

TRAINING TITLE

GAS PROCESS AND EQUIPMENT DESIGN

Training Duration

5 day

Training Venue and Dates

Ref. No. PE118	Gas Process and Equipment Design	5	29 Sep-03 Oct 2025	\$5,500	ABU DHABI, UAE
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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

Natural gas processing plays a pivotal role in ensuring the efficient and safe delivery of quality gas products that meet commercial and industrial standards. Designing and integrating gas processes and equipment requires a deep understanding of thermodynamics, fluid mechanics, and the operational challenges associated with gas treatment, compression, and handling.

The "Gas Process and Equipment Design" course is a structured 5-day program designed to provide participants with the knowledge and practical skills necessary to design, analyze, and optimize gas processing systems and equipment. From separation and dehydration to sweetening, compression, and refrigeration, this course equips participants to address real-world challenges and deliver reliable, efficient, and cost-effective solutions in the oil and gas industry.

TRAINING OBJECTIVES

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

- **Core Principles:** Understanding gas properties, impurities, and flow behavior.
- **Process Design:** Key stages of gas treatment, separation, dehydration, sweetening, and compression.

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- **Equipment Sizing and Specification: Designing separators, contactors, compressors, and more.**
- **System Integration: Optimizing energy use and ensuring compatibility across processing units.**
- **Regulatory Compliance: Meeting environmental and safety standards in gas processing operations.**

WHO SHOULD ATTEND?

This course is designed for:

- Process engineers and facility designers.
- Project and design engineers involved in upstream and midstream operations.
- Operations and maintenance personnel managing gas processing facilities.
- Equipment and reliability engineers.
- Professionals seeking to deepen their knowledge of gas processing technologies.

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

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COURSE PROGRAM:

Day 1: Introduction to Gas Processing

- **Overview of Gas Processing in the Oil and Gas Industry**
- **Composition and Properties of Natural Gas**
- **Key Gas Processing Stages: Separation, Treatment, and Compression**
- **Process Flow Diagrams (PFDs) and Equipment Layouts**
- **Safety and Environmental Considerations in Gas Processing**
- **Case Study: Natural Gas Processing Facility Overview**

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Day 2: Separation and Dehydration Systems

- Fundamentals of Gas-Liquid and Gas-Solid Separation
- Design and Sizing of Separators: Scrubbers, Knockout Drums, and Filters
- Introduction to Gas Dehydration: Absorption and Adsorption Methods
- Glycol Dehydration System Design: Components and Sizing
- Molecular Sieve Dehydration Design and Applications
- Designing a Separation and Dehydration System

Day 3: Gas Sweetening and Contaminant Removal

- Overview of Gas Sweetening: Removal of CO₂, H₂S, and Other Impurities
- Amine Sweetening: Process Flow, Equipment, and Design Considerations
- Sulfur Recovery and Acid Gas Management
- Alternative Sweetening Methods: Physical Solvents and Hybrid Systems
- Challenges in Sour Gas Processing and Safety Measures
- Case Study: Sweetening System Design for High-H₂S Gas

Day 4: Gas Compression and Refrigeration

- Principles of Gas Compression and Compressor Types
- Design and Sizing of Compression Systems: Centrifugal, Reciprocating, and Screw Compressors
- Integration of Compression with Other Processing Units
- Introduction to Gas Refrigeration and Cryogenic Processes
- Equipment Design for LNG and NGL Recovery Systems
- Design of a Compression and Refrigeration System

Day 5: Advanced Topics and System Integration

- Energy Efficiency in Gas Processing Systems
- Process Integration: Heat Exchangers, Heat Recovery, and Optimization
- Advances in Gas Processing Technologies: Membranes, Hybrid Systems, and Digital Tools
- End-to-End Design of a Gas Processing System
- Presentation and Peer Review of Group Projects
- Course Wrap-Up, Assessment, and Certification

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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