

ASHRAE Hong Kong Chapter Webinar - Net Zero Building Series

Date : 10,12,17,19 Nov 2020
 Time : 7:00pm – 8:30pm
 Venue : MS Teams (Meeting ID will be provided for successful applicant)

Background

Net zero building is a building with zero net energy consumption. The total amount of energy used by the building on an annual basis is equal to the amount of renewable energy created on the site. This technical seminar focuses on the Net Zero Building basics and highlighting our ASHRAE Standards and Guidelines. In addition, the speakers will also share their experiences on the design and latest technologies for achieving a net zero building.

Medium of instruction

English

Lesson 1

Date: 10th Nov 2020

MEP Road Map to Whole Life Carbon Net Zero by 2050

In the Paris Agreement, the world, except a few countries, agreed to 1.5°C as the climate change target. If 1.5°C can happen before 2050, there is a 50% chance we can avoid the consequences of climate change. Global built environment professionals already developed road maps to arrive at net zero by 2050. E.g WorldGBC and Architecture 2030 in architecture, SE 2050 in structure. What about MEP? In this discussion, a MEP 2050 roadmap version will be presented. This roadmap will include both embodied and operating carbon. On the embodied side, leading MEP firms in US will be requesting embodied carbon data this fall. On the operating side, the same group of firms have been requesting manufacturers to provide all electric equipment. Also SOM is currently working with US National Renewable Energy Lab on a district scale energy modeling to optimize buildings as a district scale. Selected MEP professionals already declared climate emergency and started to work on life cycle carbon studies in their projects. This trend will not go away and the global environment depends on it.



Speaker

LUKE LEUNG, PE, LEED Fellow, P.E., is a LEED Fellow; ASHRAE Pandemic Task Force Commercial Team Leader; Vice Chair of ASHRAE “Environmental Health Committee”; Member, AIA COVID-19 Task Force; UK Academy of Engineering COVID-19 Task Force; Centennial Fellow from The Pennsylvania State University Architectural Engineering Department; Expert Peer Review Committee for Council on Tall Buildings and Urban Habitat; Former Board of Directors for USGBC, Illinois; Former Chairman of ASHRAE Technical Committee on “Tall Buildings”;

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ASHRAE Distinguished Lecturer; Industrial Professional Advisory Council Pennsylvania State University Architectural Engineering School; Industry Advisory Board for IN2 start-up incubator program with US National Renewable Energy Laboratory. He is the wide firm Director of the Sustainability Engineering Studio for Skidmore, Owings and Merrill LLP. His work includes Burj Khalifa, the current world's tallest building, and other four of the top 20 tallest buildings in the world. Other work also included General Motors Global Headquarters, Beijing Finance Street, US Census Bureau, US Embassy in Beijing, BBVA Tower in Mexico City, LG Art Hall in Seoul Korea, etc.

Lesson 2

Date: 12th Nov 2020

ASHRAE and REHVA NZ Hospital design guide

The new design guide is a joint collaboration between ASHRAE and REHVA and provides leadership in the quest for a net zero carbon future by showing how hospitals which are intense users of energy can become net zero. At present the modern healthcare system in every country creates a devastating environmental impact, out of proportion to its size. This damage is especially notable in waste production and consumption of fossil fuels and its related emission of greenhouse gasses and is in part due to the fact that hospitals put patient experience before all other matters – even though they are in some part responsible for poor health and natural disasters due to climate change and environmental impact. As the world moves increasingly aggressively to eliminate carbon emissions, the healthcare industry has a moral imperative to take the lead. A large proportion of the hospital emissions come from the construction and operation of the buildings where much of today's care is provided. This Guidebook will help practitioners of hospital organizations and engineers supporting them to become part of the movement towards Zero Energy Hospital Buildings and to potentially show leadership. The outcomes will be better health for all as well as exemplary stewardship of our environment. The publication begins with a brief summary of important background information to describe the global context for the challenge and then sets out a new 5-step practical method to help practitioners and engineers to reduce the energy consumption of new as well as existing buildings from fossil fuels in a continuous improvement process.

Speaker



Frank Mills, C.Eng., Fellow CIBSE, MASHRAE, is the president/owner of Frank Mills Consulting, which specializes in design, management, supervision, construction, and operation of building services engineering projects, including education, healthcare/hospitals, research, industrial, process, commercial, retail, computer/data suites, shopping centers (including town centers), and residential (housing, hotels, and apartment buildings). These projects offer low energy features and include several exemplary zero carbon buildings. The schemes also include district energy/trigeneration systems which serve numerous

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buildings. Mr. Mills has worked closely with the Building Research Establishment (BRE) in the United Kingdom and with ASHRAE TC 2.8, Sustainability, as the committee’s international representative, to create new environmental design and rating systems that aid developers and their designers toward low carbon and environmentally friendly projects. He pioneered the new BREEAM Communities environmental rating system for whole-scale phased developments by using Media City, Salford, UK, as a pilot study for the development work behind this new scheme. When chairman of the ASHRAE Region-at-Large, Mr. Mills was actively involved in planning the 2009 Chapter Region Council meeting and conference in Kuwait. There, he also organized a session on low carbon and sustainable cities and presented the Media City, UK case study project. He is also the presenter for ASHRAE Learning Institute courses on natural ventilation and net zero energy buildings.

Lesson 3

Date: 17th Nov 2020

The Advanced Energy Design Guide for Zero Energy Buildings

Modelled after the successful 30% and 50% Advanced Energy Design Guides, this new series of guides focuses on the processes and strategies to achieve zero energy buildings at typical construction budgets. The series, published by ASHRAE, was a collaborative effort of AIA, ASHRAE, IES, USGBC, and DOE. The first book in the series was published in January 2018 and focuses on K-12 schools and includes several case studies of schools that meet the zero energy requirements. In process, is the 50% office guide. The lecture will focus on setting energy goals and the technologies that can help achieve these goals and will walk through the Guide. A sneak preview of what is coming in offices will also be presented.

Speaker



Paul Torcellini, Ph.D., has 30 years of experience examining how energy is used in buildings including delivery mechanisms, design, system integration, and operations. His focus is on creating buildings that have minimal environmental impact because of their operations including very low energy buildings and zero energy buildings. Paul received his undergraduate degree in Mechanical Engineering from Worcester Polytechnic Institute in Worcester, Massachusetts. He received a Master of Science in Mechanical Engineering specializing in heat transfer and modeling of buildings and a Ph.D. in building controls from Purdue University (W. Lafayette, Indiana).

Paul is a 25-year ASHRAE member and has received two ASHRAE Technology Awards for his energy-efficient buildings work and has been a key contributor to the Advanced Energy Design Guide Series, published by ASHRAE as a collaborative effort of AIA, ASHRAE, IES, and USGBC. He has led the technical analysis of several of the guides and has chaired two of the guides including the Advanced Energy Design Guide for K-12 Schools: Achieving Zero Energy (January 2018) and the recently released Advanced Energy Design Guide for Small to Medium Office Buildings: Achieving Zero Energy (June 2019). He has

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been a speaker on two ASHRAE Webcasts including one focused on Zero Energy Buildings. He is active in TC2.8 (Building Environmental Impacts and Sustainability) and has been involved in several Society level efforts including MTGs, position documents, and Project Monitoring Subcommittees. Paul and his family live in a zero energy home in northeastern Connecticut and run a sustainable farm focused on soil restoration growing a variety of farm products.

Lesson 4

Date: 19th Nov 2020

Next Wave of Net Zero Carbon Technologies

In the past 20 years, much progress has been made towards climate change actions through tightening energy codes, policies encouraging green buildings, building professionals skilled in sustainable design and green technology development. This has built a strong capacity in the industry on delivery zero carbon buildings. With cities, countries, companies setting pathways towards net zero by 2030, where will the next wave of movement take us? This may have an impact on equipment and system selection, construction processes and material use to drive down embodied and operational carbon. Opportunities present themselves in the advancement in renewable technology such as waste to energy, carbon sequestration such as from algae, recovering waste heat, stretching thermal comfort acceptance criteria with mixed mode cooling. On implementation, constraints on local environmental conditions are pivotal for their successful adoption. In this talk, we will focus on the Asian contexts and discuss the possible scenarios of decarbonising our building industry.

Speaker



VINCENT CHENG, FHKIE, CEng, LEED AP, BEAM Pro, REA, is a Fellow and Director of Sustainability of Arup in East Asia. He leads a group of engineers and specialists practicing primarily on sustainable developments and low carbon building design in the region. He has been involving in many pivotal green building projects including the K11 Atelier King's Rad, Victoria Dockside, CIC ZCB, Hysan Place, One Taikoo Place in Hong Kong; Chengdu Raffles City, Chongqing Raffles City, Palace 66, Riverside 66 and Parc 66 in China; South Beach in Singapore and Samsung Green Tomorrow in S. Korea. Besides, he leads the District Cooling System projects in many districts in Hong Kong (including Kai Tak Development, West Kowloon Cultural District and New Development Areas at Kwu Tung North, Tung Chung East and Lok Ma Chau Loop). His team has developed the BEAM Plus NB V2 and Building Energy Codes (2012, 2015 and 2018) in Hong Kong. Under his leadership, Arup was awarded as “the BEAM Consultant with most BEAM Plus Final and Provisional Platinum Projects” by HKGBC in 2015. Dr Cheng serves in various government and professional bodies on energy and sustainability of Hong Kong, currently as Board of Director of Hong Kong Green Building Council, Member of Energy Advisory Committee of Environment Bureau, Expanded Building Committee

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and Technical Committee on Design and Construction Requirements for Energy Efficiency of Buildings of Buildings Department to provide advice on sustainable building issues. Dr Cheng sees the importance of educating young talents to service the industry and the community. He has been the advisor of the School of Energy and Environment of CityU since its inception in 2009. He has written a book titled “Building Sustainability in East Asia”, published by Wiley in 2017, to promote the importance of sustainability to the industry and public. Recently, he has been awarded as the Sustainability Leader of the Year in the HKMA Hong Kong Sustainability Award 2018/19.

Fee

ASHRAE Member	Supporting organization	Standard
\$150 each lesson	\$180 each lesson	\$200 each lesson
\$500 for 4 lessons	\$600 for 4 lessons	\$700 for 4 lessons

Remark

1.5-hours CPD certificate will be provided each lesson

Registration

Number of participants is limited and prior registration is required. For registration, please complete Registration Form in the following link: <https://forms.gle/T3SinE9XRsqJmo6s5>.

After online registration, please make a crossed cheque payable to "ASHRAE Hong Kong Chapter" and post to our mailbox at "P.O. Box 35612, King's Road Post Office, North Point, Hong Kong". At the back of cheque, please kindly state “ASHRAE Hong Kong Chapter Webinar - Net Zero Building Series”, Name of Participant, Name of Company / Organization and Contact Number.

The deadline of application is on 4 Nov 2020. Successful members will be notified by e-mail on or before 6 Nov 2020. If the applicants have not received the confirmation e-mail on or before 6 Nov 2020, their applications will be regarded as not successful.

Enquiry

For enquiry, please call Taylor Chow at 6014 2397 or email to taylor.cf.chow@hkjc.org.hk.

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