

An Intensive **3**-day Training Course

Boilers: Operation, Maintenance, Inspection, Control and Troubleshooting

Ensuring Efficiency and Safety in Boiler Systems



CLASSROOM DATES

Date	Venue	Fee	CPD Point
20-22 Aug 2025	Sandton	R 8,999	3

VIEW COURSE AND REGISTER

INTRODUCTION

The Boilers Operation Course delivers comprehensive knowledge and practical skills for the safe, efficient, and reliable management of boiler systems. Boilers are critical to industrial operations, providing steam for energy generation, heating, and process applications across power plants, petrochemical facilities, and manufacturing plants.

This Boilers Training Course focuses on essential aspects such as boiler technologies, combustion control, feedwater management, and environmentally compliant steam production. Participants will explore modern maintenance strategies, advanced inspection techniques, and control system operations that enhance boiler reliability and efficiency.

Real-world case studies and hands-on problem-solving exercises are integrated to equip participants with the tools to troubleshoot issues and improve operational performance.

Key highlights of the Boilers Operation Control Course include:

- Operational principles and technologies of modern boilers
- Industry best practices for inspection and preventive maintenance
- Troubleshooting techniques for common boiler faults
- Modern boiler control systems and performance monitoring tools

TRAINING OBJECTIVES

By the end of this Boilers Maintenance Course, participants will be able to:

- Understand the purpose and operation of boiler control systems, safeguards, and alarms
- Execute correct procedures for boiler start-up and shutdown operations
- Identify and troubleshoot boiler malfunctions and prevent unscheduled shutdowns
- Manage boiler feedwater quality and chemical treatment to optimize performance
- Apply advanced inspection techniques for early fault detection and system integrity
- Recommend and implement maintenance strategies, including condition monitoring

WHO SHOULD ATTEND?

This Boilers Operation Control Course is suitable for:

- Boiler Operators and Technicians
- Maintenance Engineers and Supervisors
- Boiler Inspectors and Safety Personnel
- Engineers managing steam generation and distribution systems
- Contractors and consultants overseeing boiler performance and compliance

Anyone tasked with ensuring the performance, safety, and efficiency of boiler systems will find this training essential.

TRAINING METHODOLOGY

The Boilers Training Course is delivered through a dynamic and interactive learning format that includes:

- Instructor-led lectures with visual aids and technical diagrams
- Real-life case studies highlighting operational challenges and best practices
- Practical exercises to reinforce troubleshooting, control, and inspection techniques
- Video demonstrations showcasing boiler maintenance and control systems
- Group discussions and Q&A sessions to encourage knowledge exchange

Participants will also receive comprehensive course materials for continued learning and reference.

TRAINING SUMMARY

This Boilers Training Course equips participants with the skills and knowledge needed to ensure the safe and efficient operation of boiler systems. Covering critical topics such as boiler control systems, inspection methods, and preventive maintenance programs, this course provides actionable insights to enhance reliability and safety.

Key takeaways include:

- Proficiency in boiler operation, maintenance, and troubleshooting.
- Advanced understanding of boiler controls and safety systems.
- Practical skills for applying modern maintenance techniques, including RBI (Risk-Based Inspection), FMEA (Failure Modes and Effects Analysis), and RCA (Root Cause Analysis).
- Expertise in water treatment and its impact on boiler performance.

By completing this Luthando Skills training course, participants will be empowered to manage boiler systems effectively, reducedowntime, and ensure compliance with safety and operational standards, delivering significant value to their organizations.

TRAINING 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
- Generation operation parameters
- Power types - KW, KVAR, KVA
- Synchronization techniques and basic conditions
- Flame Characteristics
- Products of Combustion and Environmental Regulations

Day 2: Boiler Safety Operation and Control

- Boiler Control Strategies: Safeguards, Interlocks and Alarm Systems
- Explain PLC for boiler controls (practical)
- 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

Day 3: Boiler Troubleshooting and Accident

Prevention

- Boiler Failures and Accidents: Root Cause Analysis
- How to apply FMEA (Failure Mode Effective Analysis)
- Boiler Troubleshooting Guide
- Applying RBI (Risk-Based Inspection techniques)

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

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
- Using CMMS (computer management maintenance systems)