Propane Refrigeration 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

Propane refrigeration is likely the most important utility system in refrigeration NGL extraction plants, and in rich gas turbo-expander facilities.

The propane refrigeration system is often times the limiting utility that prevents a facility from maintaining design flow rates during periods of hot ambient conditions. The reason being is that often the refrigeration systems undersized for the hottest ambient conditions that a facility may experience during the summer time. If there is inadequate cooling available, the plant cannot maintain sales gas specifications due to excess heavy hydrocarbons present in the sales gas or because the plant cannot achieve the required hydrocarbon liquid recoveries in the NGL stream.

An undersized propane refrigeration system can cost a gas conditioning and processing facility significant revenue losses as a result of the plant having to operate at turned down conditions to fit within the cooling capacity of the refrigeration system.

This short course covers the basics of refrigeration systems, and builds up to the fundamental knowledge that is required for propane refrigeration system sizing, analysis and troubleshooting.

The self-paced online modules cover:

- Applications of Refrigeration Systems
- Simple Refrigeration Systems
- Operation of Refrigeration Systems
- Economizers in Mechanical Refrigeration Systems

Once the foundation is laid with the basic principles, the virtual, instructor-led session will take you through the fundamental sizing equations and analysis to determine a facilities propane refrigeration requirements. The problem assignments will give the participants insight into propane refrigeration operating issues, and limitations.

The virtual, instructor-led debrief will cover the practical insights that were gained from working the assigned problem set, as well as cover mechanical refrigeration system controls, common operating issues and potential solutions. The round table discussion will allow delegates to ask questions regarding their particular systems and share the current problems and experiences

Prerequisites, which participants can test out of, include Basic Conversion, Gas and Liquid Physical Properties, Pure Component Phase Behavior, Thermodynamic Principles and the First Law of Thermodynamics, Second Law of Thermodynamics and Energy Balance Equations, Enthalpy Correlations and Applications of Energy Balance Correlations, Using PH Diagrams to Perform Energy Balance Calculations, and Compressor Head, Power Requirements and Discharge Temperature.

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

- Common applications for refrigeration systems in oil and gas processing
- The basic principles of mechanical refrigeration systems
- Operation of mechanical refrigeration systems
- How to estimate the size of a simple refrigeration system
- How to estimate the size of a refrigeration system with an economizer
- Common operating problems and solutions

Course Content

Primary course content:

- Application of Refrigeration Systems
- Simple Refrigeration Systems
- Operation of Refrigeration Systems
- Economizers in Mechanical Refrigeration Systems
- Fundamentals of Propane Refrigeration Lecture
- Self-Directed Problem Assignment
- Problem Debrief and Experience Round Table

Optional content:

- Factors in Selecting Refrigerants and Cascade Refrigeration

Product Details

Categories: Midstream

Disciplines: Gas Processing

Levels: Foundation

Product Type: Course

Formats Available: Virtual

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