

TRAINING TITLE

GAS DEHYDRATION SYSTEM DESIGN

Training Duration

5 day

Training Venue and Dates

Ref. No. PE114	Gas Dehydration System 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 dehydration is a critical process in the oil and gas industry to remove water vapor from gas streams. Effective dehydration ensures the prevention of pipeline corrosion, hydrate formation, and flow assurance challenges, while maintaining product quality and operational safety. A well-designed gas dehydration system is essential to meet the demands of modern gas processing facilities, particularly in environments where temperature, pressure, and flow conditions vary significantly.

The "Gas Dehydration System Design" course is a comprehensive 5-day program aimed at equipping participants with the technical knowledge and skills required to design, operate, and optimize gas dehydration systems. Participants will explore various dehydration technologies, including glycol-based systems, molecular sieve units, and emerging membrane methods, while addressing operational challenges and environmental considerations.

TRAINING OBJECTIVES

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

- Provide a solid foundation in the principles and technologies of gas dehydration.
- Develop expertise in designing and sizing absorption and adsorption systems.

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- Explore optimization strategies for energy efficiency and environmental compliance.
- Enhance problem-solving and troubleshooting skills for operational challenges.
- Introduce the latest advancements in dehydration technology and automation.

WHO SHOULD ATTEND?

This course is designed for:

- Process and mechanical engineers.
- Facility and project design engineers.
- Operations and maintenance personnel.
- Equipment and reliability engineers.
- Professionals involved in gas processing, transmission, or storage operations.

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 Gas Dehydration

- Overview of Gas Dehydration in Oil and Gas Operations
- Importance of Dehydration: Preventing Corrosion, Hydrates, and Pipeline Damage
- Key Methods: Absorption, Adsorption, and Membrane Technologies
- Properties of Natural Gas and Water Vapor Behavior
- Hydrate Formation and Prevention Strategies
- Case Study: Gas Dehydration in Offshore vs. Onshore Facilities

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Day 2: Absorption Dehydration Design (Glycol Systems)

- Overview of Glycol Dehydration: Principles and Process Flow
- Equipment Design: Contactor Towers, Reboilers, and Regeneration Units
- Selection of Glycol Types (TEG, MEG, DEG)
- Design Considerations: Gas Flow Rate, Temperature, and Pressure
- Troubleshooting Glycol Systems: Common Issues and Solutions
- Sizing a Glycol Dehydration Unit

Day 3: Adsorption Dehydration Design (Molecular Sieves)

- Introduction to Adsorption Dehydration Systems
- Molecular Sieve Materials and Selection Criteria
- Process Flow and Equipment Design: Adsorber Towers and Regeneration Systems
- Advantages and Limitations of Adsorption vs. Absorption
- Optimizing Adsorption Cycles and Regeneration Efficiency
- Case Study: Design of Adsorption Systems for High-Pressure Gas

Day 4: Advanced Systems and Environmental Considerations

- Emerging Technologies: Membrane Dehydration and Hybrid Systems
- Integration of Dehydration Systems with Other Gas Processing Units
- Environmental Concerns: Emission Control and Waste Management
- Energy Efficiency in Gas Dehydration Systems
- Economic Considerations: CAPEX, OPEX, and Lifecycle Costs
- Evaluating and Optimizing a Dehydration System

Day 5: Design Integration and Practical Applications

- Designing a Complete Gas Dehydration System: From Feed Gas to Final Product
- Integration with Downstream Processes: Compression and Transmission
- Control Systems and Automation in Dehydration Units
- Design and Presentation of a Gas Dehydration System
- Review of Key Concepts and Best Practices
- Course Wrap-Up, Feedback, 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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