Modelling (COMIS) (*)
Annex 24: Heat, Air and Moisture Transfer in Envelopes (*)
Annex 25: Real time HVAC Simulation (*)
Annex 26: Energy Efficient Ventilation of Large Enclosures (*)
Annex 27: Evaluation and Demonstration of Domestic Ventilation Systems (*)
Annex 28: Low Energy Cooling Systems (*)
Annex 29: Daylight in Buildings (*)
Annex 30: Bringing Simulation to Application (*)
Annex 31: Energy-Related Environmental Impact of Buildings (*)
Annex 32: Integral Building Envelope Performance Assessment (*)
Annex 33: Advanced Local Energy Planning (*)
Annex 34: Computer-Aided Evaluation of HVAC System Performance (*)
Annex 35: Design of Energy Efficient Hybrid Ventilation (HYBVENT) (*)
Annex 36: Retrofitting of Educational Buildings (*)
Annex 37: Low Exergy Systems for Heating and Cooling of Buildings (LowEx) (*)
Annex 38: Solar Sustainable Housing (*)
Annex 39: High Performance Insulation Systems (*)
Annex 40: Building Commissioning to Improve Energy Performance (*)
Annex 41: Whole Building Heat, Air and Moisture Response (MOIST-ENG) (*)
Annex 42: The Simulation of Building-Integrated Fuel Cell and Other Cogeneration Systems (FC+COGEN-SIM) (*)
Annex 43: Testing and Validation of Building Energy Simulation Tools (*)
Annex 44: Integrating Environmentally Responsive Elements in Buildings (*)
Annex 45: Energy Efficient Electric Lighting for Buildings (*)
Annex 46: Holistic Assessment Tool-kit on Energy Efficient Retrofit Measures for Government Buildings (EnERGo) (*)
Annex 47: Cost-Effective Commissioning for Existing and Low Energy Buildings (*)
Annex 48: Heat Pumping and Reversible Air Conditioning (*)
Annex 49: Low Exergy Systems for High Performance Buildings and Communities (*)
Annex 50: Prefabricated Systems for Low Energy Renovation of Residential Buildings (*)
Annex 51: Energy Efficient Communities (*)
Annex 52: Towards Net Zero Energy Solar Buildings (*)
Annex 53: Total Energy Use in Buildings: Analysis & Evaluation Methods (*)
Annex 54: Integration of Micro-Generation & Related Energy Technologies in Buildings (*)
Annex 55: Reliability of Energy Efficient Building Retrofitting - Probability Assessment of Performance & Cost (RAP-RETRO) (*)
Annex 56: Cost Effective Energy & CO2 Emissions Optimization in Building Renovation
Annex 57: Evaluation of Embodied Energy & CO2 Equivalent Emissions for Building Construction
Annex 58: Reliable Building Energy Performance Characterisation Based on Full Scale Dynamic Measurements (*)
Annex 59: High Temperature Cooling & Low Temperature Heating in Buildings (*)
Annex 60: New Generation Computational Tools for Building & Community Energy Systems (*)
Annex 61: Business and Technical Concepts for Deep Energy Retrofit of Public Buildings (*)
Annex 62: Ventilative Cooling (*)
Annex 63: Implementation of Energy Strategies in Communities (*)
Annex 64: LowEx Communities - Optimised Performance of Energy Supply Systems with Exergy Principles (*)
Annex 65: Long-Term Performance of Super-Insulating Materials in Building Components and Systems (*)
Annex 66: Definition and Simulation of Occupant Behavior in Buildings (*)
Annex 67: Energy Flexible Buildings
Annex 68: Indoor Air Quality Design and Control in Low Energy Residential Buildings

Annex 69: Strategy and Practice of Adaptive Thermal Comfort in Low Energy Buildings
Annex 70: Energy Epidemiology: Analysis of Real Building Energy Use at Scale
Annex 71: Building Energy Performance Assessment Based on In-situ Measurements
Annex 72: Assessing Life Cycle Related Environmental Impacts Caused by Buildings
Annex 73: Towards Net Zero Energy Public Resilient Communities
Annex 74: Competition and Living Lab Platform
Annex 75: Cost-effective Building Renovation at District Level Combining Energy Efficiency & Renewables
Annex 76: EBC Annex 76 / SHC Task 59 Deep Renovation of Historic Buildings Towards Lowest Possible Energy Demand and CO2 Emissions
Annex 77: EBC Annex 77 / SHC Task 61 Integrated Solutions for Daylight and Electric Lighting
Annex 78: Supplementing Ventilation with Gas-phase Air Cleaning, Implementation and Energy Implications
Annex 79: Occupant-Centric Building Design and Operation
Annex 80: Resilient Cooling
Annex 81: Data-Driven Smart Buildings
Annex 82: Energy Flexible Buildings Towards Resilient Low Carbon Energy Systems
Annex 83: Positive Energy Districts

Working Group - Energy Efficiency in Educational Buildings (*)
Working Group - Indicators of Energy Efficiency in Cold Climate Buildings (*)
Working Group - Annex 36 Extension: The Energy Concept Adviser (*)
Working Group - Survey on HVAC Energy Calculation Methodologies for Non-residential Buildings
Working Group - Building Energy Codes
Working Group - HVAC Energy Calculation Methodologies for Non-residential Buildings
Working Group - Cities and Communities

1. Context

1.1. General Context

AIVC Literature List 34 is linked to the topic of “ventilative cooling”. The document is split into 3 main chapters including: 1) papers & slides presented at AIVC & venticool annual conferences and publications produced during the operation of IEA-EBC annex 62, 2) slides presented at workshops organized with the collaboration of venticool & IEA-EBC annex 62, and 3) recordings from webinars organized with the collaboration venticool & IEA-EBC annex 62.

1.2. Contributions from EBC Annex 62 Ventilative Cooling

The Executive Committee of the IEA Energy in Buildings and Communities programme (IEA EBC) approved the IEA EBC Annex 62 on Ventilative Cooling in November 2013. Annex 62 was running until the end of 2018.

Ventilative cooling is the application of ventilation air flow to reduce the cooling loads in buildings. It utilizes the cooling and thermal perception potential of outdoor air. Ventilative cooling can be an attractive and energy efficient solution to reduce the cooling load and avoid overheating of both new and renovated buildings. (Before ventilative cooling is considered, internal gains from equipment and solar radiation are assumed to be reduced to a reasonable level.)

Ventilation is already present in buildings through mechanical and/or natural systems. It can remove both excess heat gains, as well as increase air velocities and thereby widen the thermal comfort range. As cooling also becomes necessary outside the summer period, the possibilities of using the cooling potential of low temperature outdoor air increases considerably.

To address the cooling challenges of buildings the project research focused on:

- design methods and compliance tools related to predicting, evaluating and eliminating the cooling need and the risk of overheating in buildings, and
- new attractive energy efficient ventilative cooling solutions.

The outcomes from this project were:

- Overview & State-of-The-Art of Ventilative Cooling
- Ventilative cooling source book
- Ventilative cooling case studies
- Guidelines for Ventilative cooling design and operation
- Recommendations for legislation and standards

1.3. Interaction with Venticool platform

The venticool platform was inaugurated in September 2012 with the overall goal to increase communication, networking and awareness raising to mobilize the significant energy savings potential using ventilative cooling, and thus answer the growing need for international collaboration on ventilative cooling. The platform organizes events and communicates actively on ventilative cooling. It organizes its efforts around projects focused on the field.

From 2012 to 2018, the platform had been the key partner in the communication and dissemination activities of IEA EBC Annex 62 “Ventilative Cooling” and facilitated the organization of meetings & topical sessions at workshop and AIVC-venticool joint conferences, as well as webinars.

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2. Papers & reports

This chapter includes a table (Table 1) listing titles and hyperlinks to 212 papers presented at AIVC - venticool annual conferences and publications produced by the IEA-EBC annex 62. Where available, a link to the PowerPoint (PPT) presentation is provided.

Note: Hyperlinks in column "PowerPoint" of Table 1, redirect to the full pdf of the slides presented at the AIVC & venticool joint conferences since 2012 (listed below with abbreviations); page numbers mentioned within Table 1 helps you locate each presentation within the specific documents:

- **33AIVC** | Slides of the 33rd AIVC – 2nd TightVent Conference "Optimising Ventilative Cooling and Airtightness for [Nearly] Zero-Energy Buildings, IAQ and Comfort", 10-11 October 2012, Copenhagen, Denmark
- **34AIVCa**, **34AIVCb** | Slides of the 34th AIVC – 3rd TightVent – 2nd Cool Roofs' – 1st venticool Conference "Energy conservation technologies for mitigation and adaptation in the built environment: the role of ventilation strategies and smart materials", 25-26 September 2013, Athens, Greece
- **35AIVC** | Slides of the 35th AIVC – 4th TightVent – 2nd venticool Conference "Ventilation and airtightness in transforming the building stock to high performance", 24-25 September 2014, Poznań, Poland
- **36AIVC** | Slides of the 36th AIVC – 5th TightVent – 3rd venticool Conference "Effective ventilation in high performance buildings", 23-24 September 2015, Madrid, Spain
- **38AIVC** | Slides of the 38th AIVC – 6th TightVent – 4th venticool Conference "Ventilating healthy low-energy buildings", 13-14 September 2017, Nottingham, UK
- **39AIVC** | Slides of the 39th AIVC – 7th TightVent – 5th venticool Conference "Smart Ventilation for Buildings", 18-19 September 2018, Antibes Juan-Les-Pins, France
- **40AIVC** | Slides of the 40th AIVC – 8th TightVent – 6th venticool Conference "From energy crisis to sustainable indoor climate - 40 years of AIVC", 15-16 October 2019, Ghent, Belgium

Table 1

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
1	Numerical Modelling of Large Air-Conditioned Space: Comparison of Two Ventilation Systems	Ali Alzaid, Maria Kolokotroni, Hazim Awbi	p.444- 450 **40AIVC**	2019
2	Analysis of convective heat transfer coefficient correlations for ventilative cooling based on reduced-scale measurements	Katarina Kosutova, Christina Vanderwel, Twan van Hooff, Bert Blocken, Jan Hensen	p.567- 570 **40AIVC**	2019
3	Overheating reduction in a house with balanced ventilation and postcooling	Bart Cremers	p.571- 574 **40AIVC**	2019
4	Predictive control for an all-air ventilation system in an educational nZEB building	Bart Merema, Dirk Saelens, Hilde Breesch	p.672- 677 **40AIVC**	2019
5	A case study on residential mixed-mode ventilation using the Ventilation Controls Virtual Test Bed	Bert Belmans, Dorien Aerts, Stijn Verbeke, Amaryllis Audenaert, Filip Descamps	p.688- 702 **40AIVC**	2019
6	Wind Pressure Coefficient and Wind Velocity around Buildings in High Density Block of Metropolis for Natural Ventilation Design	Toshio Yamanaka, Eunsu Lim, Tomohiro Kobayashi, Toshihiko Sajima, Kanji Fukuyama		2019
7	When the EPR hits the fan, or…the killing of the fan energy	Ad van der Aa, Per Heiselberg, Willem de Gids	p.1024- 1041 **40AIVC**	2019
8	Better implementation of ventilative cooling (cooling of buildings using outside air as main source) in national building standards, legislation and compliance tools	Christoffer Plesner, Jannick K. Roth, Per Heiselberg	p.1184-1220 **40AIVC**	2019
9	Ventilative Cooling – Time for large scale implementation?	Per Heiselberg	p.1234-1242 **40AIVC**	2019

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
10	Status and recommendations for better implementation of ventilative cooling in standards, legislation and compliance tools	Christoffer Plesner, Flourentzos Flourentzou, Guoqiang Zhang, Hilde Breesch, Per Heiselberg, Michal Pomianowski, Peter Holzer, Maria Kolokotroni, Annamaria Belleri		2018
11	Ventilative cooling source book	Peter Holzer, Theofanis Psomas		2018
12	Ventilative cooling case studies	Paul O'Sullivan, Adam O'Donovan		2018
13	Ventilative cooling design guide	Adam O'Donnavan, Annamaria Belleri, Flourentzos Flourentzou, Gou-Qiang Zhang, Guilherme Carrilho da Graca, Hilde Breesch, Maria Justo-Alonso, Maria Kolokotroni, Michal Pomianowski, Paul O'Sullivan, Per Heiselberg,Peter Holzer, Theofanis Psomas		2018
14	Status and recommendations for better implementation of ventilative cooling in standards, legislation and compliance tools (Background report)	Christoffer Plesner, Flourentzos Flourentzou, Guoqiang Zhang, Hilde Breesch, Per Heiselberg, Michal Pomianowski, Peter Holzer, Maria Kolokotroni, Annamaria Belleri		2018
15	Potential of mechanical ventilation for reducing overheating risks in retrofitted Danish apartment buildings from the period 1850-1890 – A simulation-based study	Daria Zukowska, Jakub Kolarik, Myrto Ananida, Mandana Sarey Khanie, Toke Rammer Nielsen	p.664-665 **39AIVC**	2018
16	Experimental and Numerical Study of a Building Retrofitting Solution Combining Phase Change Material Wallboards and Night Ventilation	Timea Béjat, Emile Fulcheri, Didier Therme, Etienne Wurtz, Pierrick Péchambert	p.660-663 **39AIVC**	2018
17	Ventilative cooling effectiveness in office buildings: a parametrical simulation	Mario Grosso, Andrea Acquaviva, Giacomo Chiesa, Henrique da Fonseca, Seyyed Sadegh Bibak Sareshkeh, Maria José Padilla		2018

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
18	Characterising Window Opening Behaviour of Occupants Using Machine Learning Models	Bongchan Jeong, Heewon Choi, Jihyun Yoo, J.S. Park	p.657-659 **39AIVC**	2018
19	Energy analysis for balanced ventilation units from field studies	Bart Cremers	p.650-656 **39AIVC**	2018
20	Free cooling of low energy buildings with ground source heat pump system and bidirectional ventilation	Ola Gustafsson, Caroline Haglund Stignor, Huijuan Chen, Svein Ruud, Jon Persson	p.646-649 **39AIVC**	2018
21	Ventilative cooling and improved indoor air quality through the application of engineered Earth Tube systems, in a Canadian climate	Trevor Butler, John Littlewood, Huw Millward	p.631-645 **39AIVC**	2018
22	Freevent: ventilative cooling and summer comfort in 9 buildings in France	Andres Litvak, Anne Marie Bernard, Nicolas Piot, Damien Labaume	p.297-308 **39AIVC**	2018
23	Ventilative cooling in a school building: evaluation of the measured performances	Hilde Breesch, Bart Merema, Alexis Versele	p.288-296 **39AIVC**	2018
24	Validation of Dynamic Model BSim to Predict the Performance of Ventilative Cooling in a Single Sided Ventilated Room	Michal Pomianowski, Rens Smal, Flourentzos Florentzou, Per Heiselberg	p.283-287 **39AIVC**	2018
25	The influence of thermal mass on the predicted climate cooling potential in low energy buildings	Paul D. O' Sullivan, Adam O' Donovan, Michael D. Murphy	p.277-282 **39AIVC**	2018
26	Status and recommendations for better implementation of ventilative cooling into Danish standards, building legislation and energy compliance tool	Christoffer Plesner, Michal Pomianowski	p.269-276 **39AIVC**	2018
27	Key findings of four years of research on Ventilative Cooling and how it is done	Peter Holzer, Philipp Stern	p.257-268 **39AIVC**	2018
28	Ventilative cooling. State-of-the-art review executive summary	Per Heiselberg, Maria Kolokotroni		2017

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
29	The impact of climate change on the overheating risk in dwellings. A Dutch case study	Mohamed Hamdy, Salvatore Carlucci, Pieter-Jan Hoes, Jan L.M. Hensen		2017
30	Ventilative Cooling on the test bench - Learnings and conclusions from practical design and performance evaluation	Holzer Peter, Moherndl Philipp, Psomas Theofanis	p.257-268 **38AIVC**	2017
31	Determining the venting efficiency of simple chimneys for buoyant plumes	Henry C. Burridge, Gagan Sehmbi, Daniel Fiuza Dosil, Graham O. Hughes	p.862-867 **38AIVC**	2017
32	Indoor Air Quality and Thermal Comfort, in Irish Retrofitted Energy Efficient Homes	Áine Broderick, Miriam Byrne, James McGrath, Marie Coggins	p.497-499 **38AIVC**	2017
33	Influence of night ventilation on the cooling demand of typical residential buildings in Germany	Johannes Schrade, Hans Erhorn	p.744-750 **38AIVC**	2017
34	Ventilative cooling in a single-family active house from design stage to user experience	Christoffer Plesner, Nicolas Dupin	p.285-290 **38AIVC**	2017
35	Automated window opening control system to address thermal discomfort risk in energy renovated dwellings. Summertime assessment	Theofanis Psomas, Per Heiselberg, Thøger Lyme	p.673-684 **38AIVC**	2017
36	A Case Study assessing the impact of Shading Systems combined with Night-Time Ventilation strategies on Overheating within a Residential Property	Zoe De Grussa, Deborah Andrews, Gordon Lowry, Elizabeth.J. Newton, Kika Yiakoumetti, Andrew Chalk, David Bush	p.847-855 **38AIVC**	2017
37	Bulk airflow measurements in a large naturally ventilated atrium in a mild climate	Marta Avantaggiato, Nuno Mateus, Annamaria Belleri, Wilmer Pasut, Guillherme Carrilho da Graça	p.269-275 **38AIVC**	2017
38	Design and performance of ventilative cooling: a review of principals, strategies and components from International case studies	Paul D O'Sullivan, Adam O'Donovan, Guoqiang Zhang, Guilherme Carrilho da Graca	p.299-310 **38AIVC**	2017

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
39	Experimental evidence of effective single sided natural ventilation beyond 20ft or 2.5 floor to ceiling heights in open plan office spaces	Guilherme Carrilho da Graça, Nuno Mateus, Rafael Rebelo	p.666-672 **38AIVC**	2017
40	Energy Performance Indicators for Ventilative Cooling	Flourentzos Flourentzou, Jerome Bonvin		2017
41	Ventilative cooling potential based on climatic condition and building thermal characteristics	Haolia Rahman, Hwataik Han	p.133-146 **38AIVC**	2017
42	Towards Real-Time Model-Based Monitoring and Adoptive Controlling of Indoor Thermal Comfort	Ali Youssef, Pieter Truyen, Peter Bröde, Dusan Fiala, Jean-Marie Aerts	p.484-489 **38AIVC**	2017
43	The flow interaction of air distribution with thermal plumes and the effect on the air velocity fluctuation under increased heat load conditions	Sami Lestinen, Simo Kilpeläinen, Risto Kosonen, Juha Jokisalo, Hannu Koskela	p.856-861 **38AIVC**	2017
44	Inter-model comparison of indoor overheating risk prediction for English dwellings	Giorgos Petrou, Anna Mavrogianni, Anastasia Mylona, Rokia Raslan, Gurdane Virk, Michael Davies	p.481-483 **38AIVC**	2017
45	The Reintroduction of Natural Ventilation to a 19th Century Opera House, Utilising Calibrated Computer Simulation and User Operation	Julia Thompson, Michael Donn, George Baird	p.147-155 **38AIVC**	2017
46	Impact assessment of natural ventilation on thermal comfort levels in sustainable residential buildings	Elli Tsirintoulaki, Dionysia Kolokotsa, Konstantinos Gompakis, Nikolaos Kampelis	p.477-480 **38AIVC**	2017
47	The influence of occupancy behaviour on the performance of mechanical ventilation systems regarding energy consumption and IAQ	Nicolás Carbonare, Fabien Coydon, Arnulf Dinkel, Constanze Bongs	p.506-508 **38AIVC**	2017
48	Challenges of using passive ventilation to control the overheating of dwellings in noisy environments	Nick Conlan, Jack Harvie-Clark	p.471-473 **38AIVC**	2017
49	The future of hybrid ventilation in office buildings – energy simulations and lifecycle cost	Simone Steiger, Jannick Karsten Roth	p.291-298 **38AIVC**	2017

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
50	Hybrid ventilation in new and refurbished school buildings – the future of ventilation	Simone Steiger, Jannick Karsten Roth	p.125-132 **38AIVC**	2017
51	Cool materials in the urban built environment to mitigate heat islands: potential consequences for building ventilation	Carolina de Rezende Maciel, Maria Kolokotroni	p.766-776 **38AIVC**	2017
52	A study of panel ridges effect on heat transfer and pressure drop in a ventilation duct	Thiago Santos, Maria Kolokotroni, Nick Hopper, Kevin Yearley	p.451-453 **38AIVC**	2017
53	The effect of adjustable cooling jet on thermal comfort and perception in warm office environment – a laboratory study	Henna Maula, Hannu Koskela, Annu Haapakangas, Valtteri Hongisto	p.839-846 **38AIVC**	2017
54	Mixed-mode ventilative cooling opportunity for an existing shopping mall retrofit	Marta Avantaggiato, Annamaria Belleri, Michele De Carli, Roberto Lollini	p.698-703 **38AIVC**	2017
55	Coupling night ventilative and active cooling to reduce energy use in supermarkets with high refrigeration loads	Zoi Mylona, Maria Kolokotroni, Savvas Tassou	p.690-697 **38AIVC**	2017
56	Façade Improvements to Avoid Draught in Cold Climates – Laboratory Measurements	Michael Gruner, Maria Justo-Alonso, Tor Helge Dokka	p.759-765 **38AIVC**	2017
57	Experiences regarding draught effects for ventilative cooling in cold climate	Maria Justo-Alonso, Solveig Blandkjenn, Hans Martin Mathisen	p.685-689 **38AIVC**	2017
58	Delivery and performance of a ventilative cooling strategy: the demonstration case of a shopping centre in Trondheim, Norway	Annamaria Belleri, Matthias Haase, Sotirios Papantoniou, Roberto Lollini,	p.276-284 **38AIVC**	2017
59	Effectiveness of Ventilative Cooling Strategies in Hot and Dry and Temperate Climates of India	Devna Vyas, Michael Apte		2017
60	Energy Efficiency in a Thermal Comfort Field Work in Spain	Elena Barbadilla-Martín, José Guadix Martín, José Manuel Salmerón Lissén, Pablo Aparicio-Ruiz	p.503-505 **38AIVC**	2017

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
61	Application of open-source CFD software to the indoor airflow simulation	Cong Wang, Sasan Sadrizadeh, Sture Holmberg	p.490-493 **38AIVC**	2017
62	Energy performance prediction of thermoelectric ceiling radiant panels with a dedicated outdoor air system	Hansol Lim, Janghoon Shin, Shiying Li, Hye-Jin Cho, Jae-Weon Jeong	p.512-514 **38AIVC**	2017
63	Evaluation of thermal comfort in an office building served by a liquid desiccant-assisted evaporative cooling air conditioning system	Hye-Jin Cho, Jang-Hoon Shin, Joon-Young Park, Won-Jun Kim, Jae-Weon Jeong	p.500-502 **38AIVC**	2017
64	Evaluating natural ventilation cooling potentials during early building designs	Jun Cheng, Dahai Qi, Ali Katal, Liangzhu (Leon) Wang	p.468-470 **38AIVC**	2017
65	Thermal performance of ventilated solar collector with energy storage containing phase change material	Yue Hu, Per Kvols Heiselberg	p.509-511 **38AIVC**	2017
66	Will naturally ventilated dwellings still be safe under heatwaves?	Jean-Marie Alessandrini, Jacques Ribéron	p.118-124 **38AIVC**	2017
67	Demand controlled ventilation in school and office buildings: lessons learnt from case studies	Bart Merema, Muhannad Delwati, Maarten Sourbron, Hilde Breesch	p.439-440 **38AIVC**	2017
68	Performance in practice of a ventilation system with thermal storage in a computer seminar room	Thiago Santos, Nick Hopper, Maria Kolokotroni		2016
69	Non dimensional analysis and characterisation of driving forces for a single sided slot louvre ventilation system	Paul D O'Sullivan, Maria Kolokotroni		2016
70	Ventilative cooling of a seminar room using active PCM thermal storage	Maria Kolokotroni, Thiago Santos, Nick Hopper		2016
71	Comparison of measured and simulated performance of natural displacement ventilation systems for classrooms	Nuno M. Mateus, Gonçalo Nunes Simões, Cristiano Lúcio, Guilherme Carrilho da Graça,		2016

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
72	Impact of aperture separation on wind-driven single-sided natural ventilation	N. C. Daish, G. Carrilho da Graça, P. F. Linden, D. Banks		2016
73	Ten questions about natural ventilation of non-domestic buildings	Guilherme Carrilho da Graça, Paul Linden		2016
74	Ventilative Cooling Potential in Low-Energy Dwellings –The HoTT Case Study	Bouwens E.P.M., Loomans M.G.L.C., Hensen J.L.M., Lichtenberg J.J.N.		2016
75	Numerical optimization and experimental testing of a new low pressure heat exchanger (LoPHEx) for passive ventilation of buildings	Marco Simonetti, Gian Vincenzo Fracastoro, Giacomo Chiesa, Stefano Sola		2016
76	NAC wall: An open cycle solar-DEC with naturally driven ventilation	Marco Simonetti, Giacomo Chiesa, Mario Grosso, Gian Vincenzo Fracastoro		2016
77	Reducing thermal discomfort and energy consumption of Indian residential buildings: Model validation by in-field measurements and simulation of low-cost interventions	Margot Pellegrino, Marco Simonetti, Giacomo Chiesa		2016
78	Breakthrough of natural and hybrid ventilative cooling technologies: models and simulations	Giacomo Chiesa, Mario Grosso		2016
79	Cooling potential of natural ventilation in representative climates of central and southern Europe	Giacomo Chiesa, Mario Grosso		2016
80	Geo-climatic applicability of evaporative and ventilative cooling in China	Giacomo Chiesa		2016
81	Ventilative cooling in shopping centers' retrofit	Annamaria Belleri, Marta Avantaggiato		2016
82	The effect of cooling jet on work performance and comfort in warm office environment	Henna Maula, Valtteri Hongisto, Hannu Koskela, Annu Haapakangas		2016

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
83	Experimental Study of an Integrated System with Diffuse Ceiling Ventilation and Thermally Activated Building Constructions	Chen Zhang, Tao Yu, Per Heiselberg, Michal Zbigniew Pomianowski		2016
84	Experimental study on the dynamic performance of a novel system combining natural ventilation with diffuse ceiling inlet and TABS	Tao Yu, Per Kvols Heiselberg, Bo Lei, Chen Zhang, Michal Zbigniew Pomianowski, Rasmus Lund Jensen		2016
85	Overheating risk barriers to energy renovations of single family houses: Multicriteria analysis and assessment	Theofanis Ch. Psomas, Per Kvols Heiselberg, Karsten Duer, Eirik Bjørn		2016
86	Control Strategies for Ventilative Cooling of Overheated Houses	Theofanis Ch. Psomas, Per Kvols Heiselberg, Karsten Duer, Eirik Bjørn		2016
87	Overheating assessment of energy renovations	Theofanis Ch. Psomas, Per Kvols Heiselberg, Karsten Duer		2016
88	Ventilative Cooling. State-of-The-Art Review	Maria Kolokotroni, Per Heiselberg, Lorenzo Pagliano, Jie Han, Regina Bokel, Peter Holzer, Annamaria Belleri		2015
89	Validation of numerical simulation tools for wind-driven natural ventilation design	Nuno R. Martins, Guilherme Carrilho da Graça		2015
90	A two-zone model for natural cross-ventilation	G.Carrilho da Graça, N.C.Daish, P.F.Linden		2015
91	Ranking of Dwelling Types in Terms of Overheating Risk And Sensitivity to Climate Change	Mohamed Hamdy, Jan Hensen		2015
92	The impact of increased airflow rates on indoor temperatures of passive house in The Netherlands	Rebeca Barbosa, Marcel G.L.C. Loomans, Jan L.M. Hensen, Martin Barták		2015
93	Geo-climatic applicability of natural ventilative cooling in the Mediterranean area	Giacomo Chiesa, Mario Grosso		2015

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
94	Direct evaporative passive cooling of building. A comparison amid simplified simulation models based on experimental data	Giacomo Chiesa, Mario Grosso		2015
95	The Influence of Different Hourly Typical Meteorological Years on Dynamic Simulation of Buildings	Giacomo Chiesa, Mario Grosso		2015
96	Integrated Solution in an Office Room with Diffuse Ceiling Ventilation and Thermally Activated Building Constructions	Chen Zhang, Per Kvols Heiselberg, Michal Zbigniew Pomianowski, Tao Yu, Rasmus Lund Jensen		2015
97	Experimental study of diffuse ceiling ventilation coupled with a thermally activated building construction in an office room	Chen Zhang, Per Kvols Heiselberg, Michal Zbigniew Pomianowski, Tao Yu, Rasmus Lund Jensen		2015
98	A novel system solution for cooling and ventilation in office buildings: A review of applied technologies and a case study	Tao Yu, Per Kvols Heiselberg, Bo Lei, Michal Zbigniew Pomianowski, Chen Zhang		2015
99	Experimental investigation of cooling performance of a novel HVAC system combining natural ventilation with diffuse ceiling inlet and TABS	Tao Yu, Per Kvols Heiselberg, Bo Lei, Michal Zbigniew Pomianowski, Chen Zhang, Rasmus Lund Jensen		2015
100	Dynamic Measurements of a Novel System: Combining Natural Ventilation with Diffuse Ceiling Inlet and Thermally Activated Building Constructions	Tao Yu, Chen Zhang, Per Kvols Heiselberg, Michal Zbigniew Pomianowski, Rasmus Lund Jensen		2015
101	Ventilative Cooling Control Strategies Applied to Passive House in Order to Avoid Indoor Overheating	Rebeca Barbosa, Martin Barták, Jan L.M Hensen, Marcel G.L.C Loomans		2015
102	Airflow Pattern and Performance Analysis of Diffuse Ceiling Ventilation in An Office Room using CFD Study	Chen Zhang, Qingyan Chen, Per Heiselberg, Michal Pomianowski		2015

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
103	Analysis and Comparison of Overheating Indices in Energy Renovated Houses	Theofanis Psomas, Per Heiselberg, Karsten Duer, Eirik Bjørn		2015
104	Ventilation performance and indoor air pollutants diagnosis in 21 French low energy homes	Gaëlle Guyot, Adeline Bailly, Anne-Marie Bernard, Gabrielle Perez, Claire-Sophie Coeudevez, Suzanne Déoux, Sandra Berlin, Enora Parent, Alexis Huet, Sylvain Berthault, Romuald Jobert, Damien Labaume, Guillaume Ferrier, Sandrine Justet	p.995-987 **36AIVC**	2015
105	PCMS as a tool for increasing thermal inertia in buildings	Lidia Navarro, Alvaro de Gracia, Luisa F. Cabeza	p.723-730 **36AIVC**	2015
106	Thermodynamic analysis of buildings with natural ventilation and indoor air quality	Víctor Moreno, Amalia Roca	p.971-976 **36AIVC**	2015
107	Performances of a simple exhaust mechanical ventilation coupled to a mini heat pump: modelling and experimental investigations	Frédéric Ransy, Samuel Gendebien, Vincent Lemort	p.977-986 **36AIVC**	2015
108	Development of a Seasonal Smart Ventilation Controller to Reduce Indoor Humidity in Hot-Humid Climate Homes	Sara Ticci, Brennan Less, Iain Walker, Max Sherman	p.961-970 **36AIVC**	2015
109	Simplified Methods for Combining Natural and Mechanical Ventilation	Nolwenn Hurel, Max Sherman, Iain Walker	p.952-960 **36AIVC**	2015
110	How cool roofs interact with PCMs: investigating thermal-energy behavior of a cool roof membrane with paraffin based PCM inclusion	Anna Laura Pisello, Luisa F. Cabeza, Franco Cotana	p.757-772 **36AIVC**	2015
111	Concrete in ventilated facades for natural cooling of buildings. SINHOR project	Servando Álvarez, César Bartolomé	p.706-722 **36AIVC**	2015
112	Automatic natural ventilation in large spaces: a passive ventilation technology for passive buildings	Flourentzos Flourentzou, Samue Pantet, Katia Ritz	p.603-618 **36AIVC**	2015

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
113	Overheating Assessment of a Passive House Case Study in Spain	Juan María Hidalgo, Theofanis Psomas, Carlos García-Gáfaro, Per Heiselberg, Jose Antonio Millán	p.595-602 **36AIVC**	2015
114	Ventilative cooling strategies to reduce cooling and ventilation needs in shopping centres	Marta Avantaggiato, Annamaria Belleri, Michele De Carli, Roberto Lollini	p.586-594 **36AIVC**	2015
115	Energy use consequences of ventilative cooling in a ZEB residential building	Maria Justo Alonso, Cathrine Kirkøen, Hans Martin Mathisen	p.580-585 **36AIVC**	2015
116	Implementation of multi-zone ventilation methodology in the Spanish energy performance certification tool	Javier García Ramos, José Manuel Salmerón Lissén, Laura Romero Rodríguez, Servando Álvarez Domínguez, José Luis Molina Félix, Álvaro Ruiz Pardo	p.486-489 **36AIVC**	2015
117	A Study on the Reduction Effect of Ventilation and Heating Load by Installing Air-based Solar System in the Detached Houses	Youngjin Choi, Kozo Takase, Masayuki Mae, Hyunwoo Roh	p.483-485 **36AIVC**	2015
118	3D Fluid dynamic analyses of open joint ventilated facades applying experimental Stereo-PIV techniques	M. Nuria Sánchez, Cristina Sanjuan, M. Rosario Heras	p.480-482 **36AIVC**	2015
119	How safe is it to neglect thermal radiation in indoor environment modeling with high ventilation rates?	Sasan Sadrizadeh, Sture Holmberg	p.473-479 **36AIVC**	2015
120	A modular, open system for testing ventilation and cooling strategies in extremely low energy lecture rooms	Ando Ludovic Andriamamonjy, Ralf Klein	p.471-472 **36AIVC**	2015
121	Evaporative Cooling and Ventilation Control Strategies for a Kindergarten in Mediterranean Climate	Graziano Addante, Francesco Iannone, Alessandro Rinaldi	p.467-470 **36AIVC**	2015

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
122	Control Strategies of the Natural Ventilation for Passive Cooling for an Existing Residential Building in Mediterranean Climate	Guido Raffaele Dell'Osso, Francesco Iannone, Alessandra Pierucci, Alessandro Rinaldi	p.463-466 **36AIVC**	2015
123	Thermal performance analysis of a solar chimney, based on the experimental study of the main driving variables in a physical prototype	Jesús Arce, María José Jiménez, Ricardo Enríquez, Jesús Xamán, Sergio Castaño, Gabriela Álvarez, María del Rosario Heras	p.459-462 **36AIVC**	2015
124	Model Predictive Control (MPC) of hybrid ventilation systems in office buildings with dynamic glass facades	Tom Soendergaard Pedersen, Palle Andersen, Christian Drivsholm, Niels Boel	p.454-458 **36AIVC**	2015
125	Assessment of spatial and temporal distribution of thermal comfort and IAQ in low energy houses	Maria del Carmen Bocanegra-Yanez, Paul Strachan, Paul Tuohy, Jon Hand, Tim Sharpe	p.450-453 **36AIVC**	2015
126	Electrothermal actuators with PWM control	Kamil Szkarłat, Andrzej Górka, Radosław Górzeński	p.447-449 **36AIVC**	2015
127	Improvement of comfort and energy efficiency in existing buildings using adaptive thermal comfort algorithm	José Manuel Salmerón Lissén, José Sánchez Ramos, Pablo Aparicio Ruiz, Javier García Ramos, Servando Álvarez Domínguez, José Luis Molina Félix, Elena Barbadilla Martín	p.442-446 **36AIVC**	2015
128	Thermal comfort assessment in a sustainable designed office building	Silvia Soutullo, Mª Nuria Sanchez, Ricardo Enriquez, Mª Jose Jimenez, Mª Rosario Heras	p.439-441 **36AIVC**	2015
129	Impact of natural ventilation in energy demand and thermal comfort of residential buildings in Catalonia	Joana Ortiz, Verdiana Russo, Jaume Salom	p.436-438 **36AIVC**	2015
130	Experimental analysis of microscale trigeneration systems to achieve thermal comfort in smart buildings	Parantapa Sawant, Jens Pfafferott	p.432-435 **36AIVC**	2015

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
131	Field application of enhanced displacement ventilation system in an office of a Zero Energy Building in the Tropics	David K.W. Cheong, Samantha C.H. Khor	p.343-349 **36AIVC**	2015
132	Wind-induced pressure coefficients on buildings dedicated to air change rate assessment with CFD tool in complex urban areas	Stéphane Sanquer, Guillaume Caniot	p.337-342 **36AIVC**	2015
133	Optimization of indoor air quality through controlled cross ventilation in the retrofitting of residential buildings	Alberto Meiss, Jesús Feijó-Muñoz, Miguel Ángel Padilla-Marcos	p.332-336 **36AIVC**	2015
134	Model Home 2020 – full-year measurements of daylight, energy and indoor climate in five single-family houses occupied by typical families: what has been learned	Peter Foldbjerg, Thorbjørn Færing Asmussen, Christoffer Plesner, Jens Christoffersen	p.323-331 **36AIVC**	2015
135	Ventilative cooling and energy use in supermarkets	Zoi Mylona, Maria Kolokotroni, Savvas Tassou	p.218-223 **36AIVC**	2015
136	Stack driven ventilative cooling for schools in mild climates: analysis of two case studies	Nuno M. Mateus, Guilherme Carrilho da Graça	p.210-217 **36AIVC**	2015
137	Night-time cooling by ventilation or night sky radiation combined with in-room radiant cooling panels including Phase Change Materials	Eleftherios Bourdakis, Bjarne W. Olesen, Fabio Grossule	p.196-209 **36AIVC**	2015
138	Evaluation tool of climate potential for ventilative cooling	Annamaria Belleri, Theofanis Psomas, Per Heiselberg	p.186-195 **36AIVC**	2015
139	Overview of provisions for ventilative cooling within 8 European building energy performance regulations	M. Kapsalaki, F. R. Carrié		2015
140	Energy aspects and ventilation of food retail buildings	Maria Kolokotroni, Savvas A. Tassou, Baboo Lesh Gowreesunker		2014

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
141	Validation of EnergyPlus thermal simulation of a double skin naturally and mechanically ventilated test cell	Nuno M. Mateus, Armando Pinto, Guilherme Carrilho da Graça		2014
142	A 3-field earth-heat-exchange system for a school building in Imola, Italy: Monitoring results	Giacomo Chiesa, Marco Simonetti, Mario Grosso		2014
143	Natural ventilation design: An analysis of predicted and measured performance	Annamaria Belleri, Roberto Lollini, Spencer M.Dutton		2014
144	Integrated design methods for natural ventilation	Annamaria Belleri		2014
145	Control of indoor climate systems in active houses	Peter Holzer, Peter Foldbjerg	p.611-628 **35AIVC**	2014
146	Coupling hygrothermal whole building simulation and air-flow modelling to determine strategies for optimized natural ventilation	Matthias Pazold, Florian Antretter, Marcus Hermes	p.536-552 **35AIVC**	2014
147	Passive Cooling Through Ventilation Shafts in High-Density Zero Energy Buildings: A Design Strategy to Integrate Natural and Mechanical Ventilation in Temperate Climates	Luca Guardigli, Paolo Cappellacci Fausto Barbolini	p.372-374 **35AIVC**	2014
148	Ventilative cooling in national energy performance regulations: Requirements and sensitivity analysis	I. Pollet, S. Germonpré, A. Vens	p.191-202 **35AIVC**	2014
149	Simulation of night ventilation performance as a support for an integrated design of buildings	Jerzy Sowa, Maciej Mijakowski, Jerzy Kwiatkowski	p.840-847 **35AIVC**	2014
150	Reducing cooling energy needs through an innovative daily storage based facade solution	Servando Álvarez Domínguez, Rafael Salmerón Lissén, Álvaro Ruiz-Pardo, José Sanchez Ramos, Javier García Ramos	p.381-383 **35AIVC**	2014
151	Airflow modelling software development for natural ventilation design	Hee Joo Poh, Meow Win tay, Petrina Shu Hui Tay, Hoang Huy Nguyen, Bud Fox		2014

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
152	Strategies for exploiting climate potential through ventilative cooling in a renovated historic market	Annamaria Belleri, Federico Noris, Roberto Lollini	p.368-371 **35AIVC**	2014
153	Indoor climate in a Danish kindergarten built according to active house principles: measured thermal comfort and use of electrical light	Peter Foldbjerg, Thorbjørn Færing Asmussen, Jens Christoffersen,	p.363-367 **35AIVC**	2014
154	Experiences with ventilative cooling in practical application based on experiences with completed active houses	Peter Foldbjerg, Kurt Emil Eriksen, Karsten Duer	p.179-190 **35AIVC**	2014
155	Self-evaluated thermal comfort compared to measured temperatures during summer in three active houses where ventilative cooling is applied	Peter Foldbjerg, Thorbjørn Færing Asmussen, Moritz Fedkenheuer, Peter Holzer	p.604-610 **35AIVC**	2014
156	Summer performance of residential heat recovery ventilation with an air-to-air heat pump cooling system	Bart Cremers	p.360-362 **35AIVC**	2014
157	Perception of a cooling jet from ceiling - a laboratory study	Henna Maula, Hannu Koskela, Annu Haapakangas, Valtteri Hongisto	p.529-535 **35AIVC**	2014
158	venticool position paper: "Developing ventilative cooling for better comfort and energy savings in buildings"	venticool		2014
159	Experimental characterisation of dominant driving forces and fluctuating ventilation rates for a single sided slot louver ventilation system	Paul D O'Sullivan, Maria Kolokotroni	p.202-209 **35AIVC**	2014
160	Experience with measurements, ventilation and infiltration in the Active House concept. Quality issues and implications for compliance	Peter Foldbjerg, Kurt Emil Eriksen, Karsten Duer, Lone Feifer		2014
161	Potential of Night Ventilative Cooling Strategies in Office Buildings in Spain - Comfort Analysis	Olatz Irulegi, Álvaro Ruiz-Pardo, Antonio Serra, José M. Salmerón		2014

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
162	Time-averaged Single Sided Ventilation Rates and Thermal Environment in Cooling Mode for a Low Energy Retrofit Envelope	Paul D O'Sullivan, Maria Kolokotroni		2014
163	Diffuse Ceiling Ventilation - A Review	Chen Zhang, Per Heiselberg, Peter V. Nielsen		2014
164	Ventilative cooling: need, potential, challenges, strategies	venticool		2013
165	Natural ventilation in hospital wards of semi-arid climates: a case for acceptable indoor air quality and patients' health	M. A. Mohammed, S. J. M. Dudek, N. Hamza		2013
166	Micro-climate modification and potential for reduction in summertime over-heating in social housing, South Wales (UK)	J. Holmes, T. Taylor, J. Counsell	p.137-150 **34AIVCb**	2013
167	Double-skin system of room-side air gap applied to detached house (Part 2): Simulation analysis to reduce cooling load through natural ventilation in wall	K. Lin, S. Kato, T. Yoshidomi, K. Hiyama	p.403-405 **34AIVCa**	2013
168	The effect of a novel roof pond to the indoor air temperature for passive cooling	A. Spanaki, D. Kolokotsa, T. Tsoutsos, I. Zacharopoulos	p.410-412 **34AIVCa**	2013
169	Study of future weather data considering global and local climate change for building energy simulation	H. Kikumoto, R. Ooka, Y. Arima,T. Yamanaka	p.172-182 **34AIVCb**	2013
170	Building envelope design for climate change mitigation: a case-study of hotels in Greece	I. Farrou, M. Kolokotroni, M. Santamouris	p.406-409 **34AIVCa**	2013
171	Double facades: comfort and ventilation at an extreme complex case study	W. Zeiler, J. Richter, G. Boxem	p.400-402 **34AIVCa**	2013
172	Experimental analysis of different operational configurations for single sided natural ventilation as part of a low energy retrofit	P. D. O'Sullivan, M. Kolokotroni	p.263-273 **34AIVCa**	2013

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
173	Indoor air and thermal environment of environmental friendly house by passive design in Japan	T. Endo, M. Otsuka, Y. Minami, T. Umeno		2013
174	Ventilative cooling of residential buildings: Strategies, measurement results and lessons learned from three active houses in Austria, Germany and Denmark	P. Foldbjerg, T. Asmussen	p.274-284 **34AIVCa**	2013
175	A low- energy innovative system for space cooling	G. Mihalakakou, H. Bagiorgas	p.395-399 **34AIVCa**	2013
176	Double-skin system of room-side air gap applied to detached house (Part 1): Simulation Analysis for reduction of cooling load in the forced ventilated wall of detached house	K. Lin, S. Kato, T. Yoshidomi, K. Hiyama	p.140-142 **34AIVCa**	2013
177	Heat recovery ventilation with closed-loop ground heat exchange	Bart Cremers	p.132-133 **34AIVCa**	2013
178	Energy saving effect of the ERV (Energy recovery ventilator) with outdoor air cooling	J. Lee, D. Song, J. Kim, J. Lee	p.137-139 **34AIVCa**	2013
179	Combining thermal inertia, insulation and ventilation strategies for improving indoor thermal summer comfort	G. Evola, L. Marletta, F. Sicurella, V. Tanasiev	p.123-125 **34AIVCa**	2013
180	Passive ventilation in multi-storey atrium buildings: A first order design guide	A. Acred, G. R. Hunt	p.413-415 **34AIVCa**	2013
181	Evaluation of ventilative cooling in a single family house	B. Peuportier, K. Duer, C. Plesner, N.Dupin	p.285-292 **34AIVCa**	2013
182	Individual appreciation of air conditioned surroundings	S. Hassid	p.112-117 **34AIVCa**	2013
183	Preferred air velocity and local cooling effect of desk fans in warm environments	A. Simone, B. W. Olesen	p.105-107 **34AIVCa**	2013

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
184	Impact of climate change on indoor thermal comfort of naturally ventilated public residential buildings in Singapore	N. H. Wong, E. Tan, S. K. Jusuf	p.151-164 **34AIVCb**	2013
185	Impact of climate change on a naturally night ventilated residential building, Greece	T. Psomas, P. Holzer, M. Santamouris	p.134-136 **34AIVCa**	2013
186	Potential of night ventilative cooling strategies in office buildings in Spain. Comfort Analysis	O. Irulegi, Á. Ruiz-Pardo, A. Serra, J. M. Salmerón	p.165-171 **34AIVCb**	2013
187	Passive cooling dissipation techniques for buildings and other structures: The state of the art	M. Santamouris, D. Kolokotsa	p.253-262 **34AIVCa**	2013
188	Applicability of air supply type airflow window system applied to double-pane window	Sihwan Lee, Shinsuke Kato, Kyosuke Hiyama, Daisuke Kawahara, Yoshikazu Nomura, Yutaka Oura, Katsuhiko Mori, Satoshi Sawaki	p.253-255 **33AIVC**	2012
189	The discharge coefficient of a centre-pivot roof window	Ahsan Iqbal, Alireza Afshari, P.V.Neilsen, P. Heiselberg	p.607-613 **33AIVC**	2012
190	Potentials and limitations of ventilative cooling strategies in the moderate central Europe climate region	Peter Holzer	p.413-422 **33AIVC**	2012
191	Façade-integrated ventilation systems in Nordic climate	Michael Gruner, Matthias Haase		2012
192	Human preference and acceptance of increased air velocity to offset warm sensation at increased room temperatures	Giulio Cattarin, Angela Simone, Bjarne Olesen	p.69-77 **33AIVC**	2012
193	Improvement of summer comfort by passive cooling with increased ventilation and night cooling	Tommaso Pellegrini, Peter Foldbjerg, Bjarne W. Olesen	p.689-695 **33AIVC**	2012
194	Air turbulence intensity influence on the thermal comfort evaluation for different ventilation strategies	Cristiana Verona Croitoru, Ilinca Nastase, Florin Bode	p.225-226 **33AIVC**	2012

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
195	RANS and LES models comparison for a cross-shaped jet flow with application in personalized ventilation	Florin Bode, Ilinca Nastase, Amina Meslem, Cristiana Croitoru	p.245-247 **33AIVC**	2012
196	Hybrid ventilation and cooling technics for the new Nicosia townhall	Flourentzos Flourentzou, Dickon Irwin, Margarita Kritioti, Tasos Stasis, Nicholas Zachopoulos		2012
197	Towards the aeraulic characterization of roof windows?	Bruno Peuportier, Berenger Favre, Eric Vorger, Olfa Mejri, Michael Cohen, Karsten Duer, Nicolas Dupin	p.221-223 **33AIVC**	2012
198	Natural ventilation and passive cooling simulation is not any more a privilege of experts	Flourentzos Flourentzou, Bernard Paule, Samuel Pantet		2012
199	The influence of the selective ventilation in the thermal performance of modern naturally-ventilated houses in Goiânia – Brazil	Leônidas Albano da Silva Júnior, Marta Adriana Bustos Romero, Alberto Hernandez Neto		2012
200	Natural ventilation strategy potential analysis in an existing school building	Laura Lion, Annamaria Belleri, Roberto Lollini, Dino Zardi, Lorenzo Giovannini	p.93-100 **33AIVC**	2012
201	Uncertainties in airflow network modelling to support natural ventilation early stage design	Annamaria Belleri, Roberto Lollini	p.589-597 **33AIVC**	2012
202	Addressing summer comfort in low-energy housings using the air vector: A numerical and experimental study	Axel Cablé, Ghislain Michaux, Christian Inard	p.405-411 **33AIVC**	2012
203	Reducing energy consumption in an existing shopping centre using natural ventilation	Gitte T. Tranholm, Jannick Karsten Roth, Lennart Østergaard	p.227-229 **33AIVC**	2012
204	Hybrid ventilation – the ventilation concept in the future school buildings?	Simone Steiger, Jannick Karsten Roth, Lennart Østergaard	p.599-606 **33AIVC**	2012
205	Intelligent energy consumption in low energy housing	Ditte Marie Jørgensen, Anders Høj Christensen	p.79-84 **33AIVC**	2012

#	Title (including hyperlink to the paper)	Authors	PowerPoint	Year
206	Simplified hourly method to calculate summer temperatures in dwellings	Lone H. Mortensen, Søren Aggerholm	p.399-404 **33AIVC**	2012
207	Optimal sizing rules for natural, simple exhaust and mechanical residential ventilation systems	Jelle Laverge, Arnold Janssens	p.431-433 **33AIVC**	2012
208	Numerical prediction of the air exchange in the museum premises equipped with natural ventilation systems	Andrzej Baranowski, Joanna Ferdyn-Grygierek	p.235-236 **33AIVC**	2012
209	Strategies for controlling thermal comfort in a Danish low energy building: System configuration and results from 2 years of measurements	Peter Foldbjerg, Amdi Worm, Thorbjørn Asmussen, Lone Feifer	p.85-92 **33AIVC**	2012
210	Long term monitoring of residential heat recovery ventilation with ground heat exchange	Bart Cremers	p.63-68 **33AIVC**	2012
211	Ventilated courtyard as a passive cooling strategy in the hot desert climate	Mohamed Hssan Hassan	p.101-107 **33AIVC**	2012
212	BUILDUP Overview Article: Ventilative Cooling Lowers Energy Consumption	Kapsalaki M., Carrié F.R., Heiselberg P., Wouters P.		2012

3. Workshop presentations

This chapter includes a table (Table 2) listing titles and hyperlinks to 54 PowerPoint presentations presented at workshops organized in collaboration with venticool & IEA-EBC Annex 62.

Table 2

#	Title	Presenters	Year
	Workshop: Ventilative cooling in buildings: now & in the future, 23 October 2017 – Brussels, Belgium		
1	Welcome	Hilde Breesch, KU Leuven & Peter Wouters, INIVE	2017
2	Introduction to Annex 62: background, objectives and results	Per Heiselberg, Aalborg University	2017
3	IEA Annex 62 Ventilative Cooling - Design Guidelines	Annamaria Belleri, Eurac Research	2017
4	Ventilative cooling in national compliance tools	Michal Pomianowski, Aalborg University	2017
5	Solutions and technologies	Theofanis Psomas, Aalborg University & Hans Martin Mathisen, NTNU	2017
6	Implementing technologies in a kindergarten and a lecture room	Guilherme Carrilho da Graça, University of Lisbon & Maria Kolokotroni, Brunel University	2017
7	Design and Performance of Ventilative Cooling: A Review of Principals, Strategies and Components from International Case Studies	Paul O'Sullivan, Cork Institute of Technology	2017
8	Future challenges and opportunities	Peter Wouters, INIVE	2017
9	Recommendations and challenges for CEN and ISO standards	Christoffer Plesner, VELUX	2017
10	Future international research: Smart overheating prevention and resilient cooling in changing urban climates	Peter Holzer, Institute of Building Research & Innovation	2017
	QUALICHeCK International Workshop on summer comfort technologies in buildings, 09-10 March 2016 – Athens, Greece		
11	Overall Introduction	Peter Wouters, INIVE	2016
12	Challenges for sustainable summer comfort	Mat Santamouris, NKUA	2016

#	Title	Presenters	Year
13	Overview of technological development in passive cooling and high efficiency active cooling	José Molina, Seville University	2016
14	Status on ventilative cooling	Per Heiselberg, Aalborg University	2016
15	Policies and instruments for increasing buildings energy efficiency: Experience from the Greek Programme “Energy Efficiency in Household Buildings”	Margarita Karavasili, Urban Planet, Citizens Inspectorate for Sustainable Development	2016
16	Crossroads between architecture, urbanism and renewable energy sources	Nikos Fintikakis, Synthesis & Research Ltd	2016
17	Characterisation of solar control properties – Compliant product data	Wouter Beck, Ascendilex	2016
18	Product database ESSO DB	Dave Bush, ES-SO	2016
19	Quality of system and the works of solar shading devices	Ann Van Eycken, ES-SO	2016
20	Assessment of ventilative cooling and solar shading	Ivan Pollet, Renson Ventilation	2016
21	Ventilative cooling in Spain	José Molina, University of Seville	2016
22	A Greek study on quality of works, compliance with existing legislation and reliability of EPC data	Theoni Karlessi, NKUA	2016
23	Some key aspects to consider ventilative cooling in energy performance regulations	François Rémi Carrié, ICEE	2016
24	Status of CEN work on the new set of EPBD standards	Jaap Hogeling, CEN TC 371	2016
	Workshop: Ventilative Cooling: Using the cooling potential of ventilation to reduce energy use in buildings, 17 September 2014 – Uxbridge, UK		
25	IEA EBC Annex 62 Ventilative Cooling	Per Heiselberg, Aalborg University	2014
26	Monitoring summer indoor overheating risk and ventilative cooling behaviour in London homes	Anna Mavrogianni, UCL	2014
27	Venticool: The international platform for Ventilative Cooling	Karsten Duer, Velux	2014
28	Analytical and experimental modelling of energy storage in phase change materials for natural cooling of buildings	Zsolt Bako Biro, Monodraught Ltd	2014

#	Title	Presenters	Year
29	Designing natural ventilation for thermal comfort in buildings	Shaun Fitzgerald, Breathing Buildings	2014
30	Cutting edge natural ventilation of high-rise buildings in Japan	Hisashi Kotani, Osaka University	2014
	International Workshop: Ventilative Cooling: Need, Challenges and Solution Examples | Brussels, Belgium 19-20 March 2013		
31	Welcome by: Operating Agent of IEA EBC Annex 62	Per Heiselberg, Aalborg University	2013
32	Welcome by: venticool platform	Peter Wouters and Rémi Carrié, INIVE	2013
33	New solutions for modern passive cooling and heat redistribution	Bas Knoll, TNO	2013
34	Stratum Ventilation	John Z. Lin, City University of Hong Kong	2013
35	Application of PCM-systems in Ventilative Cooling	Lesh Gowreesunker, Brunel University	2013
36	Ventilative cooling experiences by Renson: lessons learned and solutions	Ivan Pollet - Renson Ventilation	2013
37	Sensitivity of night cooling performance to room/system design: surrogate models based on CFD	Kim Goethals, Ghent University	2013
38	Natural ventilation design tools, applications in commercial buildings	Stephen Ray, MIT	2013
39	Is ventilative cooling effective in light weight wooden constructions?	Hilde Breesch, KU Leuven	2013
40	Ventilative Cooling in Standards and Regulations - Country Report from Austria	Peter Holzer, Institute of Building Research & Innovation	2013
41	Ventilative Cooling: Modeling + Simulation Challenges	Jan Hensen, Eindhoven University of Technology	2013
42	Ventilative cooling in building regulations - The Netherlands	Bas Knoll, TNO	2013
43	Ventilative Cooling in Regulations	Maria Kolokotroni, Brunel University	2013
44	Ventilative Cooling in the US - Standards and Regulations	Max H. Sherman, LBNL	2013
45	Status of ventilative cooling in the DK	Karsten Duer, Velux	2013
46	Free-cooling and night ventilation - How to avoid overheating	Anne Marie Bernard, Allie'Air	2013

#	Title	Presenters	Year
47	Ventilative Cooling: the holistic approach on buildings and systems developing the EPBD standards under Mandate 480	Jaap Hogeling, REHVA	2013
48	Examples of naturally cooled buildings	Flourentzos Flourentzou, Estia SA	2013
49	Passive cooling with natural ventilation rate, a case study	Pier Nicola Currà, Archefice associat	2013
50	A ventilative cooling system in a School Building, Imola, Italy	Mario Grosso, Politecnico di Torino	2013
51	Energy efficient design of a passive school using thermal dynamic simulations	Joerie Alderweireldt, 3E	2013
52	Ventilative Cooling Potential of Outdoor Air – Now and in the future	Per Heiselberg, Aalborg University	2013
53	Personal control over indoor climate and the use of operable windows in offices	Atze Boerstra, Eindhoven University of Technology	2013
54	Urban heat island, climate change and impact on ventilation for cooling	Maria Kolokotroni, Brunel University	2013

4. Webinar recordings & slides

This chapter includes a table (Table 3) listing titles and hyperlinks to recordings of webinars organized in collaboration with venticool, AIVC & IEA-EBC Annex 62.

Table 3

#	Title	Presenters	Year
	Webinar: Ventilative Cooling – design and examples, 26 March 2020 (Flyer, Slides)		2019
1	Introduction to Annex 62	Hilde Breesch, KU Leuven	2019
2	Ventilative cooling design	Guilherme Carrilho da Graça, University of Lisbon	2019
3	Ventilative cooling potential & operational strategies	Annamaria Belleri, EURAC	2019
4	Example ventilative cooling: CML Kindergarten (Portugal)	Guilherme Carrilho da Graça, University of Lisbon	2019
5	Example ventilative cooling: University Seminar Room	Maria Kolokotroni, Brunel University London	2019
6	Lessons learnt from ventilative cooling cases	Paul O' Sullivan, Cork Institute of Technology	2019
	Webinar: Ventilative cooling and summer comfort: Freevent project in France, 25 April 2018 (Flyer, Slides)		
7	Introduction	Peter Wouters, INIVE	2018
8	Assessment of thermal and comfort performance	Andres Litvak, Apebat	2018
9	On site measurements and feedback	Anne Marie Bernard, Allie'Air	2018
10	Guidelines to achieve an effective ventilative cooling	Nicolas Piot, EGE	2018
	Webinar: Ventilative cooling potential and compliance in Energy Performance regulations — Status and perspectives in Belgium, Estonia, Greece, 17 December 2015 (Slides)		
11	Energy Consumption in the European Built Environment The Role of Cooling	Mattheos Santamouris, NKUA	2015

#	Title	Presenters	Year
12	Ventilative cooling in the Belgian regulation	Geoffrey Van Moeseke, UCLouvain	2015
13	Compliance to summer thermal comfort requirements: control of overheating in new Estonian apartment buildings	Jarek Kurnitski, Tallinn University of Technology	2015
14	Quality of works, compliance with existing legislation and reliability of EPC data in Greece	Karlessi Theoni, NKUA	2015
	Webinar: Assessing ventilative cooling potential in Energy Performance regulations Status and perspectives in Austria, Denmark, France, 8 December 2015 (Flyer, Slides)		
15	Ventilative cooling in the Danish regulation	Per Heiselberg, University of Aalborg	2015
16	Ventilative cooling in the Austrian regulation	Peter Holzer, Building Research and Innovation	2015
17	Ventilative cooling in the French regulation	Charles Pelé, CSTB	2015
	BUILD UP webinar: "Ventilative cooling: Keep cool and lower peak energy demand", 6 June 2014 (Flyer, Slides)		
18	Challenges for ventilative cooling in the context of NZEB - the venticool platform	Peter Wouters, INIVE	2014
19	Potential energy savings and the new IEA EBC Annex 62 on ventilative cooling	Per Heiselberg, University of Aalborg	2014
20	Case studies - demonstrated high level summer comfort in real buildings	Flourentzos Flourentzou, ESTIA	2014

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