# International workshop

# Quality of Methods for Measuring Ventilation and Air Infiltration in Buildings

## Programme

## Brussels, 18-19 March 2014

**Day 1 – Tuesday 18 March 2014**

**09:30-10:20 Session 1. Welcome and introduction**

**Chairpersons:** Peter Wouters and François Durier

- The role of measurements in quality and compliance schemes, Peter Wouters, INIVE EEIG, Belgium
- Why is it important to address measurement quality issues in standards? How Standards can contribute?, Jaap Hogeling, ISSO, Netherlands

**10:20-11:15 Session 2. Impact of measurement uncertainties on energy performance calculations and IAQ**

**Chairpersons:** Peter Wouters and François Durier

- Including measurement uncertainty in building energy performance calculation methods, Staf Roels, KU Leuven, Belgium
- Definition and assessment of indoor air quality classes: sources of uncertainties and rating implications, Pawel Wargocki, DTU, Denmark

**11:15-11:40 Coffee break**

**11:40-13:00 Session 3. Challenges for measurements of ventilation and air infiltration in low-energy buildings**

**Chairpersons:** Manfred Plagmann and Lorenzo Pagliano

- Field measurements in low-energy houses, Wouter Borsboom, TNO, Netherlands
- Experience with measurements, ventilation and infiltration in the Active House concept.Quality issues and implications for compliance, Peter Foldbjerg, Active House, Denmark
- Ventilation and infiltration measurements in the Effinergie label. Approach to quality issues and implications for compliance, Valérie Leprince, PLEIAQ, France
- Planning and ordering measurements in "Passive House" buildings: lessons learned from practical experience and approach to quality concerns, Christophe Debrabander, Bostoen, Belgium

**13:00-13:45 Lunch (snacks and beverages)**

**13:45-14:45 Session 4. Measurement of air exchange rates with tracer gas**

**Chairpersons**: Jean Lebrun and Pawel Wargocki

- Overview of tracer gas measurement techniques, Max Sherman, Lawrence Berkeley National Laboratory, USA
- Uncertainties in air exchange using continuous-injection, long-term sampling tracer gas methods, Max Sherman, Lawrence Berkeley National Laboratory, USA

**14:45-16:35 Session 5. Measurements of airflow rates in ducts and at air terminal devices**

**Chairpersons**: Arnold Janssens and Jae-Weon Jeong

- prEN16211 draft standard - Measurement of air flow rates on site, Carl Welinder, Swema, Sweden
- Measurement of airflow rates in ducts by velocity measurements: an overview, Isabelle Caré,CETIAT, France
- Comparative Analysis of the Methods for Measuring the Air Velocity and Flow in Mechanical Ventilation Systems, Mariusz A. Skwarczynski, Lublin University of Technology, Poland
- Measurement of airflow rates at air terminal devices: an overview, Samuel Caillou, BBRI, Belgium
- PROMEVENT: Improvement of measurement protocols used to characterize ventilation systems performance, Adeline Bailly, CEREMA, France

**16:35-16:50 Coffee break**

**16:50-18:00 Session 6. Measurement solutions and integrated measurement devices**

**Chairpersons:** François Rémi Carrié and Willem de Gids

Presentations of measurement solutions by the following companies:
BlowerDoor GmbH, Lindab, Retrotec, Swema, ACIN

Questions and answers for the whole session

**18:30 End of first day**

## Day 2 – Wednesday 19 March 2014

**09:00-09:45 Session 7. Keynote lecture**

**Chairpersons:** Max Sherman and Samuel Caillou

General approach to the evaluation of measurement uncertainties, Benoît Savanier, CETIAT, France

**09:45-10:45 Session 8. Schemes to address the quality of measurements**

**Chairpersons:** Max Sherman and Samuel Caillou Session

- Measuring ventilation and air infiltration in buildings –Johnny Andersson, Ramboll, Sweden
- Reasons behind and lessons learnt with the development of airtightness testers schemes in 11 European countries, Valérie Leprince, PLEIAQ, France
- Challenges and solutions for air speed and airflow rate calibration, Isabelle Caré, CETIAT, France

**10:45-11:00 Coffee break**

**11:00-12:45 Session 9. Building and ductwork airtightness**

**Chairpersons:** Wouter Borsboom and François Rémi Carrié

- Uncertainties and quality issues in CEN ductwork standards. Focus on ductwork pressurization tests. Lars-Ake Mattsson, convenor of CEN TC 156 WG 3, Sweden
- Durability and measurement uncertainty of airtightness in extremely airtight dwellings, Wolf Bracke - Arnold Janssens, University of Ghent, Belgium
- Airtightness test at different wind conditions in a high building, Stefanie Rolfsmeier - Paul Simons, BlowerDoor GmbH, Germany
- On the use of infrared thermography to assess air infiltration in building envelopes, Sven Van De Vijver - Marijke Steeman, University of Ghent, Belgium
- An uncertainty case study of airtightness measurements of residential buildings in Estonia, Cagatay Ipbüker, University of Tartu, Estonia
- Field measurement testing of air tightness - example from a hospital project in Sweden, Erik Olofsson Augustsson, Sweco, Sweden
- Air change rate test results in the Croatian and Hungarian border region, László Fülöp and György Polics, Hungary

Questions for short oral presentations

**12:45-13:15 Session 10. Open discussion and perspectives**

**Chairpersons**: Willem de Gids and François Durier

**13:15 Lunch (snacks and beverages)**