

Course Name: **Boiler Operation and Maintenance**

Code:

DATE:

Course Objective:

Upon the successful completion of Boiler Operation, Maintenance & Safety course, participants will be able to learn:

- Combustion process and draft system for steam boilers
- Boilers types, components and functions
- Understand the importance of the draft system for proper operation
- Improve understanding of control and protection system
- Understand the best practice operation procedures
- Safety valve & burner management System
- Routine operation and emergency procedures
- Understand NDT and maintenance procedures

Program Methodology:

This training seminar will utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. The course is designed as a blended environment of presentation; workshops; group work; practical exercises; field application/ case studies, analysis and several industry videos showing all processes; and general discussions.

Pre & Post course assessments will be used to measure the effectiveness of this training.

Who Should attend?

The Boiler Operation, Maintenance & Safety training course is designed for:

- Mechanical engineers and mechanical supervisors
- Inspection engineers and inspectors
- Mechanical technicians
- Field Operators and Technicians
- Facilities and process engineers
- Anyone involved in steam generation and water treatment

Kingdom of Saudi Arabia

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Course Outline:

Module 1 - Combustion Process and Heat Transfer Fundamentals

- KeyTopics:
 - Basics of Thermodynamics
 - Heat Transfer and Combustion
 - Introduction to Steam Boilers
 - Latent Heat & Sensible Heat
 - Steam Properties
 - Purity of Steam
 - Mass and Energy Balance
 - Conduction, Convection, and Radiation
 - Combustion Fundamentals
 - Excess Air & Flue Gases Relation

Module2 - Boiler Types & Operational Overview

- KeyTopics:
 - Classifications of Steam Boilers
 - Boiler Functional Overview
 - Main Pressure Parts Components of Steam Boilers
 - Burners Types & Operational Controls
 - Low NOx Burners
 - Draft System of Steam Boilers
 - Water Treatment System

Module 3 - Boiler Control Systems & Protection Mechanisms

- KeyTopics:
 - Boiler Control and Protection
 - Safety Valves and Flame Safeguard
 - Oxygen Trim
 - Burner Management System
 - Continuous Blowdown Control
 - Drum Level Control

Module 4 - Operation And Safety Of Steam Boilers

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- KeyTopics:
 - Boiler & combustion systems hazards codes
 - Principles of Boiler Operation
 - Pre-startup procedures
 - Start-up & Shut down Procedures
 - Routine Operation during Boiler Service
 - Emergency Procedures

Module 5 - Maintenance Management Of Boilers

- KeyTopics:
 - Problems of Steam Boilers
 - Preventive Maintenance Program
 - Destructive Test of Steam Boilers
 - NDT of Steam Boilers
 - Steam Boiler Repair

Course Duration: (5) Day

Venue:

Time: Numbers of hours: Hours

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