

FUTURE BUILDING FORUM

UNIVERSITY OF PADOVA (Italy) 15th and 16th of April 2005



LOW-E³ – BUILDING SYSTEMS

Low Energy – Low Exergy – Low Environmental impact

Background

As a consequence of the Kyoto protocol and the needed reduction in CO₂ emissions there is a huge effort needed in the dear future on energy saving and householding with high quality or primary energy. Even if we still have a considerable energy saving potential in the building stock the results of the recently finished IEA ECBCS Annex 37 Low Exergy Systems for Heating and Cooling of Buildings show that there is an even or greater potential in exergy management, i.e. to work with the whole energy chain from generation to final use in order to significantly reduce the fraction of primary energy used and thereby minimize the exergy consumption. Also as the use of high quality energy for heating and cooling is reduced there is a reason to include all other processes where energy is used in buildings in an integrated approach. In recent years we have had substantial progress in the development of new technologies for saving exergy such as heat pumps, co-generation, thermally activated building components, methods for harvesting renewable energy directly from the solar radiation or from the ground and thermal storage. All these issues and more have been treated in various annexes and task groups within IEA.

Aim

The aim with this future building forum activity **LOW-E³** is to plan for a new activity based on earlier work and that based on the exergy approach integrates advanced technologies in a holistic solution in order to substantially reduce the use of high quality energy in buildings. As a result of the forum a state of the art of relevant technologies and scientific and technical platforms should be explored and a plan for a future activity should be worked out.

Contribution

Those who want to contribute are asked to send a summary paper of maximum one page A4 per topic. A more extensive documentation should then be delivered to the lowex.net homepage in accordance with the guidelines given there.

Tentative agenda

Thursday 14th of April 2005

National Italian conference on low exergy heating and cooling arranged by the university of Padova.

Friday 15th of April 2005

- 09:00 – 10:00 Welcome - Introduction of IEA ECBCS and Future Building Forum
- 10:00 – 11:00 Report of activities and results of IEA ECBS Annex 37:
"Low Exergy Systems for Heating and Cooling of Buildings"
- 11:00 – 12:00 Aims and arrangements of the workshop
- 13:00 – 16:00 Report on relevant technologies
Heat pumps
Solar Energy
Co – Generation
Thermal storage – Ground – PCM
Appliances
Building materials and components
Functionality - a more effective demand controlled utilization of heated or cooled space
Impact of new technologies for monitoring, information, automation and control.
Integrated solutions for whole buildings
- 16:00 – 17:00 Presentation of a draft resolution on a new activity

Saturday 16th of April 2005

- 09:00 – 11:00 Working groups
- 11:00 – 12:00 Report from working groups
- 13:00 – 15:00 Discussions and resolutions
- 15:00 Closure

The Future building forum is a joint arrangement by the University of Padova – Contact person Michele di Carli and the International network of the Society for Low Exergy Systems in Buildings, the LowExNet, contact person Dietrich Schmidt. Professor Gudni Johannesson at KTH in Stockholm, gudni.johannesson@byv.kth.se is responsible for the program.

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