

# Water Treatment for Boilers and Chilled Water Systems



## DURATION

1.5 DAYS

(Optional: 0.5 day hands-on client equipment workshop)



LIVE ONLINE TRAINING



ONSITE — IN CLASS TRAINING

Understand the Water Treatment process, beyond what their current water treatment chemical supplier shares about the overall Water Treatment process, to maximize your equipment lifecycle and manage treatment costs.

Starting with the basic understanding of why Water Treatment is needed, our expert instructor will coach/review the basics of Water Treatment and discuss the best practices used for both Steam Boiler systems and Chilled Water systems. A recommended option includes conducting a field process workshop – a process and procedure review on your systems. Our instructor will review your specific water treatment method with the class, giving feedback on your processes, choice of treatment, and specific best practices.

Delivered in either our Live Online Training format or in an On-site presentation and taught by industry veterans. Attendees are to have at least a basic understanding of the water treatment needs used in their facility.

## WHAT THIS COURSE COVERS

- Water Treatment basics including chemistry and pretreatment methods
- Steam boiler water treatment and the special needs of the specific equipment needed
- Chilled water systems water treatment pertaining to both open and closed loop systems

## WHO SHOULD TAKE THIS

- Internal company role that makes decisions on Water Treatment methods and practices.
- Any individual worker tasked with the Water Treatment of their facility.

## COURSE OUTCOMES

- Discuss why water treatment is necessary and the usual methods of dealing with the issues that arise
- Discuss the operation of water treatment equipment
- Understand and evaluate a water-treatment analysis report
- Recognize the benefits of surface blowdown systems and cooling tower bleed off systems.
- Understand blowdown heat-recovery systems
- Perform the proper sequencing of valves for bottom blowdown



# Water Treatment for Boilers and Chilled Water Systems



## COURSE AGENDA

### MODULE I: Water Treatment Basics

#### INTRODUCTION

- Why Water treatment
- Water Cycle
- Introduction to Properties of Water

#### BOILER & STEAM WATERSIDE PROBLEMS

- Scale
- Corrosion & pitting
- Carryover

#### PROPERTIES OF WATER AND WATER CHEMISTRY

- pH
- Alkalinity
- Conductivity

#### PRETREATMENT METHODS

- Filtration
- RO Systems
- Sodium-zeolite water
- Demineralizers

### MODULE II: Steam Boilers

#### INTERNAL TREATMENT METHODS

- Phosphate
- Hydroxide
- Polymer
- Chelates
- Steam and Condensate line treatment
- Amines

#### CONTROLLING TDS AND BLOWDOWN

- Cycles of Concentration
- Water column blowdown
- Bottom Blowdown
- Heat Recovery

#### WATER TESTING

- Consultant Questions
- Drop Tests
- Titration Equipment
- Lab setup.

#### CORROSION CONTROL FOR STEAM BOILERS

- Dissolved gases
- Oxygen removal
- Deaerator
- Sulfites

#### WATER TREATMENT EQUIPMENT

- Selection
- Installation
- Maintenance

#### MAGNETIC WATER TREATMENT

- Magnetic water treatment basics

### MODULE III: Chilled Water Systems

#### OPEN CHILLED WATER SYSTEMS

- Cooling Tower
- Water Chemistry
- Water Quality Problems
- Cycles of Concentration
- Langelier Index
- Algaecides and Biocides

#### CLOSED LOOP SYSTEMS

- Corrosion Control
- Glycol Systems

#### MODULE IV: Water Treatment Testing Workshop Client Equipment Field Process Review

- Client Site inspection of water treatment processes  
Can be Steam Boilers and/or Chilled Water Systems, depending on client needs.



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## Client Equipment: Water Treatment Testing Field Process Review



Spend a half-day on your equipment reviewing your water testing and treatment processes. This option is available for both online or on-site clients depending on your company requirements/needs.

### CLIENT MUST PROVIDE

- Personal protection equipment (PPE) for all workers on site.
- A safe environment for the inspection of the current water treatment process at their own facility.
- For the online option, a video camera facilitator will be needed. NTT can provide a kit mobile use of the Zoom platform. Ask your sales rep for details.



## LIVE ONLINE TRAINING EQUIPMENT



### CLIENT PROVIDED COMPUTER REQUIREMENTS

- Student email address to receive access to NTT's online platform
- Internet Access through a computer (laptop or desktop)
  - 1:1 Participant minimum bandwidth requirements: 1.2 Mbps (download)
- Ability to download and view files online
- Computer with speakers, microphone and camera.
- Browser with recent updates

### NTT PROVIDED STUDENT MATERIALS

- Access to NTT's online platforms:
  - Canvas for digital exercises
  - Zoom for web video conference
    - No purchase or install necessary but students will be required to test the system they will be taking the class on before the day of training.
- Hard-Copy of Texts & Industry Standards, NTT Job Aids and general consumables: notepad, pens/highlighters, tabs
- Digital-copies NTT materials including Phone Apps

