

DUBAI-UAE

17-21 Aug 2026

Naphtha Isomerization Process

Course Overview

This 5-day training program provides a comprehensive understanding of the Naphtha Isomerization Process, an essential step in refining operations to enhance octane ratings for gasoline blending. Participants will learn the fundamentals of isomerization chemistry, process design, key operational parameters, and troubleshooting methods. This course combines theoretical concepts with practical applications, helping participants develop skills to optimize unit performance and improve overall efficiency.

Course Objectives

By the end of this course, participants will be able to:

- Understand the chemistry and purpose of naphtha isomerization in refining operations.
- Identify key equipment, process flow, and catalysts used in isomerization units.
- Apply knowledge of operating parameters to optimize unit performance.
- Troubleshoot common operational issues and implement safety measures.
- Analyze case studies to learn from real-world applications and best practices.

Who Should Attend?

This course is suitable for:

- Process engineers, chemical engineers, and refinery operators involved in naphtha processing.
- Operations and maintenance staff responsible for refinery optimization.

- Technical managers and supervisors looking to enhance their understanding of refinery operations.
- Anyone seeking a foundational understanding of isomerization in naphtha processing.

Course Outline

Day 1: Fundamentals of Naphtha Isomerization

- **Introduction to Naphtha and Isomerization Process**
 - Overview of naphtha and its role in refineries
 - Purpose and importance of isomerization in octane enhancement
- **Basic Chemistry of Isomerization**
 - Hydrocarbon structures and isomers
 - Isomerization reactions, C5 and C6 isomers
- **Process Variables and Product Specifications**
 - Key parameters: temperature, pressure, hydrogen-to-hydrocarbon ratio
 - Desired product properties and impact on gasoline blending

Day 2: Process Flow and Equipment Overview

- **Isomerization Process Configuration**
 - Typical configurations: once-through and recycle units
 - Flow of feed through preparation, reaction, and separation stages
- **Key Equipment Overview**
 - Detailed study of reactors, heat exchangers, compressors, and fractionators
 - Catalyst types (platinum, zeolite-based), their characteristics and role in reactions

- **Catalyst Performance and Maintenance**

- Catalyst regeneration, handling, and performance monitoring

Day 3: Operating Principles and Control

- **Control of Key Operating Parameters**

- Control of temperature, pressure, and hydrogen management
- Managing feed composition and flow rates

- **Hydrogen Balance and Purification**

- Role of hydrogen in reaction stability
- Techniques for hydrogen recycling and balance

- **Optimizing Process Efficiency**

- Monitoring catalyst health, optimizing yield, and enhancing efficiency

Day 4: Troubleshooting and Safety

- **Operational Challenges and Solutions**

- Catalyst deactivation, temperature fluctuations, and feed variability
- Addressing pressure drops and system imbalances

- **Safety Measures in Isomerization Units**

- Key hazards and safe operating practices
- Emergency response plans and safety controls

- **Environmental Considerations**

- Emission management, waste reduction, and regulatory compliance

Day 5: Case Studies and Practical Applications

- **Industry Case Studies**
 - Real-world examples and lessons learned from other refinery operations
- **Workshop / Simulation Exercises**
 - Practical troubleshooting and process optimization scenarios
 - Hands-on exercises to reinforce learning outcomes
- **Review and Q&A**
 - Summary of key points and discussion on real-life applications
 - Open Q&A for addressing specific participant queries

Training Course Prices:

| Number of Participants | Course Price |
|-------------------------------|---------------------|
| 1 participant | KWD 1450.000 |
| 2 participants | KWD 1400.000 |
| 3 participants | KWD 1350.000 |
| 4 participants | KWD 1300.000 |
| 5 participants | KWD 1250.000 |
| 6 and above participants | KWD 1200.000 |