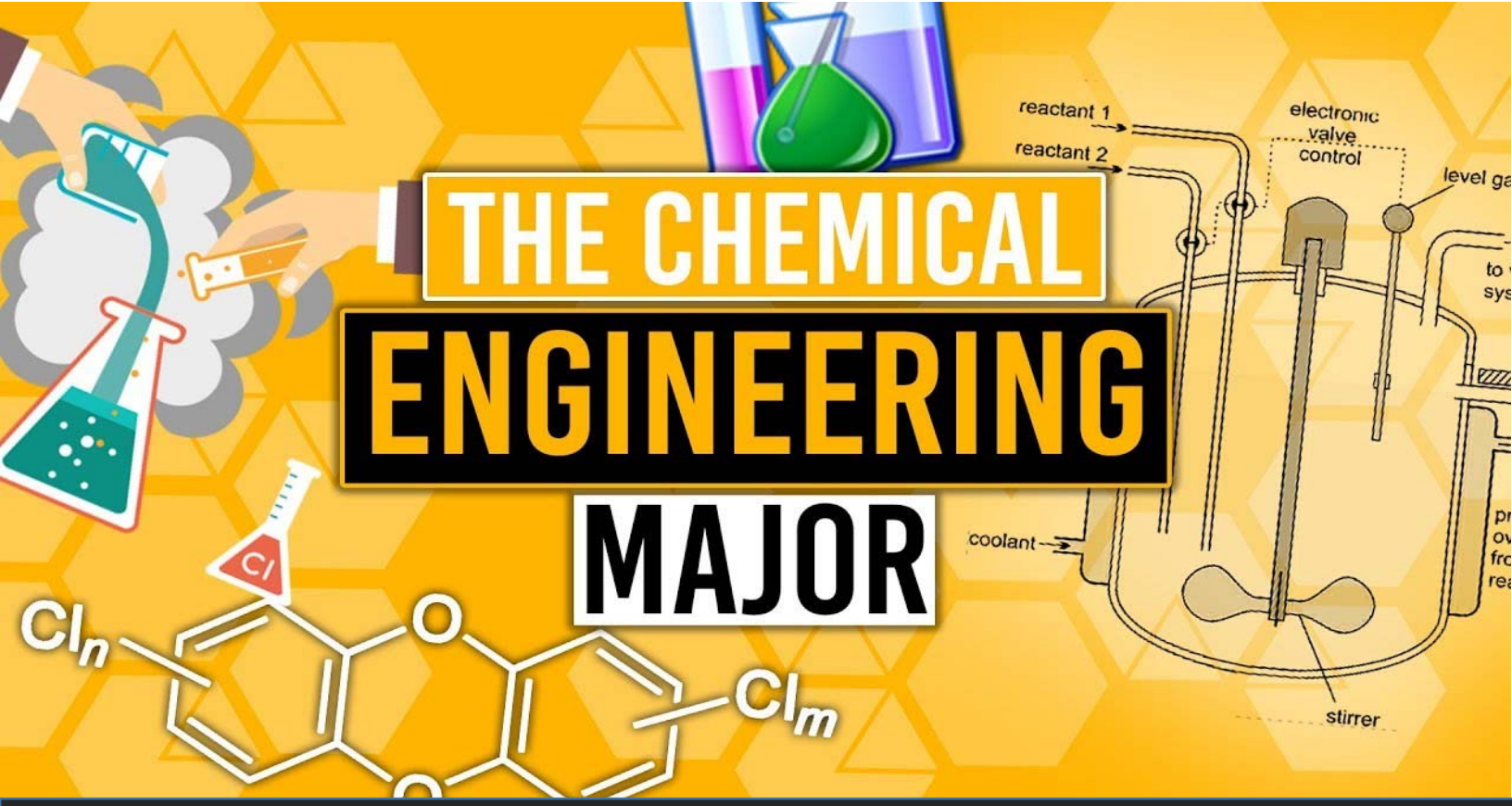

Amine Gas Sweetening & Sulphur Recovery

BTS
Training & Consultancy

Amine Gas Sweetening & Sulphur Recovery

Introduction

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 described. 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.

A significant fraction of the natural gas produced today contains acid gases--primarily hydrogen sulfide (H_2S) and carbon dioxide (CO_2) in sufficiently high concentrations as to be considered sub quality. These contaminants must be removed for the gas to be safely and economically utilised. This BTS Amine Gas Sweetening & Sulphur Recovery training course is designed for delegates as a single source of information on:

- The identity and characteristics of the waste streams produced by the major gas sweetening and sulfur recovery processes
- The possible effects of process chemistry and the nature of the gas being treated on waste characteristics
- Currently available options for waste stream disposition; and
- The effects of environmental regulations, both current and foreseeable, on waste stream disposition

This BTS training course will feature:

- Understanding of Amine Gas Processing Units' operating and maintenance techniques
- Familiarization of Sulphur Recovery process operating, and design, considerations
- Understand common operational problems and their troubleshooting
- Ability to put in place measures to maximize efficient operation
- Improve process optimization techniques
- Interface with other gas processing units

Training Objectives

What are the Goals?

By the end of this BTS training course, participants will be able 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

Target Audience

Who is this Training Course for?

This BTS training course is specifically designed to be of substantial benefit to personnel within the Oil and Gas Industries such as:

- Technologists
- Mechanical Engineers
- Inspection Engineers
- Maintenance or Project Engineers
- Operations Personnel

It is designed for both technical and non-technical personnel as well as operational staff at professional level employed in refineries, petrochemical, and oil and gas process industries.

It will serve as an introduction to acid gas removal and Sulphur recovery technology for those who are unfamiliar with the subject and will also assist those who need the ability to progress to a detailed knowledge of the gas processing technologies.

Training Methods

How will this Training Course be Presented?

This BTS training course will utilise a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. Amine Gas Sweetening and Sulphur Recovery is a hands-on, stimulating learning experience. The

training course will be highly interactive, with opportunities to advance your opinions and ideas. Participation is encouraged in a supportive environment.

To ensure the concepts introduced during the training course are understood, they will be reinforced through a mix of learning methods, including lecture style presentation, open discussion, case studies, simulations and group work.

Daily Agenda

Day One: Introduction to Natural Gas

- Statistical review of petroleum consumption and supply
- LNG / NGL production and processing
- Commercial and Unconventional Gases
- Associated / Non-associated Gas
- Types of Contaminants and Gas specifications
- Environmental and Safety Considerations
    - Case Study: Carbon capture and storage

Day Two: Gas Sweetening

- Gas contaminants and commercial processing alternatives
- Chemistry of Amine Gas Sweetening
- Physical Solvents and
- Membrane Processes
- Guide to selection of gas Sweetening Processes
- Mechanical Filters
    - Case study: Troubleshooting filtration systems

Day Three: System Design & Troubleshooting

- Process Flow and process description
- Design Criteria Guidelines for Amine Systems:
- General Considerations for Amine Processes
- Materials selection and construction
- General Operating Problems and troubleshooting
    - Solution degradation & amine losses
    - Foaming
    - Heat Stable salts
    - Corrosion
- Data collection key to successful troubleshooting

Day Four: Sulphur Recovery I

- "Claus" Sulphur recovery chemistry and thermodynamics – A question of equilibrium
- Claus Process - Considerations and Modifications
- The EUROCLAUS Concept
- Process Considerations & Instrumentation
- Mechanical Considerations
- Claus Process Calculations and Exercises

Day Five: Sulphur Recovery II

- Tail Gas Handling
- SCOT and Incineration
- Sulfur Product Specifications, Storage and Handling
- Safety and Environmental Considerations
- Troubleshooting: what can go wrong
- Course review and evaluation