The removal of acidic components (primarily H2S and CO2) from hydrocarbon streams can be broadly categorized as those depending on chemical reaction, or adsorption. Processes employing each of these techniques are covered in the course.
COURSE DESCRIPTION

The removal of acidic components (primarily H2S and CO2) from hydrocarbon streams can be broadly categorized as those depending on chemical reaction, or adsorption. Processes employing each of these techniques are covered in the course. The principle process stream is the removal of the acid gases by counter flowing contact with an amine solution, commonly known as Amine Gas Sweetening. The acidic components removed are termed acid gas streams (containing H2S,) and may be flared, incinerated, or converted to elemental sulphur in a Sulphur Recovery Unit. Various Sulphur Recovery processes (primarily The Modified Claus Process) are discussed.

COURSE OBJECTIVES

Upon completion of the course, participants are expected to:
✓ Demonstrate an understanding of Amine sweetening and Sulphur Recovery technologies.
✓ Grasp an explanation of the key features of gas treating
✓ Discuss the thermodynamics of gas processing
✓ Identify the main process steps
✓ Evaluate, monitor, and troubleshoot gas treating operations
THE COURSE OUTLINE

DAY 1

✓ General Considerations and Safety
✓ Types of Contaminants
✓ Gas specifications
  – Heating Value
  – Sulphur Content
  – Water Content
✓ Commercial Gases
  – Ethane, Propane LPG

DAY 2

✓ Chemistry of Amine Gas Sweetening
✓ Process Selection and Classification
✓ Operating Problems
✓ Selective Sweetening Systems
✓ Process Flow and General Design Criteria / Guidelines
  – MEA
  – DEA
  – MDEA
  – DGA
  – DIPA
  – FLEXSORB
  – Formulated Solvents
  – Sterically Hindered Amines
DAY 3

- Design Procedures for Amine Systems:
  - amine absorber
  - amine circulation rates
  - flash drum
  - amine reboiler
  - amine stripper
  - overhead condenser and reflux accumulator
  - rich/lean amine exchanger
  - amine cooler
  - amine pumps & storage tanks
- Materials of construction
- Amine process variables & monitoring
- Amine plant start up & shutdown
- Amine plant maintenance
- Amine plant optimization
- General Operating Problems in Amine Processes
  - corrosion
  - solution degradation
  - foaming
  - amine reclaiming
  - filtration
  - foam inhibitors
  - corrosion inhibitors
- General Considerations for Amine Processes:
  - inlet scrubbing
  - amine losses
  - filtration
  - amine-amine heat exchanger
  - amine regeneration

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DAY 4

- Claus Process Considerations and Modifications
- Typical PFD – 3 Stage
- Process Considerations
- Mechanical Considerations
- Instrumentation
- Tail Gas Handling
  - Incineration
  - Clean-up
  - SO2 Recovery Process
  - H2S Recovery Process
  - Direct Oxidation Process
  - Liquid Redox

DAY 5

- The EUROCLAUS Concept
- SCOT
- Claus Process Calculations and Exercises
- Sulfur Product Specifications
- Sulfur Storage and Handling
- Safety and Environmental Considerations
- Sulfur Recovery plant startup & shutdown and maintenance
- Troubleshooting: what can go wrong
- Course review and evaluation
- Plant optimization
THANK YOU

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AMINE GAS SWEETENING & SULPHUR RECOVERY

SECTOR / MAINTENANCE MANAGEMENT
NON-TECHNICAL & CERTIFIED TRAINING COURSE