



**ASHRAE
MALAYSIA
CHAPTER**



Supported by
BUILDING SERVICES TECHNICAL DIVISION,
THE INSTITUTION OF ENGINEERS, MALAYSIA

**ASHRAE Malaysia Chapter announces a one day seminar
on Indoor Air Quality (IAQ) & Energy Savings Design by
ASHRAE Distinguished Lecturer, USA & Others**

**BEM Approved
Hours: 8
Ref No: IEM08/HQ-068/C**

FRIDAY, 25TH APRIL 2008

TIME	TOPICS	PAPER PRESENTED BY
8:30am – 9:00am	Registration and Breakfast	
9:00am – 10:00am	Improving Building IAQ Reduces HVAC Energy Cost	Christopher O. Muller
10:00am – 10:45am	Achieving Acceptable IAQ with Unitary Air Conditioning Units	Ir.Yeo Boon Kah
10:45am – 11:00am	Break	
11:00am – 12:00am	Applying the IAQ Procedure of ASHRAE 62.1-2007 at K-12 Educational Facilities	Christopher O. Muller
12:00am – 12:45pm	A Case Study on IAQ in a District Hospital	Ir. Philip Khew SL
12:45pm – 2:15pm	Lunch Break	
2:15pm – 3:15pm	Carbon Dioxide Monitoring: IAQ Indicator or just Another “Boy Who Cried Wolf?”	Christopher O. Muller
3:15pm – 3:30pm	Tea Break	
3:30pm – 4:30pm	Energy Efficient Features in Pusat Tenaga Malaysia (PTM) Building	Steve A. Lojuntin & Muhd. Fendi Mustafa
4:30pm – 5:30pm	Achieving your Indoor Air Quality Goals: Which Filtration System Works Best?	Christopher O. Muller

Christopher O. Muller, Atlanta, Georgia, USA.

Christopher O. Muller is the Technical Director at Purafil, Inc. of Doraville, GA (USA), a manufacturer of gas-phase air filtration media, filters, equipment, and air monitoring instrumentation. He is responsible for technical support services and various research and development functions. Prior to joining Purafil, he worked in the chemical processing, pharmaceutical manufacturing, and environmental industries.

Mr. Muller has written and spoken extensively on the subject of indoor air quality and the application/use of gas-phase air filtration and counts four handbooks and over 50 papers and articles to his credit. Standard 62.1 User’s Manual and authored the chapters on “Gaseous Contaminants” in the *NAFA Guide to Air Filtration* and on “Airborne Molecular Contamination” in McGraw-Hill’s *Semiconductor Manufacturing Handbook*. He has consulted on the preparation of Dutch and Italian governmental standards for air quality in museums and has worked with many conservation groups in the U.S. and abroad to develop and implement environmental control strategies for airborne contaminants.

He serves on SSPC 62.1 – Ventilation for Acceptable Indoor Air Quality and TC 2.3 - Gaseous Contaminant Removal Equipment. He is also a member of ISIAQ’s Task Force on IAQ and climate in cultural and heritage collections, A&WMA’s IAQ Committee, ASTM committees on Indoor Air and Activated Carbon, and ISA’s committee on Environmental Conditions for Process Measurement and Control Systems. He is a senior member of the IEST and contributes to their working groups on cleanroom environments and design considerations for AMC filtration systems. He serves on the Yield Enhancement Technical Working Group for the 2005 update to the International Technology Roadmap for Semiconductors (ITRS).

Mr. Muller received his B.S. in Applied Biology with a minor in Chemistry from Georgia Tech and has done postgraduate work in Industrial Engineering at Southern Polytechnic State University.

DISTINGUISHED LECTURER TOPICS – By Christopher O. Muller

1) Improving Building IAQ Reduces HVAC Energy Cost

An important challenge facing today's engineers is how to achieve acceptable IAQ while minimizing a building's energy consumption. Historically, IAQ has suffered at the expense of energy conservation. However, in today's indoor air conscious environment, with its serious economic ramifications, this one-sided trade-off is no longer acceptable. Fortunately, ventilation standards, mechanical codes, and air cleaning technologies have evolved to the point that the engineer has a viable means of providing a healthy, comfortable indoor air environment while continuing to conserve energy. Options of applying filtration for code compliance and energy conservation will be discussed.

2) Applying the IAQ Procedure of ASHRAE 62.1-2007 at K-12 Educational Facilities

Mechanical Engineers use ASHRAE Standard 62.1-2007 to determine minimum building ventilation requirements and multiple mechanical codes refer to it as the basis for ventilation calculations. Engineers use the Indoor Air Quality Procedure (IAQP) less frequently, partly because of its perceived difficulty. This presentation provides information about the requirements of the IAQP, incentives to apply the IAQP, and experiences of one school district in using the IAQP.

3) Carbon Dioxide Monitoring: IAQ Indicator or Just Another “Boy Who Cried Wolf?”

Carbon dioxide (CO₂) has been widely used as a surrogate indicator of IAQ and it has even been offered by ASHRAE that comfort criteria are likely to be satisfied when the concentration is less than 700 ppm above than ambient levels. However, the use of CO₂ as the sole indicator of IAQ has come under increasing criticism in recent years. While CO₂ measurements can indicate the ventilation effectiveness of occupied buildings, they fail to give adequate information to properly control IAQ. CO₂ is not typically considered a “contaminant of concern” with regards to occupant comfort and health and because of this, the carbon dioxide levels in indoor air should be used only as one part in determining the effectiveness of a ventilation strategy in compliance with IAQ standards and guidelines. Because there are hundreds of chemical contaminants that may be present in the indoor environment one cannot assume that controlling one will control all. This talk will discuss CO₂ as it relates to IAQ and provide guidance on choosing more appropriate contaminants of concern for use as IAQ indicators

4) Achieving our Indoor Air Quality Goals: Which Filtration System Works Best?

One cannot discuss the topic of indoor air quality without giving some attention to the role that energy conservation measures may play. Often the quest to reduce energy costs by “tightening” buildings and relying on less outside air has been pointed to as the main cause of many IAQ problems. One economical and effective solution has been the use of air filtration. This mitigation measure can provide results similar to, and in many cases better than, those expected through ventilation, i.e. the reduction of airborne contaminant levels. Air filtration can be applied for the reduction of particulate matter, gaseous contaminants, or both. It is the use of air filtration systems for the control of gaseous contaminants that will be the focus of this discussion.

BY OTHER MALAYSIAN SPEAKERS

1) Energy Efficient Features in Pusat Tenaga Malaysia (PTM) Building

The required energy performance standard of the PTM Building is for a design that incorporates energy efficiency measures in combination with renewable energy technologies in a balanced solution. The building was designed to be a **ZEO Building, a Zero Energy Office Building**. This means that the building will not consume more electricity than what can be produced in the building using renewable energy sources. The PTM **ZEO Building** is a first of its kind in South East Asia region. The presentation will cover both the passive and active EE design features of the building.

Steve Anthony Lojuntin received an honours degree in Mechanical Engineering from University of Malaya in 1997 and is a Certified Energy Manager endorsed by Energy Commission (formerly known as Department of Electricity and Gas Supply Malaysia). He is a Member of the Malaysia Energy Professional Association (MEPA) & Institut Tenaga Malaysia (INSTEM).

In 2002 – 2006 he had opportunity working fulltime at the Ministry of Energy, Water & Communications (KTAK) office as the Local Technical Advisor (Energy Design Consultant) with DANIDA (Danish International Development Assistance) on the KTAK's Low Energy Office Building project in Putrajaya. He is also involved in the development of the new Pusat Tenaga Malaysia Building Zero Energy Office (PTM-ZEO building) in Bandar Baru Bangi and also assists in the Public Works Department (JKR) on the design improvement of various public buildings in Malaysia.

Currently, he is appointed by Pusat Tenaga Malaysia (PTM) as Energy Management, Operation & Maintenance Consultant to assist PTM on the energy management, operation & maintenance of their new HQ, PTM Zero Energy Office (ZEO) in Bangi.

Muhammad Fendi Mustafa is the Project Officer during the preliminary stage, design and construction of the PTM new office building. He holds a Bachelor of Science (Honours) Degree in Industrial Physics from Universiti Teknologi Malaysia (UTM) and currently involve in the operation and maintenance of the building.

2) **Achieving Acceptable Indoor Air Quality with Unitary Air Conditioning Units**

The use of unitary air conditioning units is expanding rapidly throughout the world, especially in hot and humid climates. Such units comprise predominantly of direct expansion refrigerant systems with indoor and outdoor units connected with refrigerant piping, commonly termed as split system. Many establishments including hotels, offices, restaurants and schools are solely relying on such units to provide cooling. Achieving acceptable indoor air quality with unitary air conditioning units poses a major challenge to the specifiers, the manufacturers and to the end-users of such systems. This is because the very simplicity and relatively low cost of such systems does not allow for elaborate fresh air intake and exhaust systems that are commonly part of large air conditioning systems employing air handling units with ducting and diffusers. Nonetheless the continued use of unitary air conditioning units globally necessitates that measures be taken to ensure that acceptable indoor air quality can be achieved and such measures and recommendations will be presented.

Ir Yeo Boon Kah is a registered Professional Engineer with the Board of Engineers, Malaysia and holds a Bachelor of Engineering (Honours) Degree in Engineering (Mechanical) from the University of Malaya and a Graduate Diploma in Business Administration from Swinburne University of Technology, Victoria, Australia. He has more than 20 years experience both local and overseas in mechanical engineering services for infrastructure and building development with involvement in technical sales, consultancy and project management. Presently he is a Director of SSP (E&M) Sdn Bhd a leading mechanical and electrical engineering consultant. Ir Yeo is active in the engineering fraternity and is currently a Committee Member of the Society of IEAust Malaysia and Vice-President of the Malaysia Chapter of ASHRAE for Session 2006-07. He served as Chairman of the IEM Building Services Technical Division for session 2002-2004 and IEM Council Member for session 2004-2007.

3) **A Case Study on Indoor Air Quality In a District Hospital**

With the vision of striving to become one of the industrialized nations, major development is seen across the major cities in the country. 'Uncontrolled' development has induced many unforeseen problem to the local community as well as the Government. One of the concerns in hospital faced by health care profession in many developing countries is the issue of Indoor Air Quality (IAQ). There is mounting evidence of IAQ exposure leading to excessive morbidity and mortality (WHO). Many extensive studies have been conducted in the field yet there is many IAQ issues remain unsolved. The objective of the case study is to present the finding of the indoor air quality in a district hospital in tropical climate. The study also presents the latest IAQ legislation/regulation in Asia and some discussion on the IAQ problem faced by the hospital and other premises.

Ir. Philip Khew SL is a professional engineer graduated from University Malaya. He has wide exposure of working experience dealing with design, construction and commission of engineering building in health care services. In the current assignment, he is involved with related study on Indoor Air Quality of some hospitals. He is very familiar with the current practice of IAQ and regulations on different buildings.

REGISTRATION FORM

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NO.	NAME(S)	RECOMMENDED BY	GRADE	FEE (S)

Registration Fee (Inclusive of breakfast, lunch, afternoon tea and notes)	Per Person
Member (MASHRAE/ IEM)	RM280.00
Recommendation by Member	RM300.00
Non Member	RM330.00

VENUE : The Institution of Engineers, Malaysia
 Bangunan Ingenieur, Lots 60 & 62
 Jalan 52/4, PO Box 223 (Jalan Sultan)
 46720 Petaling Jaya
 Tel: 7968 4001/2 Fax:7957 7678

DATE : 25th April, 2008

TIME : REGISTRATION & BREAKFAST
 8:15am on 25th April 2008

Enclosed herewith is a crossed cheque No. _____ for the sum of RM _____ issued in favour of **"Malaysian Chapter of ASHRAE"**. (Course fee must be sent with registration form in advance. Delegates may be refused admission if payment is not received prior to the event.)

I/We understand that the fee is not refundable if I/We withdraw after my/our application is/are accepted by MASHRAE but substitution of participants will be allowed. If I/We fail to attend the course, I/We will settle the registration fee in full.

Contact Person : Designation :

Name of Organization :

Address :

Tel: (O) (H/P) (Fax) (E-mail)

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Date

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Signature