

## Training Course on Energy Audit for Building Energy Efficiency 9, 11, 16 & 18 December 2020

ORGANIZER<sup>1</sup>



14<sup>th</sup> Intake

SUPPORTING ORGANIZATIONS



*Remark: This activity is regarded as General CPD Event for BEAM Pro.*

### 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.

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

## Key Speakers

- **Ir Prof Michael KH Leung**, Professor, School of Energy and Environment, City University of Hong Kong
- **Ir Gary Chiang**, Past Chairman, Energy Institute Hong Kong, Smart Home & eCommerce Manager, Residential Customer Experience, CLP Power Hong Kong Limited
- **Ir Dr Albert So**, Director, Asian Institute of Built Environment
- **Ir Dr TM Chung**, Past Chairman, CIE (Hong Kong) / Past Chair, CIBSE Hong Kong Region
- **Ir Dr Edward Lo**, Adjunct Associate Professor, Department of Electrical Engineering, The Hong Kong Polytechnic University

## General Information

<b>Date &amp; Time:</b>	9, 11, 16 & 18 December 2020 (Wednesdays & Fridays); 6:30 pm – 9:45 pm	
<b>Mean:</b>	Webinar	
<b>Medium of Instruction:</b>	English / Cantonese	
<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
<b>Training Material:</b>	Participants are <u>required</u> to collect their training material from HKPC in Kowloon Tong	
<b>Registration:</b>	 <p>Please register via online system <a href="https://bit.ly/2S7WgOu">https://bit.ly/2S7WgOu</a> (copy this link and paste on the browser if it cannot be linked directly) for seat reservation.</p> <p>We will advise you of the payment details after receiving your registration.</p> <p><i>Note: Enrolment will only be confirmed upon receipt of course fee.</i></p>	
<b>Registration Deadline:</b>	27 November 2020	
<b>CPD:</b>	CPD certificate with will be issued to all participants by the Organizer - 12 CPD hours will be granted for attending the course - 9 CPD hours can be claimed by Registered RCx Practitioners / RCx Professionals for HKGBC Training and Registration Scheme This activity is regarded as General CPD Event for BEAM Pro.	
<b>Enquiry:</b>	Ms Li [Tel: (852) 2967 8855; email: <a href="mailto:aprilagc@gmail.com">aprilagc@gmail.com</a> ]	

## Course Contents

### Lecture 1 [9 December 2020 (Wednesday)]

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

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

### Lecture 2 [11 December 2020 (Friday)]

#### Introduction to the Buildings Energy Efficiency Ordinance (BEEO) (TBC)

- Legislative Framework
- Requirements of Energy Audit
- Qualification and Duties of Registered Energy Assessors (REAs)

#### Energy Audit (Ir Gary Chiang)

- Management procedures for energy audit: walk-through inspection, detailed energy audit and identification of energy management opportunities (EMOs).

#### Energy Saving Measurement and Verification (M&V) Methods (Ir Gary Chiang)

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

#### Economic Analysis and Environmental Impact Assessment (Ir Gary Chiang)

- 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 3 [16 December 2020 (Wednesday)]

#### 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 (Ir Dr TM Chung)

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

### Lecture 4 [18 December 2020 (Friday)]

#### 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.

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