

## Steam Plant Energy and Cost Savings Course

**Training Date** : 22 – 26 October, 2023**Training Venue**: Kuala Lumpur, Malaysia**Training Time**: 8.30 am – 2.30 pm**Training Fee**: USD4,500 per participant

### COURSE OVERVIEW

Steam is largely used for the purpose of process heating and mechanical drives (power generation, pumps, and compressor). Using steam offers multiple benefits over other heating media and numerous benefits, simplicity of the system efficiency and reliability make steam become the first choice for process heating. This training course is to gain knowledge and skills to all personnel that are working with steam plant on the importance of the energy and cost savings management.

### TRAINING OUTCOMES?

At the end of the training course, the participant will be able to: -

- Understand the potential of energy and cost savings in steam plant systems and its applications.
- Select the best available up-to-date technology for steam plant systems.
- Calculate and estimate the steam boiler efficiency.
- Calculate the energy used for heat transfer and mechanical drive equipment.
- Optimize the correct heat transfer equipment for their applications.
- Identify and calculate the steam plant energy and cost savings.
- Develop a comprehensive strategy on implementing the steam plant energy and cost savings initiatives.

### WHO SHOULD ATTEND?

Plant Managers, Energy Managers, Plant Technologist, Supervisors, Engineers and Operating personnel who are responsible for steam plant operation and energy efficiency improvements in power plant, oil and gas, petrochemical plants, and other industries that using steam for power and heat transfer processes.

### COURSE PROGRAM

#### Overview of STEAM ENERGY Program

- Overview of Steam Energy Efficiency
- Steam System Basics
  - Why Steam
  - Steam System Operation
    - Generation
    - Distribution
    - End Use
    - Recovery
- Economics of Energy
  - Fuel Cost
  - Steam Cost

#### STEAM BOILERS and Its ENERGY

- Type of Steam Boilers
  - Firetube Boiler
  - Watertube Boiler
- Selection of Steam Boilers
- Types of Steam
  - Saturated Steam
  - Superheated Steam
- Definition of Steam Enthalpy
- Temperature–Specific Entropy Diagram (T–s diagram)
- Applications of Various Types of Steam Pressures and Temperatures

## **Optimizing COMBUSTION Process and Controls**

- Purposes of Burning Fuels
- Characterization of fuels
- Combustion Efficiency
- Components of Process Heating Systems
- Process Heating Energy Consumption
- Potential for Savings
- Incentive for Optimizing Heat Process Systems
- Seven Ways to Optimize Your Process Heat System
- Emerging process heating technologies
- Check Burner Air to Fuel Ratios
- Factors affecting excess air level requirements
- Preheated Combustion Air

## **Optimizing the COST and USAGE of Steam**

- Steam Generation
- Cogeneration
- Opportunities for Improvement
- Boiler Systems Efficiency and Its Performance
  - Boiler Efficiency
  - Factors Affecting Boiler Efficiency
- Opportunities For Improving Steam Generation Systems
- Boiler System Fouling and Corrosion
- Automatic Boiler Water Management System
- Boiler Feed Water Economizers
- Boiler Efficiency Design Features
- Steam Use
- Steam Trap
- Steam Recovery
  - Eliminate Condensate Losses
  - Optimize Deaerator Performance
- Steam Distribution
- Heat Recovery System
  - Conventional Economizer
  - Air Preheat
  - Blowdown
  - Vent Condenser
- Optimizing Steam System
  - Optimize Steam Pressure
  - Optimize Boiler Loading
  - Optimize Fuel Atomization
- Economic Justification for Steam Improvement Projects
- Maintenance and Inspection Procedures

## **Optimizing STEAM CONDENSATE System**

- Introduction to Condensate Recovery
  - What is Condensate Recovery?
  - The Benefits of Condensate Recovery
    - Reduced Fuel Costs
    - Lower Water related Expenses
    - Positive Impact on Safety and the Environment
- Returning Condensate and When to Use Condensate Pumps
  - Using Trap Inlet Pressure
    - Gravity Return
    - Elevated Return
  - Using a Pump to Overcome (Return Line) Backpressure
- Condensate Recovery: Vented vs. Pressurized Systems
  - Vented vs. Pressurized Condensate Recovery
    - Selecting Between a Vented or Pressurized System
  - Pros and Cons of Vented and Pressurize Recovery Systems
- Condensate Recovery Piping
  - Piping for Two
  - Phase Flow
  - Steam Present in Condensate Recovery Piping
  - Design Methods for Condensate Recovery Piping

## **Case Study on STEAM PLANT IMPROVEMENT Project**

- Boiler Efficiency (Steam to Fuel) Calculation
- Fuel Consumption
- Boiler Feedwater Temperature Improvement
- Steam Plant Savings:
  - Fuel Saving
  - Make up Water Saving
  - Motive Steam Saving

### **SELECTED CUSTOMERS**



## About the Course Instructor

**Ir. Mohammed Yaacob;** Graduated with Bachelor (Honors) in Mechanical Engineering from the University of Malaya and is both a Registered Professional Engineer (Mechanical) with Board of Engineer, Malaysia since 2000, a Corporate Member, The Institution of Engineers, Malaysia and a Member of the American Society of Mechanical Engineers (ASME). He is a certified First Grade Engineer (Steam Boiler and Internal Combustion Engine) by the Department of Occupational Safety and Health (DOSH).

He had working experiences with several companies such as Equator Engineering Sdn Bhd, Tenaga Nasional Berhad, Petronas Gas Berhad (Gas Processing Plant 5/6 and Centralised Utilities Facility), Qatar Petroleum (Corporate Training Department) and currently he is the Managing Director for Bayubali Engineering Sdn Bhd.

Throughout his carrier he has an extensive field experience in steam boiler operation, trouble-shooting, inspection, maintenance and repair.

He is the co-author for An Introduction to Steam Machinery book published by University of Malaya Publisher.

## About CfPE Technology Solutions

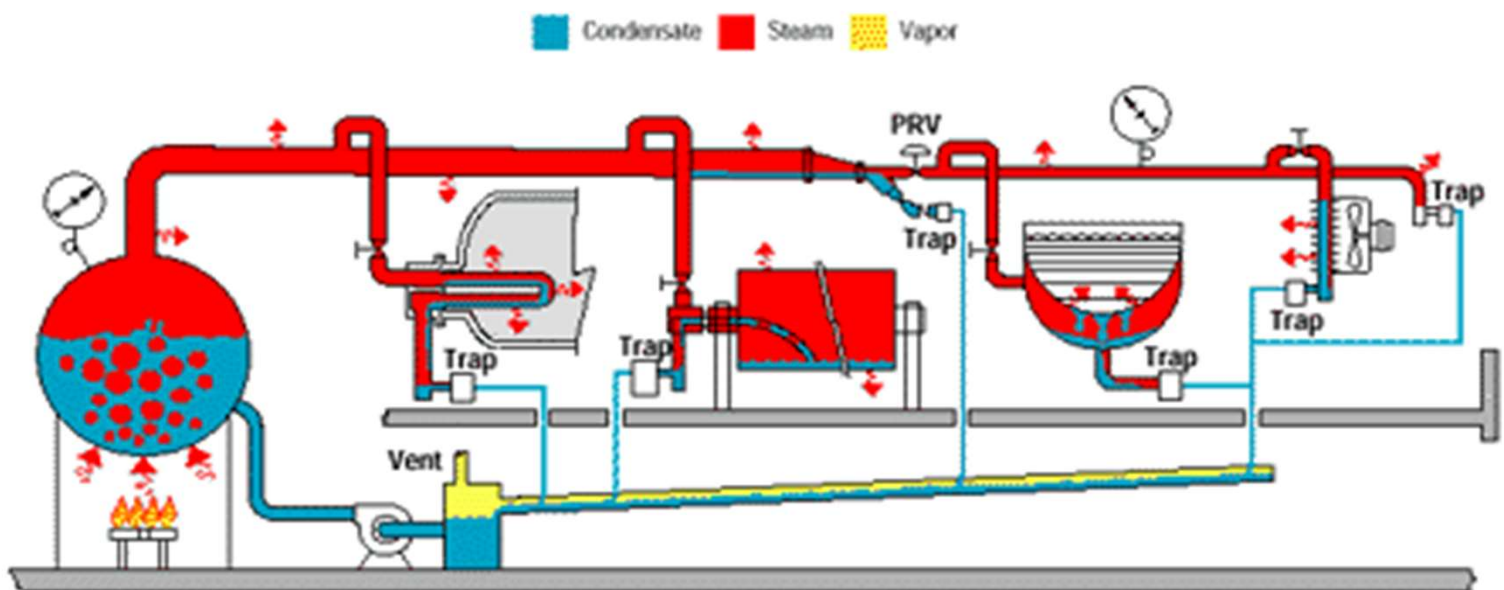
**CfPE Technology Solutions** is incorporated in July 2001 and began as a training and consulting company for power plant, oil & gas, petrochemical and manufacturing sectors.

Since the past 20 years we served several companies in Malaysia, Brunei, Indonesia, Middle East and Africa.

Our professional experience and excellent on consulting strengths provide insights and understanding about the challenges facing by the industries that we served.

In 2019, CfPE Technology Solutions has extended the business portfolio in Steam Plant Energy Savings System which we are focusing on the reduction of steam plant operation expenditures (OPEX).

Throughout our associated with local business partner, we have audited six manufacturing plants and we had been awarded two contracts for upgrading steam plant in petrochemical and pharmaceutical industries.



# Registration Form

## Please Send Your Registration To:

<b>Tel:</b>	006.019.979.0465	<b>Fax:</b>	006.09.617.8443	<b>E-mail</b>	info@cfpets.com
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## Course Details

<b>Course Name:</b>	Steam Plant Energy and Cost Savings
<b>Venue:</b>	Kuala Lumpur, Malaysia.

<b>Course Date:</b>	22 – 26 Oct., 2024
<b>Fee:</b>	USD4,500.00

## Company Information

<b>Organization</b>	
<b>Address</b>	

### HR / Training Manager

<b>Name :</b>	
<b>Tel no.:</b>	
<b>Fax no.:</b>	
<b>E-mail :</b>	

### Invoice to be sent to

## Participant Information

### Participant # 1

### Participant # 2

### Participant # 3

<b>Full Name :</b>			
<b>Job Title :</b>			
<b>Department :</b>			
<b>Telephone No. :</b>			
<b>Mobile No. :</b>			
<b>Fax No. :</b>			
<b>E-mail Address :</b>			

## Please Pay by Telegraphic Transfer to:

<b>Account Name :</b>	CFPE TECHNOLOGY SOLUTIONS
<b>Account No. :</b>	563064120047
<b>Bank Name :</b>	Maybank Islamic Berhad
<b>Branch Name &amp; Address :</b>	Malayan Banking Berhad – CPI, JALAN AIR JERNIH, KUALA TERENGGANU, TERENGGANU, MALAYSIA.
<b>SwiftCode :</b>	MBBEMYKL

### CfPE TECHNOLOGY SOLUTIONS

Lot 1196, Jalan Mawar 8, Taman Permint Jaya, 21080 Chendering, Kuala Terengganu, Terengganu, MALAYSIA.

Tel.: 006.019.979.0465 Fax: 006.09.617.8443 Website: [www.cfpets.com](http://www.cfpets.com) Email: [info@cfpets.com](mailto:info@cfpets.com)