€TRAINING

Boiler Control and Burner Management Systems

1 - 5 December 2024
Online

REF: L872 DATE: 1 - 5 December 2024 Venue: Online - Fee: 2500 Euro

Introduction:

This training program provides essential knowledge and skills for operating, maintaining, and optimizing boiler control and burner management systems. Participants learn to manage combustion processes, control fuel supply, and ensure safe and efficient boiler operation. This program combines theoretical learning with practical exercises to equip individuals with the skills needed for effective boiler performance and safety maintenance.

Program Objectives:

At the end of this program, the participants will be able to:

- Understand the benefits of improved boiler process control and savings as a result of improved efficiency, then develop proper control systems documentation to ensure clarity and effectiveness.

- Apply principles and methods for flow, level, and pressure control to improve boiler operations, then specify appropriate strategies for these controls.

- Implement analyzer measurements for improving boiler efficiency and analyze basic control loops required for boiler operation, incorporating control concepts such as cascade, ratio, and feedforward control.

- Evaluate process requirements for writing instrumentation specifications, considering safety system interlocks, and understanding the primary cause of furnace explosions.

- Use design basis documentation and flow sheets to identify equipment needs for gas, oil, and pulverized coal systems, understanding pre-firing purge requirements for both single and multiple burner boilers.

- Follow ignition-permissive establishment procedures for single and multiple burner systems, then implement flame failure protection and design alarms, interlocks, and emergency shutdown systems.

- Understand the function and use of the burner front, operator interfaces, and logic systems to ensure effective control and monitoring.

Targeted Audience:

- Technicians and Engineers in charge of Boiler Operation.

- Technical Personnel dealing with Boilers Maintenance.

- Boiler Inspectors and Contractors.

- Technical Personnel in charge of Steam Generation and Distribution Systems.

Program Outline:

Unit 1:

Boiler Control Fundamentals:

- Basic Control Loops.

- Combustion of Fuels.

- Fuel Gas Analysis.

- Steam Supply and Firing Rate Demand.

Unit 2:

Advanced Boiler Control Systems:

- Feedwater Control Systems.

- Boiler Draft Systems.

- Combustion Control.

Unit 3:

Enhancing Operations with Technology:

- Improving Operations with Computers and Analyzers.

- Emerging Technologies.

- Causes of Furnace Explosions.

- BMS Interlock and Alarm Systems.

Unit 4:

Boiler Control System Design:

- Control Systems.

- System Design Trip Philosophy.

- Programmable Electronic Systems.

- Develop P&IDs for the boiler and gas, oil, and pulverized coal.

Unit 5:

Efficiency Optimization and System Simulation:

- Review methods of efficiency calculations.

- Use personal computer software to simulate boiler start-up and shutdown, and boiler control including drum level and cross -limiting fuel control.

- Tune a boiler control system for maximum efficiency and learn the effects of boiler tuning.