

Training Title

BOILERS: OPERATION, MAINTENANCE AND TROUBLESHOOTING

Training Duration

5 days

Training Venue and Dates

PE256	BOILERS: OPERATION, MAINTENANCE AND TROUBLESHOOTING	5	12 – 16 January, 2020	\$4,500	Dubai, UAE
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In any of the 5 star hotels. The exact venue will be informed once finalized.

Training Fees

- **US\$4,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch.**

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

The course is broadly designed to incorporate all issues related to boilers starting with selecting the best design aspects, installation, and operation and boiler maintenance. Other issues are included within the course such as legal requirements and regulations, environmental and safety aspects, energy consumption, boiler efficiency and operating a treatment plant.

TRAINING OBJECTIVES

The overall objective of this course is to make the recipient more knowledgeable of what a boiler is and how boiler design, operates and what ancillary equipment is required to support its operation

Upon the successful completion of this course, participants will be able to:-

- Apply their knowledge of the different boiler chemical treatment technologies to determine whether they are employing best practices in their boiler system and protecting critical assets.
- Justify the importance of well-designed and operated pre-treatment systems upstream of their boiler plant to increase overall plant reliability and lower operating costs.
- Interpret industry-wide guidelines and monitor key performance indicators in pre-boiler, boiler and post-boiler systems.

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- Determine boiler cycles of concentration and improve chemical management
- Recognize ways to troubleshoot boiler feed water, boiler and steam purity problems.
- Identify invaluable insights on how to design for success in new boiler plant projects.
- The fundamentals types of boilers and their construction.
- Boiler components and know their specific functions.
- The fundamentals of boiler operations.
- Boilers Commissioning, Start-up and shutdown boilers.
- Boilers Operation at safe and proper pressures and temperatures.
- Boiler water treatment
- The major dangers associated with boilers and how to avoid boiler accident and explosions.
- The importance of Codes and Standards in Boiler design, construction and operation

WHO SHOULD ATTEND?

Boiler Inspectors
Steam Plant Operators
Maintenance Engineers / Managers
Operation Managers
Safety Officers
Environmental Officers
Boiler Design Engineers

TRAINING METHODOLOGY:

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions, and motivate everybody find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course. Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work& Practical Exercises
- 20% Videos& General Discussions

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DAILY OUTLINE

DAY 1:

Introduction to Boilers and Steam Generating Systems

Boiler Types and Configurations

- Fire tube Boilers

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- Water tube Boilers
- High Pressure Boilers
- Low Pressure Boilers
- Waste heat Boilers
- Package Boiler

Fundamentals of Combustion and Heat transfer

- Theory of Combustion
- Thermodynamics
- Steam Tables

Group Discussion & Class Exercise

DAY 2:

Burner Operation and Control

- Gas Train
- Oil Train
- Standard Burner
- High Turndown Burner
- Burner Controls

Boiler Operation and Testing / Standard Operating Procedures

- Start-Up and Shut-Down
- Normal Operation
- Boiler Blow-downs
- Water Quality Analysis and Treatment
- Valve Types
- Safety Valves
- Low Water Cut-off Controls

Group Discussion & Class Exercise

DAY 3:

Boiler Room Safety

- Boiler Accidents
- Cause and Effect

Cause and Effect Case Study

- Safety Valves
- Confined Spaces
- Lockout/Tag-out

Operation Standards

- ASME Codes
- NFPA Codes
- NBIC Code

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Controls and Safety Devices for Automatically Fired Boilers

- Water Level Control
- Temperature Control
- Pressure Control
- Fuel Trains

Inspection and Maintenance of Commercial and Industrial Boilers

- Fireside
- Waterside
- Burner
- Auxiliary Equipment

Group Discussion & Class Exercise

DAY 4

Boiler and Burner Efficiency

- Heat Exchanger Efficiency
- Combustion Efficiency
- Efficiency Tests
- Condensate Return
- Steam Traps

Troubleshooting

- Burner
- Controls
- Additional

Corrosion Control

- Process of corrosion
- Dissolved oxygen
- Feed tank design
- Passivation
- Selection of chemical corrosion inhibitors and oxygen scavengers for effective boiler water treatment

Group Discussion & Class Exercise

DAY 5:

Fundamentals of Feed Water Treatment and Chemicals

- Pre-treatment/de-aeration
- Oxygen scavenging
- Water conditioning
- Boiler blow-down
- Steam/condensate treatment
- Control

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- Standards

Scale Control

- Water hardness
- Common scales and deposits
- Effects of scale

Scale Prevention

- Elimination
- Precipitation
- Modification
- Blow-down

Post Course Test

NOTE:

Pre & Post Tests will be conducted

Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.

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