



5 Days Workshop

Registered Energy Manager (REM) - Type 1

19 - 23 January 2026 (Hyatt Place Johor Bahru)

9 - 13 February 2026 (Cyberview Resort & Spa, Cyberjaya)

4 - 8 May 2026 (Hyatt Place Johor Bahru)

27 - 31 July 2026 (Cyberview Resort & Spa, Cyberjaya)

21 - 26 September 2026 (Hyatt Place Johor Bahru)

19 - 23 October 2026 (Cyberview Resort & Spa, Cyberjaya)

9.00am - 5.00pm

**Date subject to changes. For latest date, refer to website.*

RM 4,860.00 (per pax)
**RM 4,760.00 (Register 30 days
before workshop, or Group of 3)**

**Price excluding 8% SST charges*



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www.optimalsystems.my

Workshop Overview

The Registered Energy Manager (REM) – Type 1 workshop is a focused 5-day training program designed to equip participants with the essential skills and knowledge required to achieve REM certification under **Malaysia's Energy Efficiency and Conservation Act (EECA 2024)**. This certification targets professionals managing facilities with energy consumption between **21,600 GJ/year and 50,000 GJ/year**, ensuring that the facilities comply with the regulatory requirements and promote sustainable energy practices.

The course covers a comprehensive range of topics, providing theoretical understanding and practical skills on energy management principles, energy efficiency strategies, and regulatory compliance. Participants will complete a certification examination on the final day to formally assess their readiness for REM Type 1 certification.

Workshop Objectives

- Equip participants with the knowledge and skills needed to manage energy resources effectively in facilities consuming between 21,600 GJ and 50,000 GJ energy annually.
- Prepare participants for the REM Type 1 certification under the Malaysia's Energy Efficiency and Conservation Act (EECA 2024).
- Enhance understanding of the governance and regulatory framework of the energy sector in Malaysia.
- Build competence in conducting energy audits and implementing energy-saving measures (ESM).
- Develop the ability to analyze and manage financial aspects of energy projects.
- Enable participants to prepare, present and execute energy management projects.
- Promote compliance with Malaysian energy regulations and policies.

Who Should Attend?

This workshop is designed for:

- Facility managers and engineers responsible for energy management of facilities with annual energy consumption between 21,600 GJ/year and 50,000 GJ/year.
- Professionals seeking REM certification to comply with the EECA 2024.
- Energy auditors/consultants seeking to enhance their energy management expertises.
- Professionals involved in energy management, policy development, and implementation for commercial buildings, industrial facilities and educational institutions.

Certification Level Overview

The REM Type 1 certification is designed for energy professionals managing facilities with energy consumption between 21,600 GJ/year and 50,000 GJ/year. This certification validates a professional's ability to oversee energy efficiency projects, implement energy-saving measures, and ensure compliance with the EECA regulations. Certification is awarded upon successful completion of the workshop and passing the REM Type 1 examination, covering key areas of energy management, energy audit processes, financial analysis, and regulatory compliance. Upon passing the REM Type 1 training, participants can apply to become REM Type 1 with the Energy Commission (EC) provided they satisfy other requirements by EC (see the next page for the details). The REM Type 1 certificate will be valid for 5 years from the date of certification.

Course Outline

- Overview of Energy Scenario and The Governance of Energy Sector in Malaysia
Legislation In Malaysia
- Fundamentals As Energy Manager (Safety)
- Fundamentals As Energy Manager (Technical)
- Fundamentals As Energy Manager (Financial)
- Energy Management System (EnMS)
- Energy Audit (as per ST Guideline)
- Common Energy Saving Measures (ESM)
 - ESM for Lighting System
 - ESM for Compressed Air System
 - ESM for Air Conditioning System
 - ESM for Motors, Pumps and Fans
- Assessment
 - Theoretical Test
 - Individual Project Presentation



Requirement

REM Type 1 Application

The requirements to become a REM First Type are as follows:

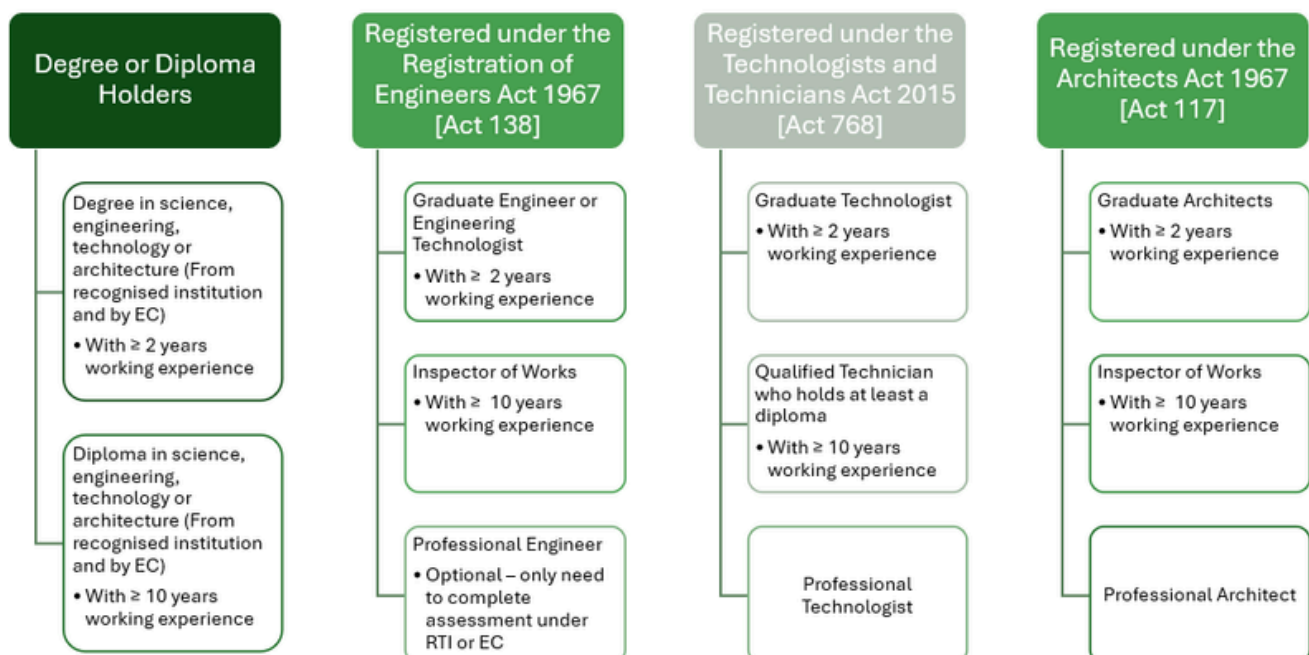
- (a) A Malaysian citizen.
- (b) Holds any qualification as may be prescribed in the Regulations.
- (c) Fulfils other prerequisite requirements as may be determined by the Commission, including requirement for training.
- (d) Demonstrates knowledge of the requirements of the Act and the Regulations that satisfies the Commission.
- (e) Has not been convicted of an offence involving fraud, dishonesty, or corruption.

The training requirement shall be as follows:

- (a) The applicant must successfully complete REM First Type training before applying for REM Second Type training.
- (b) The training certificate for REM First Type or REM Second Type is valid for only five (5) years from the date of the training completed.

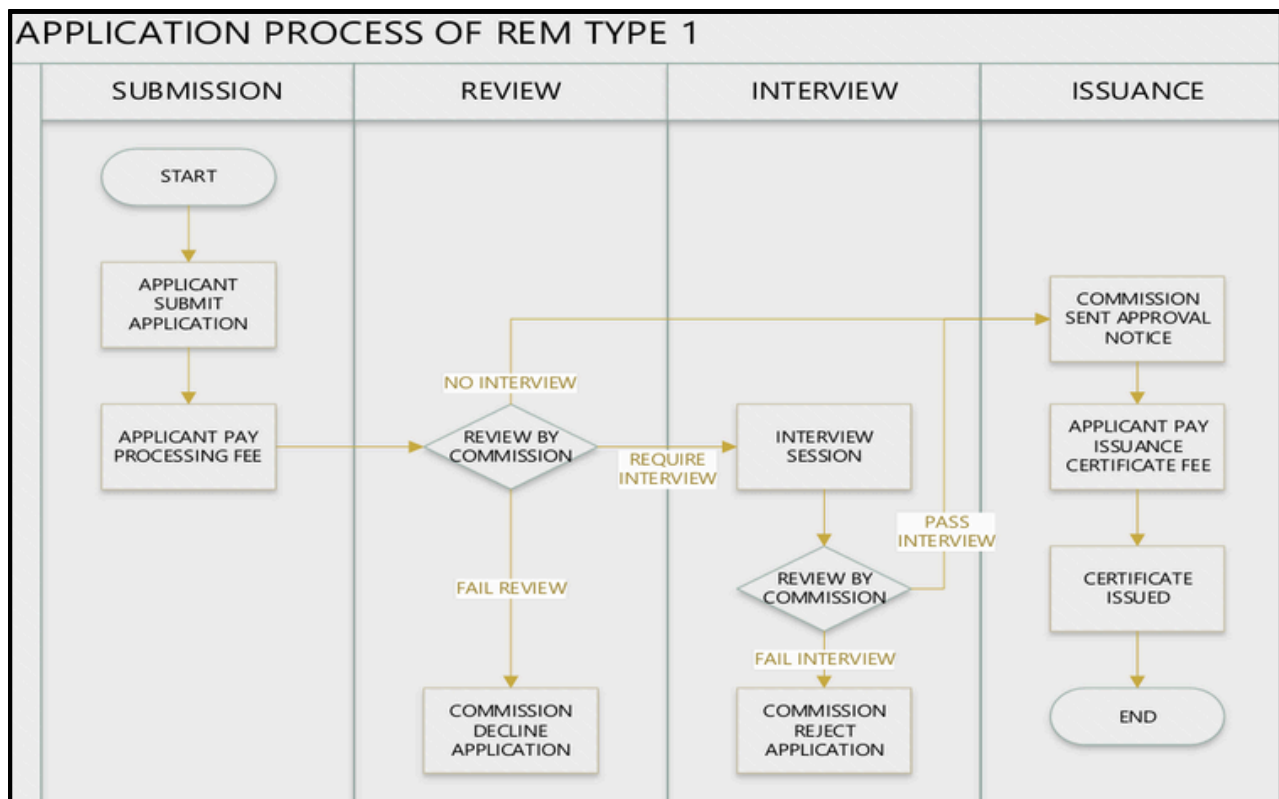
Qualifications Prescribed in the Regulations

REM Type 1 Application



How to apply after workshop completion?

REM Type 1 Application



Guidelines for Re-sitting Failed Assessment

In the event that a candidate fails the examination on the first attempt (as defined under Conditions 3a and 3b in Section 3), they will be granted the opportunity to re-sit the assessment without the need to undergo the full training programme again.

The candidate will only be required to retake the specific part of the examination that was not passed. For example, if the candidate fails Part 1, they will only be required to retake the assessment for Part 1, and not for Part 2.

Trainers' Profile



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

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 Type 1 Type 2 REM (Registered Energy Manager) and a certified trainer for ASEAN energy managers.

Trainers' Profile



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.



TRAINER 4

IR. HAJI AHMAD FATANI HAJI ABDUL RAHMAN

Ir. Haji Ahmad Fatani Haji Abdul Rahman is a consultant and has more than 25 years working experience energy management, project management, process control and building automation, waste water treatment plant, waste management, stack monitoring of incinerator, hot oil burners, scrubber, and dust collectors, project execution, plant start-up and commissioning, maintenance, process safety, safety & risk management and auditing in multi-disciplined of plant, plant turnaround, upgrade and new plant plus energy management system and facilities management system plus waterproofing, painting and flooring specialist. Ir. Haji Ahmad Fatani Haji Abdul Rahman experience as trainer and lead assessor for ENERGY MANAGEMENT SYSTEM (AEMAS Standard – MGTC)

Ir. Haji Ahmad Fatani Haji Abdul Rahman as internal auditor, developing and implementing ISO 9001, ISO 14001, OHSAS 18001, ISO 45001, RC 14001, PROCESS SAFETY MANAGEMENT SYSTEM (PSM), Facility Set-Up (PASS 55 @ ISO 55001).

Ir. Haji Ahmad Fatani Haji Abdul Rahman is certified with REM TYPE I, REM TYPE II, AEMAS Trainer, AEMAS Lead Assessor, SHASSIC Tier 3, Waterproofing Applicator, Automation Control Trainer and TTT Trainer. Ir. Haji Ahmad Fatani is excellent capabilities in both Safety Hazard Operation (HAZOP) and Hazard Design (HAZID), Process Hazard Analysis (PHA), Mechanical Hazard Analysis (MHA), Mechanical Integrity (MI), Safety Interlock Level (SIL) calculation, Process Alarm Management (PAS)–the critical safety elements in manufacturing plant and deep experience in “MANAGEMENT OF CHANGE (MOC), a systematic troubleshooting data handling to ensure (continuous) plant's efficiency

Trainers' Profile



TRAINER 5

IR. AL-KHAIRI MOHD DAUD

Ir. Al-Khairi Mohd Daud is a Professional Engineer, Certified Energy Manager (AEMAS), and a Type 1 Type 2 REM (Registered Energy Manager) with over 30 years of diverse experience spanning process plants, medical and healthcare facilities, advanced R&D centers, and large-scale energy systems. He began his career in the UK with Shell Thornton and later returned to Malaysia, where he held key engineering and management positions at Malaysia LNG, Unilever/ICI, and UCB Surface Specialties. Throughout his career, he has been recognized for his excellence in project execution, safety, and maintenance strategies. His transition into the healthcare sector saw him spearhead engineering operations at InventQjaya and Prince Court Medical Centre, contributing to international healthcare accreditations such as JCI and MSQH.

As the founder and Chief Consultant of Faqeh Management, Ir. Al-Khairi has led numerous consultancy projects for top-tier clients including IJN, UMMC, Bank Negara Malaysia, KLCC Holdings, and the Ministry of Health. His expertise includes energy audits, facilities upgrading, medical gas systems, and the drafting of concession agreements for 172 government hospitals across Malaysia. He is an HRDF-certified trainer, a national expert and lead assessor for the Energy Management Gold Standard (EMGS), and an approved trainer for medical gas system competency under the MDA. Ir. Al-Khairi is also a certified MSQH surveyor, a contributor to national healthcare facility standards under SIRIM and MDA, and serves as an industrial expert for UniKL and UTeM. Passionate about knowledge sharing, he integrates holistic approaches such as NLP and wellness training into his technical teachings—making him a highly sought-after speaker and trainer in the fields of sustainable engineering, energy efficiency, and healthcare infrastructure management.



TRAINER 6

HISHAMUDIN BIN IBRAHIM

Hishamudin Ibrahim was a facility engineer in a research park before joining a Mechanical & Electrical consultant as a resident engineer to construct a 1,000 bed paperless hospital. In 1999 he was appointed the program manager for an internationally funded Malaysian Industrial Energy Efficiency Improvement Project (MIEEIP), which promoted energy audit as a tool for energy management. Conducted more than 90 energy audits in industrial and commercial sectors in Malaysia involving mechanical and electrical systems and delivered more than 70 training sessions in energy management and energy audits. Hishamudin was the project manager for ASEAN Energy Management Scheme (AEMAS) and is currently very active in promoting Sustainable Energy Management. This involvement conducted more than 70 energy management assessments, especially for hospitals. REEM service for more than 12 installations, currently four. He graduated from Mechanical Engineering, University of Malaya and Masters in Energy Technology from the National University of Malaysia (UKM). He was the Honorary Secretary of the Malaysian Energy Professional Association (MEPA) from 2002 to 2013. He is also a Type 1 Type 2 REM (Registered Energy Manager) under the Energy Commission of Malaysia (ST) and a member of the Energy Management Standard Technical Committee (TC) on ISO 50001. He received an Energy Management Expert from the Ministry of Trade and Industry concerning Energy Management System using ISO 50001, a Certified Professionals in Measurement & Verification (CPMV), a Certified Energy Auditor (CEA Association of Energy Engineers, US) and a Certified GBI Facilitator.

Trainers' Profile



TRAINER 7

IR. DR. HAYATI ABDULLAH

Ir. Dr. Hayati Abdullah is a specialist in thermodynamics, and her professional focus centers on energy management and on improving the performance of chiller and air-conditioning systems, together with the broader family of mechanical systems that support them, including pumps, compressors, blowers, and fans. She received formal training in Energy Management in Sweden, and she holds two professional credentials in the field: she is a Registered Energy Manager (REM) and a Certified Professional in Measurement and Verification (CPMV). In addition, Ir. Dr. Hayati is a Professional Engineer with Practicing Certificate (PEPC) registered with the Board of Engineers Malaysia, reflecting her standing within the engineering profession and her authorization to practise. She is also a Fellow of the Institution of Engineers, Malaysia, and has served as the Past Chairman of its Southern Branch, a role that underscores her leadership within the engineering community.

Bringing more than 25 years of experience as an Energy Management Consultant, Ir. Dr. Hayati has contributed to national energy conservation and energy auditing projects. Her work in these programs has included collaborations with international consultants from France and Japan, aligning local initiatives with global expertise and standards while maintaining her core emphasis on thermodynamics, energy management, and the optimization of chillers, air-conditioning installations, and related mechanical systems such as pumps, compressors, blowers, and fans.



TRAINER 8

TS HAJJAH MASILAH BINTI HAJI BANDI

Ts. Hajjah Masilah is a pioneering figure in energy management, recognized as the first female Professional Energy Manager and AEMAS Assessor certified under the ASEAN Energy Management Scheme (AEMAS). She holds a Bachelor of Science in Electrical Engineering from the University of Hartford, Connecticut, USA, and a Master of Science in Maintenance Engineering and Asset Management from the University of Manchester, UK.

She began her career at Celcom, where she spent over a decade and rose to become the Head of Department for Telecommunications in Southern Malaysia. She later joined Universiti Teknologi Malaysia (UTM) as the Energy Manager, where she led the university to become the first organisation in Malaysia to achieve the EMGS 3-Star certification and to win the prestigious ASEAN Energy Award in 2014.

Ts. Hajjah Masilah is a Certified ISO 50001 Energy Management Expert through a 3-year UNIDO programme and an ISO 50001 Lead Auditor accredited by the British Standards Institution. She is also a Registered Electrical Energy Manager (REEM) under the Malaysian Energy Commission and a certified trainer for the ASEAN-Japan Energy Efficiency Programme (AJEEP) since 2017. In 2023, she was awarded the Malaysian Skills Advanced Diploma in Energy Audit Management by the Ministry of Human Resources.

Her experience includes extensive energy audits across the healthcare sector, covering over 60 hospitals nationwide: 18 in 2019, 8 in 2020, 19 in 2021, 12 in 2022, and 5 as of September 2023. She also conducted EMGS 3-Star reviews at Hospital Kuala Lumpur (HKL) and Hospital Sultan Ismail (HSI).

With more than 20 years of experience spanning telecommunications and energy efficiency, Ts. Hajjah Masilah continues to champion sustainable energy practices and capacity building in Malaysia and the ASEAN region.

Workshop Schedule

Day 1:

Time	Module
8.00 to 8.30	Registration
8.30 to 9.15	Theoretical Test and Individual Project Briefing
9.15 to 11.00	Energy Scenario, Energy Policies, Standards, And Incentives • World Energy Scenario • Malaysia Energy Scenario • Energy Policies in Malaysia • Key Energy Efficiency Programs in Malaysia
11.00 to 11.15	Break
11.15 to 13.00	Legislation in Malaysia (Part 1) • Electricity Supply Act 1990 (ESA) • Electricity Regulation 1994 • Energy Commission Act 2001 (EC) • Energy Efficiency and Conservation Act (EECA) • EEC Regulation
13.00 - 14.00	Lunch Break
14.00 to 16.00	Legislation in Malaysia (Part 2) • Introduction On Guide and Guideline Under EECA (Part 1)
16.00 to 16.15	Break
16.15 to 17.00	Legislation in Malaysia (Part 3) • Introduction On Guide and Guideline Under EECA (Part 2)

Workshop Schedule

Day 2:

Time	Module
9.00 to 10.00	Fundamentals As Energy Manager (Safety) • Safety requirement under the Act • Types of competent person • Competent person vs energy manager
10.00 to 10.30	Fundamentals As Energy Manager (Technical) – Part 1 • Overview of energy • Electricity Generation, Transmission, Distribution and Classification
10.30 to 10.45	Break
10.45 to 12.15	Fundamentals As Energy Manager (Technical) – Part 2 • Energy unit conversion factors
12.15 to 13.00	Fundamentals As Energy Manager (Financial) – Part 1 • Introduction on MESI (IBR, ICPT) • Structure of Energy Pricing
13.00 to 14.00	Lunch
14.00 to 14.45	Fundamentals As Energy Manager (Financial) – Part 2 • Calculation of energy saving • Common financial analysis for energy efficiency projects
14.45 to 15.45	Energy Management System – Part 1 1. Type of Energy Management System (EnMS) 2. Introduction to energy management and key definitions 3. Best practices and standards related to energy management
15.45 to 16.00	Break
16.00 to 17.00	Energy Management System – Part 2 4. Overview of Energy Management System (EnMS) concept (PDCA cycle) and its key elements

Workshop Schedule

Day 3:

Time	Module
9.00 to 10.00	Energy Management System – Part 3 5. Establishment of suitable energy performance indicators and energy baselines for energy performance measurements
10.00 to 10.30	Project/Case Study – Part 1
10.30 to 10.45	Break
10.45 to 13.00	Energy Audit – Part 1 • Definition and types of energy audit • Steps for energy audit
13.00 to 14.00	Lunch
14.00 to 14.45	Energy Audit – Part 2 • Energy audit measurement • Concept of Measurement & Verification
14.45 to 15.00	Break
15.00 to 17.00	Common ESM 1 – ESM for Lighting System

Day 4:

Time	Module
9.00 to 10.30	Common ESM 1 – ESM for Compressed Air System
10.30 to 10.45	Break
10.45 to 13.15	Common ESM 2 – ESM for Air Conditioning System
13.15 to 14.15	Lunch
14.15 to 16.15	Common ESM 2 – ESM for Motors, Pumps and Fans
16.15 to 16.30	Break Break
16.30 to 17.00	Project/Case Study – Part 2

Workshop Schedule

Day 5:

Time	Module
8.30 to 9.00	Examination Attendance and Briefing
9.00 to 12.00	Theoretical Test (3 hours)
12.00 to 12.15	Break
12.15 to 13.00	Individual Project Presentation (Part 1): 8 mins present, 7 mins Q&A
13.00 to 14.30	Lunch
14.30 to 16.00	Individual Project Presentation (Part 2)
16.00 to 16.15	Break
16.15 to 17.30	Individual Project Presentation (Part 3)



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

500+

National & Multinational
Companies Benefitted
from our Energy Training
Workshops