

Course Content

Title: Water Treatment For Refineries and Chemical Plants

Potential PDH: 24 **Code:** BTT057

Description:

Petroleum refineries and chemical plants use water in a variety of processes, ranging from crude oil desalting to FCC units, cokers, steam generators, reactor jackets 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 effluent water quality standards. 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.

The seminar will be presented by Becht's water treatment advisors, Mr. Dave Puchan and Mr. Ron Tebbetts. These professionals have extensive hands-on experience in all areas of water treatment technologies and have worked with a variety of industries including refineries and chemical plants around the world to solve all types of water treatment problems.

Outline:

A. CLARIFICATION / WASTEWATER

CLARIFICATION PROCESS

- Coagulation
- Flocculation
- Equipment & Operation
- Filtration

WASTE TREATMENT PLANTS

- Primary Treatment
 - Equipment
 - Monitoring
 - Troubleshooting
- Secondary Treatment
 - Basic Concepts
 - Activated Sludge Control
- Mass Balance
- Nitrification
- Control Test Monitoring
- Respirometry
- Sludge / Dewatering
 - Equipment

CRUDE IMPACT ON WWT

B. BOILER WATER AGENDA

BFW MAKEUP STREAMS

- Ion Exchange
- Reverse Osmosis
- Return Condensate

DEAERATION

- Oxygen Corrosion
- Mechanical Removal
- Chemical Removal

BOILER WATER CHEMISTRY

- Steam Generators
- Deposition and Corrosion
- Boiler Treatments

STEAM PURITY

- Steam Contamination
- Steam Sampling
- Water Quality Issues

STEAM / CONDENSATE

- Condensate Corrosion
- Condensate Treatment

STEAM SYSTEM ECONOMICS

C. COOLING WATER AGENDA

THE SYSTEM

- Cooling Tower
- Heat Exchangers

SCALE

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

CORROSION & BIOLOGICAL

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

FOULING

- Mud
- Debris

PROCESS LEAKS

- Reliability & Cost Impacts
- Detection & Control

Instructor:

Dave Puchan started his career in water treatment in 1972 after receiving an MS Degree in Physical Chemistry. Since joining Nalco Chemical Co. in 1983, he has been involved exclusively with the

chemical and refining industries. His experience with Nalco includes field sales and management, technical management, global consulting and, in his present position, Global Industrial Technical Consultant Downstream. His areas of specialization are pretreatment, boiler systems and cooling systems. He provides Advanced Technical Support to petrochemical plants and refineries and conducts classes annually on Boiler System Control.

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.