Responsive Building Elements and integrated building concepts

A Workshop within the IEA ECBCS\textsuperscript{1} Annex 44 “Integrating Environmentally Responsive Elements in Buildings”

September 11th 2006 from 9.00 to 18.00, Hotel Paradies, Graz, Austria

Research on building energy efficiency over the last decade has focused on efficiency improvements of specific building elements like the building envelope, including its walls, roofs and fenestration components (windows, day lighting, ventilation, etc.) and building equipment such as heating, ventilation, cooling equipment and lighting.

Significant improvement have been made, and whilst most building elements still offer opportunities for efficiency improvements, greatest future potential lie within technologies that promote the integration of responsive building elements and communication among building services. Integrated Building Concepts are in this perspective defined as solutions where responsive building elements together with energy systems are integrated into one system to reach an optimal environmental performance in terms of energy performance, resource consumption, ecological loadings and indoor environmental quality. Responsive Building Elements are building construction elements which are actively used for transfer and storage of heat, light, water and air. This means that construction elements (like floors, walls, roofs, foundation etc.) are logically and rationally combined and integrated with building service functions such as heating, cooling, ventilation and lighting.

With the integration of responsive building elements and building services, building design completely changes from design of individual systems to integrated design of integrated building concepts, which should allow for optimal use of natural energy strategies (day lighting, natural ventilation, passive cooling, etc.) as well as integration of renewable energy devices.

Within this workshop are new approaches and solutions for the sustainable buildings presented and discussed with national and international leading researchers, architects, planners as well as building constructors and occupants.

\textsuperscript{1} IEA, International Energy Agency
ECBCS, Implementing Agreement Energy Conservation in Buildings and Community Systems
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08.30 Registration

09.00 Welcome and opening of the workshop
   Theodor Zillner, Federal ministry of transport, innovation and technology, Austria
   Werner Weiss, AEE INTEC, Austria

09.10 The implementing agreement “Energy Conservation in Buildings and Community Systems” (ECBCS) of the IEA
   Werner Weiss, AEE INTEC, Austria

09.20 Activities of the Austrian government in the area of sustainable buildings
   Theodor Zillner, Federal ministry of transport, innovation and technology, Austria

09.30 Integrating Environmentally Responsive Elements in Buildings – an actual task within ECBCS
   Per Heiselberg, Aalborg University, Denmark

09.45 Responsive building elements – actual developments and trends within the IEA
   Marco Perino, Politecnico di Torino, Italy

10.05 Integrated building concepts – actual developments and trends within the IEA
   Inger Andresen, SINTEF, Norway

10.25 A Preliminary Study Thermal Storage Effect with Heat Island in Urban Environment
   Lina Yang, Hong Kong University, Hong Kong

10.40 Coffee break

11.05 Simulation of double-skin facades for hot and humid climate
   Matthias Haase, Hong Kong University, Hong Kong

11.25 Austrian sustainable buildings put to test – actual monitoring results
   Ernst Blümel, AEE INTEC, Austria

11.45 A new quality of living – passive house retrofitting of an apartment building
   Johan Aschauer, Gap-Solar, Austria

12.05 UNIQA Tower – an Innovative façade concept
   Michael Haugeneder, Altherm Engineering GmbH, Austria

12.25 Discussion

12.45 Lunch break
14.15 – 18.00 Excursion to demo-buildings in the region Weiz-Gleisdorf
Office building of AEE INTEC, retrofitted Dominican monastery, passive house
residential estate and passive house nursing home in the city of Weiz