ENGINEERING TRAINER

Refinery Corrosion Control - Distillation

This refinery-corrosion course connects crude and vacuum distillation process conditions with equipment damage. It covers the CDU and VDU process flow, corrosion loops, stress-corrosion cracking, naphthenic-acid corrosion, sulfidation and practical mitigation decisions. This self-paced online course includes video lectures and a completion certificate with PDH credits.

Buy This Course

Request a Quote or Invoice

ONLINE	SELF-PACED	1-YEAR ACCESS
3 MODULES	4.5 PDH	4.7 HOURS

TRUSTED BY ENGINEERING TEAMS WORLDWIDE

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What you'll learn

Distillation is a critical process in oil refining, separating crude oil into valuable fractions through atmospheric and vacuum distillation. This process involves complex chemical and mechanical systems that must operate efficiently to ensure optimal performance and safety. However, challenges such as corrosion and material degradation can significantly impact system reliability, requiring in-depth knowledge of process operations and failure mechanisms.

In this training course, you will explore the fundamentals of crude oil distillation, gain insight into process flows, and understand the role of corrosion loops in system integrity. You'll also delve into common corrosion mechanisms, including stress corrosion cracking and naphthenic acid corrosion, and learn to recognize and mitigate their effects on refining equipment.

This course consists of 3 online modules based on video content.

Skills you'll gain

- ✓ Have an understanding of the distillation process and its critical components, including CDU and VDU, and their operational flows,
- ✓ Can identify and mitigate corrosion risks in the distillation unit of a refinery, leveraging knowledge of corrosion loops and common failure mechanisms,
- ✓ Understand key corrosion mechanisms, such as stress corrosion cracking and naphthenic acid corrosion, and are able to recognize their effects and apply mitigation strategies.

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About the instructor

Christian Lewis

Christian Lewis is an Integrity Services Manager and trainer whose work focuses on corrosion, materials and integrity management. His experience covers corrosion mechanisms, refinery corrosion loops, crude and vacuum distillation, damage recognition and mitigation.

Who this course is for

- ✓ Process engineers working with crude or vacuum distillation units
- ✓ Mechanical engineers responsible for distillation equipment
- ✓ Inspection engineers assessing damage in refinery distillation systems
- ✓ Maintenance engineers supporting crude or vacuum distillation units
- ✓ Corrosion engineers responsible for distillation corrosion loops
- ✓ Integrity engineers responsible for refinery equipment integrity
- ✓ Operations personnel who connect process conditions with corrosion risks

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Course content

Distillation Unit Overview

- Crude distillation unit (CDU): purpose and main sections
- CDU process flow: crude preheat, atmospheric distillation and product streams
- Vacuum distillation unit (VDU): purpose and relationship to the CDU

Corrosion Loops

Introduction to Corrosion Loops Loop 1: Storage to Desalter Inlet Loop 2: Desalter Bottoms & Brine Loop 3: Caustic Injection Loop 4: Desalted Crude 230°C Loop 6: Preflash Vessel to Crude Column Loop 7: Crude Furnace Loop 8: Crude Furnace Transfer Line Loop 9: Mid-section of Column Loop 10: Crude Column Overheads Loop 11: Cooled Side Streams <230°C Loop 12: Vacuum Column Furnace Loop 13: Transfer Line & Side Streams Loop 14: Dry Upper Vacuum Column Loop 15: Eductors & Wet Vacuum Overheads Loop 16: Cooled Column Streams Loop 17: Debutaniser Top & Depropaniser Loop 18: Debutaniser Bottom & Depentaniser Loop 19: Sour Water Systems Loop 20: Wash Water Supply

Corrosion Mechanisms

- Chloride SCC
- Caustic SCC
- Polythionic SCC
- Sour Water Corrosion Chemistry
- Images of Corrosion Damage
- Corrosion Under Insulation
- Naphthenic Acid Corrosion
- Sulphidic Corrosion