

# Desalination, Demineralization Water Treatment & Boiler Feedwater (BFW) Operations

UK Training

# PARTNER



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## Introduction

This practical, comprehensive training course is designed for Utilities & Offsite Field Operators involved in the operation and monitoring of desalination, demineralization, water-treatment, and Boiler Feedwater BFW systems. The course covers the complete water-treatment process, with emphasis on field operation, process monitoring, equipment checks, water-quality control, abnormal conditions, and troubleshooting.

## Course Objectives

By the end of the course, participants will be able to:

- Understand the complete water-treatment process and major operating systems.
- Operate and monitor desalination and Reverse Osmosis RO systems.
- Monitor and operate demineralization and ion-exchange systems.
- Understand BFW systems, water chemistry, and critical quality requirements.
- Perform effective field inspections and operational checks.
- Interpret key process and water-quality parameters.
- Identify abnormal conditions and common equipment problems.
- Apply practical troubleshooting techniques.
- Understand chemical dosing, regeneration, cleaning, and flushing operations.
- Improve operational reliability, safety, and decision-making in Utilities & Offsite facilities.

## Course Outline

### Day 1 - Water Treatment Fundamentals & Pretreatment

1. Utilities & Offsite Water Systems Overview
2. Raw Water Intake and Water Quality
3. Water Treatment Process Flow and Major Equipment
4. Pretreatment, Filtration, Clarification and Chemical Dosing
5. Field Monitoring, Sampling and Operator Rounds

### Day 2 - Desalination & Reverse Osmosis Operations

1. Desalination Technologies and RO Process
2. RO System Equipment and Components
3. RO Start-Up, Operation and Shutdown
4. RO Performance Monitoring and Water Quality Control
5. RO Fouling, Scaling, Cleaning and Troubleshooting

### Day 3 - Demineralization Water Treatment



1. Demineralization Process and Ion Exchange
2. Cation, Anion and Mixed-Bed Units
3. Demineralizer Operation and Regeneration
4. DM Water Quality Monitoring and Control
5. Demineralizer Troubleshooting and Abnormal Conditions

#### **Day 4 - Boiler Feedwater BFW Systems**

1. Boiler Feedwater System and Process Flow
2. BFW Pumps, Deaerators and Associated Equipment
3. BFW Water Chemistry and Quality Parameters
4. Chemical Conditioning and Dosing Systems
5. BFW Monitoring, Abnormal Conditions and Troubleshooting

#### **Day 5 - Integrated Operation & Practical Troubleshooting**

1. Integrated Desalination, DM and BFW Operations
2. Start-Up, Shutdown and Emergency Operating Conditions
3. Process Alarms, Deviations and Operator Response
4. Practical Troubleshooting and Case Studies
5. Field Operator Best Practices and Final Course Review

#### **Why Attend This Course? - Wins & Losses!**

##### **Wins**

- Develop practical field-operation skills.
- Improve monitoring of desalination and DM systems.
- Strengthen troubleshooting capabilities.
- Improve understanding of BFW quality and boiler protection.
- Reduce operating errors and equipment problems.
- Improve chemical and water-treatment efficiency.
- Enhance plant reliability and operational safety.

##### **Losses**

Without proper operational knowledge, organizations may experience:

- RO membrane fouling and premature failure.
- Poor demineralized-water quality.
- Excessive chemical consumption.
- Boiler scaling and corrosion.
- Off-specification BFW.
- Equipment damage and increased maintenance.
- Unplanned shutdowns and production losses.

##### **Conclusion**



This five-day program provides a comprehensive and practical understanding of **Desalination, Demineralization Water Treatment, and Boiler Feedwater BFW** systems. It is specifically designed for **Utilities & Offsite Field Operators**, emphasizing practical operation, field monitoring, water-quality control, abnormal conditions, and troubleshooting.

The course enables participants to connect the different water-treatment systems and understand their impact on **plant reliability, boiler performance, safety, and operational efficiency**.

## Frequently Asked Questions FAQ

### 1. Who should attend this course?

Utilities & Offsite Field Operators and Senior Field Operators.

### 2. Is the course practical?

Yes. The course is designed with a stronger practical and operational focus than theoretical content.

### 3. Does it cover RO desalination?

Yes, including operation, monitoring, cleaning, fouling, scaling, and troubleshooting.

### 4. Does it cover demineralization?

Yes, including ion exchange, regeneration, water-quality monitoring, and troubleshooting.

### 5. Does it cover Boiler Feedwater?

Yes, including BFW systems, deaeration, water chemistry, chemical conditioning, and troubleshooting.

### 6. Does it cover abnormal operating conditions?

Yes. Abnormal conditions, alarms, deviations, and operator response are covered throughout the course.

### 7. How long is the training?

Five days, four hours per day, for a total of 20 training hours.

### 8. Will one instructor deliver the complete course?

Yes. The complete five-day program is designed to be delivered by one instructor.





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