ASHRAE Thailand Chapter
Technology for a Better Environment

Thailand Chapter Office: 487 Soi Ramkamhaeng 39(Thepleela), Wangthonglang, Bangkok 10310
Tel. 0-2318-4119, 0-2318-4123 Fax. 0-2318-4120 e-mail:ashrae@ashraethailand.org

Co-Organizers

ACAT CRC บริษัท ซีอาร์ซี2016 จำกัด CRC2016 COMPANY LIMITED

สัมมนาวิชาการ ครั้งที่ 1 (ASHRAE Technical Seminar # 1)

Co-organize a Technical Seminar presented by ASHRAE Distinguished Lecturer Titled: -

1. **21st Century Tall Building Design**
2. **Burj Khalifa – The Tallest Building in the World**
3. **Long, Healthy and Low Energy**
4. **Net Zero Building vs. Net Zero District**

Date: **Tuesday, September 26th, 2017**

Time: 08:30 – 16:00 hrs.

Swissotel Le Concorde Bangkok

โครงการพัฒนาวิชาชีพวิศวกรรมอย่างต่อเนื่อง
Continuing Professional Development for Engineers

ใช้เป็นคะแนนสำหรับเลื่อนวุฒิสามัญ
วิศวกรต้องได้ CPD อย่างน้อย 9 หน่วย
หลักสูตรนี้รับ CPD Point 1.5 เท่า

By... ASHRAE Thailand Chapter
Air-Conditioning Engineering Association of Thailand (ACAT)
CRC2016 Co.,Ltd.

Abstract

1. **21st Century Tall Building Design**
GBCI Approved | 1 CE Hour | 0920002637
AIA Approved|1LU| LEUNG01

The locations of cities, environmental changes, ever-increasing heights of tall buildings, and focus on high-performance design will create challenges for tall building design in the 21st century. This dialogue will discuss microclimates of tall buildings. In particular, it will focus upon the impact 21st century climate and changing air contaminants have on tall buildings. Tall buildings should be designed to be resilient; researching and exploring related microclimate topics can inform our design. Topics include: the integration of tall buildings within the city to achieve optimal energy performances; the latest stack effect data, monitoring, and control; elevator door opening sequences and their impact on elevator shaft pressure; the integration of natural ventilation in tall buildings; how energy consumption changes with height; and cloud computing and advanced modeling techniques on tall building design.

2. **Burj Khalifa – The Tallest Building in the World**

This talk will focus on the design, construction, and post-occupancy of Burj Khalifa, the tallest building in the world. The tower's design optimizes performance by anticipating how environmental factors change both in the desert climate and at different elevations. Special attention was paid to materials selection, how creep and shrinkage impacts water risers, etc. The tower features many innovative systems. Select systems include:

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a 460 psi chilled water system; an ice storage chilled water system; one of the world's largest condensate recovery systems; stack effect monitoring and control; post-occupancy measurement of air contaminant levels; special balcony door sensors that inform occupants when air quality is ideal for opening the door; and a first-of-its-kind "lifeboat" elevator system that can provide controlled evacuation, among others

3. Live Long, Healthy and Low Energy

GBCI Approved | 1 CE Hour | 0920005393
AIA Approved | 1LU | Leung02

Are people live in urban environment longer living and lower energy? Since 75% of the world's population will live in cities by 2050, we should ensure urban environment is where humans will thrive. From regression analysis done by the SOM team, urban dwellers tend to live longer than the rural residents. In fact, dense environment often coincide with longer life expectancy. Compare to rural communities, urban dwellers also consumes less energy. However, are urban dweller healthier and how can we further lower our energy consumption?

Using Amish communities as a study case, this lecture will compare how our urban environment also brings about more allergy, autism, asthma, etc. cases, and how we can use nature and mechanical means to make us healthier

Also using district scale system examples around the world, this lecture will study how cities and towns in US can lower the energy consumption through district scale integration.

4. Net Zero Building vs. Net Zero District

Over the last decade, the architectural and engineering design community has made great strides in improving the energy efficiency of buildings. This has been inspired by standards and guidelines developed by ASHRAE, USGBC, various government agencies and a public awareness translating to market demand. Buildings currently represent 49% of the US energy consumption on an annual basis. The demand for energy efficiency goes beyond energy consumption and includes energy demand especially in economically expanding countries like China and India where there is a severe gap between electricity supply and projected demand over the next 10-20 years. The next phase in the energy efficient design will challenge the community to produce Net Zero Buildings (NZB). This challenge in the US by the AJA targets the year 2030 and in Europe, the target is year 2019. To achieve the target net zero for the next generation, the answer may partially rest in the larger infrastructure in the city from the central heating and cooling plant, co-generation, clean energy from the grid and looking at waste or renewable sources as a "resource" to generate power, similar to nature that has no waste and is integrated as a whole.

Building energy efficiencies have been greatly enhanced over the last three decades by utilization by utilization of high efficiency glazing and envelopes, effective use of day lighting, high efficiency lighting, energy star computers and appliances etc. The energy required has been further reduced by the application of renewable energy strategies such as active solar systems, photovoltaic systems and building integrated wind turbines. Studies by National Renewable Energy Laboratory (NREL) have shown that zero energy becomes more difficult to achieve as the building height increases. However, the study also concludes that 62% of buildings could achieve net zero. Climate, of course, plays a major role in achieving the net zero with

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different strategies for efficiency and renewable strategies depending on climate. Tall buildings represent some challenges, but also opportunities in energy efficient design due to the changes in environmental conditions with altitude. As we strive to design NZB, there may be a point of diminishing returns economically. This extends the idea of NZB to Net Zero District (NZD).

There are many advantages that can be offered by a NZD such as more land is generally available for the alternative energy plants due to the limited site area of individual buildings. A district plant, electric, cooling, and/or heating will also see significant load diversity due to serving multi use buildings. The plant can also use larger more efficient generating equipment and would likely have unblocked access to the resources of wind and sun. Strategic locations of the generating plant can take advantage of increased efficiency measures such as lake or sea water cooling. Another main advantage of the NZD is that the responsibility is shared by the building owners, the utility companies and the local and federal government. We propose a design process to achieve NZB/NZD that begins with optimizing the architectural systems to reduce the energy requirements of buildings and then apply practical alternative energy strategies at the building level. At the district level, apply large scale alternative energy strategies such as thermal solar, photovoltaic and wind turbines for power generation. Next, apply non fossil fuel co-generation technologies for remaining peak and annual energy requirements.

About Speakers :

Luke Leung, P.E.

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Skidmore, Owings & Merrill
224 S. Michigan Avenue
Suite 1000
Chicago, IL 60604
United States
(312) 360-4121

Speaker's Profile

Luke is a LEED (Leadership in Energy and Environmental Design) Fellow; He is also a Centennial Fellow from The Pennsylvania State University Architectural Engineering Department; Board of Directors for USGBC (United State Green Building Council), Illinois; Chairman of the ASHRAE (American Society of Heating, Refrigeration and Air Conditioning) Committee on "Tall Buildings"; Chairman of the Building Pressure Committee, Chicago Committee on High Rise Buildings; Sustainable Committee with Council on Tall Buildings and Urban Habitat; Part Time Professor at IIT; Member of the Chicago Sister Cities Program with China; MBA from University of Chicago, MS and BAE from Architectural Engineering at Penn State University.

Luke Leung is a Director of the Sustainability Engineering Studio for Skidmore, Owings and Merrill LLP. His work includes Burj Khalifa, the world's current tallest man-made structure; Multiple times "Excellence in Engineering" award from the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE); 2 awards from National Institute of Building Sciences, among others. Selected projects also include Pertamina Tower (Net Zero Supertall), General Motors Global Headquarters, Roche Diagnostic in Indianapolis, Beijing Finance Street, Embassy of Ottawa in Canada, Embassy in Beijing, Lakeside – 55 million sqft low energy development, a LEED

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Platinum building with the first large scale horizontal wind turbine in the city of Chicago; etc., and has served as a member of the editorial team for the CTBUH guide Natural Ventilation in High-Rise Office Buildings, ASHRAE "Design Guide for Tall, Supertall, Megatall Building Systems", among other publications.

Target Audiences

1. ASHRAE Thailand Chapter, ACAT Members
2. RHVAC Designer& Consulting Engineers and Contractors
3. University Lecturers in Dept. of Architecture & Engineering
4. End user, HVAC Facilities Engineers, Building Owner and others.

Agendas:-

08:30 - 09:00	Registration
09:00 - 09:10	Opening Speech: President, ASHRAE THAILAND CHAPTER 2017-2018
09:10 - 10:30	21st Century Tall Building Design
10:30 - 10:45	Coffee-Tea Break
10:45 - 12:00	Burj Khalifa – The Tallest Building in the World
12:00 - 13:00	Lunch
13:00 - 14:30	Live Long, Healthy and Low Energy
14:30 - 14:45	Coffee-Tea Break
14:45 - 16:00	Net Zero Building vs. Net Zero District
16:00 - 16:10	Closing Speech: President, Air Conditioning Engineering Association of Thailand

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ใบสมัครสัมมนาวิชาการ ครั้งที่ 1

เรื่อง "21st Century Tall Building Design", "Burj Khalifa – The Tallest Building in the World", "Live Long, Healthy and Low Energy", "Net Zero Building vs. Net Zero District"

วันอังคารที่ 26 กันยายน พ.ศ. 2560

ณ ห้อง สโรชา ชั้น 3 โรงแรมสวิสโซเทล เลอคองคอร์ด ถนนรัชดาภิเษก

ชื่อ……..……นามสกุล……..……สมาชิก……

บริษัท……..…… เลขประจำตัวผู้เสียภาษี.....

ที่อยู่ (ในการออกใบเสร็จ)……..……

โทรศัพท์……โทรสาร……..……E-mail……..……..……

อัตราค่าลงทะเบียน	ชำระเงินภายใน 22 ก.ย. 60	ชำระเงินหลัง 22 ก.ย. 60
☐ สมาชิก ASHRAE Thailand Chapter/ACAT	O ราคา 2,300 บาท	O ราคา 2,600 บาท
☐ บุคคลทั่วไป	O ราคา 2,600 บาท	O ราคา 3,000 บาท

- **หมายเหตุ**
  1. อัตราค่าลงทะเบียนข้างต้น รวมค่าภาษีมูลค่าเพิ่ม 7 % ,ค่าเอกสารการบรรยาย , ค่าอาหารว่าง , ค่าอาหารกลางวัน เรียบร้อยแล้ว
  2. บริษัท ซีอาร์ซี2016 จำกัด อยู่ในข่ายที่ต้องถูกหักภาษี ณ ที่จ่าย 3 %
  3. บริษัท ซีอาร์ซี2016 จำกัด เป็นองค์กรแม่ข่ายของสภาวิศวกร มีหน้าที่ในการจัดกิจกรรมการพัฒนาวิชาชีพวิศวกรรมอย่างต่อเนื่อง ให้การรับรองกิจกรรมและจำนวนหน่วยพัฒนา PDU ของกิจกรรมการพัฒนาวิชาชีพวิศวกรรมอย่างต่อเนื่อง สามารถออกใบรับรองการเข้าร่วมกิจกรรมการพัฒนาวิชาชีพวิศวกรรมอย่างต่อเนื่องได้
  4. ติดต่อขอรายละเอียดได้ที่ คุณอรวรรณ, คุณกุลิสรา โทรศัพท์ 02-318-4119, 02-318-4123 โทรสาร 02-318-4120

วิธีการชำระเงิน

O เงินสด ณ ที่ทำการสมาคมฯ

O เช็คสั่งจ่าย "บริษัท ซีอาร์ซี2016 จำกัด"

O โอนเงินเข้าบัญชี ธนาคารยูโอบี สาขาสี่แยกศรีวรา บัญชี ออมทรัพย์
ชื่อบัญชี "บริษัท ซีอาร์ซี2016 จำกัด" เลขที่บัญชี 960-164-508-0

กรณีโอนเงินเข้าบัญชีเรียบร้อยแล้ว กรุณาแฟกซ์เอกสารการชำระเงินพร้อมระบุรายละเอียดชื่อ-ที่อยู่ในการออกใบเสร็จที่ถูกต้อง โดยแนบใบนำฝากมา พร้อมกับใบสมัครที่หมายเลขแฟกซ์ 02-318-4120