TC2

Technical Category Training

Industrial Thermal Energy Audit and Analysis (ITEA)

5 DAYS TRAINING

Training Summary

Thermal energy efficiency improvement typically offers the biggest scope for energy cost saving in industry. Thermal energy audit involves systematic and detailed analysis of the performance of thermal energy equipment and systems of a facility, and to benchmark against the system's design performance.

Certification Level Overview

This ITEA course consists of a 5-day modules. Participant need to demonstrate the learning outcomes of all modules in order to obtain the certification.

TC2a Industrial Thermal Energy Audit and Analysis (ITEA) (5 Days)

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.

TC2b Industrial Thermal Energy Audit and Analysis (ITEA) - Examination (1 Day)

After the completion of TC2a module, participants can apply to be a Certified Industrial Thermal Energy Audit and Analysis by completing and passing the assigned projects and examination.

Learning Outcomes

1) Apply the insights, principles and the big picture of industrial energy audit.
2) Perform material and energy balances for practical industrial thermal energy analysis.
3) Apply the tools to analyse steam properties.
4) Apply the key criteria for fuel selection and combustion.
5) Determine the energy performance of thermal energy system components
6) Use calculator/spreadsheet to explore improvement opportunities.
7) Apply no cost, low cost and practical strategies to improve performance of thermal energy system.

Learning Benefits

1) Improve the energy efficiency of a facility's thermal energy system.
2) Reduce the facility's thermal energy costs and GHG emissions.
3) Prepare the organisation for setting up of energy management system.
4) Raise competitiveness through thermal energy management expertise.

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Industrial Thermal Energy Audit and Analysis (ITEA) - cont.

5 DAYS TRAINING

Course Outline

- Overview of Thermal Energy Systems (TES) in Industrial Applications
- Key Principles and Concepts In Thermal Energy System Applications
- Dryers, Evaporators, Distillation Column
- Heat Exchangers
- Heat Integration Using Pinch Analysis
- Fuel and Combustion
- Steam System: Energy Generation
- Steam System: Energy Distribution and Utilisation
- Hot Oil Systems
- Cogeneration
- Solar Thermal for Process Heating
- Absorption Chiller
- Thermal Energy Storage
- Thermal Energy Audit and Report

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