

Organized by:



**3 Mandatory CPD hours  
for BEAM Pro / BEAM Affiliate**

## Technical Seminar on Sustainable HVAC System Design

Date : 18 November 2016 (Friday)  
Time : 2:15pm - 5:15pm (Registration will start at 2:00pm)  
Venue : BEC Auditorium, G/F Jockey Club Environmental Building, 77 Tat Chee Avenue, Kowloon Tong, Hong Kong

### Background

About 90% of total electricity consumption in Hong Kong is contributed by buildings and HVAC system contributed the most energy consumption in commercial buildings. Through enhancement of building energy efficiency, greenhouse gas emissions have been gradually reduced. In October 1998, the Electrical and Mechanical Services Department has launched the voluntary Hong Kong Energy Efficiency Registration Scheme for Buildings to promote the application of the Building Energy Code. To further promote building energy efficiency, the Government enacted the Buildings Energy Efficiency Ordinance (the Ordinance) which has come into full operation since 21 September 2012.

The improvements in the economy and an increased focus on efficiency are driving increases in the market for energy-efficient HVAC equipment and system. Also in the long run, increasingly stringent regulatory environments will also drive growth in energy-efficient commercial HVAC system markets. According to some researches, global revenue for energy-efficient commercial HVAC systems is expected to double in next two decade.

As concerns about the environmental impact of energy generation and uncertainty over future energy prices increase, efficiency improvements in HVAC equipment and systems become more attractive. Over the years, Building Owners, Engineers and Designers are adopting energy efficient system in their buildings, and continue to optimize to its best performance according to the loading demand. Also the market is also looking for some emerging new system and technologies.

In this technical seminar, the speaker will review the design consideration of the variable primary flow in chilled water system to achieve its best performance, he will also discuss the potential concern of the system and its potential remedies. Besides, the speaker will discuss about the Thermal Energy Storage and share his experiences in US.

### Speaker

## **William P. Bahnfleth, Ph.D., P.E.**

Distinguished Lecturer of ASHRAE  
Professor, Department of Architectural Engineering  
The Pennsylvania State University, United States

William Bahnfleth is Professor and Director of the Indoor Environment Center in the Department of Architectural Engineering at the Pennsylvania State University (Penn State) in University Park, PA, where he has been employed since 1994. Previously, he was a Senior Consultant for ZBA, Inc. in Cincinnati, OH and a Principal Investigator at the U.S. Army Construction Engineering Research Laboratory in Champaign, IL. He holds BS, MS, and PhD degrees in Mechanical Engineering from the University of Illinois, where he also earned an undergraduate degree in music (pipe organ performance), and is a registered professional engineer.



Supporting Organizations:



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At Penn State, Dr. Bahnfleth teaches undergraduate courses in HVAC fundamentals and controls and graduate courses in chilled water systems, hot water and steam systems, and indoor air quality. His research interests cover a wide variety of indoor environmental control topics, including chilled water pumping systems, stratified thermal energy storage, protection of building occupants from indoor bioaerosol releases, ultraviolet germicidal irradiation systems, and others. He is the author or co-author of more than 150 technical papers and 13 books and book chapters. He consults on the design of chilled water thermal energy storage systems and has been involved in more than 20 projects world-wide.

Dr. Bahnfleth is a fellow of ASHRAE, the American Society of Mechanical Engineers (ASME) and the International Society for Indoor Air Quality and Climate (ISIAQ). He is a member of the Indoor Air Quality Association (IAQA), the International Building Performance Simulation Association (IBPSA), Sigma Xi, the American Society for Engineering Education (ASEE), and the Society of Building Science Educators (SBSE). He has served ASHRAE in a variety of capacities, including Student Branch Advisor, Chapter Governor, Technical Committee and Standing Committee Chair, and as Director-at-Large, Vice President, Treasurer, and 2013-14 Society President. He is the recipient of a 1st place ASHRAE Technology Award, Transactions Paper Award, and Distinguished Service and Exceptional Service Awards. In 2016, he received the Penn State Engineering Alumni Society's World-Class Engineering Faculty Award.

## Topics of the Technical Seminar

### Session 1

## Variable Primary Flow Chilled Water Systems

Variable primary flow is being adopted in chilled water system design with increasing frequency as a lower cost, more efficient alternative to primary/secondary design that is not as susceptible to low delta T syndrome. Subtopics include a review of variable primary flow and primary/secondary system types; causes and effects of low delta T syndrome and potential remedies; design considerations for variable primary flow, and, comparisons of variable primary flow and primary/secondary flow taken from case study and research literature.

### Session 2

## Cool Thermal Energy Storage in the Era of Sustainability

During the 1980s and 1990s, cool thermal energy storage (TES) was a key technology in US utility demand-side management (DSM) programs. Interest in TES declined steeply as incentives disappeared during utility deregulation. Today, the focus of design has shifted from energy cost savings toward sustainability and it is reasonable to ask whether TES has anything to offer in this environment. This presentation will review the essentials of cool thermal energy storage and examine its relevance to sustainable design. Specific issues examined will include the impact of TES on site and source energy consumption, the economic case for TES without the incentives of the DSM era and the role of TES in achieving net zero energy buildings and communities.

Supporting Organizations:



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Fee : HK\$600 (ASHRAE-HKC members, BEAM Pro, BEAM Affiliate & BSL Members)  
HK\$750 (Members of Supporting Organizations)  
HK\$900 (Standard)

Language : English

Deadline for Application : 11 November 2016

### **Registration**

Number of participants is limited and prior registration is required. Registration will be on a first-come-first-served basis (priority will be given to members of Organizers and Supporting Organizations). For registration, please complete the application form via the following "[On-Line Registration Link](#)". The deadline of application is on 11 Nov 2016. Successful members will be notified by e-mail on or before 15 Nov 2016, which has to be presented at the registry of the venue entrance for verification. If the applicants have not received the confirmation e-mail on or before 15 Nov 2016, their applications will be regarded as not successful.

**Members of Supporting Organizations – kindly note that we only accept registration by original application form and cheque payment. Sorry for any inconvenience caused.**

### **Enquiry**

For enquiry, please call 3610 5700 or email to [beampro.training@beamsociety.org.hk](mailto:beampro.training@beamsociety.org.hk).

Supporting Organizations:



**Deadline for Application :** 11 November 2016, Friday

**Mandatory CPD Training –  
Technical Seminar on Sustainable HVAC System Design  
REGISTRATION FORM**

Event Code : M-2016-1118

**Name:** Dr / Ir / Prof / Mr / Mrs / Ms  
(Name shown on your HKID /Passport)

**BEAM Pro / Affiliate No.:**  
BP -  
BA -

**Chinese Name** (中文名) :

**Organisation :**

**Job Title :**

**Correspondence Address :**

**Nature of Organisation**  
(Please tick one only):

- |   |  |
|---|--|
| <p><b>A Government Department</b></p> <p><input type="checkbox"/> Architectural Services Department</p> <p><input type="checkbox"/> Buildings Department</p> <p><input type="checkbox"/> Drainage Services Department</p> <p><b>B Private Sector</b></p> <p><input type="checkbox"/> Consultant (other than Interior Design)</p> <p><input type="checkbox"/> Contractor</p> <p><input type="checkbox"/> Developer</p> <p><input type="checkbox"/> Facility &amp; Property Management</p> <p><input type="checkbox"/> Others: please specify _____</p> <p><b>C Non-government Organisation</b></p> <p><input type="checkbox"/> Educational / Research / Training Institute / University</p> <p><input type="checkbox"/> Others: please specify _____</p> | <p><input type="checkbox"/> Electrical and Mechanical Services Department</p> <p><input type="checkbox"/> Housing Department</p> <p><input type="checkbox"/> Others: please specify _____</p> <p><input type="checkbox"/> Interior Design</p> <p><input type="checkbox"/> Manufacturer / Supplier / Distributor</p> <p><input type="checkbox"/> Property Agency</p> <p><input type="checkbox"/> NGO / NPO</p> <p><input type="checkbox"/> Professional Society</p> |
|---|--|

**Area of Practice**  
(Please tick one only):

- |   |   |
|---|---|
| <p><b>A Architecture &amp; Landscape</b></p> <p><input type="checkbox"/> Landscape Architecture</p> <p><input type="checkbox"/> Architecture</p> <p><b>B Engineering &amp; Building</b></p> <p><input type="checkbox"/> Building</p> <p><input type="checkbox"/> Civil</p> <p><input type="checkbox"/> Environmental</p> <p><input type="checkbox"/> E&amp;M / BSE</p> <p><input type="checkbox"/> Geotechnical</p> <p><input type="checkbox"/> Structural</p> <p><input type="checkbox"/> Others: please specify _____</p> | <p><b>C</b> <input type="checkbox"/> Environmental Science</p> <p><b>D</b> <input type="checkbox"/> Facility &amp; Property Management</p> <p><b>E</b> <input type="checkbox"/> Interior Design</p> <p><b>F</b> <input type="checkbox"/> Planning</p> <p><b>G</b> <input type="checkbox"/> Product Materials Supply &amp; Manufacturing</p> <p><b>H</b> Surveying</p> <p><input type="checkbox"/> Building Surveying</p> <p><input type="checkbox"/> Land Surveying</p> <p><input type="checkbox"/> Quantity Surveying</p> <p><b>I</b> Others: please specify _____</p> |
|---|---|

**Contact :** Phone \_\_\_\_\_  
Email \_\_\_\_\_

Fax Number \_\_\_\_\_

**DETAILS**

| Topic   | Date  | Assembly Information  | CPD Hours Recognition | Fee for BEAM Pro / BEAM Affiliate/ BSL Member  | Standard Fee |
|---|---|---|-----------------------|--|--------------|
| Technical Seminar on Sustainable HVAC System Design | 2:15pm - 5:15pm<br>18 November 2016<br>(Friday) | BEC Auditorium, G/F Jockey Club Environmental Building, 77 Tat Chee Avenue, Kowloon Tong, Hong Kong | 3 Mandatory CPD Hours | ASHRAE-HKC members, BEAM Pro / BEAM Affiliate / BSL Members - \$600<br>Members of Supporting Organisations - \$750 | \$900        |

**PAYMENT** Please send a crossed cheque made payable to **"BEAM Society Limited"** together with this Registration Form to:

BEAM Society Limited, 1/F, Jockey Club Environmental Building, 77 Tat Chee Avenue, Kowloon Tong, Hong Kong.

**Cheque Number and Issued Bank :** \_\_\_\_\_

**Total Amount:** \_\_\_\_\_

### COLLECTION OF PERSONAL DATA

1. Your personal data will be collected and used by BEAM Society Limited (BSL) for purposes in connection with BEAM Professionals Program, training and examination, and the selection designation and regulation of assessors by us in respect of the BEAM (Building Environmental Assessment Method).
2. The data may be disclosed to relevant stakeholders in respect of BEAM including their employees and agents concerned.
3. You have the right to request for the access and correction of your personal data. Such request should be made in writing and addressed to the BEAM Society Limited by mail (1/F, Jockey Club Environmental Building, 77 Tat Chee Avenue, Kowloon Tong) or email [enquiry@beamsociety.org.hk](mailto:enquiry@beamsociety.org.hk). For details of the BSL Privacy Policy, please visit [www.beamsociety.org.hk](http://www.beamsociety.org.hk).

### TERMS & CONDITIONS

1. Registration (paper form) must be attached with a cheque as full payment.
2. Payment is non-refundable unless the event is cancelled by the organiser.
3. Booking will only be confirmed with payment on a first-come-first-served basis.
4. An official receipt will be issued upon cheque clearance.
5. The event will be cancelled with full refund should a typhoon signal no. 8 or above, or black rainstorm warning being hoisted 3 hours before commencement of the event.

\_\_\_\_\_  
*Signature of Applicant*

\_\_\_\_\_  
*Date*