

DYNASTEЕ international workshop on

**Whole Building Testing, Evaluation and Modelling for
Energy Assessment**

18-19 May 2011, Lyngby, Denmark

will be jointly organized by the EC - Joint Research Centre, INIVE EEIG and the INTERREG IV project 'Vind i Öresund' and takes place at the Technical University of Denmark (DTU) Lyngby, Denmark.

DYNASTEЕ stands for: “**D**YNAmic Analysis, Simulation and **T**esting applied to the Energy and **E**nvironmental performance of buildings”.

Topics

This is a follow-up event after the successful workshop held in 11-12 October 2010 in Brussels. The here presented workshop will focus on required research and tools for energy assessment of existing buildings and the near-zero energy building in the energy system of 2020. This includes smart/intelligent metering environments, EPBD certification, CEN standardisation, application of dynamic methodologies, advanced simulation techniques, and:

- Energy assessment in relation to the EPB Directive
- Intelligent building management systems
- Building and component assessments as part of research, development and demonstration
- In-situ measurements for energy renovation evaluation,
- Near-zero energy buildings for the future,
- Integration of large fractions of wind and solar energy in buildings using dynamics models and storage.
- CEN standardisation activities
- Smart meters in an intelligent metering environment using identification techniques for buildings
- Specific technical aspects, e.g. field testing and experimental set up

The above presented workshop is the third event in a series of three. A second workshop is organised in Brussels on 30-31 March 2011, focussing on full scale test facilities: Experiences with running such test facilities for the evaluation of the energy performance and hygrothermal characteristics of building components and full buildings will be exchanged and the targets for developing new facilities will be set. For any information, please contact Stéphane Degauquier at sd@bbri.be for INIVE EEIG (Belgian Building Research Institute - BBRI)

IEA ECBCS

Both workshops will be followed by a 1 day brainstorming meeting on a new annex project of the IEA ECBCS (www.ecbcs.org) on *full scale testing, data analysis and*

modeling. For further information on this 1 day brainstorming meeting, please contact Staf Roels at Gustaaf.Roels@bwk.kuleuven.be

Wednesday 18 May

9.00 Opening of registration
9.30 Session – 13:00
14:00 – 18:00 Visit to RISØ and DTI test facilities by bus

Thursday 19 May

9.00 Session start - 17:30 End of the workshop

Registration and Fee

There is **NO** participation fee however due to limited number of places, registration is obligatory and a *first-in rule* will be applied. Fill in the registration form (www.dynastee.info or <http://re.jrc.ec.europa.eu/energyefficiency/>) at the latest April 15 2011. Confirmation is e-mailed a.s.a.p. and not later than 2 May 2011.

The INIVE Network

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, SINTEF, NKUA, TMT US and TNO), and there is interest in joining among other organisations. (www.inive.org)

The original reason for creating INIVE was the availability of a strong entity able to act as the Operating Agent for the IEA' Air Infiltration and Ventilation Centre (AIVC). AIVC is the IEA Information Centre that deals with the topic of energy efficient ventilation and air tightness of buildings. Since 2001, INIVE has been the Operating Agent for the AIVC (www.aivc.org).

As a service provider to the European Commission and the European Agency for Competitiveness and Innovation, INIVE EEIG has been coordinating the European Buildings Platform since 2006 and, since 2009, BUILD UP, which is THE European portal on Energy Efficiency (www.buildup.eu).

INIVE aims to stimulate and contribute to the creation of new knowledge in key areas of ventilation and energy efficiency. In the ASIEPI project (www.asiepi.eu), which finished in March 2010 and was coordinated by INIVE, several critical areas related to energy-efficiency policies were analysed, with a whole range of new findings as a result.

INIVE also wants to facilitate structured collaborations, which go beyond the duration of single projects. The best example of such collaboration is the DYNASTEE-PASLINK network (www.dynastee.info), which is the leading network of use and development of system identification techniques and related applications. The DYNASTEE-PASLINK network is a part of the INIVE Activities.

The INTEREG IV project 'Vind i Öresund'

This project aims at demonstrating new methods for identifying the energy performance of buildings and demonstrates methods for a better integration of wind power in a modern. The project is founded on the Universities expertise in the system identification

and methods for modelling complex dynamical systems. The project is a joint project between the Technical University of Denmark and the University of Lund in Sweden.

The DYNASTEER Network

DYNASTEER is an informal grouping of organisations actively involved in the application of tools and methodologies relative to this field. The objective of DYNASTEER is to provide a multidisciplinary environment for a cohesive approach to the research work related to the energy performance assessment of buildings in relation to the Energy Performance for Buildings Directive (EPBD).

DYNASTEER, being a network of competence in the field of outdoor testing, dynamic analysis and simulation has 25 years experience and would like to transfer its knowledge to industry, decision makers and research. Specific outdoor experimental work needs knowledge of the analysis process in order to optimise the dynamic information in the measurement data. Simulation requires results from analysis in order to be able to scale and replicate the results from analysis and testing.

DYNASTEER functions under the auspices of the INIVE EEIG and constitutes a sustainable informal networking mechanism.

What are dynamic methods?

Dynamic analysis methods are techniques to analyse dynamic processes and to identify typical parameters of physical processes like energy flows in buildings. Dynamic methods take into account the aspect of time whereas a static analysis method does not. Dynamic analysis, simulation and testing remains an area of high scientific interest.

The application of system identification techniques to the energy performance assessment of buildings and building components requires a high level of knowledge of statistics, physical and mathematical models. This factor, combined with the quality of the data, the description of the monitoring procedure and test environment, together with the experience of the user of the analysis software itself, can produce varying results from different users when applying different models and software packages.

The developed dynamical methods will enable new methods for providing guidelines for improving buildings with the purpose of obtaining energy savings and optimising efficient use of energy. Dynamic tools will indicate the most beneficial subject of improvement, as e.g. further insulation in the walls, tighten the building, change the windows, or insulate the roof and will be able to assess the thermal mass of the building.

It is expected that buildings in the future will play an active role in the integration of renewable energy in the energy system. Smart and intelligent meters are one of the big energy saving hopes by reducing the energy used in residential houses and public buildings, lowering the energy bill and carbon emissions. Dynamic methods imply that smart meters can be used for automatic generation of reliable energy labels for buildings. This workshop will deal with the application of dynamic methods for outdoor testing, related analysis and modelling techniques and is targeted to energy researchers, engineers, building designers and energy system managers.

The DYNASTEE network

has long term experience with:

Testing under outdoor conditions

- Use of PASLINK test cells (generation of high quality data series)
- PASSYS test cells and other test cells
- Test houses (energy systems performance assessment)
- Real building testing (occupancy behaviour)

Analysis applying dynamic methods for analysis and forecasting

- LORD (lumped model analysis tool)
- CTSM (Continuous Time Stochastic Modelling)
- Matlab – System Identification Toolbox
- Others (including regression techniques)

Modelling (based on technical specifications; design phase)

- TRNSYS
- ESP(-r)

Up to date Technology

Dynamic mathematical and statistical technologies are recognised as crucial in optimisation of energy efficiency.

Integration of renewable energy technologies in our society is rapidly taking place giving another perspective of the use of available energy resources. The recast of the Energy Performance for Buildings Directive, the Energy Service Directive and the Construction Product Regulation Directives require energy standards for calculation methods, certification, etc. New buildings will consume and produce energy for space heating while electricity consumption for systems and appliances is increasing.

Innovative applications in the energy sector for dynamic methods:

- Energy labelling for buildings (certification)
- In-situ measurements and analysis (new CEN – WG)
- Energy performance assessment of buildings (EPBD)
- Integration of solar and wind power in the grid (2020 targets)
- District heating (optimising CHP)
- Intelligent metering techniques

Further information:

E-mail to: hans.bloem@jrc.ec.europa.eu

European Commission - DG Joint Research Centre

<http://re.jrc.ec.europa.eu/energyefficiency/>

Institute for Energy - Renewable Energy Unit

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