



# OPTIMISE ACADEMY IN-HOUSE ENERGY TRAINING



**OPTIMISE ACADEMY**

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**OPTIMAL SYSTEMS ENGINEERING SDN BHD  
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**MyHS00015/22-E002**



# Training Categories

## MC MANAGEMENT

### MC1 Energy Manager Training Course (EMTC)

This course aims to train certified energy managers who will help establish and implement a sustainable energy management system in an enterprise, in preparation for AEMAS Energy Management Gold Standard certification.

### MC2 Establishment of an Energy Management System (EnMS)

This course is for the top management, energy manager, energy committee as well as technical and managerial staff that are involved in energy management to appreciate the importance of EnMS, understand the concepts of EnMS and be familiar with the basic procedure for establishing an EnMS for an organisation in line with the ISO 50001 standards.

### MC3 Building Organisational Resilience via a Sustainable Energy Management Program

This training session highlights the experience of Universiti Teknologi Malaysia (UTM) in driving reforms through a sustainable energy management program. The key highlight of the presentation is the UTM 6P Energy Sustainability Transformation (Energy-STAR) Program that created a competitive edge and built a resilient ecosystem of innovation-driven best practices in energy sustainability.

## TC TECHNICAL

### TC1 Thermal Energy Recovery Technologist (TERT)

The Thermal Energy Recovery Technologist (TERT) course aims to develop professionals and certified experts in thermal energy recovery system using Pinch Technology. Successful participants of this course shall be awarded competency certification based on the level of completion. More than 7000 successful applications worldwide, including our own project experiences show that implementation of pinch technology typically provides an attractive payback period of less than three years.

### TC2 Industrial Thermal Energy Audit and Analysis (ITEA)

This course aims to equip participants with practical concepts, principles, tools and systematic techniques to analyse thermal energy systems, and effectively apply them for thermal energy cost saving measures. This course will cover energy generation and distribution equipment system such as boiler and steam system, thermal oil, furnace, cogeneration system and solar thermal; process equipment such as reactor, flash, evaporator and distillation column, heat exchanger and dryer. The course utilizes pinch analysis as a tool to maximise energy efficiency, heat recovery and energy cost savings.

### TC3 Energy Audit on Electrical System

This course provides insights on the importance of selecting the right electricity tariff, to improve power factor and to manage electricity load demand. Participants will also learn how to improve energy efficiencies for lighting, motor and transformer.

### TC4 Energy Efficiency Improvement of Mechanical Equipment

In this course, participants will learn how to perform analysis and energy efficiency improvement measures on key mechanical equipment including chiller, fans, pumps and compressed air systems. Participants will also be able to identify the typical energy losses and apply a systematic approach to account for the energy efficiency of the mechanical equipment and implement measures to save energy costs.

### TC5 Energy Conservation for Air-Conditioning Systems

This course will provide participants with an understanding of the fundamentals of the operation of various types of air-conditioning systems. Participants shall be able to appreciate the thermodynamic properties of moist air and its application in coil load calculations and the determination of the performance indicators of air-conditioning systems. Various strategies for energy conservation and cost-saving measures will be discussed.





# Training Categories

## **TC6 Introduction to GHG Accounting**

This course highlights the concept and principles of GHG accounting and reporting, including the inventory boundary, GHG emission identification and methodologies and GHG reporting format. The approach shall enable organisations to quantify GHG that are related to initiatives to reduce GHG emissions toward low carbon and sustainable manufacturing.

## **TC7 Chiller Plant Energy Efficiency**

This training provides an opportunity for participants to be exposed to an in-depth energy analysis of chiller plants as well as methods for evaluating the plant's energy performance. This training is designed to give participants a learning experience in carrying out energy audit measurements and to identify possible savings through selected energy conservation measures and the return of investment for chiller plants and cooling towers.

## **AC**

## **AWARENESS**

### **AC1 Now, Everyone Can Contribute Toward Energy Efficiency and Conservation!**

This awareness course focuses on empowering all staff in an organization to implement simple and practical energy efficiency and conservation measures and green practices at the office buildings and at home.

### **AC2 Non-structural Energy Management: Energy Saving Through Behavior Change**

This course provides an approach for energy managers to systematically integrate behavioural tools in the planning and implementation of energy efficiency and conservation practices among building users.



# About OPTIMISE

## Vision & Mission

At OPTIMISE, we aspire to create a society practising sustainable consumption and production.

We are driven by our mission to advance circular economy using innovative process integration and smart systems engineering solutions.

We strive to build resilience and sustainability in people and culture, process and systems, and performance delivery to enable businesses to thrive above challenges of today and tomorrow.

## About OPTIMISE

**What do we do?** We provide consultancy services, conduct professional training and develop cutting-edge process integration and smart systems engineering products, technologies and solutions to enable organisations to achieve multiple bottomline benefits of reduced costs of energy, water, power, resources, ultimately improving efficiency and sustainability.

**Our Leading Edge.** With a portfolio of award-winning innovative solutions, products as well as programs that are backed by over three decades of world-class, internationally validated and referenced research, we strive to build resilience and sustainability in organisations' people and culture, process and systems, performance delivery to enable businesses to thrive above challenges such as COVID-19 pandemic, and beyond.

**Our People.** OPTIMISE people consists of certified professional practitioners and leading global experts and pioneers in the development and advancement of Process Systems Engineering (PSE), Process Integration Pinch Analysis technologies and solutions that promote industrial symbiosis and organisational synergy.

**Our Experience and Track Record.** For over three decades, we have engaged and provided services to over 500 national, and international organisations in advancing our mission to create sustainable societies; in our roles as developer of innovative solutions, products and programs; certified professional practitioners and coaches, champions of education and social activists spreading public awareness on energy and resource conservation.

## Our Track Records

Over 500+ companies in Malaysia have benefited from our trainings.  
 More than 3500+ professionals joined our trainings.

## Among companies that have benefitted:

PERTAMINA	Shell Refinery, Middle Distillate Synthesis
BP – Amoco	Huntsman Tioxide
MLNG	Oleon
Felda Proctor and Gamble	Malaysia Newsprint Industries
MIMOS Semiconductor	Malaysia Palm Oil Board
Riau Pulp and Paper Mill	Malaysia Energy Commission
Qatar LNG	Technip (M) Sdn Bhd
Pertamina Engineering Group	Amoco Mitsui PTA
PT Titan Petrokimia Interindo	PT Chandra Asri
Pan Century Oleochemicals	Petronas Penapisan (M) Sdn Bhd
BASF – Petronas	Petronas Gas Sdn Bhd





MC1

Management Category Training

Certification

5 DAYS  
TRAINING

# Energy Manager Training Course (EMTC)

## Training Summary

Energy security and sustainability are the key challenges facing enterprises and policy makers across the globe. Prudent management of energy allows enterprises to abide by the Efficient Management of Electrical Energy Regulation 2008 and to support the commitment of Malaysia to contribute to a greener world by reducing the carbon emission intensity by 40% by the year 2020. AEMAS Workshop on Energy manager Certification is recognized by the Malaysia Energy Commission.

This course also help participant to establish and implement a sustainable energy management system in the enterprise, in compliance with the ISO 50001 standard, and in preparation for AEMAS Energy Management Gold Standard certification. The course is taught by certified energy managers who are also certified trainers from industry and from Universiti Teknologi Malaysia (UTM), and are among those who have successfully implemented the Sustainable Energy Management System. Get the first-hand insights from certified Energy Managers/Trainers from University Teknologi Malaysia(UTM).

## Learning Outcomes

- 1) Understand the comprehensive sustainable energy management programme.
- 2) Learn the skills to establish and sustain for businesses, to increase energy efficiency and significantly reduce energy cost.
- 3) The Certified Energy Manager under this scheme can apply for conversion to Registered Electrical Energy Manager (REEM).

## Learning Benefits

### **For the Energy Manager Trainees**

- 1) Understand the context of energy use in Malaysia and the world as well as local laws and regulations, which help business to proactively prepare for the energy management and to comply with the law.
  - 2) Ability to establish and implement a sustainable energy management system in the enterprise, in compliance with the ISO 50001 standard, and in preparation for Energy Management Gold Standard certification.
  - 3) Improve professional standing with a certificate validated in 10 ASEAN countries.
- Provide employment opportunities through a network of ASEAN Energy Management Scheme in ten ASEAN countries.

### **For Businesses**

- 1) Establish energy management system to use energy in a systematical manner.
- 2) Save energy costs, become economically competitive.
- 3) Minimize energy losses, save money.
- 4) Ease the application of other quality systems like ISO 50001 and TPM.
- 5) Achieve Energy Management Gold Standard certification.
- 6) Improve the businesses image as a sustainable and efficient business.
- 7) Increase the competitive position regionally and internationally, with a certification recognized in 10 ASEAN countries.

## Targeted Participants

Future Energy Managers, Professionals from any discipline, Facility / Maintenance Managers or Engineers and Industry personnels.





**5 DAYS  
TRAINING**

**MC1**

Management Category Training

Certification

# Energy Manager Training Course (EMTC) - cont.

## Course Outline

### 1) Global & Local Energy Trends

### 2) Energy Efficiency Standard & Labelling

### 3) Energy Policies & Legislations

Energy Policies in Malaysia.

Legislations Related to Energy Management.

### 4) Introduction to Sustainable Energy Management

Introduction to AEMAS & Sustainable Energy Management.

Definition and role of Energy Manager.

Responsibilities of Energy Manager.

Recommended Code of Practice for Energy Manager.

### 5) Setting up a Sustainable Energy Management System

Effective Tool for Appraising Energy Management Performance or Organization.

Methodology for Preparation of Energy Management System.

Setting of Energy Target and Plan.

Integration of Energy Management System into Business Practice.

### 6) Managing Activities in Sustainable Energy Management

Project Management & Controlling.

Energy Management & Performance Review.

### 7) Fundamental of Electrical System

Overview of Energy.

Electrical Energy Basics.

Electrical Loads and Maximum Demand.

Power Factor and Capacitors.

Transformer.

Electricity generation, Transmission and Distribution Structures and Classifications.

Electricity Unit and Conversion.

### 8) Understanding of Energy Pricing and Electricity Bills

Structure of Energy Pricing Related to Electricity Supply.

Understanding of Electricity Billing System and Electricity Bills.

### 9) Introduction to Energy Audit

Need and Approaches in Energy Auditing.

Methods and Approaches in Energy Auditing.

Criteria of an Effective Energy Audit and Report.

Measuring and Monitoring Equipment.

Energy Management Monitoring and Control Equipment or System.





MC1

Management Category Training

Certification

# Energy Manager Training Course (EMTC) - cont.

## 10) Energy Efficiency and Conservation Potentials

Electric Motors.  
Compressed Air System.  
HVAC and Refrigeration System.  
Cooling Tower.  
Fans and Blowers.  
Pumps and Pumping System.  
Lighting System.  
Office Equipment.  
Control and Variables Speed Drives.  
Energy Efficient Technologies and Application in Electrical System.  
Boiler.

### Course Objective

Energy Manager Training Course has been designed to provide knowledge and skills to implement Sustainable Energy Management Systems to all Energy Managers and certify them under the scheme.

### Pre-requisites for Participants

- 1) Age above 21 years old with proficient in English.
  - 2) Holds a degree in Engineering, Science, Economic, Accountancy, Law etc.
  - 3) At least 2 years experience in Supervisory/ Managerial Role.
- (All supporting documents must be certified true copy by Superior or HR department)

### Trainer Profile

Refer to Trainers:

- 1) Prof. Ir. Ts. Dr. Zainuddin Abdul Manan
- 2) Prof. Ir. Ts. Dr. Sharifah Rafidah Wan Alwi
- 3) Ir. Dr. Lim Jeng Shiun
- 4) Prof. Ir. Dr. Mohammad Yusri Hassan
- 5) Prof. Ir. Dr. Haslenda Hashim
- 6) Ir. Al-Khairi Mohd Daud



**2 DAYS  
TRAINING****MC2**

Management Category Training

# Establishment of an Energy Management System (EnMS)

## Training Summary

Energy Management System Standards (EnMS) such as ISO 50001:2018 has been a globally proven tool for the systematic, efficient and sustainable management of energy use in an organisation. EnMS has enabled many organisations to achieve multiple bottom line benefits of reduced energy cost, minimised GHG emissions, improved profitability and enhanced its public image through effective environmental and social governance (ESG). This workshop is designed to empower organisations to establish and implement the ISO 50001:2018 Energy Management System Standards (EnMS) as an integral part of a company's ESG initiative.

## Learning Outcomes

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

- 1) Describe the importance and benefits of EnMS for an organization.
- 2) Communicate real-life example success stories, and make a strong case for EnMS establishment.
- 3) Establish the EnMS context, stakeholders needs, scope and structure based on elements of ISO50001:2018.
- 4) Plan the EnMS actions, resources and support systems, activities and programs and set improvement targets.
- 5) Implement operational control, design and procurement requirements.
- 6) Perform energy performance monitoring, analysis as well as measurement and verification procedure.
- 7) Conduct EnMS continual improvement program.

## Learning Benefits

- 1) Customise EnMS establishment in line with organisational needs.
- 2) Implement a systematic, holistic and sustainable energy management program.
- 3) Improve energy efficiency, profitability and minimise GHG emissions.
- 4) Raise organisation's image and competitiveness via EnMS.

## Course Outline

- 1) Introduction
- 2) Context of Energy Management System
- 3) Leadership
- 4) Planning
- 5) Support
- 6) Operation and Evaluation
- 7) Improvement
- 8) Checklist for EnMS

## Targeted Participants

Top management, energy manager, energy committee as well as technical and managerial staff that are involved in energy management.

## Trainer Profile

Refer to Trainers:

- 1) Prof. Ir. Ts. Dr. Zainuddin Abdul Manan
- 2) Prof. Ir. Ts. Dr. Sharifah Rafidah Wan Alwi
- 3) Ir. Dr. Lim Jeng Shiun



**2 HOURS  
TRAINING****MC3**

Management Category Training

# Building Organisational Resilience via a Sustainable Energy Management Program

## Training Summary

Organisations across the world face massive challenges amidst COVID19 crisis that has cost lives, threatened livelihoods, disrupted businesses and caused widespread unemployment at an unprecedented scale. There is the need for organisations to rapidly adapt, drive innovation and build resilience in order to continue to survive and eventually thrive beyond the epic crisis.

This training session highlights the experience of Universiti Teknologi Malaysia (UTM) in driving reforms through a sustainable energy management program. The key highlight of the presentation is the UTM 6P Energy Sustainability Transformation (Energy-STAR) Program that created a competitive edge and built a resilient ecosystem of innovation-driven best practices in energy sustainability.

UTM 6P Energy STAR strategy to drive reform and innovation began by getting the commitment of UTM top management. Doing so entailed pinpointing the specific and major pains experienced by UTM management and community. Understanding the pains allowed the team to build the definite purpose for the reform initiative. Driven by this purpose, an inclusive SEM Program was established. A key component of the program involves upskilling the people as program champions. The team is responsible for mobilising the commitment of staff and students, drafting policies and action plans, monitoring implementation, conducting energy audits and undertaking measures for continuous performance improvement. Successful results of the SEM initiative have been widely promoted to over 1000 organisations regionally, in close partnership with stakeholders from industry and policy makers.

## Learning Outcome

At the end of the course, it is expected that participants will be able to describe the UTM 6P Energy Sustainability Transformation (Energy-STAR) Program components consisting of Purpose, Program, People, Performance, Promotion and Partnership.

## Learning Benefit

Understand the key steps for transforming an organisation towards energy sustainability via the 6P Energy Sustainability Transformation (Energy-STAR) Program.

## Targeted Participants

Energy Managers, Top Management, Energy Management Committee, and Utilities Manager.

## Trainer Profile

Refer to Trainer:

1) Prof. Ir. Ts. Dr. Zainuddin Abd Manan





TC1

Technical Category Training

Certification

5 DAYS  
TRAINING

# Thermal Energy Recovery Technologist (TERT)

## Training Summary

The Thermal Energy Recovery Technologist (TERT) course aims to develop professionals and certified experts in thermal energy recovery system using Pinch Technology. Successful participants of this course shall be awarded competency certification based on the level of completion. More than 7000 successful applications worldwide, including our own project experiences show that implementation of pinch technology typically provides an attractive payback period of less than three years.

\*There are two modes of TERT Competency Training which you can choose from: Face to face training, and online self-paced training.

## Certification Level Overview

- 1) Thermal Energy Recovery Technologist – Level 1: User
- 2) Thermal Energy Recovery Technologist – Level 2: Advanced
- 3) Thermal Energy Recovery Technologist – Level 3: Expert Certification
- 4) Thermal Energy Recovery Technologist – Level 4: Industrial Practitioner Certification

## Learning Benefits

**If you are an energy manager, energy auditor, or energy service company.**

- 1) Equip yourself as a TERT to manage thermal energy. The anticipated enactment of the Malaysia Energy Efficiency & Conservation Act (EECA) shall unlock opportunities for energy managers with the competency to audit, manage, and optimize thermal energy systems apart from electrical energy.
- 2) Gain competency to perform practical retrofit of existing facilities. Learn from certified experts and practitioners on how to perform optimal thermal energy recovery analysis to retrofit existing facilities practically, and gain the support of top management to achieve triple bottom-line benefits.
- 3) Offer value-added energy audit services for the ASEAN community. If you are an energy auditor, you will be able to offer value-added energy audit services to your customer by incorporating thermal energy recovery of the process. You can also offer energy audit services under the newly announced Energy Audit Conditional Grant (EACG) which supports energy auditing of both electrical and thermal energy. Widespread and holistic implementation of Energy Management System covering thermal and electrical energy in the region is expected to significantly increase the demand for thermal energy analysis experts in Malaysia and across ASEAN.

**If thermal energy is the leading energy cost in your manufacturing site.**

### **1) Huge potential reduction in energy bills from thermal heat recovery.**

Over 7000 successful process integration applications worldwide, including our project experiences have resulted in thermal energy savings of between 10 to 50%, and a payback period of less than 3 years. Our recent petroleum refinery retrofit project for example amassed an annual savings of USD 12 Million.

### **2) “We already have heat recovery systems in place. How could we benefit more?”**

Our experience shows that plant renovation, plant expansion, the addition of new product lines, consideration of total site, and area-wide integration could lead to ample energy cost-saving potentials.




**TC1**
**Technical Category Training**
**Certification**
**5 DAYS  
TRAINING**

# Thermal Energy Recovery Technologist (TERT)

## **TC1a Thermal Energy Recovery Technologist – Level 1 (3 days)**

For TERT Level 1 competency, participants will be equipped with the basics of heat recovery, analysing thermal energy losses from the processes, energy-saving potentials, and the tools to target and design the maximum energy recovery system based on Pinch Technology. Participants will be trained by using excel tools for calculations and is also introduced to our proprietary Optimal Heat software. Participants need to submit the completed excel calculation as proof they have mastered the competency.

### **Learning Outcomes**

- 1) Understand the benefits and application of heat integration.
- 2) Understand the basic concept on heat integration and Pinch Analysis.
- 3) Target maximum energy recovery by using Composite Curves and Problem Table Algorithm.
- 4) Extract correct stream data for heat integration analysis.
- 5) Design heat exchanger network that achieves the maximum energy recovery target.
- 6) Design heat exchanger network that achieves the maximum energy recovery target with stream splitting.
- 7) Determine the minimum number of units.
- 8) Design heat exchanger network that achieves the minimum number of units.
- 9) Make the correct placement for multiple utilities.
- 10) Familiarise with Optimal Heat software for heat integration.

### **Course Outline**

- 1) Maximising Energy and Resource Cost Savings in Industry using Pinch Analysis.
- 2) Process Integration based on Pinch Analysis - The Basic Concepts.
- 3) Setting the Minimum Energy Targets (Energy Targeting) using Composite Curves.
- 4) Significance of Composite Curves.
- 5) Energy Targeting using Problem Table Approach (PTA) with working session.
- 6) Stream Data Extraction (SDE).
- 7) Stream Data Extraction (SDE) Working Session.
- 8) Design of Heat Recovery Network (HRN) by using Grid Diagram.
- 9) Transferring Grid Diagram back to Flowsheet.
- 10) Design of Complex HRN (with Stream Splitting).
- 11) Minimum Units Targets.
- 12) Reducing Number of Units.
- 13) Economic Analysis.
- 14) Multiple Utility Targeting and Optimisation using Grand Composite Curve (GCC).

## **TC1b Thermal Energy Recovery Technologist – Level 2 (2 days)**

For TERT Level 2 competency, participants are exposed to more advanced Pinch Technology techniques to optimise capital and operating cost of the thermal energy recovery system, further recovery potential from process modification analysis, combined heat and power system integration and analysis, retrofit analysis and exploring multiple sites energy exchange potential. Participants need to submit the completed excel calculation as proof they have mastered the competency.

### **Learning Outcomes**

- 1) Understand the importance of heat exchanger network retrofit.




**TC1**

Technical Category Training

Certification

**5 DAYS  
TRAINING**

# Thermal Energy Recovery Technologist (TERT) - cont.

- 2) Apply the steps to perform heat exchanger network retrofit.
- 3) Perform economic analysis and cost-benefit analysis for heat exchanger network design.
- 4) Perform retrofit case study.
- 5) Understand the basic concept of process modification.
- 6) Understand the combined heat & power system.
- 7) Understand the concept of total site heat integration.

## Course Outline

- 1) Advanced Process Integration – Optimum DT<sub>min</sub>.
- 2) Advanced Process Integration – Process Modification.
- 3) Advanced Process Integration – Combined Heat & Power.
- 4) Advanced Process Integration – Total Site Heat Integration.
- 5) Optimal Heat Demo.
- 6) Step-wise retrofit procedure.
- 7) Retrofit Analysis.
- 8) Economic Analysis and Cost Benefit Analysis.
- 9) Retrofit Case Study.

**TC1c**
**Thermal Energy Recovery Technologist – Level 3 (1 day)**

Certification

For TERT Level 3 competency, participants are required to demonstrate they can apply the knowledge of Level 1 and 2 to an industrial case study. They are required to complete an industrial case study assignment. In addition, they also need to take an examination to test their knowledge.

## Learning Outcomes

- 1) Apply knowledge of TERT Level 1 and 2 to solve industrial case study.
- 2) Examine participants' TERT knowledge via examination.

## Course Outline

- 1) Online Exam.
- 2) Industrial Project Case Study Presentation.

**TC1d**
**Thermal Energy Recovery Technologist – Level 4 (By application)**

Certification

For TERT Level 4 competency, participants need to demonstrate they have applied the TERT Level 1 to 3 knowledge to a real industrial case study. The participant needs to submit the project report. An evaluation committee will be appointed, which will vet the report in detail. There will be an evaluation session between the candidate and the evaluation committee. Upon satisfactory evaluation by the committee, the candidate will be awarded TERT Level 4.

## Trainer Profile

Refer to Trainers:

- 1) Prof. Ir. Ts. Dr. Zainuddin Abdul Manan
- 2) Prof. Ir. Ts. Dr. Sharifah Rafidah Wan Alwi
- 3) Ir. Dr. Lim Jeng Shiun





TC2

Technical Category Training

3 DAYS  
TRAINING

# Industrial Thermal Energy Audit and Analysis (ITEA)

## Training Summary

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 saving 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.

## Learning Outcomes

- 1) Holistically perform energy audit involving process as well as the utility areas.
- 2) Conduct process/equipment energy accounting using energy balances & Sankey diagram.
- 3) Apply systematic procedure for macro and technical-level energy audit and analysis.
- 4) Utilise Pinch Analysis benchmarking tool to establish energy recovery targets for process and utilities and to assess potential to maximise energy savings.
- 5) Gain awareness on Pinch Analysis Optimal-Heat software for maximising heat recovery.
- 6) 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, ovens, dryers, separator and heat exchangers.

## Course Outline

- Industrial Thermal Energy Audit (ITEA) – Premise and The Big Picture
- Industrial Energy Audit and Analysis – The 10 Key Steps – Part 1
- Industrial Energy Audit and Analysis – The 10 Key Steps – Part 2
- Process and Equipment Thermal Energy Accounting – Part 1
- Process and Equipment Thermal Energy Accounting – Part 2
- Thermal Energy Pinch Benchmarking and Targeting
- Maximum Thermal Energy Targeting
- Heat Recovery Systems – Analysis, Design and Retrofit
- Fuels & Combustion
- Thermal Utility Analysis & Improvements
- Combined Heat and Power (Cogeneration) Systems
- Thermal Utility Analysis & Improvements

## Trainer Profile

Refer to Trainers:

- 1) Prof. Ir. Ts. Dr. Zainuddin Abdul Manan
- 2) Prof. Ir. Ts. Dr. Sharifah Rafidah Wan Alwi
- 3) Ir. Dr. Lim Jeng Shiun




**2 DAYS  
TRAINING**
**TC3**

Technical Category Training

# Energy Audit on Electrical System

## Training Summary

Technical energy audits are detailed evaluations of the actual performance of a facility's energy using systematic approach and equipment, benchmark against the designed performance level or the industry. Trainees will gain insight on the importance of selecting the right electricity tariff, power factor improvement and how to manage the electrical load. Trainees will also learn how to improve the energy efficiency for lighting, motor and transformer. This training will also provide demonstration on the use of electrical energy audit equipment.

## Learning Outcomes

- 1) Learn to select the best electricity tariff.
- 2) Reduce your Energy Costs Improve Energy Efficiency of your Facilities.
- 3) How to improve the power factor to reduce the electrical energy consumption.
- 4) How to manage the electrical load.
- 5) The important aspects of improving the energy efficiency of transformer.
- 6) Lighting and motor energy improvement measures.

## Learning Benefits

- 1) Reduce your Energy Costs.
- 2) Improve Energy Efficiency of your Facilities.

## Course Outline

- 1) Electricity Tariff
- 2) Power Factor Correction
- 3) Electric Motor
- 4) Transformer
- 5) Lighting
- 6) Electrical Load Management
- 7) Electrical Energy Audit
- 8) Methodology

## Targeted Participants

Energy manager, Professionals from any discipline, Facility/maintenance managers or engineers and Industry personnel who wish to learn more on electrical system.

## Trainer Profile

Refer to Trainer:

- 1) Prof. Ir. Dr. Mohammad Yusri Hassan



**2.5 DAYS  
TRAINING****TC4**

Technical Category Training

# Energy Efficiency Improvement of Mechanical Equipment

## Training Summary

In this course, participants will learn the technical energy efficiency improvement measures for mechanical equipment including chillers, fans, pumps and compressed air systems. Participants will also be exposed to the systematic approach to analyze the energy efficiency of these equipment and understand the typical energy losses, and gain insights on how to improve the energy efficiency.

## Learning Outcomes

- 1) Determine the current energy efficiency of your mechanical equipment.
- 2) Identify energy improvement opportunities.

## Learning Benefits

- 1) Reduce your facilities' energy costs.
- 2) Improve the energy efficiency of the mechanical equipment in your facilities.
- 3) Gain professional recognition.
- 4) Prepare your organisation for setting up an energy management system.

## Course Outline

Fundamentals, efficiency calculations, energy improvement opportunities

- Chiller
- Fluid Pumps
- Fans
- Compressed Air System

## Targeted Participants

Energy manager, Professionals from any discipline, Facility/maintenance managers or engineers and Industry personnel who wish to learn more on mechanical equipment.

## Trainer Profile

Refer to Trainer:

- 1) Assoc. Prof. Ir Dr Hayati Abdullah



TC5

Technical Category Training

2 DAYS  
TRAINING

# Energy Conservation for Air-Conditioning Systems

## Training Summary

This course is designed to provide building operators, maintenance personnel, energy managers and executives working in commercial buildings and industries with the necessary skills to improve energy efficiency of air-conditioning systems through enhanced operations.

This course provides participants with an understanding of the fundamentals of the operation of various types of air-conditioning systems. Participants shall be able to appreciate the thermodynamic properties of moist air and its application in coil load calculation and the determination of the performance indicators of air-conditioning systems. Various strategies for energy conservation and cost-saving measures will be discussed. This training emphasizes on interactive learning.

## Learning Outcomes

- 1) Describe various types of air-conditioning systems used in commercial buildings and industries.
- 2) Explain the working operations of the basic refrigeration cycle.
- 3) Analyse air properties using the psychrometric chart and how they relate to thermal comfort.
- 4) Determine performance indicators for air-conditioning systems.
- 5) Identify energy conservation measures and savings.

## Learning Benefits

Participants will gain knowledge in the area of air-conditioning and be able to improve energy efficiency of air-conditioning systems in their plants or buildings.

## Course Outline

- 1) Introduction to Air-Conditioning Systems.
- 2) Air-Conditioning Fundamentals.
- 3) Energy Efficiency of Air-Conditioning Systems.
- 4) Efficient operation and maintenance of air-conditioning systems.
- 5) Air-Conditioning Energy Audit.
- 6) Case Study - M&V of Air-Conditioning System.
- 7) Summary - Energy Conservation Measures.

## Targeted Participants

Energy Managers, Building Operators and Facility/Maintenance Personnel.

## Trainer Profile

Refer to Trainer:

- 1) Assoc. Professor Ir. Dr. Hayati Abdullah



**TC6**

Technical Category Training

**1 DAY  
TRAINING**

# Introduction to GHG Accounting

## Training Summary

To align with the global and national initiatives to mitigate climate change, organizations need to propose initiatives and implementation measures toward low carbon and sustainable manufacturing by reducing their GHG emissions. In designing the action plan, one must know the source of GHG emissions, and more importantly, quantify it. Thus, there is a need to understand the systematic approach for GHG reporting.

This course highlights the concept and principles of GHG accounting and reporting, including the inventory boundary, GHG emission identification and methodologies and reporting format. The approach shall enable a company to quantify GHG that are associated with initiatives to reduce GHG emissions toward low carbon and sustainable manufacturing.

## Learning Outcomes

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

- 1) Describe the GHG accounting and reporting principles.
- 2) Identify the GHG inventory boundary.
- 3) Quantify GHG emissions.
- 4) Report the GHG emissions.

## Learning Benefits

- 1) Understand the GHG reporting principle.
- 2) Understand the key components of GHG report.

## Course Outline

- 1) Introduction to GHG Accounting.
- 2) Reporting principle of GHG.
- 3) GHG inventory boundary.
- 4) GHG management practice.
- 5) GHG emission quantification methodology.
- 6) GHG emission calculation.
- 7) GHG reporting.

## Targeted Participants

Energy Managers, Sustainability Manager, Top Management, Energy Management Committee and Utilities Manager.

## Trainer Profile

Refer to Trainer:

- 1) Ir. Dr Lim Jeng Shiun
- 2) Prof. Ir. Ts. Dr. Zainuddin Abdul Manan
- 3) Prof. Ir. Ts. Dr. Sharifah Rafidah Wan Alwi
- 4) Dr. Lai Yee Qing



**TC7**

Technical Category Training

**1 DAY  
TRAINING**

# Chiller Plant Energy Efficiency

## Training Summary

This training provides an opportunity for participants to be exposed to an in-depth energy analysis of chiller plants as well as methods for evaluating the plant's energy performance. This training is designed to give participants a learning experience in carrying out energy audit measurements and to identify possible savings through selected energy conservation measures and the return of investment for chiller plants and cooling towers.

## Learning Benefits

- 1) Able to carry out energy audit of chiller plants and cooling towers.
- 2) Able to identify energy saving measures for chiller plants.
- 3) Able to improve energy efficiency of existing chiller plants in building/industry.

## Course Outline

- 1) Introduction Chiller Fundamentals & Thermal Comfort
- 2) Basic Refrigeration Cycle.
- 3) Chiller Plant Operations.
- 4) Chiller Plant Audit & Performance Assessment.
- 5) Cooling Tower Performance Assessment.
- 6) Energy Efficiency Opportunities.

## Targeted Participants

Energy managers, Facility/maintenance managers or engineers, and Academicians.

## Trainer Profile

Refer to Trainer:

- 1) Assoc. Professor Ir. Dr. Hayati Abdullah



**4 HOURS  
TRAINING****AC1**

Awareness Category Training

# Now, Everyone Can Contribute Toward Energy Efficiency and Conservation!

## Training Summary

This awareness course focuses on empowering all staff in an organization to implement simple and practical energy efficiency and conservation measures and green practices at the office buildings and at home.

## Learning Outcomes

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

- 1) Appreciate the importance and impact of energy efficiency and conservation on the environment, organization and the environment.
- 2) Apply systematic steps to implement Sustainable Energy Management for an organisation.
- 3) Contribute toward energy efficiency and conservation initiatives at their offices and homes.
- 4) Share green practices at home with their families and neighbors.
- 5) Evaluate the benefits of implementing energy efficiency and energy conservation via simple cost-benefit analysis.

## Learning Benefits

- 1) Gain awareness on energy efficiency and conservation.
- 2) Gain awareness of green practices at home.
- 3) Gain experience in energy reduction via energy efficiency experimental setup.

## Course Outline

- 1) Building Organisational Resilience via Sustainable Energy Management - (1 hour)
- 2) Energy Efficiency and Conservation at the Office - (1.25 hours)
- 3) Green Practices at Home - (0.75 hours)
- 4) Cost benefit analysis - (1 hour)

## Targeted Participants

Building or company managers, engineers and executives; plant operators, office staff and the general public

## Trainer Profile

Refer to Trainer:

- 1) Prof. Ir. Ts. Dr. Zainuddin Abdul Manan
- 2) Assoc. Prof. Ts. Dr. Jasrul Jamani Bin Jamian



**1 DAY  
TRAINING****AC2**

Awareness Category Training

# Non-structural Energy Management: Energy Saving Through Behavior Change

## Training Summary

Building users contribute to the energy usage of a building. Their energy-using habits affect the building energy performance. The non-structural energy management approach provides non-technical solutions and low-cost approach for the organization to achieve better energy savings by improving building user's energy practices. Such goal can be achieved by applying emerging behavioural tools

This course provides an approach for energy managers to systematically integrate behavioural tools in the planning and implementation of energy efficiency and conservation practices among building users.

## Learning Outcomes

- 1) Will understand the concept of non-structural energy management.
- 2) Will learn to plan and foster behaviour change among building users in systematic way.
- 3) Will understand the integration of behavioural tools in energy management for fostering energy practices among building users.

## Learning Benefits

- 1) Understand the importance and concept of non-structural energy management.
- 2) Understand the systematic approach to foster energy saving behaviour among building users.
- 3) Comprehend behaviour changing tool and understand the concept in applying them for energy saving purpose.
- 4) Understand MEL (Monitoring, Evaluation and Learning) framework for non-structural energy management.

## Course Outline

- 1) Introduction of non-structural energy management.
- 2) Systematic approach to foster energy saving behaviour among building users.
- 3) Energy behaviour changing tools.
- 4) MEL (Monitoring, Evaluation and Learning) framework for energy management .

## Targeted Participants

Registered Electrical Energy Managers, Energy/sustainability managers, Facility & asset managers, Asset owners, Administrators & facility management companies, Lecturers, Researchers, Academicians & post-graduate students and Energy saving campaign planners.

## Trainer Profile

Refer to Trainers:

- 1) Associate Professor Dr. Choong Weng Wai
- 2) Dr Low Sheau Ting
- 3) Dr. Wee Siaw Chui



# Trainers Profile



## **PROF. IR. TS. DR. ZAINUDDIN ABDUL MANAN**

Prof Ir Ts Dr Zainuddin Abdul Manan is a professor of chemical 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 15 books/ chapters, 220 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 registered electrical 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 has been the technical advisor for the Malaysian Ministry of Energy and Natural Resources. He founded and spearheaded the UTM Sustainable Energy Management initiative that led UTM to achieve over USD 7 million energy savings between 2011 and 2020, and to win the ASEAN Energy Award.



## **PROF. IR. TS. DR. SHARIFAH RAFIDAH WAN ALWI**

Prof Ir Ts Dr Sharifah Rafidah Wan Alwi is a Professor in the School 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 Pinch consultant for multiple industries and is among the leading researchers in Pinch Analysis technique development. Prof Sharifah is also the co-founder and Director of Optimal Systems Engineering Sdn Bhd, a UTM Spin-off company. She is an active consultant as well as trainers for the industries. Together with her team, they have developed 7 resource minimisation software. Prof 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 and Top Research Scientists Malaysia 2018. 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. Due to her various contributions globally and locally, she was promoted as Professor in 2016 at the age of 34 years old by Universiti Teknologi Malaysia. Dr Sharifah is also the Associate Editor for Journal of Cleaner Production, Chair for the Science Leadership Working Group under Young Scientist Network, Academy of Sciences Malaysia (YSN-ASM) and UTM Sustainable Energy Management System advisor. She has also served as the Chair for Malaysia IChemE Young Engineer Group (YEG).



# Trainers Profile



## **IR DR LIM JENG SHIUN**

Ir Dr Lim Jeng Shiun is 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 for energy and carbon planning. Dr Lim has published 82 Scopus indexed articles to date. His Scopus h-index is currently 21 with 1505 citations. He has also been appointed as the guest editor for Special Issue of JCLEPRO and Chemical Engineering Transactions (Scopus indexed). He is also a professionally Certified Energy Manager, Certified Energy Auditor, Accredited Energy Measurement & Verification Professional and a Registered Electrical Energy Manager certified by Energy Commission of Malaysia. As an engineer in practice, he has applied the output of his research work in consultancy projects for the industrial community. He has been extensively involved in 22 research projects, 11 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 identify energy saving opportunities worth millions of dollar through the use of process integration and process systems engineering approach.



## **ASSOCIATE PROFESSOR DR. CHOONG WENG WAI**

Associate Professor Dr. Choong Weng Wai from Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia (UTM) is a Certified Energy Manager, a Registered Electrical Energy Manager (REEM) with Energy Commission and a Green Building Index Facilitator. His research niche focus on behavioral studies and environment, he has been appointed as the Consultant Head for the United Nations Development Programme (UNDP) and the Department of Malaysia (DOE) for environmental projects, and assisting DOE to develop nationwide guidance document and nudge guidelines to conduct effective environmental program. His involvements in promoting and creating sustainable lifestyle received the Excellence Award for Contribution towards Sustainability from Royal Institution of Surveyor Malaysia (RISM).



## **DR LOW SHEAU TING**

Dr Low Sheau Ting is a senior lecturer in Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia (UTM). Her research activities are focus on fostering pro-environmental behaviour, particularly on energy conservation behaviour. She is a Registered Electrical Energy Manager (PTE-0017-2014) endorsed by the Energy Commission Malaysia and a Certified Energy Manager from ASEAN Energy Management Accreditation Scheme (AEMAS).



# Trainers Profile



## **DR. WEE SIAW CHUI**

Dr. Wee Siaw Chui is a senior researcher from Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia. Her research niche is on behavioural change and environmental fields. She had previously been appointed as researcher for Consultation Project by Department of Malaysia (DOE) and successfully produced report on environmental programmes organized by DOE and guidance documents in assisting the DOE to foster behavioural change among the communities for sustainable lifestyle.



## **PROF IR DR MOHAMMAD YUSRI HASSAN**

Prof. Ir. Dr. Mohammad Yusri Hassan is a Professor at Faculty of Electrical Engineering, Universiti Teknologi Malaysia (UTM). He was the Director of Centre of Electrical Energy Systems (CEES), UTM. He has wide experiences in the area of energy consultancy. He is also a Working Group Member of Energy Efficiency of SIRIM and member of SIRIM Technical Committee on Energy Management. He is a Certified Energy Manager under ASEAN Energy Management Scheme (AEMAS) and a Registered Electrical Energy Manager under the Energy Commission of Malaysia.



## **ASSOC. PROFESSOR IR. DR. HAYATI ABDULLAH**

Ir. Dr. Hayati is an Associate Professor at the School of Mechanical Engineering, UTM. She specializes in Thermodynamics, more particularly in the area of Air-Conditioning and Energy Management. She was trained in Energy Management in Sweden and is a Certified Energy Manager (AEMAS). Ir. Dr. Hayati is a Professional Engineer registered with The Board of Engineers Malaysia, Chartered Engineer registered with The Engineering Council United Kingdom and Past Chairman of The Institution of Engineers Malaysia (Southern Branch). She has experience working as an Energy Management consultant for over 25 years & has worked in National Energy Conservation & Auditing projects including with international consultants such as ADEME from France.



## **ASSOC. PROF. TS. DR. JASRUL JAMANI BIN JAMIAN**

Dr. Jasrul Jamani Bin Jamian received the Bachelor of Engineering (B. Eng. (Hons)) degree, Master of Engineering (M. Eng.) and Ph.D degree in electrical (power) engineering from Universiti Teknologi Malaysia in 2008, 2010 and 2013 respectively. He is currently director for Power Engineering Division, School of Electrical Engineering, Universiti Teknologi Malaysia. Dr Jasrul is actively involved in research as a principal investigator as well as leader in consultancy projects with several companies such as Petronas and Tenaga Nasional Berhad, which focuses on relay coordination projects and off grid solar PV design. He is the author and co-author of more than 80 publications in international journals and proceedings in the area of Power Systems and Energy. His research interest includes Network Reconfiguration, Optimization technique, and Renewable Energy.



# Testimonials

## Recent Reviews from our Past Participants:

**Nur Fatihah Zainal Abidin**, Freelancer

A good initiative to enhance knowledge and add variety to the offered services. Training materials, explanation, presentation done by Optimise Team were great!

**Mohd Zaid Misran**, Senior Process Technician

Practically, valuable and knowledgeable in terms of industry expertise.

**Mohd Lutfi Bin Mahali**, Electrical Engineer

An excellent training! I learned a lot, and it inspired me to look at the way thermal energy works. A very high pedagogical standard. Well done!

**Siti Aishah Bt Abu Hanipah**, Energy Manager

Absolutely excellent! The technical team really need a very detail training like this annually to always improvise our skills. I love it very much! My first time online training and I think it is really good because we can directly access to trainer.

**Azizah Kassim**, Director & Energy Manager

This is the best Thermal Energy Training that I have attended so far! Everyone should go to this training if you want to become an Thermal Energy Recovery Expert.

**Tommy Chang Chee Pang**, Director

The trainers are expert in their field and I truly learned a lot from their best knowledge. Not to forget the helpful facilitators who made this online training a great learning experience. Thank you!

**Nur Hidayat Purdiono**, Executive - Operation (Cogeneration)

It really contributes to personal skills growth and helps participant qualities to be equipped with current industry needs. It delivers what it offers and gives some eye-opening theory and understanding on how energy conservation should be analyzed and done rather than just to commit to renewable energy or conventionally resources to newer or better equipment by relooking into plant design.

**Cheng Kai Cong**, Energy Manager

The training further deepen and enhance my understanding of heat recovery and pinch analysis. This kind of training needs to be conducted more often to benefit more people.

**Calvin Kong Leng Sing**, Student

It is easy to follow although it is a online courses. It is a great course for me to refresh and gain some new understandings about the heat recovery via pinch analysis. The quality of the online working sessions also exceeds my expectation.

**Anonymous**, Energy Manager & Sustainability Program Leader

The training has been an eye opener for me on pinch analysis and the different methods that can be applied to the process plant I worked at.

**Lim Kek Sia**, Building Commissioning Specialist

It enhance the engineers' career and entrepreneurship skills. It is a great idea for engineers that will improve the confidence level.



# Testimonials

## Recent Reviews from our Past Participants:

**Tharmaswaran**, Project Manager

I think what is great about this training is that we get to practice almost immediately the details shared. This way the understanding of the subject is immediately applied and clarified if not understood especially since the training is done online.

**Ashraf Tariq Anwar bin Anuar**, Head of Technical

Comprehensive training which achieved its main objective in equipping trainees with the fundamentals to start GHG Accounting in respective organization.

**Lau Zheng Zhou**, Manager (ESG & Sustainability)

This course has practical work sessions which allow participants to apply what they learn, and by doing so, reinforces their understanding and helps to retain knowledge. You don't know if you truly understand the concept until you've been asked to apply them.

**Mohamad Firdaus Bin Azizan**, SE (Technology & Process Optimization)

TERT 1 provides insights and practicality tools for industrial practitioners to discover thermal energy saving, by maximizing potential heat recovery while minimizing external cooling and heating duty requirement through pinch analysis.

**Md Sairol Nizam Bin Md Saidi**, Senior Manager (Technology & Process Optimization)

This is an opportunity to learn from and to build network with established pinch practitioners in Malaysia. With the increasing energy prices, it is wise for companies to further improve and optimize their processes to stay competitive and profitable.

**Er Hong An**, Graduate Research Assistant

This course introduces wider scopes of Pinch Analysis applications, ranging from HEN retrofit, process modifications, batch heat integration, industrial symbiosis, and Total Site integration. These serve as helpful tools in the pocket of engineers to identify the potential for utility saving from various perspectives at their plants. Great!

**Tan Ying Yi**, Engineer

The skills learned in this workshop will greatly help in GHG emissions accounting and reporting.

**Wan Nurul Atiqah Wan Mohamed**, Executive

Loved the workshops as it is directly applicable to the actual GHG accounting work that has to be done in organisations.



# Training Overview

In-house Training Fee Overview (Form A)						
Management Category		Total Days	Certification	Training Fee		✓
MC1	Energy Manager Training Course (EMTC)	5	Yes	RM750 pax/day		
MC2	Establishment of an Energy Management System (EnMS)	2	-	RM560 pax/day		
MC3	Building Organisational Resilience via a Sustainable Energy Management Program	1/3	-	RM3,800 (F2F)	RM2,000 (Online)	
Technical Category						
TC1	Thermal Energy Recovery Technologist (TERT) - Level 1-3	6	Yes	★ RM520 pax/day		
TC1a	Thermal Energy Recovery Technologist (TERT) - Level 1	3	-	RM560 pax/day		
TC1b	Thermal Energy Recovery Technologist (TERT) - Level 2 (*Prerequisite: TC1a)	2	-	RM560 pax/day		
TC1c	Thermal Energy Recovery Technologist (TERT) - Level 3 (*Prerequisite: TC1a and TC1b)	1	Yes	RM750 pax/day		
TC2a	Industrial Thermal Energy Audit and Analysis (ITEA)	5	-	RM560 pax/day		
TC2b	Certified Industrial Thermal Energy Audit and Analysis (ITEA) - Examination (*Prerequisite: TC2a)	1	Yes	RM750 pax/day		
TC3	Energy Audit on Electrical System	2	-	RM560 pax/day		
TC4	Energy Efficiency Improvement of Electrical and Equipment	2.5	-	RM560 pax/day		
TC5	Energy Conservation for Air-Conditioning Systems	2	-	RM560 pax/day		
TC6	Introduction to GHG Accounting	1	-	RM560 pax/day		
Awareness Category						
AC1	Now, Everyone Can Contribute Toward Energy Efficiency and Conservation!	1/3	-	RM3,800 (F2F)	RM2,000 (Online)	
AC2	Non-structural Energy Management: Energy Saving Through Behavior Change	1	-	RM560 pax/day		

Kindly tick on the right side column of the **Form A** for selection of your training title. After filling up this **Form B**, kindly send both pages to us via email to [training@optimalsystems.my](mailto:training@optimalsystems.my).

\*\* For training code: **MC3** and **AC2**, maximum participant per session is at 50pax.







# OPTIMAL SYSTEMS ENGINEERING SDN BHD

No. 35A (Tingkat 1) Jalan Flora 1/9,  
Taman Pulai Flora, 81300 Skudai,  
Johor Darul Takzim, Malaysia

Reply Form (Table B)				
Organisation Name			PIC Name	
Training Address (Not required if online)			PIC Phone No.	
			PIC Email Address	
How many pax?			Expected Training Date	
Method Preference	Face-to-face	Online	Budget Range	

Kindly tick on the right side column of the **Form A** for selection of your training title. After filling up this **Form B**, kindly send both pages to us via email to [training@optimalsystems.my](mailto:training@optimalsystems.my).

**For training workshops:**

All training fee listed are standard arrangement only. For special arrangement, kindly consult with our staff to inquire more on the final figure. **For selection of more than 1 title for in-house training, you are entitled to exclusive rates per pax.**  
1) Maximum number of person per session is 30 pax.  
2) Minimum number of person per session is at 20 pax.

For F2F inhouse training outside Johor Bahru, cost of accommodation and travel for trainers and secretariat will be borne by client.

**The Client has to provide: (for Face-to-face only)**

- 1) Training Venue and/or Facilities
- 2) Meal for Participants, Trainer(s) and Secretariat(s)

**For Special Arrangement:**

Office Tel : (+60)7-5536244  
Phone : Ms Famieza (+60)16-7167248  
Email : [inquiry@optimalsystems.my](mailto:inquiry@optimalsystems.my)

