TRAINING TITLE
PROCESS ENGINEERING - DESIGN AND OPERATIONS

Training Duration
5 day

Training Venue and Dates

Ref. No. PE121	Process Engineering - Design and Operations	5	22-26 Sep 2025	$5,500	DUBAI, UAE

In any of the 4 or 5-star hotels. The exact venue will be informed later.

Training Fees
- **$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch**

Training Certificate
Define Management Consultants Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION
The oil and gas industry operates in a dynamic and complex environment, requiring precision and efficiency in every aspect of its processes. Process engineering plays a pivotal role in ensuring the safe, efficient, and cost-effective design, operation, and optimization of these processes. This comprehensive 5-day course is designed to provide participants with both foundational knowledge and practical tools to excel in process engineering roles across upstream, midstream, and downstream sectors.

TRAINING OBJECTIVES
By the end of the course, participants will be able to understand

1. **Gain a clear understanding of process design and operational principles in the oil and gas industry.**
2. **Learn to interpret and create essential engineering documentation, such as Process Flow Diagrams (PFDs) and Piping & Instrumentation Diagrams (P&IDs).**
3. **Understand key equipment and processes, including separators, heat exchangers, and gas dehydration systems.**
4. **Develop skills in troubleshooting operational issues and implementing process control techniques.**
5. **Explore modern technologies, such as process simulation and optimization tools, to enhance efficiency and productivity.**

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6. **Learn how to address safety, environmental, and economic considerations during design and operation phases.**

WHO SHOULD ATTEND?

This course is tailored for:

- **Process engineers and plant operators.**
- **Facility designers and project engineers.**
- **Operations and maintenance professionals.**
- **Technical managers seeking to improve process efficiency.**
- **Professionals transitioning into the oil and gas industry from related fields.**

TRAINING METHODOLOGY

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.
Very useful Course Materials will be given.

- **30% Lectures**
- **30% Workshops and work presentation**
- **20% Group Work& Practical Exercises**
- **20% Videos& General Discussions**

COURSE PROGRAM:

Day 1: Fundamentals of Process Engineering

- **Introduction to Process Engineering**
- **Overview of the Oil and Gas Industry: Upstream, Midstream, and Downstream**
- **Basic Concepts of Fluid Flow, Heat Transfer, and Thermodynamics**
- **Process Flow Diagrams (PFDs) and Piping and Instrumentation Diagrams (P&IDs)**
- **Understanding Equipment and Components: Pumps, Compressors, Valves, and Piping**
- **Case Study: Analyzing a Simple Oil Separation Process**

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Day 2: Process Design Principles

- Process Design Steps: Problem Definition, Conceptualization, and Optimization
- Equipment Sizing and Selection: Heat Exchangers, Separators, and Columns
- Safety Considerations in Process Design
- Introduction to Process Simulation Tools (e.g., Aspen HYSYS, ChemCAD)
- Simulating a Gas Dehydration Process
- Identifying Design Constraints in Real Scenarios

Day 3: Process Operations and Control

- Principles of Process Control: Feedback, Feedforward, and PID Control
- Monitoring and Optimizing Operational Performance
- Troubleshooting Common Operational Issues in Oil and Gas
- Emergency Shutdown (ESD) Systems and Procedures
- Case Study: Operational Challenges in a Gas Processing Plant
- Interactive Session: Real-Time Process Control Exercise

Day 4: Advanced Topics in Process Engineering

- Overview of Enhanced Oil Recovery (EOR) Processes
- Multiphase Flow and Pipeline Design
- Environmental Considerations: Emission Controls and Waste Management
- Introduction to LNG (Liquefied Natural Gas) Processing
- Process Optimization Techniques: Heat Integration, Debottlenecking
- Process Optimization Case Study

Day 5: Practical Applications and Integration

- Integrated Process Design: From Wellhead to Refinery
- Economic Analysis and Cost Estimation in Process Engineering
- Risk Assessment and Hazard Analysis (HAZOP Studies)
- Designing a Simplified Oil Processing Facility
- Review of Key Learnings and Best Practices
- Course Assessment and Feedback

NOTE:

Pre-& Post Tests will be conducted.

Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.

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