€TRAINING

Boiler Operation, Maintenance and Troubleshooting

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Introduction:

Boilers are an important asset used for various purposes in different industrial plants. It's one of the main application to produce high-pressure steam for process applications and power generation. Operation and maintenance of Boiler are critical to ensure a safe and efficient plant environment.

This Boiler Operation, Maintenance & Safety training ensure participants gain a comprehensive understanding of commercial, industrial and utility boiler systems. This program covers the principle of operation of steam boilers, types and the main components of steam boilers. It will also focus on the study of correct operation and routine maintenance and safety. Participants will also learn how to improve boiler efficiency, energy cost saving methods and maximize safety.

Course Objectives:

At the end of this course the participants will be able to:

- 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

Targeted Audience:

- 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
- Process Engineers who are new to the profession

Course Outlines:

Unit 1: - Combustion Process and Heat Transfer Fundamentals

- 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

Unit 2: - Boiler Types & Operational Overview

- 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

Unit 3: - Boiler Control Systems & Protection Mechanisms

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

Unit 4: - Operation And Safety Of Steam Boilers

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

Unit 5: - Maintenance Management Of Boilers

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