



WEBINAR

EBC



Energy in Buildings and  
Communities Programme

**Annex 58**

## How to determine the real performances of buildings? Building characterisation by co-heating

**Thursday 6 February 2014**

16:00-17:30 (Brussels, BE)

15:00-16:30 (London, UK)

07:00-08:30 (LA, USA)

23:00-24:30 (Hong Kong, CN)

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In order to reduce the energy use of buildings, several countries have put forward more stringent requirements on the energy performance of new and renovated buildings. Without exception, these buildings are characterised or awarded a label in the design phase. A theoretical energy use calculated on the basis of building plans and specifications determines the performance category.

An important distinction needs to be made, however, between this theoretical energy performance and the actual 'as-built' performance. Several studies have shown that these can differ rather significantly.

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. Hence, the thermal performance characterisation of a building envelope represents a crucial first step to bridge the gap between 'designed' and 'as-built' energy performance of the building. A common method to evaluate the thermal performance of a building in situ is the co-heating test.

This webinar tries to crystallise the current knowledge on the co-heating test, as applied for assessing the thermal characteristics of the building envelope.

The webinar is organised in the framework of the IEA Annex 58 'Reliable building energy performance characterisation based on full scale dynamic measurements' through the DYNASTEE platform ([www.dynastee.info](http://www.dynastee.info)) which is facilitated by INIVE ([www.inive.org](http://www.inive.org)).

### Programme (Brussels time)

16:00	Introduction   <i>Staf Roels, Operating agent IEA EBC Annex 58</i>
16:05	Experiences with co-heating in UK - Building Performance and Coheating Tests   <i>Chris Gorse, Dominic Miles-Shenton and Dr. David Johnston, Leeds Metropolitan University</i>
16:30	State of the art on the co-heating test methodology   <i>Geert Bauwens, KULeuven, Building Physics Lab, Belgium</i>
16:55	Rapid Building Thermal Diagnosis: Presentation of the QUB Method   <i>Guillaume Pandraud, Isover Saint-Gobain CRIR, France</i>
17:20	Final discussion and conclusion

5' for Questions and Answers foreseen after each presentation

[www.dynastee.info](http://www.dynastee.info)



## Content notes

**Experiences with co-heating in UK - Building Performance and Coheating Tests** Coheating and the accompanying building forensic tools used by Leeds Metropolitan University have been instrumental in identifying the performance gap and the reasons for underperformance. The results provide an important metric, differentiating those buildings that perform successfully and those that fail to achieve expected levels of fabric performance. The ability to check that buildings perform is fundamental, if we are to advance to Zero Carbon Buildings. Neil Jefferson, Director of the National House Building Council and Chief Executive of the Zero Carbon Hub, has stated that the coheating test is critical to the Government and industry's aim of dealing with as-built performance. However, there are cynics and those that question the validity of the coheating test results. The criticism associated with the method often occurs through a lack of understanding of the method and how it should be applied to achieve reliable and meaningful results.

The latest version of the coheating methodology will be discussed, alongside recent and past research projects where it was used. The methods and tests used to cross check the reliability of the test and results will also be presented.

**State of the art on the co-heating test methodology** An overview will be presented 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.

**Rapid Building Thermal Diagnosis: Presentation of the QUB Method** QUB (Quick U-value of Buildings) is an innovative and simple method for the experimental measurement of the total heat loss coefficient of a building envelope, i.e. the sum of the real U-Value of the house and its infiltration losses. While the experimental heat loss coefficient is not directly proportional to the energy consumption, it is an important indicator and can be used to assess the quality of the construction by comparing it to calculated values or to previous measurements, for instance done before improvements. QUB only uses the temperature responses to two different constant power excitations, done during two consecutive nights of experiments. This makes it possible to do a complete test in about 48 hours, but only if the material used for the test is adapted for this specific use. QUB has been validated by comparing its results to reference values in several cases, both numeric and experimental, under a large range of building types and insulation levels. Based on these comparisons, we estimate the uncertainty of the QUB measurements to be about  $\pm 15\%$ .

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**Cost and registration** Participation to the webinar is free, but requires you to register for the event. The webinar will be limited to a maximum of 200 persons. To register, please click on the "Register now" button above or visit [inive.webex.com](http://inive.webex.com).

**What is a webinar?** A webinar is a conference broadcasted on internet. To follow a webinar you must have a computer with a sound card and speakers or headphones. Once logged in the "conference room", you will be able to see the slides of the presentation and to hear the panellists' comments. You will also be able to ask written questions to the speakers, and to answer on-line surveys.

**Hardware, software** Our webinars are powered by WebEx Event Center. The only thing you need is a computer with a sound card and speakers. Before you can log in the "conference room", WebEx will install the required application. If you are not a WebEx user, please visit [www.webex.com/login/join-meeting-tips](http://www.webex.com/login/join-meeting-tips) to check the system requirements and join a test meeting. Please also join the event at least 15 minutes in advance.

**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) was created in 2001 as a so-called European Economic Interest Grouping. The main reason for founding INIVE was to set up a worldwide acting network of excellence in knowledge gathering and dissemination. At present, INIVE has 11 member organisations (BBRI, CETIAT, CIMNE, CSTB, ERG, ENTPE, IBP-Fraunhofer, SINTEF, NKUA, TMT US and TNO) ([www.inive.org](http://www.inive.org))

INIVE is coordinating and/or facilitating various international projects, e.g. the AIVC ([www.aivc.org](http://www.aivc.org)), the European portal on Energy Efficiency ([www.buildup.eu](http://www.buildup.eu)), TightVent Europe ([www.tightvent.eu](http://www.tightvent.eu)), venticool ([www.venticool.eu](http://www.venticool.eu)) and Dynastee ([www.dynastee.info](http://www.dynastee.info)). INIVE has also coordinated the ASIEPI project ([www.asiepi.eu](http://www.asiepi.eu), 01/10/2007 - 31/03/2010) dealing with the evaluation of the implementation and impact of the EU Energy Performance of Buildings Directive.