ASSOCIATION OF CONSULTING ENGINEERS SINGAPORE

ACES-TROX Training: Types of ACMV Systems

TROX® ACADEMY

6 x Lessons: 6 to 24 July 2023 on Monday and Thursday
Duration: 1.5 hours per Lesson 8.00 pm to 9.30 pm

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6
6 Jul (Thu)	10 Jul (Mon)	13 Jul (Thu)	17 Jul (Mon)	20 Jul (Thu)	24 Jul (Mon)

Mode of Delivery: Online via Zoom Meeting

CPD: **6 PDU**
9 STU (M&E)

Fee: **$120 for ACES Member**
$150 for M&E RE/RTO
$200 for Non-member

Register in advance for this meeting:
https://us02web.zoom.us/meeting/register/tZErfuGspzwpE92hoUbXzv5jt0ybJbNlgEz-

After registering, you will receive a confirmation email containing information about joining the meeting

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 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.

CERTIFICATION

- **E-Certificate of Attendance** will be issued to participants with at least 75% attendance.

TRAINING PROGRAMMES:

8.00 to 9.30 pm	**Topics covered**

6 July 2023 (Thu)	**Lesson 1: Intro to ACMV Systems**
	❖ Intro to different types of ACMV System
	❖ Mixed Flow Systems
	  o Constant Air Volume (CAV) Systems
	  o Variable Air Volume (VAV) Systems
	  o Fan Coil Unit Systems
	  o Induction Unit Systems
	❖ Task Conditioning Systems
	❖ Types of Air Terminal Devices (ADT)
	❖ Thermal Displacement Flow Systems
	❖ Air-Water (or Chilled Beam) Systems

10 July 2023 (Mon)	**Lesson 2: Chilled Beam System** ❖ What are Chilled Beams? ❖ How to They Work? ❖ Types of Chilled Beams ❖ Product Types and Features ❖ Induction Principle ❖ Benefits and Limitations of Chilled Beam Systems ❖ Installation Guidelines ❖ Are they suitable for Tropical Climate?
13 July 2023 (Thu)	**Lesson 3: Thermally Stratified Ventilation System** ❖ Types of Air Diffusion Methods. ❖ Mixed Flow Systems. ❖ Task Conditioning Systems. ❖ Thermal Displacement Ventilation (TDV) Systems. ❖ Advantages and Limitations of TDV Systems. ❖ Under-floor Air Distribution (UFAD) Systems. ❖ Advantages and Limitations of UFAD Systems. ❖ Design Considerations ❖ Installation Examples
17 July 2023 (Mon)	**Lesson 4: VAV System** ❖ Introduction on VAV Systems ❖ Benefits of VAV Systems ❖ Fan Laws ❖ Terminologies ❖ How does VAV System work? ❖ Types of VAV Terminal Units ❖ VAV Diffusers ❖ Types of Air Terminal Device suitable for VAV system ❖ Constant Flow Regulators

8.00 to 9.30 pm	**Topics covered**

20 July 2023 (Thu)	**Lesson 5: Laboratory Ventilation System**
	❖ ACMV System in Laboratories
	  ○ Room Balance Control
	  ○ Room Pressure Control
	❖ Mechanical Ventilation for Fume Hoods
	❖ ACMV Components for Laboratory Ventilation System
	  ○ Air Flow Controller Units
	  ○ Noise Attenuators
	  ○ Air Terminal Devices
	  ○ Air Filtration System

24 July 2023 (Mon)	**Lesson 6: Challenges of ACMV in times of Covid-19** ❖ Virus Transmission ❖ Airborne Contaminants ❖ Mixed Flow vs Thermally Stratified Ventilation Systems ❖ Ventilation Rate

TRAINER

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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 joint 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.