

ASHRAE Hong Kong Chapter

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美國供暖製冷及空調工程師學會 香港分會

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電郵：info@ashrae.org.hk 網站：http://ashrae.org.hk 傳真：(852) 30198334

Technical Workshop

Title: **Fundamentals of Water System Design**

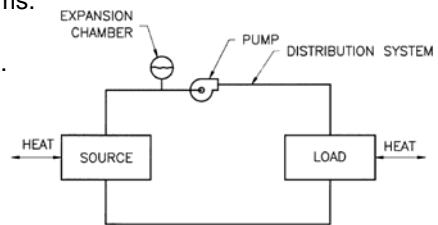
Date/Time: 17, 18, 24 and 25 January 2007 (Wed and Thu), 6:30 pm – 9:30 pm

Venue: DE302 (Wed, 17 and 24 Jan) and DE307 (Thu, 18 and 25 Jan), PolyU, Hung Hom, Kowloon

Description: **What You Will Learn**

You will develop an understanding of the basic concepts of hydronic system operation and design including piping systems, pipe materials and fittings, centrifugal pumps, terminal units, expansion tanks and water chillers. After completing the workshop, you should know:

- The components of closed and open hydronic systems.
- The basic concepts of piping system design.
- The different types of pipe used in hydronic systems.
- How centrifugal pumps operate.
- How to match pumps to systems.
- What variables are involved in terminal unit control.
- How to optimize water chiller operation.



Course Content

Water System Design Components -- Introductory concepts, basic system components, heat transfer in hydronic systems and load systems.

Piping System Design -- Basic considerations, design philosophy, sizing piping, and flow rate measurement.

Pipe Materials and Fittings -- Pipe materials, corrosion, valves and fittings, backflow-prevention devices, and pipe selection.

Centrifugal Pumps -- Types of pumps, pump selection and system design considerations.

Terminal Unit Performance and Control -- Types of terminals, performance and control, system control characteristics, and system control configurations.

Expansion Tanks and Air Elimination -- Open and closed water systems, hydronic accessories, and sizing expansion tanks.

Piping System Development -- Piping system design, direct return analysis, primary-secondary analysis, types of pumps and valves, primary-secondary application study, antifreeze solutions for low temperature applications, and pumping design factors.

Matching Pumps to Systems -- Matching the pump to the system, parallel pumping, series pumping, standby pumps, trimming pump impellers, two-speed pumping, variable speed pumping and source distribution pumping.

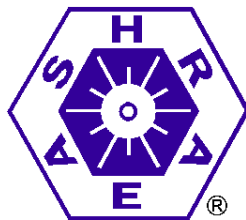
Water Chillers and Load Control - Basic water chiller components, refrigeration cycle, heat transfer chiller, refrigeration power, chiller types and control, chiller piping arrangements, chiller energy performance and thermal storage.

Who Should Attend

This workshop is recommended for:

- recent engineering graduates working in the HVAC&R industry and related fields;
- experienced engineers entered the HVAC&R industry from other engineering fields; or
- other professionals who want to increase their knowledge of water system design.

A study guide "*Fundamentals of Water System Design*" from ASHRAE, list price at US\$150, will be given to the participants (included in the fee). Certificate of attendance will be issued to each participant at the end of the workshop.



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Speakers:

Dr. Sam C. M. Hui

PhD, BEng(Hons), CEng, CEM, MCIBSE, MHKIE, MASHRAE, MIESNA, LifeMAEE, Assoc AIA



Dr. Hui is a Teaching Consultant and an Honorary Assistant Professor of the Department of Mechanical Engineering, The University of Hong Kong. He has a strong technical background in the study of energy efficiency in buildings and has carried out teaching, research and consultancy studies in Hong Kong, Mainland China, Germany, Japan, USA and Thailand. He has published more than 50 technical articles in academic/professional journals and conferences and is active in promoting interdisciplinary building energy and environmental research studies that integrate architectural design and sustainable building technology. He is currently the President of the ASHRAE Hong Kong Chapter.

Dr. Philip C. H. Yu

PhD, RPE, CEng, MASHRAE, MHKIE, MIMechE



Dr. Yu is the Environmental & Applications Engineering Director of TRANE and has over 17 years of professional experience in the HVAC field in Asia Pacific. He graduated from the Department of Building Services Engineering, The Hong Kong Polytechnic University in 1988 and obtained his PhD from the same department in 2001. He also received a second degree from the University of London in 1995. He has acted as the President of ASHRAE Hong Kong Chapter in 1996-97 and served in various positions of ASHRAE Region XIII and the Hong Kong Chapter. His areas of interest include building energy, chiller technology, refrigerant piping design, and applications of various air-conditioning systems such as low-temp-low-flow, ice storage, geothermal heat pump, etc. He has published 10 technical papers, 2 applications guides and over 10 engineering articles.

Language: English (supplemented with Cantonese)

Venue Department of Building Services Engineering, The Hong Kong Polytechnic University

Support:

Application: Open to all interested persons, but priority will be given to ASHRAE members. Please complete and return the application form by e-mail/post and send the crossed cheque via post before **1 January 2007**. Number of participants is limited to 35. Places will be allocated on a first-come-first-served basis. Successful applicants will be informed individually by e-mail / phone.

Application Form: Technical Workshop on Fundamentals of Water System Design

Name (Dr/Mr/Mrs/Ms/Ir) : _____

ASHRAE Membership : Class: _____ No.: _____

Company/School Name : _____

Contact Address : _____

E-mail Address : (Required) _____

Contact Numbers : (Tel/Mobile) _____ (Fax) _____

Course Fee (Member of ASHRAE) - \$1,200 x _____ person (cheque no.: _____)

Course Fee (Student Member) - \$ 600 x _____ person (cheque no.: _____)

Course Fee (Non-Member) - \$1,600 x _____ person (cheque no.: _____)

Enquiries: For inquiries, please contact us at email info@ashrae.org.hk

Registration: The application form and crossed cheque with appropriate payment in Hong Kong dollars payable to "ASHRAE Hong Kong Chapter" shall be sent to **P.O. Box 35612, King's Road Post Office, North Point, Hong Kong**, before **1 January 2007**. The applicant may e-mail the above information to apply@ashrae.org.hk for place reservation and then followed by cheque payment via mail.