DYNASTEE international workshop on

Dynamic Methods for Building Energy Assessment

11-12 October 2010, Brussels
will be jointly organized by the EC - Joint Research Centre and INIVE EEIG

DYNASTEE stands for: "**DYN**amic **A**nalysis, **S**imulation and **T**esting applied to the **E**nergy and **E**nvironmental performance of buildings".

Topics
The workshop will highlight the Status, Classical approaches and New concepts covering areas where intelligent analysis techniques can be used for the following topics

- Energy performance contracting
- Energy certification of buildings
- Intelligent building management systems
- Building and component assessments as part of research, development and demonstration
- Certification, test cells and houses, in-situ measurements, near zero energy buildings,
- Energy supply and demand including district heating,
- Integration of large fractions of wind and solar energy in buildings using dynamics models and passive storage.
- Training: System Identification competition (SIC) Software tools
- CEN standardisation activities
- Smart meters in an intelligent metering environment using identification techniques for ordinary buildings without extra costs
- Specific technical aspects, e.g. field testing and experimental set up

The DYNASTEE Network
DYNASTEE is an informal grouping of organisations actively involved in the application of tools and methodologies relative to this field. The objective of DYNASTEE 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).

DYNASTEE, 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.

DYNASTEE 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. By dynamic evaluation techniques (parameter identification), dynamic effects due to accumulation of heat in the equipment, test room envelope and test specimen are properly taken into account. In general, parameter identification is needed to be able to derive the steady state properties from a short test with dynamic (e.g. fluctuating outdoor) conditions. 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 physical and mathematical processes. 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, and in order to operate such a system in an optimal way it is essential to have access to dynamical models for reasonable forecasts of the heat and electricity load for the household.
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.

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. Dynamic methods are needed for using buildings as an active component in the integration of large fractions of renewable energy like solar and wind. Buildings are needed in order to obtain the goals set by many governments and EU on the fraction of renewable energy in power system at the 2020 horizon.

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:

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http://re.jrc.ec.europa.eu/energyefficiency/
Institute for Energy - Renewable Energy Unit

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Dynamic Methods for Building Energy Assessment

11 - 12 October, 2010

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Monday 11 October

9.00 Opening of registration
9.30 Session start - 18:00 End of the first day

Tuesday 12 October

9.00 Session start - 13:00 End of the workshop

Venue : The workshop will take place at CCBA offices, Rue Froissart 36, Brussels

Scope

The programme will be organized around three topics in order to address the whole chain from outdoor testing of building components to energy performance assessment of buildings in relation to EU Directives and CEN standards:

Testing: in-situ measurements, laboratory construction product testing, CEN standards
Analysis: dynamic methods, system identification, models, methods and tools
Modelling: wind and solar power forecasting, simulation, dynamic demand response

Each of these three topics will be addressed by experts who will present:

Industry: Opportunities for industry and commerce: innovative products for the building sector, integration of renewable energy technologies
Research: Necessary research areas: buildings of the future, power forecasting, energy demand management
Government and policy programmes: energy efficiency and building performance, energy certification

Language : The workshop (hand-outs and presentations) will be in English.

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 a.s.a.p. (www.dynastee.info or http://re.jrc.ec.europa.eu/energyefficiency/) at the latest September 9.

Programme

The draft programme on: www.dynastee.info or http://re.jrc.ec.europa.eu/energyefficiency/