Basics of Pressure Regulators (Instructor-Led Training)

Course Description

This course introduces Basics of Pressure Regulators to technicians new to the natural gas industry. It includes discussions about pressure regulator types and operation.

Course Prerequisites

- GTA Web-Based Training
  - None
- Instructor-Led Training
  - Basics of Overpressure Protection

Course Objectives

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

- Describe the basic operation of pressure regulators.
- Describe the operation and construction of direct-operated pressure regulators.
- Describe the operation and construction of pilot-operated pressure regulators.

Course Outline

1. Description of Pressure Regulators
    a. Basic Operation
2. Direct-Operated Pressure Regulators
    a. Regulator Construction
    b. Manual Regulator Operation
    c. Regulator Performance
    d. Ideal Regulator
    e. Setpoint
    f. Droop
    g. Capacities
    h. Accuracy
    i. Spring Rate and Regulator Accuracy
    j. Lockup
    k. Increased Demand
    l. Spring Rate and Droop
    m. Effect on Plug Travel
    n. Light Spring Rate
    o. Practical Limits
    p. Diaphragm Area and Regulator Accuracy
    q. Restricting Element and Regulator Performance
    r. Critical Flow
    s. Orifice Size and Capacity
    t. Orifice Size and Stability
    u. Orifice Size, Lockup, and Wear
    v. Increasing P1
    w. Factors Affecting Regulator Accuracy
    x. Performance Limits
        i. Design Variations to Improve Performance
        ii. Improving Regulator Accuracy with a Pitot Tube

iii. Improving Performance with a Lever

3. Pilot-Operated Pressure Regulators
    a. Pilot-Operated Pressure Regulators
    b. Loading and Unloading Designs
        i. Two-Path Control (Loading Design)
        ii. Unloading Control (Unloading Design)
    c. Pilot-Operated Pressure Regulator Performance
        i. Accuracy
        ii. Capacity
        iii. Lockup
    d. Pilot-Operated Regulator Applications

Recommended Resources

- GTA Basics of Pressure Regulators Participant Guide.
- GTA Basics of Pressure Regulators Instructor Presentation.
- Internet sites related to industrial pressure regulators.
- Textbooks or other publications related to industrial pressure regulators.