



## Molecular Sieve Dehydration Fundamentals for Facilities Engineers- Virtual, Blended Short Course

### COURSE

#### About the Course

This short course is from the industry-standard Gas Conditioning and Process course (G-4), known globally as the Campbell Gas Course. Each session will follow the format below:

Days 1-2:

- 4.5 hours prerequisite e-Learning modules (participants may test out)
- 1.5 hours required e-Learning modules

Day 3:

- 2 hours virtual, instructor-led session, 9:00-11:00 CST (GMT-6)
- 1.5 hours e-Learning and problem assignments

Day 4:

- 2 hours virtual, instructor-led session, 9:00-11:00 CST (GMT-6)

[Click here to see the full G-4 Short Course listing](#)

Dehydration is the process of removing water from the gas so that no condensed water will be present in the system downstream of the dehydration unit. Molecular sieve is the only technology that can remove essentially all of the water from the natural gas stream so that the gas can be further processed at cryogenic conditions. Molecular sieve dehydration is required upstream of cryogenic turbo-expander gas plants and in front of liquefaction (LNG) facilities. The dehydration unit is critical to the performance of these plants as small amounts of water breakthrough can result in freezing in the downstream heat exchangers, typically Braze Aluminum Plate Fin exchangers for turbo-expander plants, core and kettle, or possibly coil-wound exchangers for LNG facilities.

Molecular sieve dehydration units are sized and serviced by the molecular sieve vendors. However, facilities engineers need to understand how these dehydrators work and what their key parameters are.

This short course covers the process of molecular sieve dehydration. The online module components cover the following topics:

- Adsorption dehydration
- Molecular sieve dehydration performance parameters
- Molecular sieve regeneration process

The virtual, instructor-led lecture will cover equilibrium loading, define the mass transfer zone, and discuss the life factors that affect operations. The method to apply these principles to molecular sieve performance test runs will be covered, as well as the benefits of utilizing standby time to extend the life of molecular sieve beds. The problem assignment will work through determining the expected life of a molecular sieve bed using these principles with the results of a performance test run, and to investigate options to extend the bed life.

The problem debrief will cover the practical applications learned in the problem assignment. Common operating problems and potential solutions will be discussed, and the participants will be able to share their experiences and ask detailed questions in the round table discussion.

Prerequisites (of which participants can test out) include Basic Conversion, Gas and Liquid Physical Properties, Pure Component Phase Behavior, Multicomponent Phase Behavior, Fundamental Applications of Phase Envelopes, and Water Content of Sweet and Sour Natural Gas.

### **Target Audience**

Production and processing personnel involved with natural gas and associated liquids, to acquaint or reacquaint themselves with gas conditioning and processing unit operations.

This course is for facilities engineers, process engineers, senior operations personnel, field supervisors, and engineers who select, design, install, evaluate, or operate gas processing plants and related facilities.

These short courses are ideal for mid-career professionals that have experience in the industry and have been transferred to a new role or assignment.

They are also ideal for new engineers that need to get up to speed quickly on the primary principles of gas processing with a deep dive on the issues of the short course topics.

### **You Will Learn**

You will learn how to:

- Explain the process of adsorption, and list common adsorbents used in gas dehydration
- Describe a molecular sieve process flow diagram for gas dehydration
- Describe aged and new equilibrium capacity for molecular sieve
- Discuss the key performance parameters for molecular sieve dehydration units
- Apply equilibrium loading and life factor calculations to estimate the life of a molecular sieve bed
- Discuss common operating problems and solutions

### **Course Content**

- Adsorption Dehydration

- Molecular Sieve Dehydration Performance Parameters
- Mol Sieve Regeneration Process
- Fundamentals of Molecular Sieve Dehydration Lecture
- Self-Directed Problem Assignment
- Problem Debrief and Experience Round Table

## Product Details

Categories: [Midstream](#)

Disciplines: [Gas Processing](#)

Levels: [Foundation](#)

Product Type: [Course](#)

Formats Available: [Virtual](#)

Instructors: [Dale Kraus](#) [Mahmood Moshfeghian](#) [Kindra Snow-McGregor](#)