Energy Efficiency of Data Centres (5th Run)

By Dr Lal Jayamaha & Dr Jahangeer K Abdul Halim

*** SkillsFuture – Approved** (Course code: TGS-2021005921)*
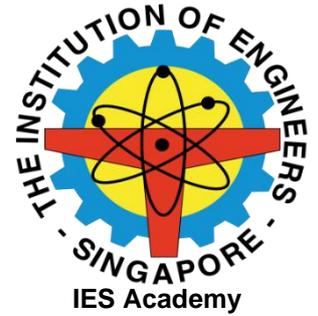
IES Academy

Programme Details

Date : 11-12 October 2023 (Wednesday & Thursday)

Time : 9am – 6pm

Venue : IES Academy @ Jurong East (Devan Nair Institute, E2i Building)

   80, Jurong East Street 21 #04-10, Singapore 609607 (Near Jurong East MRT)

CPD : 16 PDU (SCEM) / 16 PDU (PEB) / 16 PDU (CEng) To be confirm

Fees* : $540 (IES Member), $648 (Non-Member)

* Inclusive of 8% GST and course materials.

** Certificate of Attendance will be given to participants with **100% attendance***

Introduction

It is quite common that large companies and government organizations house all their servers, storage devices, and info-communication systems in a wall-developed infrastructure setup called a Data Centre. In the recent times, data centres have taken on an increasingly central role in the progress of two parallel areas of rapidly growing global societal interest. Internet delivered information technology (IT) systems and telecommunications systems. In an energy efficiency point of view, data centres are highly energy intensive especially when they have to be operated round the clock. As a result, for the sustainable operation of data centres, the Infocomm Development Authority of Singapore (IDA) has setup the Green Data Centre Technology Roadmap. The Roadmap aims to reduce energy consumption of the constituent systems of a data centre. Most existing data centres in Singapore were designed and constructed without sustainability and energy conservation in mind. In future, it is expected that the Singapore data centre industry would experience strong and sustained growth. Therefore, it is very much imperative to develop a better understanding of the data centre system in an energy efficiency point of view. This course aims to help the Singapore Certified Energy Manager (SCEMs) to have a basic understanding of the data centres and their energy efficiency.

Objectives

Upon completion of this course, the participants should be able to develop good understanding of:

a) The data centre and associated auxiliary equipment
b) Energy performance indicators of data centres
c) Measurement techniques of main parameters of data centres
d) Optimizing energy efficiency of data centres

Course Syllabus

Day 1:

a) What is a data centre?
b) Typical equipment in a data centre
c) Typical configuration of power supply
d) Data centre classifications based on reliability
e) Thermal management systems
f) ASHRAE design guidelines

Day 2:

a) Rack arrangement
b) Data centre performance indicators
c) Efficiency of individual equipment
d) Efficiency measurement metrics
e) Instruments for data centre parameters measurements
f) Singapore Standard (SS) for Green Data Centre design
g) Green Mark Certification for data centres

Trainer's Profile

Dr. Lal Jayamaha
Founder & CEO at LJ ENERGY Pte Ltd

Dr. Lal Jayamaha is the author of two book titled "Energy Efficient Building Systems" and "Energy Efficient Industrial Systems" published by McGraw-Hill, USA and the founder of LJ Energy Pte Ltd which is one of the leading ESCOs (Energy Service Companies) in Singapore. He graduated from Queen Mary College, University of London with a First Class Honours degree in Mechanical Engineering in 1982. Thereafter he worked for 8 years in Industry including 5 years for multi-national Unilever. In 1990 he was awarded a Research Scholarship by the National University of Singapore to undertake a research leading to a MEng degree. After completing his Masters degree in 1993 he continued his research in heat transfer relating to building heat gain and building energy performance and was awarded a PhD. degree in 1997. After completing his PhD, he specialised in the area of Energy Management and has been the team leader for many major energy audits and energy retrofits carried out in Singapore and the region. He is an EEO Assessor, Professional Engineer (PE - Singapore), a Chartered Engineer (UK and Singapore) and a Qualified Energy Services Specialist (QuESS) for conducting Energy Audits. He is also a member of the Institution of Mechanical Engineers, UK and the American Society for Heating, Refrigerating and Air-conditioning Engineers (ASHRAE).

Dr. Jahangeer K. Abdul Halim
Deputy Director at LJ ENERGY Pte Ltd

Dr. Jahangeer K. Abdul Halim a registered Professional Engineer (Mechanical) with the Professional Engineer Board Singapore, graduated with a Master of Science (M.Sc.) in Mechanical Engineering from National University of Singapore in 1998. He was awarded a Research Scholarship by the National University of Singapore (NUS) in 1999 to undertake a research project on solar energy and was awarded a Master of Engineering (M.Eng.) degree in 2002. After completing his M.Eng. degree, he continued with research and teaching at NUS and his research on evaporatively-cooled condensers of air-conditioning systems led to the award of a PhD. degree in 2013.

Dr. Jahangeer's areas of specialization include air-conditioning and mechanical ventilation systems, combined heat and power systems, steam technologies, steam turbines and boiler systems, compressed air system optimization, building energy simulation and energy optimization. He has also authored chapters in several technical books and research papers in international peer-reviewed journals. He is an EEO Assessor and SCEM (Singapore Certified Energy Manager). He is also a Senior Member of Institute of Engineers Singapore (IES since 1999.

Currently, Dr Jahangeer is a Technical Director with LJ Energy Pte Ltd. (an accredited ESCO) providing consultancy services for mechanical and energy Systems including large scale trigeneration systems, boilers and compressed air systems. Dr Jahangeer has also been providing training for local and international practising engineers from the mechanical and energy services sector including the Singapore Certified Energy Manager (SCEM) professional candidates. He along with his colleague has already trained more than 1000 industrial professionals as Singapore Certified Energy Managers (SCEMs) since the inception of the SCEM.

Registration Form

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Date: 11-12 October 2023 (Wednesday & Thursday)
Time: 9am – 6pm
Venue: IES Academy@Jurong East
Fees (Include GST): IES member: $540, Non-member: $648

Please register via email the completed form by **02nd October 2023 before 3pm** to:Jesline.yue@iesnet.org.sg

<div align="center">

Attn: Jesline Yue
IES Academy@Jurong East
80 Jurong East Street 21, #04-10
Devan Nair Institute for Employment and Employability
Singapore 609607
Tel: 6463 9211

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Participant Details

*Name   : _____   ***NRIC**   : _____
                         (Please written in BLOCK Letter)

Company   : _____   ***Designation**: _____

*Address 1   : _____
                         (For mailing of invoice and receipt)

Address 2   : _____
                         (For mailing of certificate)

*Postal Code : _____   Gender   : _____Male   /   Female_____

*Contact No. : _____   Fax   : _____

*Your Email   : _____
                         (For sending of confirmation email, preferable personal unless company sponsored)

Please indicate :   ❑   IES members   IES M'ship No.: _____   P.E. No.: _____ (if applicable)

                              ❑   Non-members   SCEM No.: _____ (if applicable)

         ❑   *Sponsored by company (Please indicate the Contact person detail)*

Contact Person Details (if different from participant)

#Name   : _____   #Designation : _____

#Contact No. : _____   Fax   : _____

#Email   : _____

Payment Details

Bank / Cheque No :_____   Amount ($):_____
~ All Fees are inclusive of 7 % GST.
~ Cheque should be made payable to: "**IES ACADEMY PTE LTD**".

Acceptance of Terms and Conditions for Registrations of IES Academy's Events

I agree to abide by the Terms and Conditions for Registration of IES Academy's Events.

Name: _____   Signature:_____

TERMS & CONDITIONS COURSE REGISTRATION

Registration

Any registration, whether online, fax or by email, will based on a *first-come-first-served basis* and will only be confirmed upon receipt of full payment by **IES Academy Pte Ltd** unless otherwise invoice to company.

All registrations must be submitted with duly completed registration form.

Closing Date & Payment

The closing date of the event will be 1 week prior to event commencement date. Cheques should be crossed 'A/C payee only' and made payable to **'IES ACADEMY PTE LTD'**, with the *Date of event, Title of The Event and participants' name indicated clearly on the back of the cheque*, and post to:

Attn: Jesline Yue
IES Academy@Jurong East
80 Jurong East Street 21 #04-10
Devan Nair Institute for Employment & Employability
Singapore 609607

Confirmation of Registration

Confirmation of registration will be given at least one week before the commencement date of event via email. *If you do not receive the said confirmation email, you are required to contact IES Academy at 6463 9211 during office hours.*

IESA reserves the right to allow only confirmed and paid registrants to attend the Event.

Withdrawals/Refunds of Fees

➢ Written notice **at least 1 week in advance** before the commencement of the event
➢ Full course fee shall be refunded subjected to 4.5% transaction charge
➢ **NO** refund otherwise.
➢ No-show of participant would not be accepted as a valid reason for withdrawal/refund.
➢ One time replacement is allowed only if written notice is received by us at least 1 week before the commencement of the event. However, when an IES member is replaced by a non-member, the participant has to pay the difference in the relevant fees.

Cancellation/Postponement

Changes in Venue, Dates, Time and Speakers for the Events can occur due to unforeseen circumstances. IESA reserves the full rights to cancel or postpone the Event under such circumstances without prior reasons. Every effort, however, will be made to inform the participants or contact person of any cancellation or postponement.

Fees will be refunded in FULL if any Event is cancelled by IESA.

SkillsFuture Credit (SFC) "All Singaporeans aged 25 and above can use their $500 SkillsFuture Credit from the government to pay for a wide range of approved skills-related courses. Visit the SkillsFuture Credit website (www.skillsfuture.sg/credit) to choose from the courses available on the SkillsFuture Credit course directory." Please visit HERE for more information on SFC & UTAP claim.

Personal Data Protection Act

By registration, you consent to the processing by Institution of Engineers, Singapore of personal data, including your sensitive personal data as defined in the Data Protection Act 2014 for the proper purposes of Institution of Engineers, Singapore (IES). You undertake to observe the provisions of the Data Protection Act 2014 in relation to any personal data you may hold and process as a Members of Institution of Engineers, Singapore, and you agree to indemnify Institution of Engineers, Singapore from liability for any claims or damages that may arise from the processing of this data. For more information kindly refer to here.

Enquiries

For further enquiries, please contact IESA general office at Tel: 6463 9211.