Maximise Thermal Energy Efficiency & Cost Savings via

INDUSTRIAL THERMAL ENERGY AUDIT AND ANALYSIS (ITEA)

24 CDP Hours under Mandatory Topic for REM Type 2

6 - 8 April 2027
15 - 17 June 2027
3 - 5 August 2027
5 - 7 October 2027
7 - 9 December 2027
9.00am - 5.00pm
*Date subject to changes. For latest date, refer to website.

RM4,800 per pax (Normal Rate)
RM4,700 per pax (Register 30 days before workshop, or Group of 3)
**Price excluding 8% SST charges*

https://shorturl.at/H6KUi



Optimise
OPTIMAL SYSTEMS ENGINEERING SDN BHD
ENGINEERING SUSTAINABILITY

HRD CORP CLAIMABLE

MALAYSIA MyHIJAU

MyHS00015/22-E002

WORKSHOP OVERVIEW

Up to 50% of industrial thermal energy input are finally lost as waste heat in exhaust gases, cooling water, heated surfaces and in products/byproducts (US-DoE). Thermal energy efficiency improvement typically offers among the biggest scope for energy cost savings in industry. By benchmarking process and equipment performances, identifying inefficiencies and implementing targeted measures involving optimization of operating parameters and equipment upgrades, significant cost savings and emission reduction can be achieved. Regular monitoring and maintenance of optimal operations ensure sustained energy cost savings, GHG emission reduction and compliance with regulations.

WORKSHOP OBJECTIVE

This course aims to equip participants with practical concepts, principles, tools and systematic techniques to conduct energy audit, benchmark and analyse the thermal energy efficiency of industrial processes and utility systems, and effectively apply the tools and techniques for thermal energy cost saving measures.

WORKSHOP LEARNING OUTCOMES

At the end of the workshop participants are expected to be able to

- Holistically perform energy audit involving process as well as the utility areas.
- Conduct process/equipment energy accounting using energy balances & Sankey diagram.
- Apply systematic procedure for macro and technical-levels energy audit and analysis.
- Identify, analyse and evaluate energy savings measures covering thermal utility system such as boiler and steam system, combined heat and power (cogeneration); and processes and such as reactor, oven, dryer, tank, separator and heat exchanger.

WHO SHOULD ATTEND?

Utility/Facility Managers and Engineers, Energy Auditors, Energy Managers, Lecturers and Researchers.

TRAINERS' PROFILES



TRAINER 1

PROF IR TS DR ZAINUDDIN ABDUL MANAN

Zainuddin Abdul Manan is a professor of chemical and energy engineering, the founding director of UTM Process Systems Engineering Centre (PROSPECT), founding Dean of UTM Faculty of Chemical and Energy Engineering, founder of UTM Sustainable Energy Management Program and the CEO and founder of the UTM spin-off company OPTIMISE Sdn Bhd. He began his career as an engineer in PETRONAS and Hume Industries and has been an academic leader, educator, researcher, consultant and professional coach for over 25 years. He completed over 100 R&D & consultancy projects serving local and multinational companies, has numerous patents and over 450 publications that include 20 books/ chapters, 230 refereed journals and 250 conference proceedings on energy and resource conservation using process integration techniques. He is a co-author of the globally referred Book on Process Integration and Intensification – Saving Energy, Water and Resources. Zain is a UK/EU chartered engineer, a Fellow IChemE (UK), Fellow of Academy of Sciences Malaysia, a professional engineer, a professional technologist, a certified energy manager, a Type 1 Type 2 REM (Registered Energy Manager) and a certified trainer for ASEAN energy managers. He has coached professionals from over 500 organisations and delivered over 400 invited talks in professional courses, conferences and seminars worldwide. Zain chaired the Academy of Sciences (ASM) Energy Committee, the ASM Net Zero Task Force and the Energy Efficiency and Conservation Act (Thermal Energy) Drafting Committee under the Malaysian Ministry of Energy. He founded and spearheaded the UTM Sustainable Energy Management initiative that led UTM to save over USD 7 million energy costs (2011-2022), to win the National & ASEAN Energy Awards, and to be ranked 1st globally by Time Higher Education on SDG7.



TRAINER 2

Prof Ir Ts Dr Sharifah Rafidah Wan Alwi is a Professor in the Faculty of Chemical and Energy Engineering, Universiti Teknologi Malaysia. She previously helmed as the Director of Process Systems Engineering Centre for ten years (2011 to 2021). She is an expert resource minimisation consultant for multiple industries and is among the leading researchers in resource integration technique development. Prof Sharifah is also the co- founder and Director of Optimal Systems Engineering Sdn Bhd, a UTM Spin-off company. She has been extensively involved in 80 research projects, 17 industrial based projects for various companies and government agencies and has trained engineers from more than 300 companies in the field of sustainable engineering design and management. Together with her team, they have developed 7 resource minimisation software. Sharifah has won various international and national awards such as Green Talents 2009 (Germany), IChemE Highly Commended Sir Frederick Warner Prize 2011 (UK), ASEAN Young Scientist and Technologist Award 2014, National Young Scientist Award 2015, ASEAN-US Science Prize for Women 2016 in Energy Sustainability, Malaysia Research Star Award 2016, 2018, 2019, Top Research Scientists Malaysia 2018 and Sarawak State - International Women Award 2021. She was listed as ‘Asian Scientist 100’ in 2017 and ‘Asia’s Rising Scientists’ in 2020, and ‘8 Women Scientists from Asia You Should Know’ in 2021 by AsianScientist.com. Sharifah is also the Associate Editor for Journal of Cleaner Production and UTM Sustainable Energy Management System advisor. She has also served as the Chair for the Science Leadership Working Group under Young Scientist Network, Academy of Sciences Malaysia (YSN-ASM) and Chair for Malaysia IChemE Young Engineer Group (YEG). Sharifah is also a professional engineer, a professional technologist, a UK/EU chartered engineer, a certified energy manager, a registered energy manager (Type 1 and 2) and a certified trainer for ASEAN energy managers.

TRAINERS' PROFILES



TRAINER 3

ASSOCIATE PROF IR DR LIM JENG SHIUN

Associate Professor Ir Dr Lim Jeng Shiun is the Director of Products and Service, Optimal Systems Engineering Sdn Bhd, a UTM spin-off company specialising in providing solutions related to energy conservation and GHG emissions reduction. He is also the Deputy Director of Process Systems Engineering Centre (PROSPECT), Universiti Teknologi Malaysia. His core expertise is in the area of innovative development and application of process systems engineering techniques for resource conservation, and energy and carbon planning. He is also a professionally Certified Energy Manager, Certified Energy Auditor, Accredited Energy Measurement & Verification Professional and a Type 1 Type 2 REM (Registered Energy Manager) certified by the Energy Commission of Malaysia.

He is the trainer of the Energy Management Trainer Course conducted by MGTC to certify the Energy Manager. He is also the instructor for MSc Energy Management in UTM, sharing knowledge related to energy efficiency and energy management. As an engineer in practice, he has applied the output of his research work to consultancy projects for the industrial community. He has been extensively involved in more than 35 industrial-based projects for various companies and government agencies. The key clients include local industries and multinational companies such as BERNAS, FABER MEDISERVE, SHELL, OLEON in Malaysia and PERTAMINA in Indonesia.

He has assisted those companies to identify energy-saving opportunities worth millions of dollars and GHG reduction opportunities through the use of process integration and process systems engineering approaches in the energy audit and GHG emissions accounting projects. He has shared his project experience in his co-authored book titled Pinch Analysis for Energy and Carbon Footprint Reduction, published by the Institution of Chemical Engineers (IChemE). He has been invited to share his experience on Net Zero carbon for industry and facilities, including on Net Zero Carbon for Palm Oil Industry organised by IChemE.

COURSE SCHEDULE

Day 1	
08:00am – 08:45am	Registration & Breakfast
08:45am – 09:00am	Overview of Workshop
09:00am – 10:15am	Industrial Energy Audit (IEA) – The Big Picture
10:15am – 10:30am	Break
10:30am – 11:30am	Essentials of Steam Properties for Utility and Process Analysis
11:30am – 13:00pm	Process and Equipment Energy Accounting
13:00pm – 14:00pm	Lunch Break
14:00pm – 15:30pm	Energy Audit – Overall Approach and 10 Key Steps
15:30pm – 15:45pm	Break
15:45 pm – 17:00pm	Heat Recovery

Day 2	
08:30am – 09:00am	Breakfast
09:00am – 10:00am	Fuels and Combustion
10:00am – 10:45am	Boiler Efficiency
10:45am – 11:00am	Break
11:00am – 12.15pm	Thermal Utility Analysis & Improvements – Steam generation
12:15pm – 13:00pm	Thermal Utility Analysis & Improvements – Utility Distribution: Steam and Thermal Oil System
13:00pm - 14:00pm	Lunch Break
14:00pm – 15:15pm	Thermal Utility Analysis & Improvements – Steam distribution and condensate recovery
15:15pm – 15:30pm	Break
15:30pm – 17:00pm	Combined Heat and Power Systems (Cogeneration)
17:00pm – 17:30pm	Wrap Up and Closing

COURSE SCHEDULE

Day 3	
08:30am – 09:00am	Breakfast
09:00am – 10:30am	Thermal Utility Analysis & Improvements – Utility generation
10:30am – 10:45am	Break
10:45am – 13:00pm	Thermal Utility Analysis & Improvements – Utility distribution and recovery
13:00pm – 14:00pm	Lunch Break
14:00pm – 15:30pm	Combined Heat and Power Systems (Cogeneration)
15:30pm – 15:45pm	Break
15:45pm – 17:00pm	Thermal Utility Analysis & Improvements – System perspective
17:00pm – 17:15pm	Wrap up and Closing

OPTIMISE Energy Audit, GHG Accounting and EnMS Track Records

- Led UTM to be globally ranked 1st on SDG 7 - Affordable and Clean Energy
- Co-developer of ASEAN EMGS Energy Management System Standards with MGTC.
- Led UTM to win the ASEAN Energy Award and EMGS 3 Star EMGS Gold Standard.
- Involved in certification of energy managers and energy end users for 15 years.
- Developer of award-winning energy audit and energy monitoring software.
- Led UTM to achieve over RM 30 million energy savings between 2011-2023.
- Over 20 years experience in energy audit and optimisation consultancy, R&D and professional training for over 500 national/multinational companies.
- Certified trainer, auditors & centre for training & certification of energy managers.

Selected References

- Shell, Middle Distillate Synthesis
- BP – Amoco
- MLNG
- Felda Proctor and Gamble
- MIMOS Semiconductor
- Riau Pulp and Paper Mill
- Qatar LNG
- Pertamina Engineering Group
- PT Titan Petrokimia Interindo
- Pan Century, IOI Oleochemicals
- BASF – Petronas
- MTBE – Petronas
- Huntsman Tioxide
- Ansell Malaysia
- Hershey Malaysia
- Malaysia Newsprint Industries
- Malaysia Palm Oil Board
- Malaysia Energy Commission
- Technip (M) Sdn Bhd
- PT Chandra Asri
- Petronas Penapisan (M) Sdn Bhd
- Petronas Gas Sdn Bhd
- Kaneka Malaysia
- UKM, UPM, USM, UM, UNIKL

20+

Years Experience in Energy Audit and Optimisation

#1

Global Rank in R&D on 'Heat Exchanger. Retrofitting and Design' Elsevier Scival 2014

700+

National & Multinational Companies Benefitted from our Energy Trainings and Consultancy Services

WHAT OUR TRAINEES Said

★★★★★

The ITEA Training was very useful for companies aiming to enhance energy efficiency of plant operations. From theory to in-depth methodology, participants learnt many new methods from OPTIMISE experienced professors and educators. I recommend those who are going for sustainability to join this training. Well done OPTIMISE!

AZREE HAZWAN
PROJECT MANAGER
BECIS MALAYSIA
Industrial Thermal Energy Audit (ITEA)
Participant

★★★★★

I enjoyed the training so much as it allowed me to refresh my engineering calculations and link them with my industrial experience. Even though I have 15 years industrial experience in oil and gas, I learnt so much during this training.

IZZA MAHMOD
IMPROVEMENT EXECUTIVE
PETRONAS CHEMICAL ETHYLENE SDN.BHD
Industrial Thermal Energy Audit (ITEA)
Participant

★★★★★

The course provides good guidance on conducting thermal energy audit which is very different (maybe more rigorous) than the electrical energy audit that I'm familiar with and have participated in. It's a good refresher course from what I've learnt during my undergrad years, and even more relatable since I got to apply it to an actual scale that matches my current responsibility. The step-wise details on the audit approach is also very helpful for me to get started.

NASSYA BINTI MOHD SAID
EXPERIENCED RESEARCHER
SIRIM MALAYSIA
Industrial Thermal Energy Audit (ITEA)
Participant