TETRA TECH RPS ENERGY | TRAINING

N613: Natural Gas Processing - Dehydration, Refrigeration, and Fractionation

Instructor(s): Dale Kraus

Format and Duration

Classroom - 3 Days
Virtual - 5 Sessions

Summary

This course is designed to familiarize technical professionals with the design and operation of several common gas plant processing blocks. Day one will be spent on dehydration systems used in typical field gathering and plant facilities, including a review of options available. Day two will focus on mechanical propane refrigeration systems typically used in Hydrocarbon Dew Point and NGL Recovery systems, including a review of design and performance enhancements. Day three will focus on tower operations and troubleshooting used in absorption and fractionation services, with optimization and key performance indicators discussed for each tower in each application.

Learning Outcomes

Participants will learn to:

1. Describe the design of a glycol dehydration unit.
2. Evaluate the water content of natural gas.
3. Recognize the operation and potential problems of a glycol dehydration unit.
4. Describe the types of gas processing pumps.
5. Identify desiccant dehydration systems.
6. Discuss the components of a refrigeration system.
7. Review the operating problems and possible solutions in a refrigeration system.
8. Define the various liquids recovery options.
9. Describe absorption and fractionation towers.
10. Analyze de-ethanizer and stabilization tower operation and typical operating problems and determine product specification and pricing.

Training Method

This is a classroom course comprising a mixture of lectures, discussion, case studies, and practical exercises.

Who Should Attend

The course is intended for engineers, technologists and operators involved in the operation and optimization of gas processing facilities.

Course Content

1. Dehydration

- Water Content of Natural Gas

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- Hydrate Formation, Prevention and Handling
- Glycol Dehydrator Sizing
- Optimization of a System
- Operational Issues
- Troubleshooting
- Environmental Safety Considerations

2. Refrigeration

- Basic Operation and Design of Refrigeration Circuit
- Capacity Control
- Equipment Options
- Power-Reducing Modifications
- Troubleshooting H/C Dew Point Control Problems
- Gas Expander - Propane Refrigerant Comparison

3. Absorber and Fractionation Towers

- Basic Design
- Tower Internals
- Capacity Control and Issues
- Turn-Up and Turn-Down Problems
- Amine Systems and Filtration
- Stabilization vs. Oil Treating