



# UNDERSTANDING PUMPS: A SYSTEMATIC APPROACH

## COURSE OVERVIEW

Pumps take up 20 - 30% in a typical split of energy usage of motor driven equipment for an industrial plant. Commercial buildings, with lower demand for processes, it is between 15 to 20%. The large amounts of energy used for pumping makes pump systems a major candidate for energy savings. Pumping systems is usually less complicated when compared to process or chiller side optimisation.

## COURSE OBJECTIVES

At the end of the course, participants will be able to:

- Understand the performance characteristics of pumping systems
- Gain an enhanced understanding of a systems versus component approach to optimise the energy efficiency of pumping systems
- Identify performance problems and systems that are most likely to yield energy efficiency savings
- Develop an action plan to achieve energy efficiency improvements
- Integrate continuous energy improvement into the management of pumping systems

## TARGET AUDIENCE

Engineers, Energy Managers and Facility Managers in the Process, Electronics, Pharmaceuticals, Engineering, Food Manufacturing, Oil and Gas sectors

## PRE REQUISITE

- Participants should be familiar with pump and system curves
- Experienced in proposing or operating pumps
- Experienced in engineering field is an advantage
- Fresh graduates should read up on system curve before attending this workshop

## SCEM-PDUs & PEB-PDUs TO BE AWARDED

## APPLICABLE FOR PRODUCTIVITY AND INNOVATION CREDIT (PIC)

2 & 3 NOV 2017

9:00AM - 5:00PM

SEAS Office at Sky Park  
180 Kitchener Road, #06-10 City Square Mall



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## PROGRAMME OUTLINE

### Day 1:

- Pump system efficiency improvement using pre-screening and LCC approach
- Understanding pump systems & process demands
- Typical pump types in industries
- Pump system fluid relationships
  - Fundamental hydraulics
  - Total head
  - System curves
- Understanding pump performance characteristics
- Understanding pump system energy use
- Introduction to PSAT

### Day 2:

- Sample PSAT exercise
- Assessment introduction
  - Organising the assessment
  - Conducting the assessment
- How to collect field data collection
- Sample problem - group exercise
- Selecting a pump system optimisation provider

## ABOUT THE TRAINER



Ir. Kumarason S. Kandiah (Resource Consultant, ISI Ventures Sdn. Bhd)

UNIDO's International Trainer

With more than 12 years working experience in system optimisation of chiller, pumps and compressed air systems, Ir. Kumarason S. Kandiah has vast experience in conducting Investment Grade Energy Audits (IGAs), energy efficiency retrofits of chiller plants and feasibility studies at national and international level.

Kumarason has been involved in designing and retrofitting Air Conditioning and Mechanical Ventilation (ACMV), pumps, fans and compressed air systems for commercial and industrial applications. He co-developed a building monitoring system specifically inclined towards improving chiller efficiency that has been operating for more than 10 years at mission critical sites.

He was an expert consultant for MIGHT (Malaysian Industry-Government Group for High Technology) on viable green energy businesses which will be used as a roadmap for Malaysia's green initiatives towards 2030. His Masters' degree was titled "Cogeneration Potential in Selected Malaysian Industries" where the design and economic viability of cogeneration systems for food and chemical industries was conducted.

Kumarason was a Qualified Energy Services Specialist (QuESS - Singapore) until 2015 and he is also a member of ASHRAE, Board of Engineers Malaysia and Institution of Engineers, Malaysia. He is currently the trainer with the Malaysia Association of Energy Services Company (MAESCO) for Chillers and Pump Systems and an International Pump System Expert for the Industrial Energy Efficiency for Malaysian Manufacturing Sector (IEEMMS) program spearheaded by UNIDO. He has conducted multiple pump training sessions and has trained up to 30 engineers on identifying pumping efficiency improvements with the objective of transforming them into pump system experts.

## RATES

EARLY BIRD (before 8 Sept)	NORMAL FEE	GROUP FEE
SEAS Member: S\$850 Non Member: S\$950	SEAS Member: S\$950 Non Member: S\$1,200	S\$900.00 (4+ delegates from 1 organization)

\* Fees inclusive of GST

\* SEAS reserves the right to make changes to the trainer, programme, venue, cancel or reschedule the programme if necessary or warranted by circumstances beyond our control

\* Payment to be made by early bird closing date to enjoy early bird rate

\* Enjoy group discount for 4 or more delegates registered at the same time from the same organisation and same billing sources

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

Sustainable Energy Association of Singapore, 180 Kitchener Road, #06-10 City Square Mall, Singapore 208539

# CALL US AT 6338 8578 TO ENQUIRE

## 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)		NRIC No
	HP No	Email	Designation
			PEB <input type="text"/> SCEM <input type="text"/>
2	Name (Dr/Mr/Mrs/Ms)		NRIC No
	HP No	Email	Designation
			PEB <input type="text"/> SCEM <input type="text"/>

## ORGANISATION'S DETAILS

Company Name	
Company Address	
Contact Name	Tel
Email	Fax