

C4 Isomerization unit

AXENS C4 ISOMERIZATION PROCESS

OPERATIONS TRAINING

Objective: To provide in-depth knowledge of the **C4 ISOMERIZATION** 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 4 days. The duration can be tailored to the participants' level of understanding.

Attendance: This training is targeted for 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 subject to modification due to specific customer requirements subject to an agreement between the customer and AXENS.

C4 Isomerization Unit

Day 1

1. Introduction

- Supply/demand situation
- Market trends
- Gasoline specification
- 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. Adsorbents Mechanism and Regeneration

- Adsorption objectives
- Adsorption theory
- Adsorbent regeneration
- Operating variables

Day 2

5. Process Description

- Process Flow Diagrams
- Piping & Instrumentation Diagrams
- Main equipment (Drawings, pictures and functions)
- Catalyst storage section / Catalyst removal section description

6. Start-up Preparation

- Pre-commissioning operations
- Commissioning operations:
 - Precommissioning key points
 - Grading, adsorbents and packing loading
 - Leak test
 - Inerting

Day 3

7. Main Start up Activities

- Hydrogen pressurization
- Oil circulation, column start-up
- Drying of reaction section (flushing with oil)
- Acidizing and final drying
- Catalyst loading
- Pressurization
- First isomerization reactor line-up
- Second reactor line-up
- Lining-out at design capacity

8. Normal Operation and Operating Parameters

- Operating parameters
- Performance follow-up
- Analysis

Day 4

9. Unit Shut-down / Restart

- Planned shut-down
- Restart

10. Emergency Shutdown

- Emergency shutdown
- Unscheduled shutdown
- Safety Interlocks

11. Troubleshooting

- Typical causes and resolution of product quality incidents
- Operational disturbances

12. Catalyst Special Procedures

- Sulfur stripping
- Unloading

13. Health, Safety and Environment

14. Quiz