



The 7th International Energy Agency Annex 44 Forum

24 October 2007
The University of Hong Kong

Integrating
Environmentally
Responsive
Elements in
Buildings



The 7th International Energy Agency Annex 44 Forum - Integrating Environmentally Responsive Elements in Buildings

Jointly Organized by
Dept. Mechanical Engineering, HKU
ASHRAE Hong Kong Chapter

Supported by
CIBSE Hong Kong Branch
HKIE (Building Services Division)

As a part of the International Energy Annex 44 project 6th expert meeting, we like to present you with this 7th Annex 44 forum, where Annex 44 experts from more than 10 countries will present their latest research findings in developing responsive building elements and integrated building concepts, and local engineers and architects in Hong Kong can share their experience for a better building design.

- Date** 8:30-17:30, 24 October 2007
- Venue** Room 737, Haking Wong Building (HKW)
Department of Mechanical Engineering
The University of Hong Kong
Pokfulam Road, Hong Kong
- Language** The official language of the forum is English.
- Fee** HK\$500 (Non-Annex 44 participant)

CPD Certificate

Certificate of Attendance will be issued to each participant after the lecture.

Introduction of IEA Annex 44

IEA Annex 44 is a task-shared international research project initiated by the International Energy Agency (IEA) implementing agreement Energy Conservation in Buildings and Community Systems (ECBCS). Annex 44 is a four year project running from 2005–2008 and about 25 research institutes, universities and private companies from 14 countries world wide participate.

Research into 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 and building services systems such as heating, ventilation, cooling equipment and lighting.

Significant improvement have been made, and whilst most building elements still offer opportunities for efficiency improvements, the greatest future potential lie with technologies that promote the integration of responsive elements in buildings. 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 will allow optimal use of natural energy strategies as well as integration of renewable energy devices.

Integrated Building Concepts are defined as design 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 defined as 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 services systems such as heating, cooling, ventilation and lighting. The development, application and implementation of responsive building elements are considered to be a necessary step towards further energy efficiency improvements in the built environment.

Objectives of IEA Annex 44

- To improve and optimise responsive building elements
- To develop and optimise new building concepts with integration of responsive building elements, HVAC-systems as well as natural and renewable energy strategies
- To develop guidelines and procedures for estimation of environmental performance of responsive building elements and integrated building concepts

Programmes (Tentative)

8:30	Participants	Registration at the Entrance of Room 737 Haking Wong Building
8:45	Participants	Informal introduction of meeting participants
Plenary session		
9:00	Professor Yuguo Li The University of Hong Kong	Welcome and opening of the forum
9:05	Prof. ST Tan or Prof. WC Chew Head of Mechanical Engineering or Dean of Engineering, HKU	Welcome and congratulatory message
9:15	Prof. Per Heiselberg IEA Annex 44 Operating Agent Aalborg University, Denmark	Integrating Environmentally Responsive Elements in Buildings – An overview of IEA Annex 44 project
Session I – Responsive building elements, Chairman: Per Heiselberg		
9:30	Prof. Marco Perino Annex 44 Subtask A leader Politecnico di Torino, Italy	An overview of responsible building elements
9:45	Fernando Marques da Silva LNEC, Portugal.	Test programme at LNEC's DSF test cell
10:00	Prof. Yuichiro Kodama Kobe Design University Estec Design, Tokyo	Thermal mass cooling effect and ventilation mode
10:15	Prof. Mats Sandberg KTH Research School, University of Gävle, Sweden	Controlled active mass and velocity variations
10:30	Jian Zhang Concordia University, Canada	Convective heat transfer phenomena in large ventilated ducts
10:45	Coffee break	
Session II– Integrated Building Concepts, Chairman: Marco Perino		
11:15	Annex 44 Subtask B leader	An overview of integrated building concepts
11:30	Prof. Tomoyuki Chikamoto Ritsumeikan University, Japan	Construction of energy performance analysis technique according to architectural design
11:45	Dr. Matthias Haase SINTEF, Norway	Climate adapted buildings in Norway
12:00	Prof. Hisashi Miura BRI (Building Research Institute), Tsukuba, Japan	Reduction of cooling energy consumption by utilizing cross ventilation based on empirical experiments with simulated human behaviour
12:15	Prof. Per Heiselberg Aalborg University, Denmark	Application of Sensitivity Analysis in Design of Integrated Building Concepts
12:30	Lunch break	
Session III– Implementation and dissemination, Chairman: SubTask B leader		

14:00	Mr. Ad van der Aa Annex 44 Subtask C leader Cauberg-Huygen Raadgevende Ingenieurs BV, Netherland	Results of IEA Annex 44 subtask C Enquiry: Situation of responsive building elements and integrated design strategies in various countries
14:15	Dr. Takao Sawachi NILIM, Tsukuba, Japan	Gap between research and design practice to be fulfilled by the design guideline based on the research
14:30	Louis Stephan Institut National d'Energie Solaire et Savoie Technolac, France	Interest of thermal mass activation in the case of natural ventilation
14:45	Prof. Marco Perino Politecnico di Torino, Italy	Title?
15:00	Ms. Liang Zhou Concordia University, Canada	Simulation-based optimization of ventilation system design and operation in office environment
15:15	Coffee Break	
Session IV– Beyond Annex 44, Chairman: Ad van der Aa		
15:45	Mr. Xichun Wang The Hong Kong Polytechnic University, HK	Progresses in PCM (phase change material) thermal energy storage
16:00	Dr. Sam Hui The University of Hong Kong, HK	Green roof and sustainable building design
16:15	Ms. Lina Yang The University of Hong Kong, HK	Chinese Kangs
16:30	Discussion	
16:45	Discussion	
17:00	Discussion	
17:15	Discussion	
17:30	Closing	

- End of Programme -

Forum Submissions – presentations by invitation only

- A CD will be produced containing files from all speakers.
- All presenters should submit by Monday 1 October, 2007 an abstract of 150-200 words. There is no guarantee for a time slot for late submissions.
- All presenters should submit by Monday October 15 2007 an electronic copy of their ppt files (limited to 30 slides). A full copy of the paper (less than 20 pages) will be appreciated.

Registration & Enquiry

Interested persons shall fill in the registration form and return to us via email: lnyang@hkusua.hku.hk with personal details shown on the registration form.

Non-Annex 44 participants shall pay their fee at the Registration Counter in cash at 8:30 am on 24 October 2007. The registration fee for a non-Annex expert is HK\$500.

The seat number is limited to **25**. Applications will be accepted on a first-come-first served basis. The deadline of application is **10 October 2007**. Applicants will receive a confirmation email on or before 15 October 2007. For enquiry, please contact Ms. Lina Yang at lnyang@hkusua.hku.hk or by telephone (+852 9607 6926).

----- Reply Slip -----
**The 7th International Energy Agency Annex 44 Forum –
Integrating Environmentally Responsive Elements in Buildings (24 October 2007)**

To: Forum Secretary

By email: lnyang@hkusua.hku.hk

I wish to attend the above forum on 24 October 2007 (Wednesday).

Name: Mr/Mrs/Ms _____ Company/Institute _____
*ASHRAE / CIBSE / HKIE (BS Div) Member *Delete as appropriate

Membership No. _____ E-mail Address _____

Telephone (Co.) _____ (Mobile) _____ Fax No. _____

Correspondence Address _____

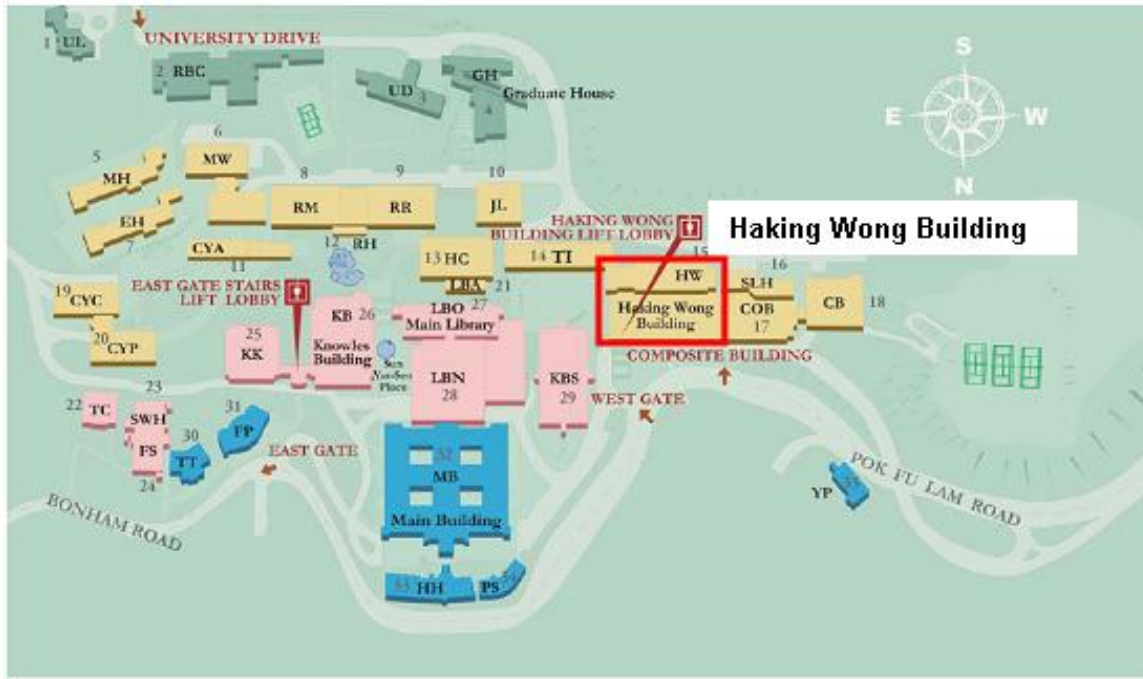
I wish to make a presentation at the forum on 24 October 2007 (Wednesday).

Title _____

Notes: All members have to fill in the membership number for verification. The organizers reserve the right to decline their application if no membership no. is submitted.

HKU MAP

Haking Wong Building (near West Gate of HKU)



Main Campus Map

<ul style="list-style-type: none"> [01] UL - University Lodge [02] RBC - Robert Black College [03] UD - University Drive No.2 [04] GH - Graduate House 	<ul style="list-style-type: none"> [22] TC - Tang Chi Ngong Building [23] SWH - Swire Hall [24] FS - Fong Shu Chuen Amenities Centre [25] KK - K.K. Leung Building [26] KB - Knowles Building [27] LBO Main - Library Building (Old Wing) [28] LBN - Library Building (New Wing) [29] KBS - Kadoorie Biological Sciences Building
<ul style="list-style-type: none"> [05] MH - May Hall [06] MW - Meng Wah Complex Building [07] EH - Eliot Hall [08] RM - Runme Shaw Building [09] RR - Run Run Shaw Building [10] JL - James Hsioung Lee Science Building [11] CYA - Chong Yuet Ming Amenities Centre [12] RH - Rayson Huang Theatre [13] HC - Hui Oi Chow Science Building [14] TI - Technology Innovation and Incubation Building [15] HW - Haking Wong Building [16] SLH - Simon K.Y. Lee Hall [17] COB - Composite Building [18] CB - Chow Yei Ching Building [19] CYC - Chong Yuet Ming Chemistry Building [20] CYP - Chong Yuet Ming Physics Building [21] LBA - Library Annex 	<ul style="list-style-type: none"> [30] TT - T.T. Tsui Building [31] FP - Fung Ping Shan Building [32] MB - Main Building [33] HH - Hung Hing Ying Building [34] PS - Pao Siu Loong Building [35] YP - Yam Pak Building

Relevant websites

International Energy Agency, <http://www.iea.org/>

IEA Implementing Agreement on Energy Conservation in Buildings and Community Systems, <http://www.ecbcs.org/>

IEA Annex 44 project, <http://www.ecbcs.org/annexes/annex44.htm> and <http://www.civil.aau.dk/Annex44/>