Eurotek
Refining Services Ltd

Our Business is Knowledge Transfer

Crude Oil Desalting

A Eurotek training course

ERS Crude Oil Desalting

An introduction:

The ERS Crude Oil Desalting course covers in detail:

- The key design features of desalter equipment
- The key operational and maintenance procedures which are important in keeping Crude Oil Desalting at their optimum

Learning objectives:

Upon completion of this course, participants will:

- have obtained a broad working knowledge of desalter operations
- have gained an insight into advancements in the field
- have interacted with others working in this area

Who should attend?

This is a comprehensive core skills course for personnel involved in refinery process engineering, plant operations, and technical service. Process engineers from design and construction companies as well as those providing services to the petroleum refining industry should also find this program beneficial.
Managers – Operations and Executive
Engineers – Process and Mechanical
Implementation Team Members – Anyone involved with implementation, including operators and maintenance personnel

Description:

The desalting of crude oil is a process that does not have a high profile, but is vital to the operation of the modern petroleum refinery. Desalters provide more protection to costly refinery equipment than any other single piece of process hardware. ERS and Nalco have developed this program to provide an in-depth, yet practical review of both the art and science of crude oil desalting. Maintaining smooth operation of crude oil desalting units is both critically important and quite difficult. Since there are so many significant variables to control, desalter operation must constantly be adjusted to maintain optimum performance with the ever-changing sources of crude oil.

The program's content is both comprehensive and wide-ranging. Sessions begin with a discussion of the fundamentals of the desalting process including crude oil quality impact, the operating variables, key equipment, various design options and major process variables.

Once the fundamentals are established, discussion moves into the topics of unit operations, monitoring, and process troubleshooting

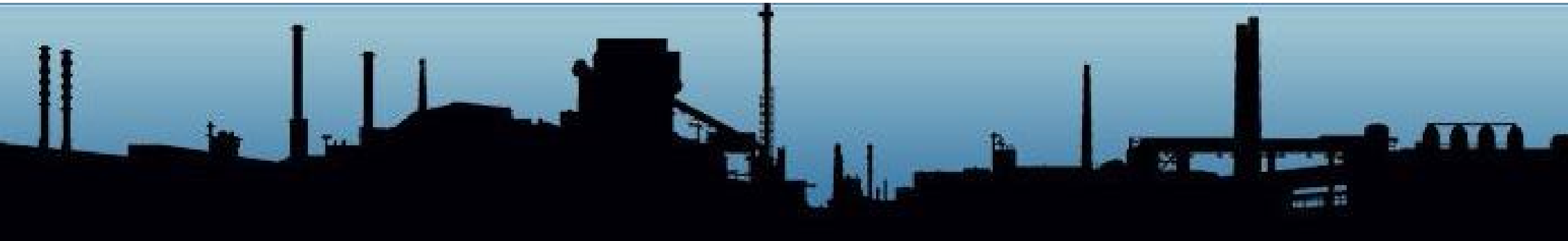
Program participants will have the opportunity to obtain a broad working knowledge of desalter operations, to gain insight into advancements in the field, and to interact with others working in this area.

Course Presenter

Philip Thornthwaite has over 22 years in the refining and petrochemical industry with extensive experience in product & process development, technical support and sales management.
Phil is Industry Technical Consultant with Nalco in Cheshire, UK. He is responsible for the provision of technical support to Customers in the EAME region and working within the RFM division of Nalco on the implementation of new technologies and Best Practices.

Earlier in his career Phil was responsible for technical support (lab and field) on the management of key projects to major customers such as ExxonMobil, Shell, ConocoPhillips, ChevronTexaco and Total.
Phil has an MSc in Process Technology & Management and a BSc (Hons) in Chemistry

Tom Collins is Vice President - Electrostatic Process Certified Technical Services at Forum Energy Technologies in Pasadena, Texas. His responsibilities include technical sales, process review, desalter design, troubleshooting, training, optimisation, and business development. Earlier in his career Tom started in the Technical Service Department at Petreco in 1980, servicing desalters worldwide. He has spent his career in the field of desalting, and has over 30 years experience in this area. He has authored and co-authored papers on desalting for the American Institute of Chemical Engineers, and has been active in the NPRA for over 20 years.



Course programme

Day 1

Benefits of crude oil desalting
General overview
Impact of crude oil quality on desalter performance.
Introduction to desalting.
Crude oil impurities: water, salt and solids. Impact of organic acids, asphaltenes.
Desalting heavy and opportunity crudes.
Tankage dehydration
Fundamentals of electrical desalting.
Wash water addition.
Rate and wash water quality.
Mixing/Contact. Mix valves. Static mixer.
Coalescence.
Stoke's Law and electrical voltage.
Performance control variables.
Dehydration efficiency vs. salt removal efficiency
Types of desalting systems.
Single-stage dehydrator.
Single-stage desalter.
Two-stage desalter.
Three-stage desalter.
Typical operating conditions and performance
Desalter components.
Process vessel.
Distribution system.
Electrodes and transactors.
Mud wash.
Level control devices
Desalter design considerations.
Vessel size.

Day 2

Number of stages.
Transactor size and power consumption.
Crude properties
Commercial desalter designs
. Petreco/Edge. NATCO
Factors that affect desalter operation and performance.
Crude oil feed rate and quality.
Temperature/viscosity/density relationships. Electrical field intensity.
Wash water rate, quality and flow configuration. Emulsion formation (pumps, exchangers, valves, mixers).
Control of water level and emulsion layers.
Demulsifier technology and addition rate.
Mud washing and brine recycle
Types of desalting applications.
Heavy crude desalting.
FCC feed desalting.
Distillate treating Desalter troubleshooting.
Oily effluent.
Poor dehydration and/or desalting.
Workshop Economic impact

Day 3

Opportunity crudes processing
. Challenges involved. Proactive risk assessments.
Desalter Inspection

Desalter Effluent management
. WTP effects. Manage oil in effluent, COD, Nitrogen..
Slops. effluent/wash water exchanger