22 MAR 2016 | 9:00AM TO 5:00PM | WWW.SEAS.ORG.SG

DEMAND VENTILATION CONTROLS IN LABORATORY

COURSE OVERVIEW

The main aims of this workshop are to provide an understanding of:

- Laboratory Airflow design criteria
- Fumehood requirement and VAV system
- Demand Ventilation Control
- Critical Airflow Management

LEARNING OUTCOMES

- Understanding the design criteria for laboratory
- Integrate DCV into energy management system
- Understand of demand ventilation control
- Set up (or develop) energy policy, energy planning, procedure for evaluating performance of energy systems and energy performance review, documentation and communication processes
- Integrate energy manangement system into business practice
- Understanding critical environment safety before implementation of energy saving management and technology
- Evaluate financial attractiveness of energy retrofit projects
- Understand the various energy savings performance models

PDUs AWARDED BY PROFESSIONAL ENGINEERS BOARD, SINGAPORE.

APPLICABLE FOR PRODUCTIVITY AND INNOVATION CREDIT (PIC) VISIT IRAS.GOV.SG FOR MORE INFORMATION.

SEAS
Sustainable Energy Association of Singapore

22 MARCH 2016
9:00AM - 5:00PM

SEAS Training Centre
9 Penang Road, #08-02 Park Mall, Singapore 238459

SEAS
Sustainable Energy Association of Singapore

DEMAND VENTILATION CONTROLS IN LABORATORY

PROGRAMME OUTLINE

Session 1: Laboratory and Fumehood

- Types of laboratory and fumehoods
- Laboratory HVAC components
- Airflow control
- VAV fume hood technologies
- VAV flow device for critical area
- Room pressurization and supply airflow tracking approaches
- Volumetric offset control
- Fumehood energy efficient solutions
- Operation and maintenance

Session 2: Demand ventilation control in critical environment

- Introduction to low energy lab design
- Importance and impact of lab ventilation on first costs & energy usage
- Typical lab energy costs & metrics
- A holistic summary of the technologies and strategies used in low energy lab design
- Overview of Variable Air Volume (VAV) lab air flow controls as an enabling technology
- Temperature and minimum dilution ventilation control
- The goal of reducing lab air flow rates to 2 ACH and how to safely achieve this
- Overview of the three lab airflow drivers and how they can be reduced
- Reducing the fume hood exhaust air flow rates
- Reducing the cooling load requirements for lab airflow
- Reducing the dilution ventilation requirements
- Occ/Unocc control
- Demand Based Control
- Applicable lab standards and guidelines
- Detailed discussion of Demand Based Control: Basic concepts & requirements
- Practical technology: Multiplexed sensing
- Published study on Lab IEQ conditions and energy savings implications
- First cost savings
- Case study examples of energy and first cost savings
- Variable exit velocity exhaust fan control approaches
- Varius hydronic cooling approaches for labs
- Low pressure drop design for labs
- Duct and coil design considerations
- Static pressure reset strategies
- Airflow control synergies and impacts
- Relevant US standards & guidelines
- Energy and first cost analysis of the various energy savings approaches
- Description of a detailed lab energy and capital cost analysis tool
- Comparison of savings and first costs using a sample lab example

Session 3: Lab tools Exercise

- Lab Analysis ROI Tools
- Summary and review of major conclusions

ABOUT THE TRAINERS

Mr. Gordon Sharp is the Chairman of Aircuity and has over 25 years of experience and over 25 patents in energy efficiency, indoor environmental quality and laboratory controls.

As the founder and former CEO of Phoenix Controls, he led his world learder n laboratory airflow controls that was acquired by Honeywell in 1998. In 2000, Gordon founded Aircuity out of Honeywell and is a smart airside energy efficiency company.

Gordon is an MIT graduate, an ASHRAE Distinguished Lecturer, and the Executive Vice president and a member of the Board of Directors of I²SL, the International Institute of Sustainable Laboratories. He is also a member of ASHRAE Standard 170 on Healthcare Ventilation and the ANSI/AIHA/ASSE Standard Z9.5 on Laboratory Ventilation.

RATES

EARLY BIRD (before 19 Feb 2016)	NORMAL FEE	GROUP FEE
S$350.00 (SEAS Member) S$450.00 (Non Member)	S$450.00 (SEAS Member) S$500.00 (Non Member)	S$380.00 (4+ delegates from 1 orginization)

*** EENP member is entitled to SEAS member rate**

*** Fees inclusive of GST**

*** Payment to SEAS & Address:** Please send a crossed cheque to:
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REGISTRATION FORM

☐ Yes! I would like to register for this programme ☐ I am unable to attend but please put me on your mailing list

PARTICIPANT'S DETAILS	Number of Delegates	Fees Payable

1	Name (Dr/Mr/Mrs/Ms)		Designation
	HP No	Email	PEB ☐
2	Name (Dr/Mr/Mrs/Ms)		Designation
	HP No	Email	PEB ☐

ORGANIZATION'S DETAILS

Company Name	
Company Address	
Contact Name	Tel
Email	Fax