



THE CHEMICAL ENGINEERING MAJOR

Water Treatment for Refineries and Chemical Plants

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Water Treatment for Refineries and Chemical Plants

Introduction:

Petroleum refineries and chemical plants use water and steam in a variety of processes, ranging from crude oil desalting to FCC units, cokers, steam generators and cooling towers. With scarcity of water common around the world proper treatment and operation of utility systems become critical to sustainable and reliable operations. Water treatment issues can impact the effectiveness of the corrosion control program, compromising the integrity of key pieces of heat transfer equipment and negatively affecting the energy efficiency of process units. New and improved options for wastewater treatment are critical in the effort to achieve ever more stringent refinery effluent water quality standards. This program provides an in-depth discussion of all aspects of water treatment, including basic water chemistry, boiler water pretreatment, mechanical and chemical deaeration, control of corrosion, scale and deposition in boilers and cooling systems as well as all of the available technologies for wastewater treatment.

Program Outline:

COOLING WATER AGENDA

1. THE SYSTEM

- Cooling Tower
- Heat Exchangers

2. SCALE

- Theory & Types
- Modeling & Prediction
- Treatment Options
- Monitoring

3. CORROSION & BIOLOGICAL

- Theory & Types
- Modeling & Prediction
- Treatment Options
- Monitoring

4. FOULING

- Mud
- Debris

5. PROCESS LEAKS

- Reliability & Cost Impacts
- Detection & Control

BOILER WATER AGENDA

6. BFW MAKEUP STREAMS

- Ion Exchange
- Reverse Osmosis
- Return Condensate

7. DEAERATION

- Oxygen Corrosion
- Mechanical Removal
- Chemical Removal

8. BOILER WATER CHEMISTRY

- Steam Generators
- Deposition and Corrosion
- Boiler Treatments

9. STEAM PURITY

- Steam Contamination
- Steam Sampling
- Water Quality Issues

10. STEAM/CONDENSATE

- Condensate Corrosion
- Condensate Treatment

11. STEAM SYSTEM ECONOMICS

CLARIFICATION / WASTE WATER

12. CLARIFICATION PROCESS

- Coagulation
- Flocculation

- Sedimentation
- Equipment & Operation

13. WASTE TREATMENT PLANTS

- Pretreatment
- Primary Treatment
- Secondary Treatment
- Tertiary Treatment
- Sludge Thickening/Dewatering
- Sludge Disposal
- Disinfection

14. ADVANCED TREATMENT TOPICS

- Respirometry
- OUR and SOUR