8 CDP Hours
(Mandatory CDP For REM)

Workshop on

EECA Awareness & **Energy Efficiency Improvement for Industry**

Optimise
Optimal Systems Engineering Sdn Bhd
Engineering Sustainability

MyHS00015/22-E002

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Workshop Overview

This one-day in-house workshop is designed specifically for the industrial energy consumer, focusing on the requirements of the Energy Efficiency and Conservation Act (EECA) 2024 and its implications for energy-intensive manufacturing operations. The workshop integrates regulatory awareness, technical fundamentals, and practical industrial case examples to support manufacturers in improving energy performance, ensuring regulatory compliance, and enhancing operational competitiveness.
The programme emphasises process energy use, utilities systems, and plant-wide energy management, addressing key process and utility areas consuming thermal and electrical energy. Participants will gain practical insights into identifying energy saving opportunities, implementing systematic energy efficiency benchmarking and targeting technique, and preparing their organisations for EECA compliance, reporting, and continuous improvement.

Workshop Objectives

The objectives of this workshop are to:

- Provide clear understanding of EECA 2024 requirements and compliance obligations relevant to manufacturing facilities
- Enhance awareness of energy efficiency principles in industrial processes and utilities systems
- Equip participants with tools to identify high-impact energy saving opportunities in manufacturing operations
- Support the adoption of systematic energy management practices aligned with EECA and ISO 50001 principles
- Strengthen organisational capability to reduce energy costs, carbon emissions, and operational risks

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Workshop Learning Outcomes

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

- Interpret and explain the key provisions of EECA 2024 as they apply to manufacturing plants
- Understand industrial energy performance indicators, energy intensity metrics, and benchmarking approaches
- Identify and prioritise energy efficiency improvement measures in process equipment and utility systems
- Apply practical strategies to support regulatory compliance, cost optimisation, and sustainability targets

Target Participants

This workshop is designed for personnel involved in manufacturing operations and energy management, including:

- Plant managers, production managers, and operations managers
- Energy managers, facility managers, and utility engineers
- Process, electrical, mechanical, and maintenance engineers
- Sustainability, ESG, and environmental management personnel
- Compliance and corporate governance teams (EECA awareness session)
- Senior management and decision-makers responsible for energy strategy and operational efficiency (EECA Awareness session)

The programme is particularly relevant for energy-intensive manufacturing facilities that are subject to, or preparing for, EECA 2024 compliance, as well as manufacturers seeking to improve energy efficiency, reduce operating costs, and support their Net Zero and ESG commitments.

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Workshop Schedule

Time	Schedule
9.00 to 10.30	**Understanding the EEC Act and Regulations** • EECA 2024 in the national energy transition context • EEC Acts, Regulations, Guideline and Guide • Penalties for non-compliance • Key requirements under the EEC Regulations • Timeline for EECA compliance.
10.30 to 10:45	Break
10.45 to 12.15	**Establishing Energy Baseline and Monitoring Energy Savings** • Performing Regression Analysis • Monitoring Energy Savings using Cumulative Sum (CUSUM) Approach
12:15 to 13:00	**Energy Audit to Maximise Energy Cost Savings Using Pinch Analysis – Part 1** • Process-Driven *Pareto* Retrofit Strategy of Targeting Maximum Energy Savings
13.00 to 14.00	Lunch Break
14.00 to 15.30	**Energy Audit to Maximise Energy Cost Savings Using Pinch Analysis – Part 2** • Case Study Application to Thermally Intensive Industry • Targeting the Maximum Energy Savings with Optimal Heat
15.30 to 15.45	Break
15.45 to 17.00	**Energy Audit to Maximise Energy Cost Savings Using Pinch Analysis – Part 3** • Heat Recovery to Maximise Cost Savings – Application to Medical Glove Industry

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Trainers' Profile

TRAINER 1

PROF IR TS DR ZAINUDDIN ABDUL MANAN (ZAM)

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 (SRWA)

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.

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Trainers' Profile

TRAINER 3

ASSOCIATE PROF IR DR LIM JENG SHIUN (LJS)

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.

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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

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