

AIR INFORMATION REVIEW

Vol 27, No. 3, June 2006

A quarterly newsletter from the IEA Air Infiltration and Ventilation Centre



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New AIVC publication on Adaptive Comfort

Adaptive Thermal Comfort and Ventilation
AIVC VIP 12, 2006, 8 p.
M. Santamouris, University of Athens, Greece

Existing thermal comfort standards and methods cover mainly thermal comfort conditions under steady state conditions. Most of the thermal comfort studies have been carried out in laboratories and are based on evaluations of the heat transfer between the human beings and their environment and of the required physiological conditions for thermal comfort.

Given the thermal interaction between the building envelope, the occupants and the heating and cooling system, it is very rare to encounter steady state conditions in real buildings, and it is evident that the temperature in free running buildings is far less likely to be steady.

Field comfort studies carried out around the world have shown that the so called adaptive approach describes comfort conditions in non air conditioned buildings better. The fundamental assumption of the adaptive approach is expressed by the 'adaptive principle' that stipulates:

"If a change occurs such as to produce discomfort, people react in ways which tend to restore their comfort".



This principle codifies the behaviour of building occupants which takes two basic forms:

- Adjustments to the optimal comfort temperature by changes in clothing, activity, posture, etc. so that the occupants are comfortable in prevailing conditions
- Adjustment of indoor conditions by the use of controls such as windows, blinds, fans and in certain conditions mechanical heating or cooling. Occupants may also migrate around the room to find improved conditions

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AIVC Conference 2006

Due to circumstances beyond our control the dates of the next conference
have been changed to
20 - 22 November 2006 - Lyon - France

More information on page 8

AIR

AIR INFORMATION REVIEW

The newsletter of the AIVC, the Air Infiltration and Ventilation Centre. This newsletter reports on air infiltration and ventilation related aspects of buildings, paying particular attention to energy issues. An important role of the AIVC and of this newsletter is to encourage and increase information exchange among ventilation researchers and practitioners worldwide.

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Continued from page 1

New AIVC publication on Adaptive Comfort

It is as a result of these adaptive behaviours that field surveys have verified that the comfort temperature is very closely related to the mean indoor temperature. It is suggested that such an effect could be seen as the result of feedback between the thermal sensation of subjects and their behaviour as part of the processes by which the thermal situation is preserved.

Very important research has been carried out in order to develop an international adaptive comfort standard. As a result ASHRAE has proposed an adaptive comfort standard (ACS ASHRAE Standard 55), applicable for naturally ventilated buildings. In parallel, the new proposed thermal comfort standard of CEN involves an adaptive thermal comfort part.

Analysis from various researchers has shown that when variable indoor temperature comfort standards based on adaptive theory are used in air conditioned buildings, remarkable energy savings may occur.

The expected energy saving in European buildings is more than 18% over that from using a constant indoor temperature as reported, while the corresponding energy savings for UK conditions have been estimated close to 10 %.

The new VIP prepared by AIVC on adaptive comfort offers the basic scientific and practical information on adaptive comfort and discusses the impact of air speed on thermal comfort. We expect that it may be a valuable tool for engineers and scientists working in the building sector.

 Download VIP12

Changes to ASHRAE Standard 62.1 Ventilation Rates Proposed

Ventilation requirements for high-rise residential buildings are among changes being proposed for ASHRAE's indoor air quality standard.

Three addenda to ANSI/ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality, are proposed.

Addendum 62.1h would add requirements for high-rise residential buildings to the standard's ventilation rate table.

These ventilation rates are somewhat higher than the residential rates included in ANSI/ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings, according to Dennis Stanke, chair of the Standard 62.1 committee. "Standard 62.2 bases its rates on the assumption that infiltration always provides some ventilation and on the requirement that each dwelling unit includes operable windows for supplemental ventilation," he said. "The Standard 62.1 rates, on the other hand, assume that ventilation requirements are independent of infiltration and operable windows" For example, the required mechanical ventilation rate for a two-bedroom apartment or condo could double compared to Standard 62.1-2001. Stanke noted that increased outside air rates can mean more outside air conditioning tons, especially in humid climates.

Addendum 62.1e would add an informative appendix that summarizes the requirements for documentation found throughout the standard.

"Good documentation aids communication between all parties involved with the design, installation, operation and maintenance of ventilation systems," Stanke said. "Reducing communication failures reduces building-ventilation and indoor-air-quality problems."

Addendum 62.1f would change the purpose and scope of the standard to make them more consistent with its body. The purpose retains its dual goals of providing indoor air quality acceptable to human occupants that minimizes the potential for adverse health effects.

The scope no longer includes single-family houses or multiple-family buildings with three or fewer stories. These structures are covered by Standard 62.2. The scope also states that the standard includes no specific prescribed ventilation rates for smoking-permitted spaces or for improperly separated non-smoking spaces (since these spaces also might contain environmental tobacco smoke). "Although they contain no specific compliance requirements, statements of scope and purpose must be clear and accurate to help users of the standard apply it properly," Stanke said.

<http://www.ashrae.org/standards>

10 Addenda Proposed to ASHRAE Energy Standard

Fan power limitation requirements for complex HVAC systems, such as those in hospitals and laboratories, would be improved under a proposed change to ASHRAE's energy standard.

Eight addenda to ANSI/ASHRAE/IESNA Standard 90.1-2004, Energy Standard for Buildings Except Low-Rise Residential Buildings are proposed. Included is addendum ac, which would expand application coverage to address complex mechanical systems.

"The standard would more effectively address static pressure associated with complex HVAC systems requiring specialized equipment in return air or exhaust air systems, such as those in hospitals," said Larry Kouma, who heads the group that oversaw the proposed addendum. "Appropriate allowances for discharge and return air flow treatment equipment would be allowed, enabling a clear avenue for these systems to demonstrate compliance using the prescriptive compliance methods of the standard. Or, if required, users can still use the standard's energy cost budget method."

The addendum also improves compliance consistency and strengthens stringency for simple systems with an easy-to-use format and structure;

Two addenda to Standard 90.1 are proposed. They are as follows:

- Addendum ag clarifies that only HVAC fans that provide outdoor air for ventilation need to be modeled as running continuously
- Addendum ah clarifies the budget building model heat recovery requirement by stating that condenser heat recovery must be included in the budget building model if it is a prescriptive requirement for the building.

<http://www.ashrae.org/standards>

ASHRAE's Most Used Standards Available on One CD

ASHRAE's "greatest hits" – its 12 top selling standards and guidelines - are now available on one CD.

Design Essentials: ASHRAE's Most Referenced Standards and Guidelines contains a library of documents that can be easily searched and printed with copy and paste features for text and graphics. The standards and guidelines address design or system operations, and most are code-intended standards.

"Because ASHRAE standards/guidelines often refer to requirements in other standards, our documents need to be used together in order to understand the means for compliance with any one of them," Rick Hermans, chair of ASHRAE's Standards Committee, said. "The Design Essentials CD is intended to make that process simpler for the user."

Hermans noted that the standards and guidelines included in the CD serve as the basis for HVAC&R design and some of them are referenced in building codes. Included are:

1. ANSI/ASHRAE Standard 15-2004, Safety Standard for Refrigeration Systems;
2. ANSI/ASHRAE Standard 34-2004, Designation and Safety Classification of Refrigerants;
3. ANSI/ASHRAE Standard 52.2-1999, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size;
4. ANSI/ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy;

5. ANSI/ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality;
6. ANSI/ASHRAE Standard 62.2-2004, Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings;
7. ANSI/ASHRAE/IESNA Standard 90.1-2004, Energy Standard for Buildings Except Low-Rise Residential Buildings (I-P edition);
8. ANSI/ASHRAE Standard 90.2-2004, Energy-Efficient Design of Low-Rise Residential Buildings;
9. ANSI/ASHRAE Standard 135-2004, BACnet®: A Data Communication Protocol for Building Automation and Control Networks;
10. ASHRAE Guideline 0-2005, The Commissioning Process;
11. ASHRAE Guideline 1-1996, The HVAC Commissioning Process;
12. ASHRAE Guideline 13-2000, Specifying Direct Digital Control System.

<http://www.ashrae.org/bookstore>

ASHRAE Publishes Principles of HVAC&R

A new textbook designed to also be used as a reference manual that allows engineers to build on their knowledge of HVAC&R design procedures and methods has been published by ASHRAE.

"Principles of Heating, Ventilating and Air-Conditioning builds on much of the basic information in the ASHRAE 2005 Handbook, Fundamentals, which includes many significant changes," said co-author Ron Howell, Ph.D., P.E. "It serves as a good source for many of the procedures or methods used in HVAC&R design."

The book can be used as an undergraduate or graduate level textbook or for self instruction and as a reference for those who would like reinforcement of their understanding of HVAC&R.

Principles of HVAC elaborates on the use of technical guidance in the Fundamentals Handbook, such as the new radiant time series (RTS) methodology, which includes enhanced treatment of RTS procedures for non-residential cooling and heating loads; a new chapter on residential cooling and heating loads; inclusion of the new ventilation air procedure from ASHRAE 62.1-2004;

and changes in the format and quantity of design weather conditions around the world.

The book includes a CD that contains a spreadsheet for the RTS method and the expanded weather data.

Also available is Principles of HVAC Solutions Manual, which contains solutions to most of the problems in the principles book.

Co-authors are Harry Sauer Jr., Ph.D., P.E., and William Coad.
<http://www.ashrae.org>

ASHRAE Studies Impact of Ventilation on Health

The impact of ventilation rates on occupant health is being studied through ASHRAE research.

“ASHRAE’s guidance is widely referenced in the HVAC&R industry because it stays on top of new developments,” said lead researcher, Jan Sundell, Danish Technical University, Copenhagen, Denmark. “The study will lead to an improved understanding of what science can tell us about the relationship between ventilation and health, which in turn will lead to more reliable information on the benefits of building ventilation. It also will give information about where there is a lack of knowledge, providing the basis for new research.”

He noted that ASHRAE’s ventilation standards primarily focus on occupant perception of indoor air quality, not health. A panel of leading authorities on indoor air pollution and health within medicine and engineering will review existing research and literature on the effect of ventilation on health in schools, offices, residences, etc. While the focus will be on ventilation rates, they also will look at pollutant sources, source strength and pollutant concentrations.

Results may be used to update ASHRAE Standard 62.1, Ventilation for Acceptable Indoor Air Quality, and Standard 62.2-2004, Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings.

The project, Scientific Review of Existing Information Related to the Impact of Ventilation Related to Health, 1443-RP, was approved at ASHRAE’s 2006 Winter Meeting. It is expected to take 18 months to complete. Researchers are Jan Sundell and Hal Levin, Indoor Air Institute, Santa Cruz, California.
<http://www.ashrae.org>

Google Trends – Information on the world’s interest in your favorite topics

With Google Trends, you can compare the world’s interest in your favorite topics. Enter up to five topics and see how often they’ve been searched for on Google over time. Google Trends also displays how frequently your topics have appeared in Google News stories, and which geographic regions have searched for them most often.

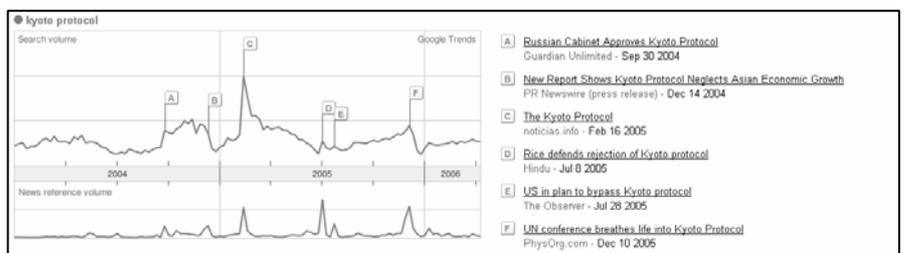
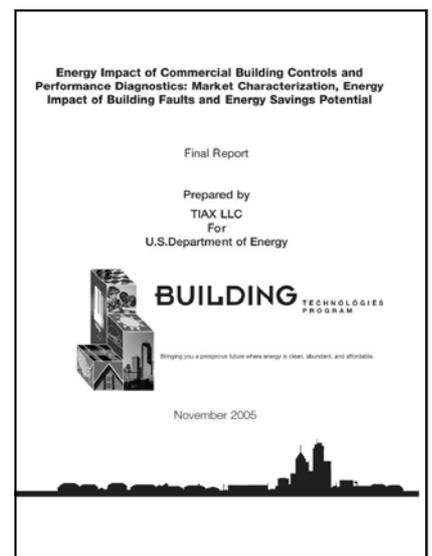
Google Trends analyzes a portion of Google web searches to compute how many searches have been done for the terms you enter relative to the total number of searches done on Google over time. It then shows a graph with the results – the search-volume graph.

Located just beneath the search-volume graph is the news-reference-volume graph. This graph shows you the number of times your topic appeared in Google News stories. When Google Trends detects a spike in the volume of news stories for a particular term, it labels the graph and displays the headline of an automatically selected Google News story written near the time of that spike. In the example below, a search is done on ‘Kyoto Protocol’. On the longer term, this tool might be interesting to study certain ventilation related topics.

TIAX Report Analyzes Energy Savings Potential within U.S. Commercial Buildings

Study for the Department of Energy concludes that a combination of controls and diagnostics could reduce national commercial building energy consumption by approximately 40 percent.

February 14, 2006 (Cambridge, MA) – TIAX, a leading collaborative product and technology development firm, recently released a comprehensive report evaluating the energy savings that could be achieved in U.S. commercial buildings from controls and diagnostics. The report, “The Energy Impact of Commercial Building Controls and Performance Diagnostics: Market Characterization, Energy Impact of Building Faults and Energy Savings Potential,” was commissioned by the Department of Energy (DOE) and is one of several studies TIAX has conducted for the DOE on energy consumption and efficiency.



“Commercial buildings represent about 17 percent of total United States energy consumption and 35 percent of the nation’s electricity use,” said John Ryan, Leader of the Commercial Buildings Team in the DOE’s Building Technologies Program. “To help reduce energy consumption, it is essential for the DOE to assess and prioritize promising opportunities to improve the energy efficiency of commercial buildings. TIAX’s thorough examination of the inefficiencies of these buildings and the controls and diagnostics technologies available to improve efficiency is an important step in this process.”

The TIAX report was divided into four primary segments:

1. The identification of faults that exist within commercial building systems and an evaluation of the national energy impact of these faults
2. An assessment of the energy saving potential of a range of building controls and diagnostics systems
3. An analysis of barriers associated with wide adoption of these controls and diagnostics systems
4. An examination of drivers that could encourage wider adoption of controls and diagnostics within commercial buildings

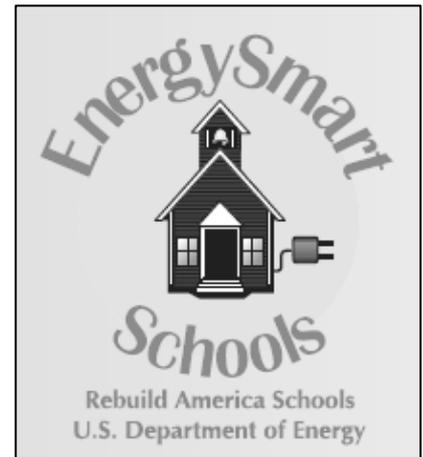
TIAX identified more than 100 faults found in commercial building HVAC, lighting, and water heating systems. Faults identified included duct leakage, HVAC and light systems left on when office space was unoccupied, and simple software programming errors. TIAX’s analysis found that as much as 20 percent of the energy consumed by commercial building HVAC and lighting systems could be wasted due to these faults.

The company then evaluated 10 current, new, and advanced building controls and diagnostics systems including optimal whole building control systems, packaged rooftop unit fault detection diagnostics, occupancy sensor-based lighting controls, building commissioning, and HVAC sensors. Diagnostics save energy by identifying energy-wasting faults to be fixed, while controls reduce energy consumption by improving the effectiveness and intelligence of building systems. TIAX concluded that applying a combination of these sophisticated controls and diagnostics to the entire commercial building stock could reduce HVAC and lighting energy consumption by approximately 40 percent on a national basis.

Despite their energy savings potential, more sophisticated controls and diagnostics have very limited market penetration. TIAX found that many building owners are hesitant to invest in controls and diagnostics systems due to a variety of barriers including uncertainty of the upfront cost and payback of these systems, concerns over reliability and implementation, and a general lack of awareness and understanding of these systems. To address these barriers, TIAX investigated a number of possible factors that could increase building owner confidence and encourage broader adoption of building controls and diagnostics technology. The company recommended the development of rigorous and credible cost-benefit analyses for several controls and diagnostics systems, as well as targeted market promotion and transformation activities. TIAX also identified a range of research and development activities to reduce the cost and increase the effectiveness of controls and diagnostics.

“New innovations in building controls and diagnostics, such as lighting controls and HVAC sensors, have great potential to save energy and reduce costs in commercial buildings nationwide,” said Dr. Kurt Roth, Project Manager and senior engineer in TIAX’s Building and Appliance group. “To spur greater adoption of commercial building controls and diagnostics, we should work to better understand the value these technologies may offer owners and tenants.”

The full report is available at http://www.tiaxllc.com/aboutus/pdfs/energy_imp_comm_bldg_cntrls_perf_diag_110105.pdf



EnergySmart Schools brochures

As part of the Rebuild America Schools programme, a whole series of very interesting publications on energy efficient schools have been published by the US Department of energy. In many of these publications are ventilated related discussions discussed.

AIVC-Online There are energy design guidelines for high performance schools for various climates:

- Temperate and mixed climates
- Temperate and humid climates
- Hot and dry climates
- Hot and humid climates
- Cool and humid climates
- Cool and dry climates
- Cold and humid climates
- Arctic and subarctic climates

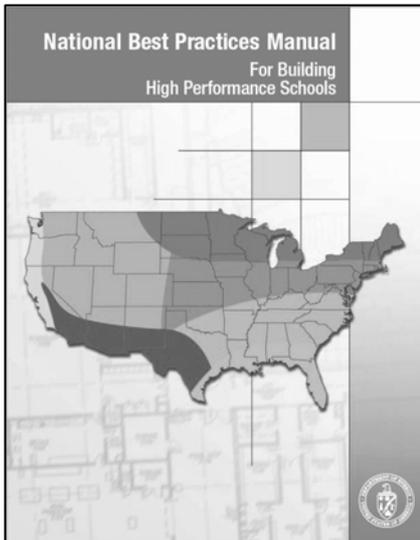
In addition to that, there is also a **National Best Practice Manual**

AIVC-Online - 457 pages!), with the following sections:

- Site design
- Daylighting and windows
- Energy efficient building shell
- Lighting and electrical systems
- Mechanical and ventilation systems
- Renewable energy systems
- Water conservation
- Recycling systems and waste management
- Transportation
- Resource-efficient building products
- Commissioning and maintenance

Finally, there are several brochures for the various types of users:

- Myths about energy in schools
- How school administrators can help?
- How parents and teachers can help?
- How school facilities managers can help?



All publications can be downloaded free of charge at <http://www.eere.energy.gov/buildings/info/publications.html>

For more information, visit the EnergySmart Schools Website: <http://www.energysmartschools.gov>



U.S. Department of Energy
Energy Efficiency and Renewable Energy

Technology Fact Sheets from US DOE Technologies Building Programme

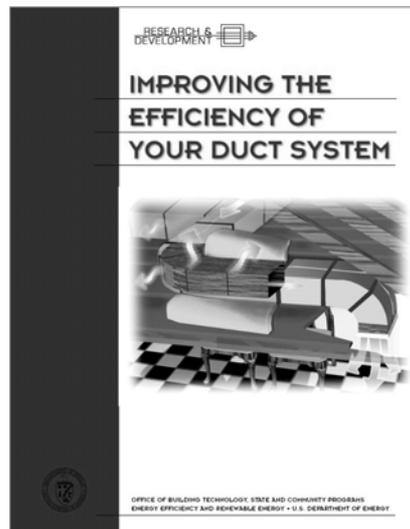
A series of interesting Technology Fact Sheets is published by the Technologies Building Programme of the Department of Energy (DOE) of the USA.

AIVC-Online Several of these fact sheets are dedicated to air infiltration and/or ventilation, e.g.:

- Air distribution system design
- Air distribution system installation and sealing
- Air sealing
- Weather resistive barriers
- Whole house fan
- Whole house ventilation system
- Attic access
- Spot ventilation
- Improving the energy efficiency of your duct system

More downloads:

<http://www.eere.energy.gov/buildings/info/publications.html>



Many ventilation related IEA ECBCS publications are now free available!

The AIVC is one of the annexes of the Implementing Agreement on Energy Conservation in Buildings and Community systems (ECBCS –

<http://www.ecbcs.org>). Since almost 30 years, ECBCS has initiated some 50 research projects (so-called 'annexes'), whereby many of these annexes have a direct or indirect link with ventilation.

For a large number of annexes some or all of the reports are now available free of charge as a pdf-file. The list below gives an overview of the available reports as well as the title of the annex.

Annex 1: load energy determination of buildings (1977-1980)

- Annex 1 Results and Analyses of Avonbank Building Simulation Level 1
- Annex 1 Results and Analyses of Avonbank Building Simulation Level 2

Annex 3: Energy conservation in residential buildings (1979-2982)

- Annex 3 Calculation Methods to Predict Energy Savings in Buildings
- Annex 3 Guiding Principles Concerning Design

Annex 6: Energy systems and design of components (1979-1981)

- Annex 6 Program for Community Systems Swedish Report

Annex 11: Energy auditing (1982-1987)

- Annex 11 Source Book for Energy Auditors
- Annex 11 Source Book for Energy Auditors Vol2

Annex 12: Windows and fenestration (1982-1986)

- Annex 12 Calc of Seasonal Heat Loss and Gain Through Windows
- Annex 12 Thermal and Solar Properties of Windows
- Annex 12 The State of The Art in Existing and New Windows
- Annex 12 Building Regulations, Standards and Codes
- Annex 12 Comparison of Six Simulation Codes
- Annex 12 Windows and Space Heating Requirements

Annex 13: Energy management in hospitals (1985-1989)

- Annex 13 Booklet I Introduction and Management Perspective
- Annex 13 Booklet II Heat and Cold Generation and Distribution
- Annex 13 Booklet III Heating, Ventilating, Air Conditioning, Domestic Hot Water
- Annex 13 Booklet IV Electrical System
- Annex 13 Booklet V Services
- Annex 13 Booklet VI Building Envelope

Annex 14: Condensation and energy (1987-1990)

- Annex 14 Catalogue of Materials Properties
- Annex 14 Condensation and Energy Case Studies
- Annex 14 Guidelines and Practice Vol2
- Annex 14 Source Book

Annex 15: energy efficiency in schools (1988-1990)

- Annex 15 Energy Efficiency in Schools Final Report Part1
- Annex 15 Energy Efficiency in Schools Final Report Part2
- Annex 15 Working Group: Energy Efficiency in Educational Buildings Working Group Final Report

Annex 16: Building Energy Management Systems – User interfaces and system integration (1987-1991)

- Annex 16 A Guide to Sensors for Bems

Annex 17: Building Energy Management Systems – Evaluation and emulation techniques (1988-1992)

- Annex 16-17 Technical Synthesis Report

Annex 18: Demand controlled ventilating systems (1987-1992)

- Annex 18 Technical Synthesis Report: Demand Controlled Ventilating Systems
- Annex 18 Demand Controlled Ventilating Systems Case Studies
- Annex 18 Demand Controlled Ventilating Systems Market Survey
- Annex 18 Demand Controlled Ventilating Systems Sensor Tests
- Annex 18 Demand Controlled Ventilating Systems Source Book
- Annex 18 Demand Controlled Ventilating System State of the Art Review

Annex 19: Low slope roof systems (1987-1993)

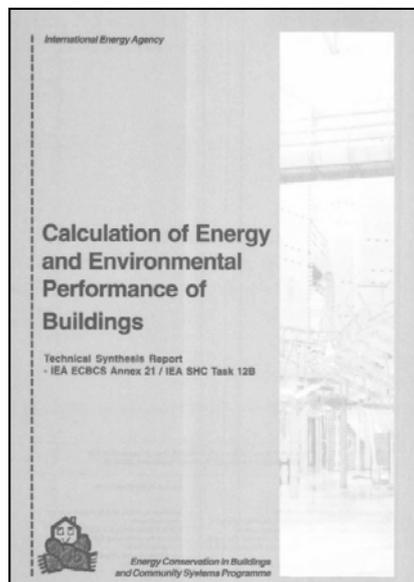
- Annex 19 Technical Synthesis Report: Low-Slope Roof Systems

Annex 20: Air flow patterns within buildings (1988-1991)

- Annex 20 Air Flow Through Large Openings in Buildings
- Annex 20 Room Air and Contaminant Flow
- Annex 20 Stochastic Model of inhabitant Behaviour

Annex 21: Environmental performance of buildings (1988-1993)

- Annex 21 Appropriate Use of Programs Volume 1
- Annex 21 Appropriate Use of Programs Volume 2
- Annex 21 Energy Analysis Tests for Commercial Buildings (Commercial Benchmarks)
- Annex 21 Technical Synthesis Report: Calculation of Energy and Environmental Performance



Annex 23: Multizone air flow Modelling (1990-1996)

- Annex 23 Evaluation of COMIS
- Annex 23 Evaluation of COMIS Appendices
- Annex 23 Technical Synthesis Report: Multizone Air Flow Modelling COMIS

Annex 24: Heat, air and moisture transport in insulated envelope parts (1991-1995)

- Annex 24 Technical Synthesis Report: Heat Air and Moisture Transfer in Highly insulated Buildings

Annex 25: Real-time HEVAC simulation (1991-1995)

- Annex 25 Building Optimization and Fault Diagnosis Source Book
- Annex 25 Real Time Simulation of HVAC Systems Fault Detection
- Annex 25 Technical Synthesis Report: Real Time Simulation of HVAC Systems

Annex 26: Energy efficient ventilation of large enclosures (1993-1996)

- Annex 26 Technical Synthesis Report: Energy Efficient Ventilation of Large Enclosures
- Annex 26 Ventilation of Large Spaces in Buildings Case Study Report
- Annex 26 Ventilation of Large Spaces in Buildings Analysis and Prediction

Annex 27: Evaluation and demonstration of domestic ventilation systems (1993-2002)

- Annex 27 Evaluation and Demonstration of Domestic Ventilation Systems
- Annex 27 Handbook
- Annex 27 Technical Synthesis Report: Simplified tools for Evaluation of Domestic Ventilation Systems

Annex 28: Low energy cooling systems (1993-1997)

- Annex 28 Low Energy Cooling Case Study Buildings
- Annex 28 Low Energy Cooling Detailed Design tools
- Annex 28 Review of Low Energy Cooling Technologies
- Annex 28 Technology Selection and Early Design Guidance
- Annex 28 Technical Synthesis Report: Low Energy Cooling

Annex 30: Bringing simulation to application (1995-1998)

- Annex 30 Technical Synthesis Report: Bringing Simulation to Application

Annex 31: Energy related environmental impact of buildings (1996-1999)

- Annex 31 Technical Synthesis Report

Annex 32: Integrated building envelope performance assessment (1996-1999)

- Annex 32 Technical Synthesis Report: Integral Building Envelope Performance Assessment

Annex 34: Computer aided evaluation of HVAC system performance

- Annex 34 Technical Synthesis Report: Computer-Aided Evaluation of HVAC System Performance

Annex 35: Control Strategies for Hybrid Ventilation in New and Retrofitted Office Buildings (HybVent) (1998-2002)

- Annex 35 Technical Synthesis Report: Control Strategies for Hybrid Ventilation in New and Retrofitted Office Buildings (HybVent)

EPIC 2006 AIVC

Palais des Congrès - Lyon, France - 20-22 November 2006



Scope of the conference

Given the oil crisis and the huge increase of the energy consumption (and its environmental impact), the theme of the conference focuses on the sustainability principles to be applied in the built environment.

In order to achieve a sustainable development with respect to the energy use and indoor climate in buildings, significant actions are required in the short and long term. The conference will pay attention to both aspects. Practical HVAC aspects are covered during the conference.

The 3-day conference is organised in the framework of the 4th European Conference on Energy Performance and Indoor Climate in buildings (EPIC), the 27th Conference of the Air Infiltration and Ventilation Centre (AIVC – <http://www.aivc.org>) and the 1st conference of the International Energy Agency - Programme on Energy Conservation in Building and Community Systems) <http://www.ecbcs.org>.

Target audience

- Industrial manufacturers and developers of building components
- Consultant engineers
- Designers and architects
- Researchers
- Building and housing estate managers
- Policy makers and officials involved in housing, construction and energy
- People involved in standardization

Topics

1. Extreme Low Energy Buildings and Buildings with Positive Energy
2. Energy Performance Regulations and Certification: where are we and where to go?
3. The Existing Building Stock: Technical, Economical and Social Aspects for a Wide Scale Upgrading
4. Performance Assessment of Building Components and Installations
5. Sustainable Urban Planning
6. Advanced Glazing, Façade and HVAC Technologies
7. Natural Ventilation in Urban Settlements
8. Design of Buildings of High Architectural and Environmental Quality
9. Contributions & Challenges of the Information Society in relation to achieving Environmental Quality
10. Indoor Climate Criteria in relation to Sustainable Building
11. Indoor Climate, Energy & Economy, i.e. the Economic Value of Indoor Climate, the Overall Cost of Low Energy Concepts
12. Opportunities & Barriers for the integration of Renewables in the Built Environment
13. International and National Policies for medium and long term Energy Management – Post-Kyoto
14. Innovative Concepts for Education and Training

Conference Programme

There will be 4 parallel sessions during the whole duration of the conference (with the exception of the opening and closing session).

Each of the parallel sessions covers a specific topic:

1. AIVC track organised by the Air Infiltration and Ventilation Centre

A total of 8 sessions will cover a wide range of topics dealing with ventilation, e.g. development of new ventilation systems, ventilation and thermal comfort, indoor air quality, energy performance of ventilation systems, airtightness of buildings

2. EPBD and SAVE track organised by the EPBD Buildings Platform

Also this track contains 8 sessions during which the focus is primarily on the implementation of the European Energy Performance of Buildings Directive.

Information will be provided about the relevant projects of the SAVE programme, the activities in the EPBD concerted Action and the EPBD Buildings Platform, the mandate given by the EC to CEN for developing a whole range of standards facilitating the implementation of the EPBD. Moreover, a wider view on the EC policy regarding energy in buildings as well as the long term challenges will be presented.

3. IEA track organised by the International Energy Agency

For more than 30 years, the International Energy Agency (IEA) has been running a whole range of projects focusing on the energy performance of buildings. Many of these projects are managed by the IEA Programme on Energy conservation in buildings and community systems (ECBCS).

In total, 8 of these so-called annexes will lead a session covering topics as low exergy systems, high performance thermal insulation, commissioning of buildings and HVAC, testing and validation of energy simulation tools, integrating environmentally responsive elements in buildings, energy efficient lighting, energy efficient retrofit buildings for governmental buildings, energy efficient retrofits of schools.

4. EPIC track

During these sessions, there will be a wide range of presentations in relation to the conference topics.



Monday 20/11/2006	Auditorium	MEETING ROOMS			
09:30	Opening EPIC				
	Amphithéâtre	Room 1	Room 2	Room 3	Other rooms
14:00	Opening CLIMAMED	AIVC	IEA	EP*	
16:15	CLIMAMED	AIVC	IEA	EP*	
Tuesday 21/11/2006					
09:00	EPIC topics	AIVC	IEA	EP*	CLIMAMED
11:15	EPIC topics	AIVC	IEA	EP*	CLIMAMED
14:00	EPIC topics	AIVC	IEA	EP*	CLIMAMED
16:15	Closing CLIMAMED	AIVC	IEA	EP*	Epic topics
Wednesday 22/11/2006					
09:00	EPIC topics	AIVC	IEA	EP*	Epic topics
11:15	EPIC topics	AIVC	IEA	EP*	Epic topics
14:00	EPIC topics				Epic topics
16:15	Closing EPIC				

Organizing committee

The Conference is jointly organized by:

ENTPE (Ecole Nationale des Travaux Publics de l'Etat) Vaulx-en-Velin, France

INIVE EEIG (International Network for Information on Ventilation) on behalf of AIVC, Brussels, Belgium

IEA ECBCS (International Energy Agency Energy Conservation in Buildings and Community Programme)

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Scientific chairmen

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 A. Zhivov, USA

Registration fees

	EPIC-AIVC only	CLIMAMED only	EPIC-AIVC
Members of french AICVF	700 Euros	200 Euros	810 Euros
Others	700 Euros	225 Euros	833 Euros
All attendants – on site	700 Euros	250 Euros	855 Euros
Students: no Climamed proceedings & no gala	300 Euros	50 Euros	350 Euros
Students: Climamed proceedings & gala included	300 Euros	100 Euros	400 Euros
Conference dinner	50 Euros	Included	included

One full registration fee per participant is required. Papers submitted without payment of the registration fee will not be printed in the Conference Proceedings nor included in the technical programme.

The fee covers:

- Attendance of oral sessions, poster sessions and workshops
- Coffees and lunches during the Conference
- Printed conference Proceedings and CD-ROM of papers.

Conference proceedings

All accepted papers will be published in the Conference Proceedings and delivered to participants at the Conference (printed proceedings and CD-Rom).

Best papers will be published in a special issue of a scientific journal.

Related event

CLIMAMED conference

During the last 2 days of the EPIC 2006 AIVC Conference (30 November - 1 December 2006), the Climamed conference will take place on a different floor of the same Congress Centre. The Climamed Conference is an annual event organized by the REHVA members in France, Italy, Portugal or Spain. The 2006 conference is organized by AICVF, French member of REHVA. Participants of the EPIC 2006 AIVC Conference will also be able to participate in the Climamed Conference at a reduced registration fee. This event is an opportunity to gather architects, engineers, researchers and producers of HVAC systems (<http://www.climamed2006.org>).

Venue

The EPIC 2006 AIVC Conference will be held at the "Palais des Congrès", the Convention Centre, Lyon, in the heart of the Cité Internationale. SECIL, Cité Internationale, 50 Quai Charles de Gaulle, 69463 Lyon Cedex 06, France, phone: +33.4.72.82.26.26, fax: +33.4.72.82.26.27, <http://www.palais-des-congres.com>.

Language

English will be the official language. Simultaneous translation in English and French will be provided for the opening and closing sessions.

Conference Secretariat

Laboratoire des Sciences de l'Habitat - Département Génie Civil et Bâtiment, CNRS URA 1652
Ecole Nationale des Travaux Publics de l'Etat - Rue Maurice Audin, FR - 69518 Vaulx-en-Velin, France
Tel: +33.4.72.04.70.27, Fax: +33.4.72.04.70.41, epic2006aivc@entpe.fr, <http://epic.entpe.org>

Conference Dinner

The Conference Dinner will be organized on Thursday evening at a cost of 50 Euros per guest.

Hotel information

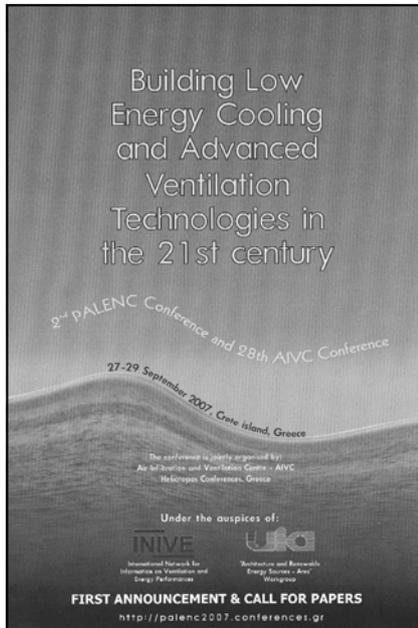
The EPIC 2006 AIVC organizing committee made special arrangements for accommodation in Lyon during the conference. You will find at <http://epic.entpe.org> the list of the hotels by category with contact for reservation.

Please book your room directly with the hotel you choose and mention allotment reference "**EPIC 2006**" to obtain special prices as arranged by us. Please book as soon as possible and before **1st September 2006 at the latest**. Due to various events in Lyon at this period of the year, there will be a high demand for rooms, so if you wish to benefit from allotment prices, make sure to book your room early.

For further information on other categories of hotels, please refer to web site <http://epic.entpe.org>.

Building Low Energy Cooling and Advanced Ventilation Technologies in the 21st Century

27-29 September 2007,
Crete Island, Greece



The joint 2nd Palenc and the 28th AIVC Conference aims to focus on the advanced low energy cooling and ventilation technologies for buildings.

Increase of the living standards, deterioration of the thermal conditions in the urban environment and non-appropriate architecture design, has caused huge penetration of air conditioning in many parts of the world and not only in hot climates. Such a condition has a very serious impact on the peak electricity demand of the countries and the corresponding energy consumption. Intensive research carried out during the last years has permitted to develop new technologies, components, materials and techniques that permit to decrease seriously or even eliminate the cooling demand of buildings. In parallel, very low energy consumption for cooling new generation buildings have been realized and monitored.

Ventilation in buildings permits to decrease the cooling demand, improve comfort conditions and decrease indoor pollution. A wide range of research activities carried out over the last years has permitted to develop advanced ventilation systems that highly satisfy the above requirements.

There is in many countries increased interest in regulations to cover the issue of summer comfort, air conditioning and peak power control, e.g. the European Energy Performance of Buildings Directive asks from the Member States to undertake all the necessary measures in order to decrease the energy consumption caused by air conditioning and improve indoor environmental conditions (air quality, summer comfort, ...). Passive and low energy cooling strategies provide interesting options.

The scope of this conference includes all aspects of technology and building design dealing with ventilation and passive cooling techniques able to improve the environmental performance of buildings.

Papers related on ventilation, solar control, thermal mass, thermal comfort, urban microclimate landscaping, low energy architecture, innovative components and materials, standardization and legislation, advanced and alternative air conditioners, demand side management, etc. are welcomed. The main aims are to present and discuss the state of the art of research and applications dealing with ventilation and cooling and also to assess the results achieved almost two years after the application of the European Energy Performance of Buildings Directive.

Topics

Passive Cooling Techniques
Ventilation for Cooling
Solar Control
Thermal Mass
Natural Ventilation
Hybrid Ventilation
Heat Protection Techniques
Advanced Control Systems and Techniques
Innovative Material and Components
Ground Cooling
Evaporative Cooling
Radiative Cooling
Microclimate
Heat Island
Canyon Effect
Applications in social housing
Demand Side Management
Legislation and in particular results from the application of the European Directive
Education & distance learning
Climatic Responsive Architecture
Thermal Comfort
Indoor Environmental Quality
High Efficiency Air Conditioners

Call for papers

Oral or poster presentations are welcome on the above mentioned topics.

Interested contributors are kindly asked to submit their abstracts electronically by **15 December 2006**.

An abstract of up to 300 words should be submitted, stating clearly the scope of the paper to be presented, the scientific methodology applied and the results obtained.

All abstracts will be reviewed and the authors will be notified about acceptance of their abstract by **15 February 2007**.

A book (or CD) of the conference proceedings will be published and will be available to the participants during the conference. Detailed instructions on paper submission will be given in a later stage.

Note: All deadlines are provisional at this stage and subject to change

Venue

The conference will take place at **Cap-sis Beach Hotel & Sofitel Capsis Palace Conference Center**. The hotel is located in Aghia Pelaghia on a private peninsula of 150 acres, 25 km from the city of Heraklion in Crete. It consists of two main buildings and three bungalows sets with a total of 650 air-conditioned rooms, suites and bungalows & two Conference Centers and one Exhibition Center with a maximum conference capacity of up to 4.800 delegates.

Website

<http://palenc2007.conferences.gr>

Emissions and odours from materials

4th Edition

11-12 October 2006,
Brussels, Belgium

Technical programme:

- Standards and regulatory issues: updating EU-legislation (REACH, superdirective...) and labelling schemes.
- Comfort and impact on health: IAQ, workplace environment, odours and VOCs, off-flavours...
- State of the art for measurement and evaluation: sampling, analysis and sensory evaluation.
- Remediation: optimisation of manufacturing and compounding processes, storage and transport conditions, new barrier properties...
- Recent developments: new OEM requirements, latest trends, new products (low-VOC products, new additives formulations...) in
 - automotive industry
 - building industry
 - packaging industry.



IAQVEC 2007

28-31 October 2007,
Sendai, Japan

This conference is the sixth in the series of international conferences devoted to an integrated approach to design and operation of buildings. The IAQVEC 2007 conference will provide a comprehensive overview of the latest research results in the area of IAQ, Ventilation and Energy Conservation in Buildings; and will serve as a forum for exchange of information, ideas and results, as well as opportunity for private discussion. The official language of the conference is English.

The conference will be held at the Sendai International Centre in Sendai (<http://www.sira.or.jp/center/en/>). An exhibition will be held concurrently with the meeting at the same venue. Interested industrial enterprises are welcome to contact the Secretary of the exhibition for detailed information (sendai_houjin202@itb.jp).

Paper topics

Indoor Environment and Health Effects
Pollutants and Pollutants Sources
Ventilation Requirement and Strategies
Innovative Ventilation and Air Cleaning Systems
Human Comfort and Indoor Environment
Moisture Transfer and Condensation Proofing
Ventilation and Thermal Systems
Outdoor Environment Related to IAQ
Systems Control and Building Services
Energy Conservation and Built Environment
Design and Simulation Tools
Sustainable Approach
Innovative Technologies and Solution
Facilities Management and Maintenance
Policy and Legal Issues

Technical Tours (tentative)

1. Climate test facilities, Tohoku Electric Power, Sendai
2. Near-Zero-Energy house, Hokushu Housing, Sendai
3. Clean room facility, New Industry Creation Hatchery Centre (NICHe) Tohoku University, Sendai

Abstract Submission

All the interested authors are invited to submit one page abstracts. Each abstract should be submitted separately and should contain the following information:

1. Topic code (See Paper Topics)
2. Title of the paper
3. Full name of the author(s)
4. Affiliation of the author(s)
5. Mailing address and e-mail of the corresponding author
6. Abstract

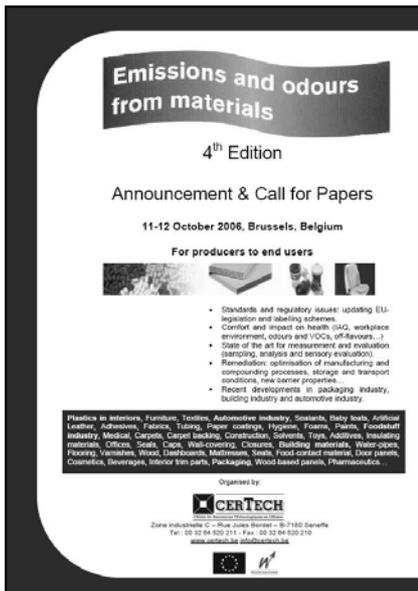
All abstracts must be submitted electronically through the conference web site (<http://www.iaqvec2007.org>).

Schedules

- Abstract submission: 30 October 2006
- Notification of abstract acceptance: 10 January 2007
- Full papers submission: 10 April 2007

Secretariat of IAQVEC 2007

Graduate School of Engineering,
Tohoku University, Room No.1202,
6-6-11 Aoba, Sendai 980-8579, Japan
Tel: +81.227.95.78.84
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iaqvec2007@sabine.pln.archi.tohoku.ac.jp
<http://www.iaqvec2007.org>



Papers are invited to submission for inclusion in the technical programme.

 **Announcement & Call for Papers**

Roomvent 2007

10th International Conference on Air Distribution in Rooms
13-15 June 2007,
Helsinki, Finland

The 10th Roomvent Conference will offer scientists, industry, consultants, engineers, architects and policy-makers a platform for the exchange of scientific knowledge and technical solutions.

The special congress theme is air distribution and control techniques for productive room environments. The conference will cover all aspects of room airconditioning technology in all types of buildings.

The Roomvent 2007 conference and web service open a global window to the scientific knowledge and innovative applications of room air-conditioning. The focus is on air distribution and control techniques for productive room environments.

Papers are invited under the following scope and themes:

Air distribution and control techniques for productive room environments

- Human to room environment interaction
- Thermal environment
- Contaminant distribution in rooms
- Acoustical and visual environment
- Room environment and productivity

Plenary lecture: Human interaction with indoor climate – scientific background for comfort criteria

- Design of room environment
- Target and design values in specific applications
- Room air conditioning, ventilation and cooling
- Design methods
- Modelling and visualisation
- Validation of designs

Plenary lecture: CFD in design – where are we today?

- Control techniques
- Air diffusion: jets, plumes, terminal devices
- Zonal control techniques
- Demand based control techniques
- Sensors and control devices

Plenary lecture: Room air conditioning and control strategies

- Assessment of room environmental quality
- Commissioning and inspection
- Measurement techniques
- Case studies

Plenary lecture: Assessment of Indoor Climate

Deadline for abstracts 15 October 2006 (max. 300 words, see <http://www.roomvent2007.org> for instructions)

 Call for papers

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inive@bbri.be
<http://www.inive.org>

How to obtain the AIVC publications?

The easiest way is through a free subscription

Subscribers receive:

- a personal access code to the protected part of the AIVC website and
- the quarterly newsletter of the AIVC (paper version)

Thanks to the access code, one can download all the AIVC publications:

- 12 AIVC Ventilation Information Papers
- 48 AIVC Technical notes
- 6 AIVC Guides
- 12 AIVC Annotated Bibliographies
- AIVC conference proceedings 1980 to 2004 - 1431 papers
- Air Information Review – All issues since 1979
- 3 AIVC contributed reports



The bibliographic database Airbase is also available on-line (about 17000 references from 1979 to present day). The access code gives access to 1800 full documents already linked to Airbase.

Since the March 2005 issue of the Air Information Review, all the documents linked to the newsletter are available on-line. They are only available with the access code.

The cost of the subscription for the year 2006 is given on the order form.

Subscribe now and take advantage of the temporary special offer!

Access codes for **Belgium, France, Germany, Greece, Norway, Netherlands and Switzerland** and for the **U.S.** engineering and research community (U.S. residents) can be delivered **free of charge** on request.

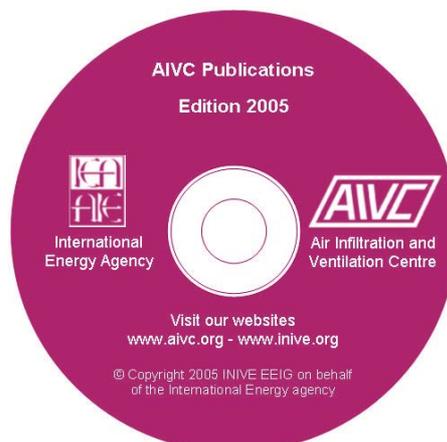
See <http://www.aivc.org> (How to subscribe?) for more information and on-line registration.

AIVC publications are also available on CD-Rom

A CD-Rom is available with all the guides (6), annotated bibliographies (12), ventilation information papers (10) and technical notes (47 - only some old superseded ones are not included) published by the AIVC between 1979 and 2005.

A CD-Rom is also available with the proceedings of the AIVC conferences from 1998 to 2004.

There is also another CD-Rom with the proceedings of the AIVC conference 2005.



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Proceedings of AIVC conference 2005 (1 CD-Rom)		40,00 EUR	48,40 EUR	
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AIVC publications CD-Rom - Edition 2005 (1 CD-Rom)		200,00 EUR	242,00 EUR	
Air Information Review & personal access code to AIVC publications online (Subscription 2006) (Free for Germany) Temporary special offer		200,00 EUR 100,00 EUR	242,00 EUR 121,00 EUR	
Total				

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I herewith authorise INIVE EEIG to use my credit card information to charge the total amount due for the order

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Name Country

Address

Town Postcode

SECOND ANNOUNCEMENT

PRELIMINARY PROGRAMME

EPIC 2006 AIVC

**PALAIS DES CONGRÈS
LYON, FRANCE
20 - 22 NOVEMBER 2006**

**THE 4TH EUROPEAN CONFERENCE ON ENERGY
PERFORMANCE & INDOOR CLIMATE IN BUILDINGS
THE 27TH CONFERENCE OF THE
AIR INFILTRATION & VENTILATION CENTRE
CONFERENCE OF THE IEA PROGRAMME ON ENERGY
CONSERVATION IN BUILDINGS & COMMUNITY SYSTEMS**

**Technologies & Sustainable Policies
for a Radical Decrease
of the Energy Consumption in Buildings**



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