

Gas Quality Measurement (Instructor-Led Training)

Course Description

This course teaches how to correctly monitor natural gas for impurities using a variety of equipment; and introduces the many components of natural gas and how, if unprocessed, they affect the quality, increase corrosion potential, and can lead to the formation of lethal substances such as hydrogen sulfide.

Course Prerequisites

- GTA Web-Based Training
 - Gas Quality Instrumentation
- GTA Instructor-Led Training
 - Gas Sampling

Course Objectives

Upon completion of this course, the student will have received instruction designed to assist him/her in the following:

- State the reason for measuring moisture in process gas streams.
- List the different techniques used to measure the moisture content in the process gas.
- Explain the operation of a low level moisture analyzer.
- Discuss the operation of an online moisture analyzer.
- Describe the operation of a tunable diode laser moisture analyzer.
- Explain the operation of a portable moisture analyzer
- State the purpose for measuring hydrogen sulfide (H₂S) in process gas streams.
- List the different techniques available for monitoring H₂S in process gas stream
- Describe the operation of H₂S gas analyzers.
- Explain the reason for monitoring oxygen (O₂) in process gas streams.
- Explain the general operation of online percent O₂ analyzers
- Describe routine maintenance performed on online percent O₂ analyzers.
- Explain general operation of portable trace O₂ analyzers.
- List routine maintenance performed on portable trace O₂ analyzers.
- Explain the general operation of portable percent O₂ analyzers.
- Describe routine maintenance performed on portable percent O₂ analyzers.

- Explain the purpose of chilled mirror hygrometers in the natural gas industry.
- Discuss the operation of a chilled mirror hygrometer.
- Describe the routine maintenance performed on chilled mirror hygrometers.

Course Outline

1. Water Vapor Dew Point Analyzers
 - a. Physical Measurement
 - b. Abundance Measurement
 - c. Moisture Measurement Technologies
 - d. Chilled Mirror
 - e. Optical
 - f. Electrolytic
 - g. Metal Oxide Capacitance
 - h. Piezoelectric (Crystal Quartz)
 - i. Low-Level Moisture Analyzers
 - j. Online Moisture Analyzers
 - k. Portable Moisture Analyzers
 - l. Tunable Diode Laser Moisture Analyzers
 - m. High-Speed Portable Dew Point Meter
2. H₂S Analyzers
 - a. Sulfur Measurements
 - b. Lead Acetate Tape
 - c. Sulfur-Specific Gas Chromatograph
 - d. SulfurSmart™ Hydrogen Sulfide Gas Analyzer
 - e. Galvanic 801 Hydrogen Gas Analyzer
3. Oxygen Analyzers
 - a. Online Percent O₂ Analyzers
 - b. Portable Trace O₂ Analyzers
 - c. Portable Percent O₂ Analyzers
4. Chilled Mirror Hygrometers
 - a. Operation
 - b. Construction
5. Length of Stain Detectors
 - a. Length of Stain Detector

b. Principle of Operation

Recommended Resources

- GTA Gas Quality Measurement Participant Guide
- GTA Gas Quality Measurement Instructor Presentation.
- AGA Report 8, GPA Standards 2145, 2166 and 2172.
- Internet sites related to gas quality measurement devices.
- Textbooks or other publications related to gas quality measurement devices.