

# Training Course on Energy Audit for Building Energy Efficiency

18, 23, 25 & 30 August 2011

## ORGANISER<sup>1</sup>:



## SUPPORTING ORGANIZATION:



### Course Objectives

The main purpose of this course is to provide the participants with the fundamental principles, skills and guidelines needed to carry out effective energy audits in accordance with the Building Energy Efficiency Ordinance. After taking the course, the participants would appreciate the approach to identify energy saving measures and perform quantitative analysis to predict the energy savings, environmental and economic benefits. Moreover, the participants should be able to measure and verify the performance of implemented energy saving measures.

### Key Speakers

- **Ir KC Mak**, Chief Engineer, Electrical and Mechanical Services Department, HKSAR Government
- **Ir Joseph Chan**, Past Chairman, Energy Institute (Hong Kong Branch)
- **Mr Richard Lee**, Senior Consultant, Hong Kong Productivity Council
- **Ir Dr Edward Lo**, Associate Professor, Department of Electrical Engineering, The Hong Kong Polytechnic University
- **Ir Dr Albert So**, Director, Asian Institute of Built Environment
- **Ir Dr Michael KH Leung**, Associate Professor, School of Energy and Environment, City University of Hong Kong

### General Information

<b>Date &amp; Time:</b>	18 Aug 2011 (Thur), 23 Aug (Tue), 25 Aug (Thur) & 30 Aug (Tue) 6:30 pm – 9:30 pm	
<b>Venue:</b>	HKPC Building, 78 Tat Chee Avenue, Kowloon Tong	
<b>Medium of Instruction:</b>	English	
<b>Target:</b>	Practicing engineers, energy managers, energy auditors, environmental officers, building services managers, plant managers, etc.	
<b>Course Fee:</b>	HK\$2,800 per person (member of EI) HK\$3,000 per person (member of Supporting Organizations) HK\$3,500 per person (non-member)	(includes training material and tea breaks)
<b>Registration:</b>	Please fax the registration form to (852) 8143 0048 for reservation and mail a copy of the registration form with a cheque (payable to “ <b>Energy Institute (Hong Kong Branch)</b> ”) to the Event Manager, Ms April Li, c/o Asian Gateway Consultants Limited, P.O. Box No 44347, Shau Kei Wan Post Office, Hong Kong.	
	Enrolment will only be confirmed upon receipt of course fee.	

<sup>1</sup> The Energy Institute Hong Kong (Branch) is Incorporated in Hong Kong with limited liabilities

**Registration Deadline:** 1 August 2011

**CPD:** CPD certificate will be issued.

**Enquiry:** Ms Li [Tel: (852) 2967 8855; email: aprilagc@gmail.com]

## Course Contents

### Lecture 1 (18 August 2011, Thursday)

#### Introduction to Buildings Energy Efficiency Ordinance (Ir KC Mak)

- Buildings Energy Efficiency (Fees) Regulation
- Building Energy Code (BEC)
- Qualifications and duties of Registered Energy Assessors (REAs)

#### Energy Audit (Ir Joseph Chan)

- Management procedures for energy audit: walk-through inspection, detailed energy audit and identification of energy management opportunities (EMOs).
- Advanced energy management techniques commonly considered to improve the energy performance.

#### Energy Saving Measurement and Verification (M&V) Methods (Mr Richard Lee)

- International Performance Measurement & Verification Protocol; instrumentation and measurement techniques; baseline adjustment; error and uncertainty analysis; third-party verification.

#### Economic Analysis and Environmental Impact Assessment (Mr Richard Lee)

- Discussion of common economic analysis methods used to determine the cost effectiveness of energy efficiency measures.
- Life-Cycle carbon emission analysis for energy efficiency measures.

### Lecture 2 (23 August 2011, Tuesday)

#### Electrical Systems and Power Quality Improvement (Ir Dr Edward Lo)

- Energy efficiency for electrical distribution systems, including transformers and wires.
- Procedures of measuring and improving power quality for buildings due to low power factor and/or high harmonics (typically caused by electronic equipment).
- Experimental tests suitable for evaluating energy use of electrical systems and for identifying any power quality problems.
- Calculation of energy and cost savings due to improvement in electrical systems performance and power quality.

### Lecture 3 (25 August 2011, Thursday)

#### Lift and Escalator (Ir Dr Albert So)

- Maximum allowable electrical power requirements.
- Energy consumption measurements of lift and escalator Systems.
- Total harmonic distortion and power factor of motor drive systems.
- Energy efficient designs.

#### Lighting Systems (TBC)

- Photometry and light measurements.
- Incandescent lamps, fluorescent lamps, electromagnetic ballasts, high-frequency electronic ballasts, light-emitting diode (LED).

### Lecture 4 (30 August 2011, Tuesday)

#### Heating Ventilating and Air-Conditioning (HVAC) (Ir Dr Michael KH Leung)

- Measurements and evaluation of energy efficiency of chillers, water-side systems and air-side systems; coefficient of performance (COP) analysis.
- Provision of thermal comfort and good indoor air quality in an energy-efficient manner.
- Qualitative analyses of effective energy management opportunities for HVAC systems, including temperature settings for chilled water supply and indoor air, building envelopes meeting the overall thermal transfer value (OTTV) requirements, evaporative cooled condensers, variable-speed pumps, automatic cleaning devices for seawater cooled condensers, Fresh air intake control and more.

#### Water Heating Systems (Ir Dr Michael KH Leung)

- Evaluation of fuel-fired water heater and energy efficiency of condensing water heater.
- Heat pump water heater and integrated heat pump for cogeneration (water heating and air-conditioning).

#### Commercial Cooking (Ir Dr Michael KH Leung)

- Evaluation of gas cookers, electric cookers, induction cookers.
- Energy saving by innovative heat-pump steamers.

*\* Contents are subject to change without further notice*

## Registration Form

### TRAINING COURSE ON ENERGY AUDIT AND ENERGY CONSERVATION 18, 23, 25 & 30 August 2011

EI member at HK\$2,800 per person

Member of Supporting Organizations  
at HK\$3,000 per person

HKAEE  SOE

Membership #:: \_\_\_\_\_

Membership #:: \_\_\_\_\_

Non-member at HK\$3,500 per person

(Please tick the appropriate box)

Name (Mr/Ms)

\_\_\_\_\_ (name for issuing CPD Certificate)

Position

\_\_\_\_\_

Organization

\_\_\_\_\_

Mailing Address

\_\_\_\_\_

\_\_\_\_\_

E-mail  
(MUST PROVIDE) \_\_\_\_\_

Tel \_\_\_\_\_

**TYPHOON:** Classes in the evening will be cancelled if a typhoon signal No. 8 or above, or a black rainstorm warning, is still hoisted after 2:00 pm.

#### Important

1. All cheques should be crossed and made payable to **Energy Institute (Hong Kong Branch)** and are subject to bank clearance.
2. Enrolment fee is not refundable unless the Organiser is notified in writing of your withdrawal at least 7 working days before the course commences. A handling charge of HK\$200 will also be levied.
3. An applicant may, subject to approval from the Organiser, nominate a substitute to attend the course on his/her behalf.
4. The Organiser has adopted a Personal Data (Privacy) Policy. Information about the policy can be collected from the Organiser. You may also contact our Personal Data Controlling Officer for further details..

+++++

If you do NOT wish to receive any of our promotional materials in future, please complete the following details and fax this page to 8143 0048. 如閣下不想再收到我們的宣傳刊物，請填妥下列資料後，傳真至8143 0048.

Name 姓名 \_\_\_\_\_ Email Address 電郵地址 \_\_\_\_\_

Tel # 電話號碼 \_\_\_\_\_ Fax # 傳真號碼 \_\_\_\_\_

Organisation 機構名稱 \_\_\_\_\_