

**9 x Lessons; Duration: 1.5 hours per Lesson**

**Online Training – 8.00 pm to 9.30 pm**

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8	Lesson 9
20 May	27 May	3 June	10 June	17 June	24 June	1 July	8 July	15 July

**Mode of Delivery:** Online via Zoom Meeting

**Registration Link:** <https://forms.gle/WGCq3eqYVXGkDje3A>

**Limit to 40 pax per run**

**CPD:** PDU to be confirmed

**Fee:** \$120 nett per pax

### COURSE OBJECTIVES

1. To provide training programs (on-line) for graduates and practicing engineers in the ACMV industry who need to either extend or update their knowledge on a particular subject(s) in accordance with current developments in the industry.
2. The training programs are designed to cater for the needs of young graduates, practicing technicians and engineers to provide a better understanding of certain fundamentals as listed in this series of courses.
3. To provide joint training programs with recognised engineering and/or training institutions in the Asia Pacific region.
4. The course is designed to be a flexible, to allow the potential participants to choose either to sign up for the entire series of lessons in the 'Fundamentals' module or select the relevant subject(s) of interest as required.
5. The contents for each lesson is given below as a guide to show what can be expected in the training under each subject.
6. The course will be conducted sequentially in the order as shown below on a once a week basis. In short, since there are nine lessons under this module, it will be spread out over nine weeks in order to complete the entire module.
7. The presentation for each lesson is expected to take 1 hour and 30 minutes including tests and assignments to be completed by the participants and assessed by the trainer. Each participant is also expected to complete five test questions and at least two discussions of their choice, which they can select from a list of five discussion questions.

## COURSE CONTENTS

### Fundamentals:

This will include fundamental engineering concepts that are relevant to the ACMV industry. This caters largely for young graduates and those who does not have the necessary formal training in the subject or simply as refresher course to update knowledge. The contents for each of the courses are detailed below:

- i. **Lesson One - Thermal Comfort**  
Content: Terminologies for thermal comfort; Air movement; Indoor Air Quality (IAQ); Outdoor air requirements; Introduction to mechanical ventilation; Importance of good ventilation.
- ii. **Lesson Two - Air Distribution**  
Content: Terminologies for air distribution; Importance of good air distribution; Type of air terminal devices; Factors affecting air distribution; Air Distribution Performance Index (ADPI); Commissioning of ACMV systems; Air flow measurement at site.
- iii. **Lesson Three - Duct Design**  
Content: Ductwork construction standards; Duct sizing methods; Ductwork installation; Final duct connections; Ductwork insulation; Access and measuring stations.
- iv. **Lesson Four – Fans**  
Content: Types of fan; Fan Laws; Fan curve and system characteristic curve; Fan selection; Fans in series and parallel arrangement; Air flow and fan speed control; Fan installation.
- v. **Lesson Five – Psychometrics**  
Content: Properties of air; Application of psychometric chart; Understanding psychometric processes; Work examples.
- vi. **Lesson Six - Building Science**  
Content: External building factors; Building envelope; Building structure; Building layout and Building design drawings.
- vii. **Lesson Seven – Acoustics for ACMV systems**  
Content: Terminologies for acoustics; A-weighting; Noise Criteria (NC) and Noise Rating (NR); Combination of noise levels; Total sound field; Noise reduction with distance; Noise measurement at site.
- viii. **Lesson Eight - Fire safety in buildings**  
Content: Triangle of fire; Stages of fire development; Fire safety strategies; Means of escape; Smoke control; Fire protection systems.
- ix. **Lesson Nine - Commissioning of ACMV systems**  
Content: Objectives for commissioning; Setting to work; Measurement of air flow rates; regulation for air flow; Commissioning documentation.

## CERTIFICATION

- **E-Certificate of Attendance** will be issued to participant with at least 75% attendance.
- **E-Certificate of Competency** will be issued to participant upon meeting the requirements of the course and passing the examination.

## TRAINER



### **Kenneth Gong**

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#### Academic Qualifications:

BSc Degree in Building Services Engineering (Northumbria University, UK), 1987.  
Diploma in Acoustic and Noise Control (Institute of Acoustics, UK), 1989.  
Certificate in Quality Management (Institute of Quality Assurance, UK), 1989.  
Master of Business Administration (Maastricht School of Management, Netherlands), 2009.

Kenneth is a qualified Chartered Building Services Engineer with more than 30 years working experience in the building services industry. After completion of his first degree, he started his career in the UK as a M & E Design Consultant for a period of 10 years before he returned to Malaysia in 1997.

Upon his return, he joined TROX Malaysia Sdn. Bhd., a multi-national manufacturer of air-conditioning components and systems. He is responsible for product research and development, product testing and certification and technical support and training.

## TRAINING PROGRAMMES:

<b>9 x Thursdays 8.00 to 9.30 pm</b>	<b>Topics covered</b>
<b>20 May 2021</b>	<b>Lesson 1</b> - Thermal Comfort; Content: Terminologies for thermal comfort; Air movement; Indoor Air Quality (IAQ); Outdoor air requirements; Introduction to mechanical ventilation; Importance of good ventilation.
<b>27 May 2021</b>	<b>Lesson 2</b> - Air Distribution; Content: Terminologies for air distribution; Importance of good air distribution; Type of air terminal devices; Factors affecting air distribution; Air Distribution Performance Index (ADPI); Commissioning of ACMV systems; Air flow measurement at site.
<b>3 Jun 2021</b>	<b>Lesson 3</b> - Duct Design; Content: Ductwork construction standards; Duct sizing methods; Ductwork installation; Final duct connections; Ductwork insulation; Access and measuring stations.
<b>10 Jun 2021</b>	<b>Lesson 4</b> – Fans; Content: Types of fan; Fan Laws; Fan curve and system characteristic curve; Fan selection; Fans in series and parallel arrangement; Air flow and fan speed control; Fan installation.
<b>17 Jun 2021</b>	<b>Lesson 5</b> – Psychometrics; Content: Properties of air; Application of psychometric chart; Understanding psychometric processes; Work examples.
<b>24 Jun 2021</b>	<b>Lesson 6</b> - Building Science Content: External building factors; Building envelope; Building structure; Building layout and Building design drawings.
<b>1 Jul 2021</b>	<b>Lesson 7</b> – Acoustics for ACMV systems; Content: Terminologies for acoustics; A-weighting; Noise Criteria (NC) and Noise Rating (NR); Combination of noise levels; Total sound field; Noise reduction with distance; Noise measurement at site.
<b>8 Jul 2021</b>	<b>Lesson 8</b> - Fire safety in buildings; Content: Triangle of fire; Stages of fire development; Fire safety strategies; Means of escape; Smoke control; Fire protection systems.
<b>15 Jul 2021</b>	<b>Lesson 9</b> - Commissioning of ACMV systems; Content: Objectives for commissioning; Setting to work; Measurement of air flow rates; regulation for air flow; Commissioning documentation