

ASHRAE Distinguished Lecturer Series

**Technical Seminar on Sustainable Design of Atrium Buildings
and Natural Ventilation + Hot Climate Design Guide**

Date : 24 February 2020 (Monday)

Time : 6:30pm – 9:30pm (Registration will start at 6:00pm)

Venue : Room 202E, 2/F Jockey Club Environmental Building, 77 Tat Chee Avenue, Kowloon Tong, Hong Kong

Background:

Design of Atrium buildings and natural ventilation has different kinds of HVAC and sustainability concerns, such as indoor built environment, building integration, utilization of daylight, fire management, energy efficiency, etc. This technical seminar is to cover these main issues of atrium buildings and natural ventilation designs. In addition, new hot climate design guide is also presented to introduce how integrated design solutions can provide comfort at low cost to reduce energy consumption as well as to meet carbon emission targets.

Topic 1:

Design of Atrium Buildings

A presentation which covers all aspects of atrium design from HVAC and passive solar design to daylight, fire and smoke control, innovative glazing systems and shading, environment for planting and landscape and energy consumption and potential energy savings. The presentation covers a wide range of atrium types from commercial offices to retail. Leisure, hotels, and mixed use. The potential for hybrid designs using passive solar linked to mechanical HVAC is highlighted and exemplar solutions explained.

Topic 2:

Natural Ventilation

Natural Ventilation is used in many locations to provide fresh air for ventilation and cooling, avoiding the use of mechanical systems which saves both capital cost and running cost. In some cases there is the added aesthetic advantage of direct user control by, for example, opening a window which can be a pleasant and uplifting feeling.

This presentation provides an overview of natural ventilation starting with a review of early building ventilation – how were buildings ventilated before HVAC – to modern solutions which range from the use of windows (simple NV) to the use of automatically controlled inlets, plenums, integral chimney and shafts, atrium spaces and roof outlets, turrets and exhausts (Advanced NV).

It covers design strategies, ventilation systems, components and their integration into building fabric. Also design Supporting organizations (TBC):

calculations, modelling techniques and exemplar projects including 'full' Nat Vent and 'hybrid' schemes and presents example projects.

Topic 3:

Hot Climate Design Guide

The presentation discusses this new guide which complements the existing 'Hot and Humid' guide by focusing on 'Hot and Dry' and 'Hot and Temperate' climates and considers how integrated design solutions can provide comfort at low cost. The guide also addresses the challenges facing building service engineers who must develop design solutions which are affordable to construct, affordable to operate, reduce energy consumption and meet carbon emission targets which are now being set by Governments around the world to address climate change issues.

Speaker:

Frank Mills



Frank Mills has spent the past 40 years applying best practice engineering to develop innovative and leading edge solutions to new and existing building projects ranging from individual buildings to multiple, neighbourhood and city wide developments. Frank received his mechanical engineering degree from the University of Surrey, Guildford, England, where he completed a four year 'thick' sandwich degree course which included a full year's industrial experience at the UK Atomic Energy Authority Labs and Workshops at Risley, UK. He received a Postgraduate Diploma (Masters) at Southbank University in Environmental Engineering where his studies covered all aspects of building services engineering and energy use in buildings and integrated architectural/engineering design.

Frank served as a Graduate Apprentice with Haden Carrier on their 3 year graduate training programme which involved work experience in all aspects from site installation, to design, contracting, estimating, commissioning, testing and maintenance and also spent periods at manufacturers works, in architect's offices and a period in a research laboratory developing in-duct sound measurement equipment. He was assistant project manager with the Haden Carrier delivery team for the engineering services at St. George's Hospital, Tooting's new build Hospital, after which he moved to the UK Governments' Department of the Environment where he was a main grade engineer working on projects to improve the efficiency and reliability across the Government estate ranging from offices, military bases, laboratories, naval dockyards to airfields across the UK and overseas.

Frank moved into new project design when joining Building Design Partnership (BDP), a multi-disciplinary design practice and provided innovative design input and team leadership at Associate grade across a range of projects ranging from offices, residential care homes, schools, Universities and Hospitals to new town centre developments (such as Ealing Broadway, London, Carlisle, Cumbria). Whilst working at BDP he also acted as an in-house energy consultant to project teams across the company as well as undertaking a number of research and development studies funded by the Dept. of Energy and other clients seeking to develop new, innovative and successful solutions to energy efficient design. These included passive solar design as well as technical studies and the early application (and development) of energy simulation software to create complex energy models which could be analysed and used to identify optimum solutions. He also led design work that used physical modelling and other techniques to develop concepts to reality.

Frank was project manager for the UK project to develop energy efficiency in Public Houses, Restaurants and Hotels which used a representative sample of 68 premises to produce example case studies and design guides which could be applied to the other 100,000 plus premises across the country. He also led the technical input to the Atrium Buildings Study and the new British Supporting organizations (TBC):

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Hong Kong Association of Energy Engineers

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INSTITUTION OF ENGINEERS
香港工程師學會
Building Services Division
樓宇服務分部

IFMA Hong Kong Chapter
International Facility Management Association



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Standard to cover Fire Safety in Atrium buildings. Frank established Environmental Design Consultants in 1991 to provide a new type of engineering design practice which focussed onto energy and environmental issues and developed innovative, cost effective, practical solutions, and continued through this period to introduce new ideas and techniques into construction to achieve successful innovative solutions. EDC merged with SKM (now Jacobs) in 2008 and Frank was able to expand his approach to cover Australia, Singapore, Middle East and Europe.

Frank is now Principal of Frank Mills Consulting Ltd and provides high level strategic design advice, technical reports and expert witness to clients including hospitals, government bodies, developers and building owners. Frank has been an ASHRAE member since 1971 and has been active on technical and standards committees and on Councils. Whilst on Handbook he has promoted the Board initiative to update all Handbooks with more digital content for the Online Handbook, more worked examples, case studies and material that can support project engineers who wish to apply new, innovative and modern design solutions. He is President of the new (2017 formed) ASHRAE UK Northern section. He was chair of the new ASHRAE Cold Climate Design Guide and member/past chair of ASHRAE Publications committee. He is chair of the guide for Hot Climates (due for publication in 2018). He has presented ASHRAE ALI short courses on Natural Ventilation, Design of zero energy buildings and Healthcare HVAC and presented papers on Atrium design, Fire engineering, Education buildings, best practice engineering and sustainable development. Recent projects include Media City – excellent rated sustainable design of regeneration project completed in 2008, occupying 200 acres of former dockland in Salford Quays, Manchester - Specialist consultant design for sustainability and energy including Site Wide Tri-Generation system. Sustainability consultant for Trafford Quays development. 3000 homes and mixed use 'Eco'city' development which is aiming to achieve 'Outstanding BREEAM Communities and be first major UK 'smart city' and a Zero Carbon City. Similarly Liverpool Waters and Wirral Waters developments.

Frank is current Chair of CIBSE Preston Centre, Vice Chair of CIBSE North West Region and a member of CIBSE Council. He is a Member of the UK Department of Health Engineering Knowledge Group and Past Chair of CIBSE Healthcare Group. He is chair of the Construction Division of the Institution of Mechanical Engineers.

Language: English

Fee: HK\$ 300 [Member of ASHRAE Hong Kong Chapter]
 HK\$ 350 [Member/Staff of Supporting Organizations]
 HK\$ 400 [Standard]

Remark: 3-hour CPD certificate will be provided.

Registration & Enquiry:

Number of participants is limited and prior registration is required. For registration, please complete Registration Form in the following link: <https://forms.gle/UmUmcJdgvRPzcEoc6>. The deadline of application is on 18 February 2020.

After online registration, please make a crossed cheque payable to "ASHRAE Hong Kong Chapter" and post to our mail box at "P.O. Box 35612, King's Road Post Office, North Point, Hong Kong". At the back of cheque, please kindly state "ASHRAE DL Series – Frank Mills", Name of Participant, Name of Company / Organization and Contact Number.

Supporting organizations (TBC):





ASHRAE Hong Kong Chapter

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Successful members will be notified by e-mail on or before 19 February 2020, 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 19 February 2020, their applications will be regarded as not successful.

If typhoon signal no. 8 or black rainstorm signal is in force and still hoisted after 5:00 pm on that date, the seminar would be cancelled without further notification.

For enquiry, please contact Mr. Jason Kwok at email to jason.ashrae@gmail.com.

Supporting organizations (TBC):

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