Seminar

Real building energy performance assessment

Wednesday 16 April 2014 - 14:00-18:00

The energy performance of a building is essentially determined by the (1) thermal characteristics of the building envelope, (2) installed services and (3) building usage. As the latter is not easily predicted nor controlled, the first two are decisive in achieving the envisaged building energy performance, both for new buildings and renovations.

The theoretical energy use calculated on the basis of building plans and specifications, in order to meet building regulations or specifications by the builder, determines the anticipated performance.
It may differ, however, from the actual 'as-built' performance in a significant way.
The IEA EBC Annex 58-project on ' Reliable Building Energy Performance Characterisation Based on Full Scale Dynamic Measurements' is working on this gap between actual and calculated performance of the building. A consortium of researchers and industries from 15 countries are developing knowledge, tools and networks to achieve reliable in-situ dynamic testing and data analysis methods that can be used to characterise the actual thermal performance and energy efficiency of building components and whole buildings.

This seminar gives an overview of the current knowledge in the field of energy performance assessment. It aims also at looking into the future of new applications and answers how to close the gap between calculated and real performance.

The seminar is organised by the DYNASTEE platform (www.dynastee.info) which is facilitated by INIVE (www.inive.org), in the framework of the IEA Annex 58 6th international expert meeting in Ghent. The practical organisation is in the hands of University Ghent and BBRI, under the auspices of the Technical Committee Hygrothermics.
The seminar is open to all professionals interested in the real performance characterization of buildings.

Programme

Wednesday 16 April 2014 - 14:00-18:00

1. **The IEA EBC Annex 58-project on 'Reliable Building Energy Performance Characterisation Based on Full Scale Dynamic Measurements'** -
   Staf Roels, KULeuven, Operating Agent Annex 58
   The Annex 58-project tries to develop the necessary knowledge, tools and networks to achieve reliable in-situ dynamic testing and data analysis methods that can be used to characterise the actual thermal performance and energy efficiency of building components and whole buildings.

2. **The gap between calculated and real performances: Experiences from the laboratory and field and the measures to address the difference** -
   Chris Gorse, Leeds Sustainability Institute, UK
   The co-heating test has become the accepted method of acquiring thermal building performance data in the field. Much has been gained from the research exploring heat loss and the factors that have contributed to the performance gap provide a body of knowledge that inform element, junction and whole building design. The different tests will reveal different characteristics of performance and behaviour that will continue to build on the knowledge already amassed. The situation has changed from one that denies the performance gap, to one that now has the tools to address the change required.

3. **State of the art on test facilities and data analysis methods** -
   Arnold Janssens, UGent
   The presentation gives an overview and evaluation of previous and ongoing in situ test activities to characterize energy performance of building components and whole buildings. Examples of full scale test facilities available at different institutes all over the world are presented. An overview is given of common methods to analyse dynamic data, with their advantages and drawbacks.

4. **Standardisation of methods for in-situ performance assessment** -
   Gilles Flamant, BBRI
   Since 2010, working group 13 of CEN TC89 is working on the elaboration of new standardized procedures for deriving in-situ test data that will complement the thermal performance characteristics of construction products, building elements and structures established by conventional steady state methods. This presentation gives the objectives, the work progress, the difficulties encountered, the issues and possible solutions considered.

5. **Co-heating test: a state-of-the-art** -
   Geert Bauwens, KULeuven
   An overview of the current state of the art of the co-heating test, as it is applied to assess the thermal characteristics of the building envelope. Focus lies more on data analysis methodology, not so much on the experimental equipment and setup and subsequent data collection.

Coffee break

6. **Experiences with in situ measurements** -
   Frédéric Delcuve, Knauf Insulation, Belgium
   Knauf Insulation recently launched a co-heating test initiative to investigate the real-world performance of a thermal renovation process. One of the tests was conducted using a terraced house located near Liège, Belgium. Co-heating testing not only provides a consistent and repeatable means to test the real-world effects of a given type of insulating product, it also helps to identify and understand the discrepancy between real and expected performance.

7. **Reliability of characterisation models and methods: A Round Robin Experiment on a test box** -
   Staf Roels, KULeuven and Maria José Jimenez, CIEMAT, Spain
   The research within the IEA EBC Annex 58 project is driven by case studies. As a first simple case, an experiment on testing and data analysis is performed on a round robin test box. This test box can be seen as a scale model of a building, built by one of the participants, with fabric properties unknown to all other participants. Full scale measurements have been performed on the test box in different countries under real climatic conditions. The obtained dynamic data are distributed to all participants who tried to characterise the thermal performance of the test box's fabric based on the provided data. It is shown how different techniques can be used to characterise the thermal performance of the test box, ranging from a simple stationary analysis to advanced dynamic data analysis methods.

8. **Dynamic building envelopes: testing, analysis and simulation** -
   Hans Bloem, JRC, Italy
   The energy performance assessment of dynamic building envelope elements has to be based on declared and designed performance values and importantly be verified by in-situ measurements. A common approach for testing, analysis and simulation of dynamic building envelopes is required.

9. **A view on the future, characterization based on smart metering data** -
   Henrik Madsen, P. Bacher, H. Aalborg Nielsen, S.B Mortensen, DTU, Denmark
   In the near future frequent readings of the energy consumption will be generally available given the use of smart meters. This talk describes statistical methods for use of such time series data, jointly with meteorological time series data, to obtain valuable information about the thermal performance of buildings. Specifically smart meter data can be used in automated systems for a continuous screening of the city for identifying the buildings with the most critical energy efficiency. Subsequently the methods can be used for identifying the potential problematic aspect of the critical buildings. Hence these methods provide a systematic approach for maximizing the performance gains obtained given a certain investment allocated for an upgrade of the energy efficiency.

10. **Final discussion and conclusions**

Practical information

Wednesday 16 April 2014 - 14:00-18:00

Venue

University Congress Centre 'het Pand' - Onderbergen 1, 9000 Gent - Belgium
'Het Pand' is a former Dominican Monastry, situated beside the river Leie in the historic centre of the city of Ghent.

Cost and registration

Participation to the seminar is free, but requires you to register for the event. The seminar will be limited to a maximum of 100 persons. To register on line, please click here. A registration form in English is also available at the end of this document.

About Dynastee

Dynastee is a platform of information exchange on dynamic analysis, simulation and testing of the energy performance of buildings. Dynastee is closely linked to the activities of the IEA ECB Annex 58 project; it is responsible for the subtask on dissemination and the Network of Excellence. This is done through activities such as training of researchers on dynamic methods (Summer School), bringing its expertise from earlier projects (PASSYS-PASLINK) into the Annex 58 project, publication of a newsletter and a website, and organising workshops and webinars.

About INIVE

INIVE EEIG (International Network for Information on Ventilation and Energy Performance) a European Economic Interest Grouping has 11 member organisations (BBRI, CETIAT, CIMNE, CSTB, ERG, ENTPE, IBP-Fraunhofer, SINTEF, NKUA, TMT US and TNO) (www.inive.org).
INIVE is coordinating and/or facilitating various international projects, e.g. the AIVC (www.aivc.org), the European portal on Energy Efficiency (www.buildup.eu), TightVent Europe (www.tightvent.eu), Venticool (www.venticool.eu) and Dynastee (www.dynastee.info).

Registration form

Seminar
‘Real building energy performance assessment’

Wednesday 16 April 2014 - 14:00-18:00 – Ghent, Belgium

Last name:	First name:	(Mr/ Mrs/ Dr):
Institution:		
Address :		
ZIP: City:		Country:
Phone:	Fax:	E-mail:

Participation to the seminar is free, but requires you to register for the event. The seminar will be limited to a maximum of 100 persons.

Please return this completed registration form to Mr. Stéphane Degauquier, Secretariat INIVE EEIG
INIVE, Lozenberg 7, BE-1932 St-Stevens-Woluwe, Belgium – Fax : +32.2.653.07.29 – Tel : +32.2.655.77.70 – e-mail : sd@bbri.be