

Hydrotreating Technology

Introduction

The success of every company depends of each employee's understanding of the key business components. Employee training and development will unlock the companies' profitability and reliability. When people, processes and technology work together as a team developing practical solutions, companies can maximize profitability and assets in a sustainable manner. Training and development is an investment in future success - give yourself and your employees the keys to success

It is strategically important that your operations team understands the fundamentals of process unit operations concepts. This is the difference between being in the best quartile of operational ability and being in the last quartile. There is vast difference in the operational ability of operating companies and most benchmarking studies have confirmed this gap in operational abilities.

The unit on stream time is an indication of operations training. A first quartile-operating unit's on stream factor is greater than 97%. If the on stream factor is below 97% a review of operation training and development is warranted. If on stream factor or average years of operating experience is declining a review of operations training and development should be considered.

Whether you have a team of new or seasoned employees, an introduction or review of these concepts is very beneficial in closing the gap if you are not in the best quartile, or maintaining a leadership position. Most studies show that a continuous reinforcement of best practices in operational principles is the most effective way to obtain the desired results. Training and learning should be an on going continuous life long goal.

Course Objective

This course will guide the participates to develop key concepts and techniques to operate and troubleshoot key fundamental unit operation systems of Hydrotreaters Systems. These key concepts can be utilized to make operating decisions that can improve your unit's performance.

Many aspects of operations can be improved including, product recoveries, purities and energy utilization, and safety. This cannot be achieved without first an understanding of basic fundamental principles of design and operation. These principles need to be understood in advance of operating and trouble shooting a process unit operation for the operator or problem solving to be effective.

This seminar focuses on the core building blocks of the Hydrotreater process unit equipment. The program will emphasize process unit equipment fundamentals, safe utilization of these fundamentals by operations and maintenance personnel, and equipment troubleshooting techniques.

The purpose of this seminar is to improve and update the participant's personal knowledge of Hydro treating technologies and will include:

- Naphtha HT
- Kerosene HT
- Diesel HT
- Monitoring unit operations
- Troubleshooting
- Latest developments
- Areas of concern

Outline

1. Background-development of Hydro processing.
 - Hydro processing Objectives.
 - Commercial History
2. Process Fundamentals
 - Chemical reactions
 - Catalysts
 - Reaction Kinetics
 - Hydrogenation –Dehydrogenation Equilibrium
 - Reaction Selectivity
 - Multicatalyst Systems
 - Commercial Catalysts
3. Process Design
 - Typical Processing Conditions
 - Reactor Systems
 - Flow Schemes
 - Design Considerations
4. Process Capabilities
 - Feedstocks and applications
 - Hydrogen Utilization

- Product Qualities
- Catalyst Consumption
- Hydrogen Consumption
- Utilities

5. Cost and Economics

What You Can Expect To Gain;

- Overview of the Catalytic Processes in a Refinery, with a special emphasis on Hydrotreaters Systems
- Catalyst Evaluation Techniques
- An understanding of Reactor and Catalyst interaction
- The operation, control and trouble shooting of a reactor and associated heaters, heat exchangers and distillation equipment
- An overview of reactors, practical solutions as well as theory
- An understanding of essential reaction concepts
- Valuable practical insights for trouble free design and field proven techniques for commissioning, start up and shutdown of reactor, heater, heat exchanger and distillation operations
- To tailor your approach to specific design, analysis and trouble shooting problems.

Course Syllabus

This suggested course is three to four days. The goal of the course would be to refresh the knowledge of those who have a basic understanding of process operations and to build a foundation to those who are new to process operations.

Day One

Introduction

1. Refinery Overview
2. Safety for the Process Industry

Hydrogenation

1. Introduction
2. History

Day Two

3. Process Overview
4. Process Chemistry
5. Feedstock, Reaction, Catalyst, Regeneration

Day Three

6. Process Variables
7. Common Problems
8. Advance in Cat Development

Day Four

9. Catalyst Evaluation Techniques
10. Distillation Fundamentals
11. Summary

Who Should Attend:

- People who are making day to day decisions regarding operation, design, and economics of processing plants;
 1. 1st Line Operations personnel,
 2. Operation Supervisors,
 3. 1st Line Maintenance personnel,
 4. Maintenance Supervisors,
 5. Senior Plant Supervisors,
 6. Operations Engineers
 7. Process Support Engineers,
 8. Design Engineers,
 9. Cost Engineers.

- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding in Processing Plant Operations.

Other professionals who desire a better understanding of subject