

# PRODUCTION QUALITY AND PROCESS TROUBLESHOOTING

## PRD060

### COURSE DESCRIPTION

This course offers participants a thorough understanding of the essential components, processes, and challenges in oil and gas production facilities. Combining theoretical instruction, practical case studies, and hands-on exercises, participants will learn the fundamentals of oil and gas production, process facility design and selection, gas and oil treatment processes, troubleshooting techniques, and the operation of rotating equipment. The course is designed to equip participants with the skills to effectively identify and address production quality issues and process disruptions in oil and gas operations.

### COURSE OBJECTIVES

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

- Grasp the fundamentals of oil and gas production.
- Understand principles of process facility design and selection.
- Master gas and oil treatment processes.
- Develop proficiency in troubleshooting techniques.
- Gain expertise in operating rotating equipment.
- Apply knowledge to real-world scenarios.
- Enhance their understanding of quality control measures.
- Learn best practices for safety and control systems.

### WHO SHOULD ATTEND

- Engineers
- Technicians
- Operators
- Supervisors

### COURSE DURATION

5 Working Days

## COURSE OUTLINES

### 1. Introduction to Oil and Gas

- Course Introduction: Overview of objectives and participant learning outcomes.
- The Oil and Gas Production System and Key Components
- Basics of Oil and Gas Production
  - Wellhead and Surface Facilities Components
  - Types of Oil and Reservoirs and Driving Mechanisms
  - FEED Stream Properties and Composition
  - Natural Flow and Artificial Lift Concepts
  - Flow Regimes and Types of Flow
  - Flow Transmission from Well Sites to Process Plants
  - Physical and Chemical Properties of Crude Oil and Gas

### 2. Process Facilities

- Process Facilities Concept, Design, and Selection
  - Basis of Process Design
  - Basis of Equipment Selection
  - Product Specifications Requirements
  - Cost and Safety Considerations
  - Project Main Safety Studies Requirements
- Case Studies
  - GOSP Plant Overview
  - Required Engineering Documentation Samples
  - Equipment Specifications and Related P&IDs

### 3. Gas Treatment Process

- Basics of the Treatment Process
  - Separation Principles
  - Types of Separators
  - Separation Troubleshooting
  - Gas Dehydration and Dew Point Control
  - NGL Stabilization Process
  - Safety and Control Systems
  - System Monitoring and Product Sampling
- Case Studies: Troubleshooting Scenarios and Best Practices

#### 4. Oil Treatment Process

- Main Oil Treatment Plant Equipment
  - Desalters Concept and Operations
  - Main Troubleshooting and Process Upsets
  - Emulsions and Salt Problems
- Case Studies with Drawings and Troubleshooting Scenarios
- Heat Exchanger Types
  - Main Troubleshooting and Related Process Upsets
  - Corrosion, Erosion, and Fouling Problems
  - Sales Product Specification and Lab Analysis
  - Loading and Transferring Operations
  - Trucking and Loading Troubleshooting
  - Wastewater Management System

#### 5. Rotating Equipment Operation and Troubleshooting

- Compressors
  - Types, Components, and Operations
  - Safety and Control Systems
  - Troubleshooting
- Pumps
  - Types, Components, and Operations
  - Basis of Pumps Selection
  - Protection System Requirements
  - Main Pumps Troubleshooting and Mitigation
- Valves: Types and Problems

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