

**Course Name:** Boiler Operation Performance and Maintenance

**Reference Code :**

**Description:** This is a 5-day workshop we will be emphasizing on the general safety and best practice of steam boilers, operation, maintenance and control systems.

The workshop consists of multi-media presentation sessions and a high level of class interaction. Our trainer will facilitate quizzes after each session for revision and self-evaluation.

A workshop manual which includes quiz questions and answer sections will be provided to each participant.

**Course Objective:**

- Explanation of functions of controls, safeguards, interlocks and alarm systems
- Describe correct procedures for boiler starting up and shutdown
- Explanation of the malfunctions that can cause boiler shutdown
- Identification of the appropriate boiler feed water treatment methods
- Identification of important steps in inspection of cooling towers
- Recommendation of the best practices for preventive maintenance of cooling tower

**Programme Methodology:**

This Boilers training course will be conducted along training course principles with formal lectures and interactive worked examples. The emphasis will be on the explanation of all technical points and providing answers to problems that are encountered in everyday industrial practice regarding the efficient operation and maintenance of industrial boilers. Each learning point will be reinforced with practical examples and case studies. There will be ample opportunities for active discussion during the training course and video presentations. The sharing professional experiences and exchange will help solidify the gained knowledge. All training course materials will be provided.

**Who Should attend?**

- Boiler plant operators, maintenance personnel, controls technicians and contractors
- Boiler plant engineers, managers and supervisors
- Consulting engineers and Insurance company inspectors
- Instrumentation engineers and technicians
- Boiler chemicals and accessories suppliers

**Course Outline:**

*Day 1: - Overview of Steam Generation and Use*

- Overview of Boiler Types and Industrial Steam Generators
- Elements of Boiler Plant: *Fired Tube Boilers and Water Tube Boiler*
- Steam Generation Basics
- Combustion Process: *Burners and Accessories*

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- Fuels and Fuel Properties
- Flame Characteristics
- Products of Combustion and Environmental Regulations
- Programme: *Problems and Solutions*

**Day 2: - Boiler Efficiency and Performance**

- Boiler Efficiency: *Economic and Environmental Aspects*
- Boiler Feed Water Preheating Train
- Air Economizers and Waste Heat Utilization
- Boiler Performance and Specifications
- Evaluating Boiler Efficiencies
- Boiler Blow-Down Control Recovery
- Steam Distribution System Losses
- Programme: *Problems and Solutions*

**Day 3: - Boiler Safety Operation and Control**

- Boiler Control Strategies: *Safeguards, Interlocks and Alarm Systems*
- Boiler Load Management
- Burner Management System (BMS)
- Safe Start Up and Shutdown Procedure
- Scale and Corrosion Control
- Chemical & Physical Treatment of Feed Water
- De-aeration of Feed Water: *Removing of Oxygen and CO2*
- Programme: *Problems and Solutions*

**Day 4: - Boiler Inspection, Maintenance and Repairs**

- Routine & Periodic Boiler Inspections: *Risk Based Inspection (RBI)*
- Common Boiler Problems in Operation
- Abnormal Operating Conditions and Operator Actions
- Maintenance Work Done Periodically
- Checklist for Maintenance of Fuel Supply System
- Maintenance of Condensate Recovery and treatment
- Programme: *Problems and Solutions*

**Day 5: - Boiler Troubleshooting and Accident Prevention**

- Boiler Failures and Accidents: *Root Cause Analysis*
- Boiler Explosions: *How to Prevent?*
- Boiler Troubleshooting Guide
- Class Programme: *Boiler Problem Solving*
- Summary and Conclusions

Course Duration    Date of start : 16/06/19

**Time:** 08:00 AM -03:00 PM

**Numbers of hours:** 30 Hours

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