Industrial Water Treatment – Intake to Outfall

Potential PDH: 24

Description:

This three-day program covers the four main areas that deal with water in an industrial plant including raw water and wastewater treatment, boiler water treatment and cooling water treatment. In-depth discussions will focus on the mechanical, chemical, and operational parameters of these systems with emphasis on remediation and troubleshooting of common issues.

Outline:

Day One: Intake and Outfall Operations and Programs

1. **Water: It's characteristics and problems**
2. **Cleaning up the intake**
    - Clarification
    - Flocculation
    - Equipment and Operation
    - Filtration
3. **Treating the waste**
    - Primary Waste Treatment
        - Equipment and operation
    - Secondary Waste Treatment
        - The "bugs"
        - Mass Balance
        - Nitrification/denitrification
        - Control tests
        - Specialized testing
    - Handling the sludge
        - Equipment and Operation

Day Two: Steam Generation

1. **Preparing the BFW**
    - Ion Exchange
    - Membrane Technology
    - Advanced Technologies
    - Condensate Return
    - Deaeration
        - Why oxygen is bad
        - Mechanical and chemical methods

2. Boiler Water Problems and Treatment
- Steam Generators
- Boiler deposition and corrosion
- Boiler Water Treatment

3. Issues with steam/condensate
- Steam contamination
- Steam sampling
- Condensate corrosion
- Steam/Condensate Treatment

4. The economics of steam/condensate

Day Three: Cooling the Process

1. Why and How
- The Equipment
  - Cooling Towers
- Heat Exchangers

2. The Problems
- Corrosion
  - Theory & Types
  - Modeling & Prediction
  - Treatment Options
  - Monitoring
- Scale
  - Theory & Types
  - Modeling & Prediction
  - Treatment Options
  - Monitoring
- Microbial Growth
  - Types and damage mechanisms
  - Treatment Options
  - Monitoring
- Fouling
  - Mud
  - Debris

3. PROCESS LEAKS
- Reliability & Cost Impacts
- Detection & Control

Who Should Attend:

Participants will gain broad knowledge of troubleshooting principles, covering traditional and

advanced techniques, and network with industry peers. Ideal for refinery troubleshooting personnel, process engineers, plant operators, and technical service staff, the program also benefits engineers from operating, design, and construction firms, as well as service providers to the petroleum and petrochemical industries.

Subject Matter Expert (SME):

Ron Tebbetts is a retired Industry Technical Consultant, having spent 32 years with Nalco Champion. Ron has worked extensively in all aspects of water treatment including cooling treatment, boiler treatment, waste water treatment and raw water pretreatment in the Refining, Chemical, Power and Pulp & Paper industries across North America, the Caribbean and in the Asia Pacific region. In his current role as a technical consultant, working exclusively for Nalco Water, Ron specializes in cooling water technical assessments, program design and system troubleshooting for the refining and chemical industries. He has conducted numerous educational seminars on cooling water technology and has presented papers on water systems modeling. He holds a BS Degree from Louisiana State University.