

Semi-regenerative Reforming unit

AXENS SEMI-REGENERATIVE REFORMING

OPERATIONS TRAINING

Objective: To provide in-depth knowledge of the **Semi-Regenerative Reforming** process and particularly the client's unit. By the end of the course, the participants will have:

- A general understanding of the significance of the unit within the refinery scheme
- A broad technical understanding of the catalyst and the chemical reactions involved in the process
- A solid knowledge of the Process Flow Diagram and equipment
- A thorough knowledge of operating conditions and their impact on performance
- A good overview of the start-up and shutdown activities (NB: a detailed review of procedures is not included in the course).
- A sound knowledge of the main troubleshooting actions

Duration: The training course lasts 3 days. The duration can be tailored to the participants' level of understanding.

Attendance: This course is targeted to unit process engineers, unit technical managers, shift leaders, and board men. Suitably qualified or experienced outside operators may attend to enhance their process knowledge.

Program: The program below may be modified due to specific customer requirements, subject to an agreement between the customer and AXENS.

Semi Regenerative Reforming Unit

Day 1

1. Introduction

- Supply/demand situation
- Market trends
- Environmental regulation
- Focus on the unit in its context

2. Process Objectives

- General information
- Feed characteristics
- Unit duty
- Products' specifications
- Material Balance

3. Chemical Reactions

- Chemistry and catalysis basics
- Feed chemical composition
- Chemical reactions
- Catalysts
- Catalyst contaminants

4. Process Description

- Process Flow Diagrams
- Piping & Instrumentation Diagrams
- Main equipment
(Drawings, pictures and functions)
- Catalyst and chemicals loading procedures

5. Start up Preparation

- Pre-commissioning operations
- Commissioning operations:
 - Unit dry out
 - Unit washing
 - Unit emptying
 - Pump calibration procedure
 - Catalyst and chemicals loading procedures

Day 2

6. Main Start up Operations

- Exhaustive descriptive steps leading to fresh feed-in:
 - > Reaction section dry out
 - > Catalyst reduction and sulfiding
 - > Oil in
 - > Adjustment to normal operation

7. Normal Operation and Operating Parameters

- Summary of main operating conditions
- Operating variables
- Adjusting operating conditions
- Monitoring of H₂O/Cl equilibrium on the catalyst
- Analytical control

Day 3

8. Shutdown and Restart

- Planned shutdown
- Normal restart

9. Troubleshooting

- Typical causes resolution of product quality incidents
- Operational disturbances

10. Description of Emergency Situations

- Emergency procedures
- Interlock loops

11. Catalyst Special Procedures

- Regeneration
- Oxychlorination
- Calcination

12. Health, Safety and Environment

13. Quiz