



Towards high quality, low-carbon ventilation in airtight buildings

AIVC International Workshop

Tokyo, Japan

18-19 May 2023

Workshop description

NILIM and BRI of Japan, together with the Air Infiltration and Ventilation Centre (AIVC) organise a workshop entitled "Towards high quality, low-carbon ventilation in airtight buildings" to be held on 18-19 May 2023 in Tokyo, Japan.

The 2-day workshop provides the opportunity to Japanese researchers and engineers, as well as international experts visiting Japan, to present and discuss recent developments in relation to ventilation and airtightness. The workshop is organized in 5 thematic sessions.

In the opening session, a representative of the ministry in charge of Japanese policies toward zero carbon buildings in 2030 and 2050 will describe the latest concrete policy measures including energy efficiency. Latest evolutions in regulations and standards on energy performance and ventilation in Europe and the US are also presented.

In the session for IEA EBC Annexes (international collaborative R&D projects), which are relevant to ventilation, latest outputs from 1) technologies for gas-phase air cleaning (Annex 78), 2) side-by-side management methods of indoor air quality and energy efficiency (Annex 86) and 3) personalized environmental control system technologies (Annex 87) will be introduced.

Airtight building envelope is essential especially in order to avoid heat loss due to air leakages. In non-residential buildings, in addition to wind and stack effects, air pressure caused by HVAC systems may worsen the heat loss due to the air leakages. However, it seems that reality nor effective techniques for improving the airtightness in non-residential buildings has not yet been shared enough among building engineers and researchers. Some existing trials in Europe, North America and Japan and future perspectives for standardisation will be discussed in the airtightness session.

In the session on approaches to search for more energy efficient and reliable ventilation systems, the latest standards for testing heat recovery effectiveness in laboratories will be reviewed with test examples, in which key characteristics of products influential on the actual effectiveness have been demonstrated. Characteristics of the Japanese market of energy recovery ventilators and improvements in the latest products will be analyzed. Performance assessment of other energy efficient ventilation strategies and smart ventilation is also discussed.

In the session on the role of ventilation in infection control, a government proposal in July 2022 on effective ventilation to avoid infections by large aerosol and small floating aerosol diffusion will be reviewed with some actual infection case studies, and the characteristics of aerosol transmission route of respiratory pathogens and their mitigation strategies will be discussed by building physics researchers, who have been collaborating with medical experts in the committee dedicated to the Japanese infection control strategies. Other presentations discuss new developments in ventilation standards and regulations, and advances in measurement techniques.



Programme (draft)

The workshop will start at 09:00 on May 18th and finish at around 18:00 on May 19th. It will include 5 sessions as follows.

Welcome

- Welcome on behalf of NILIM, *Mr. Takahiko Hasegawa (Deputy Director-General, NILIM, JP)*
- Welcome on behalf of BRI and overview of IEA-EBC, *Takao Sawachi (EBC Executive Committee Chair, JP)*
- Overview of AIVC, TightVent, venticool & IEQ-GA, *Arnold Janssens (AIVC Operating Agent/INIVE/UGent, BE)*
- Context and policies for energy, climate, ventilation in Japan, *Takashi Imamura (Housing Bureau, MLIT, JP)*
- The context and policies for energy and ventilation in Europe, new evolutions in EPBD, *Jaap Hogeling (EPB/REHVA/ISSO, NL)*
- Ventilation standards/regulations in the US, *Iain Walker (LBNL, USA)*

IEA-EBC Annex session

- EBC Annex 78 – General overview, *Pawel Wargocki (DTU, DK)*
- International Standardization of Testing Perceived Air Quality and the supporting information from in silico model for transport efficiency of acetone from indoor to olfactory epithelium cells, *Kazuhide Ito (Kyushu University, JP)*
- An update on IEA-EBC Annex 86: energy efficient smart IAQ management in residential buildings, *Jelle Laverge (UGent, BE)*
- Dallying with DALYs: a harm based approach to IAQ acceptability, *Benjamin Jones (Nottingham University, UK)*
- EBC Annex 87- General overview, *Bjarne Olesen (DTU, DK)*
- Personal Environment Comfort System (PECS) for Improving Thermal Comfort and IAQ in a Zero Energy Building, *Shin-ichi Tanabe (Waseda University, JP)*

Airtightness session

- Proposals for Future Activities to Promote Airtightness in Non-Residential Buildings in Japan, *Kiyoshi Hiwatashi (Taisei Corporation, JP)*
- Trends in building and ductwork airtightness in different countries, *Valérie Leprince (Cerema, FR)*
- Airtightness testing of large buildings, *Iain Walker (LBNL, USA)*
- Measurement for Exterior Wall Airtightness of High-Rise Buildings Using Stack Effect/Individual Air Conditioning and Outdoor Air Entering through Entrance Doors, *Yuichi Takemasa (Kajima Technical Research Institute, JP)*
- Report of the Blower-Door-Test for the Meiken Kogyo CLT Building, *Takashi Hasegawa (Eikan-Shoji co., JP)*
- ISO 9972: An overview of difficulties with the current standard, *Benedikt Koelsch (Cerema, FR)*
- Durability of building airtightness, *Valérie Leprince (Cerema, FR)*

Quality assurance of ventilation and heat recovery systems

- Actual effectiveness of energy/heat recovery ventilators in buildings: how is it influenced by key design factors and testing results (airflow, airflow ratio, unit exhaust air transfer ratio)?, *Tetsutoshi Kan (Better Living, JP)*
- Latest Trends and Technologies of Energy Recovery Ventilators in Japan, *Junichi Takahashi (Mitsubishi Electric co, JP)*
- Assessment of smart ventilation systems, *Hilde Breesch (KULeuven, BE)*
- Effect of Indoor Temperature Differences and Zoning on the Performance of Energy Efficient Ventilation Strategies for Domestic Buildings, *Jelle Laverge (UGent, BE)*

Role of ventilation in infection control

- Aerosol transmission route of respiratory pathogens and their mitigation strategies, *U. Yanagi (Kogakuin University, JP)*
- Countermeasures against Indoor Aerosol Infection in Japan, *Motoya Hayashi (Hokkaido University, JP)*
- Measurement of virus concentrations: recent developments (pre-recorded presentation), *Chris Iddon, (UCL, UK)*
- Revision of ISO- and CEN-standards on indoor environment, *Bjarne Olesen (DTU, DK)*
- Role of air cleaning in infection control, *Pawel Wargocki (DTU, DK)*
- Developing regulations to improve IAQ and ventilation in Belgian buildings, *Peter Wouters (INIVE, BE) and Arnold Janssens (UGent, BE)*



- Airtightness and internal air flows in multifamily buildings, *Iain Walker (LBNL, USA)*

Organisers

The workshop is organized by [NILIM](#) and [BRI](#) together with the Air Infiltration and Ventilation Centre ([AIVC](#)) and facilitated by [INIVE](#) (International Network for Information on Ventilation and Energy Performance).

Language

English will be the official language. No translation is foreseen.

Cost

Participation to the workshop is free but requires you to register for the event. Participation is possible in person or online. In case of no-show after registering as in person participant, a penalty of €100 will however be charged.

Registration

To register, please fill in the registration form available at: <https://forms.gle/ErfmjSCG6H8RbSXR6>

Venue

The workshop will take place in at Bellesalle Mita (Mita, Minato-ku, Tokyo 108-6301) (Room 1).

Enquiries

For further information, please contact: aivc2023tokyo@iibh.org