Solution Note

Honeywell

Accurate Compressed Air Flow Measurement with Honeywell Smart Multivariable Transmitters

Gas Flow Measurement in the Chemical Industry

Problem: A compressor manufacturer needed more accurate air flow measurement

Over the past few years, a Honeywell representative sold a compressor manufacturer glass rotometers. The customer was satisfied with the units and were hesitant to move away from this known technology into the unknown world of transmitters.

The compressor manufacturer conducted tests that required the flow measurement calculation to be temperature compensated. Unfortunately, the rotometers were not so compensated. With ambient temperature swings inside the plant of 60 -110F, the meters were obviously introducing significant errors into the measurement. In addition, the considerable heat added to the air by the compressor was not considered.

Solution: The Honeywell Smart Multivariable Transmitter with the Multivariable Analog Interface and a UDC display

The representative promoted the Smart Multivariable Transmitter as a device that could provide more accurate air flow readings.

The Smart Multivariable Transmitter (SMV3000) provides measurement of differential pressure across a primary flow element such as an orifice, a process (static) pressure measurement and a process temperature using either an RTD, or thermocouple detector. As the fourth process variable, the SMV3000 provides a flow measurement based on the three process variables of differential pressure, static pressure and process temperature.

The customer agreed to try a gauge pressure version of the SMV3000, a Multivariable Analog Interface (MVA141 made by Vektron), a pitot tube, an RTD temperature probe, and 3 Panel Meters for a new test stand under construction. The customer was well satisfied with the completed stand. Although, the customer originally indicated that he did not need control, he later expressed a need for an automated valve package. The representative then sold a control valve, a UDC3300 Controller, and a Pressure Transducer to add to the package.

The customer then requested a data acquisition package. The accompanying diagram shows how to provide remote metering for multivariable transmitters. This technique can also be used to monitor the secondary variable.

The SMV3000 can be used to measure the flow of virtually any liquid, or gas for which a primary flow element exists to provide differential pressure measurement. Examples include gas flows (nitrogen, hydrogen, natural gas), and liquid flows (acids, hydrocarbon feed stocks, bases, solvents, monomers, and polymers).

Honeywell has a variety of sizing software programs available to help the customer select the product which precisely matches his measurement application. A ***NEW*** service from Honeywell is an Internet web site, which enables customers to specify a field instrument product for virtually any measurement application. This site is located at http:\www\technologyselector.com.

Benefits

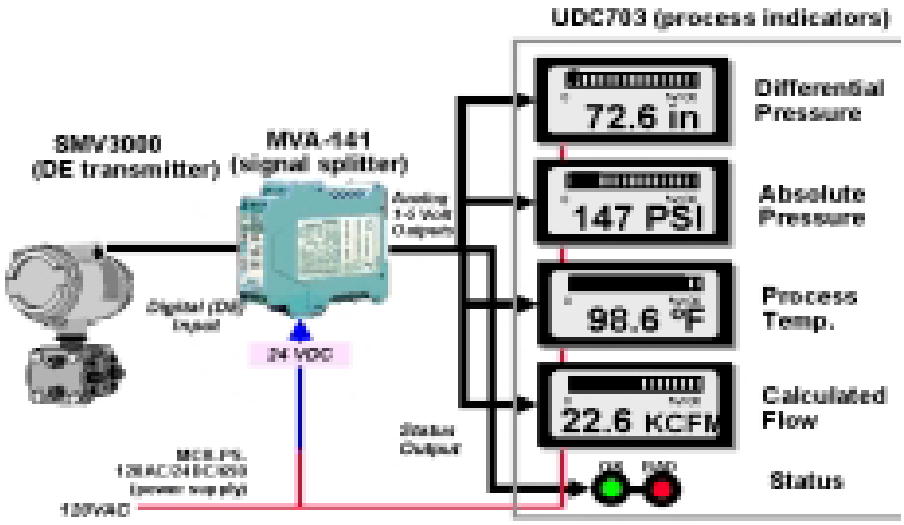
Installation of the SMV3000 with a Vektron MVA provides:

- A single pipe intrusion for all three process variable measurements with consequent savings in installation cost.
- Rapid, and effective configuration of the SMG170 using the SCT (Smart Configuration Toolkit.
- Accurate measurement of the process flow through compensation for pressure and temperature variations.
- Significant dollar savings through the use of a single transmitter to provide three process variable measurements plus a calculated flow.

- Digital integration of the SMG170 to the Honeywell TDC provides the security of digital integration plus a wide range of diagnostic and configuration capabilities from the control room.

Other Gas Flow Applications

The compressed air customer has applications for several other compressed gas applications in addition to those for compressed air. These include fuel gas, process gas feeds, and exhaust gases.



SMV3000 Connected to a Multivariable Analog Interface and UDC 703 Indicators

More Information

For more information on Smart Multivariable Transmitters, visit www.honeywellprocess.com, or contact your Honeywell account manager.

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