

Crude Oil Treatment Operations and Troubleshooting Training Course

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Overview

Crude Oil Treatment Operations and Troubleshooting Training Course is a one-week course for production, process, operating, laboratory, flow-assurance, and technical-assurance functions who leave with a Crude Treatment Performance and Troubleshooting File. Participants connect crude properties, emulsion behavior, separation, dehydration, desalting, stabilization, quality evidence, and operating limits. The course resolves treatment failures through trend analysis, bottle-test decisions, electrostatic-treater checks, and structured upset diagnosis. Agile Leaders Training Center presents crude oil treatment operations and troubleshooting.

Who Should Attend

- Production engineering functions responsible for crude-treatment performance and delivery specifications
- Process engineering functions responsible for separation, heating, dehydration, desalting, and stabilization
- Operations functions responsible for treatment trains, chemical injection, interfaces, and upset response
- Laboratory and quality functions responsible for crude sampling, testing, and result validation
- Flow-assurance functions responsible for wax, asphaltene, solids, foam, and emulsion behavior
- Technical-assurance functions responsible for operating envelopes, evidence, and improvement actions

The course assumes participants already interpret process-flow diagrams, operating trends, laboratory results, or crude specifications, and it leaves out reservoir engineering, artificial lift, refinery-wide integration, detailed mechanical design, produced-water treatment as the primary subject, and gas processing.

Departments and Industries

The course supports departments and industries that condition crude oil for transfer, transport, storage, or refining.

- Upstream production and surface facilities
- Crude gathering and central processing facilities
- Oil terminals and storage operations
- Refinery crude-receipt and feed-preparation functions
- Process laboratories and product-quality assurance
- Production chemicals and technical services

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Learning Objectives

By the end of this course, participants will be able to:

- Build a crude-treatment target and operating-envelope basis
- Analyze emulsion stability, separation, heating, and retention effects
- Apply dehydration, desalting, wash-water, and chemical controls
- Evaluate stabilization, vapor-pressure, solids, wax, foam, and H2S risks
- Diagnose quality excursions from samples, trends, interfaces, and equipment behavior
- Prioritize energy, chemical, start-up, shutdown, and upset actions

Course Agenda

Day 1: Define Treatment Targets

- Crude Characterization and Treatment Target Sheet
- Wellstream Separation and Treatment Train Map
- BS&W, Salt, Sediment, and Vapor-Pressure Evidence Register
- ASTM D4057-22 Manual Sampling Practice Check
- Crude Treatment Operating Envelope and Constraint Log

Day 2: Control Emulsions and Dehydration

- Water-in-Oil Emulsion Stability Diagnosis Matrix
- Gravity Settling, Temperature, and Retention-Time Assessment
- Demulsifier Bottle-Test and Dosage Decision Sheet
- Electrostatic Dehydrator Field and Interface Control Map
- ASTM D4007-22 Water and Sediment Trend Review

Day 3: Operate Desalting and Stabilization

- Wash-Water Quality, Rate, and Mixing Control Plan
- Electrostatic Desalter Salt-Removal Performance Balance
- ASTM D6470-26 Crude Salt Result Interpretation
- Crude Stabilization and Vapor-Pressure Control Diagram
- Produced-Water, Slop, and Recycle Interface Register

Day 4: Troubleshoot Treatment Performance

- Solids, Wax, Asphaltene, Foam, and H2S Risk Matrix
- High BS&W and Salt Excursion Fault Tree
- Treater Interface, Carryover, Arcing, and Short-Circuit Check
- Heat, Chemical, Wash-Water, and Residence-Time Optimization Sheet
- Start-Up, Shutdown, and Treatment Upset Response Checklist

Day 5: Practice Treatment Assurance

- Suggested Exercise: Diagnose an Emulsion and Select Treatment Controls
- Suggested Exercise: Reconcile Dehydrator and Desalter Performance Trends
- Suggested Exercise: Resolve Stabilization and Quality-Specification Deviations
- Suggested Exercise: Optimize Heat, Chemical, and Wash-Water Decisions
- Capstone Exercise: Complete the Crude Treatment Performance and Troubleshooting File

Practical Exercises

The course uses suggested activities to convert crude properties, treatment conditions, test results, and failure evidence into controlled operating decisions.

- Suggested activity: classify an emulsion and compare temperature, retention, chemical, and electrostatic treatment options.
- Suggested activity: calculate a dehydration and desalting performance balance from inlet, outlet, water, and salt data.
- Suggested activity: trace a quality excursion through sampling, interfaces, chemical dosage, heating, and equipment behavior.
- Suggested activity: document start-up, shutdown, upset-response, and optimization actions inside an operating envelope.

FAQs

Who suits crude oil treatment operations training, and what does it assume?

Crude oil treatment operations training suits production, process, operating, laboratory, flow-assurance, and assurance functions. It assumes working familiarity with process diagrams, operating data, laboratory results, or crude specifications.

How does crude oil treatment training differ from produced-water treatment training?

Crude oil treatment training focuses on export-quality oil through separation, emulsion breaking, dehydration, desalting, stabilization, and quality control. Produced-water treatment training focuses on removing dispersed oil and solids from the water stream for discharge, reuse, or reinjection.

Why do crude oil emulsions resist dehydration?

Crude oil emulsions resist dehydration when small water droplets, interfacial films, fines, high viscosity, insufficient temperature, poor chemical selection, short residence time, or unstable electrostatic conditions prevent droplet coalescence and settling.

How is crude oil desalter performance monitored?

Crude oil desalter performance is monitored through inlet and outlet salt, water and sediment, wash-water quality and rate, mixing, temperature, pressure, interface level, electrical behavior, brine quality, and trend reconciliation.

How is a crude oil treatment quality excursion troubleshot?

A quality excursion is troubleshot by validating the sample, locating the first abnormal trend, checking feed properties and interfaces, testing chemical response, reviewing heat and residence time, examining electrical behavior, and recording corrective evidence.

Conclusion

Participants take back a Crude Treatment Performance and Troubleshooting File linking crude properties, targets, treatment stages, operating limits, test evidence, deviations, and corrective actions. The file changes isolated readings into a traceable treatment diagnosis. It supports more consistent quality decisions, controlled chemical and energy use, structured upset response, and documented operating assurance.

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