APPLICATION NOTE

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Two-way communication feature of FOUNDATION fieldbus™ reduces total cost of ownership

Industry: Oil and Gas
Product: STARDOM Controller FCN, EJX multivariable transmitter

Introduction

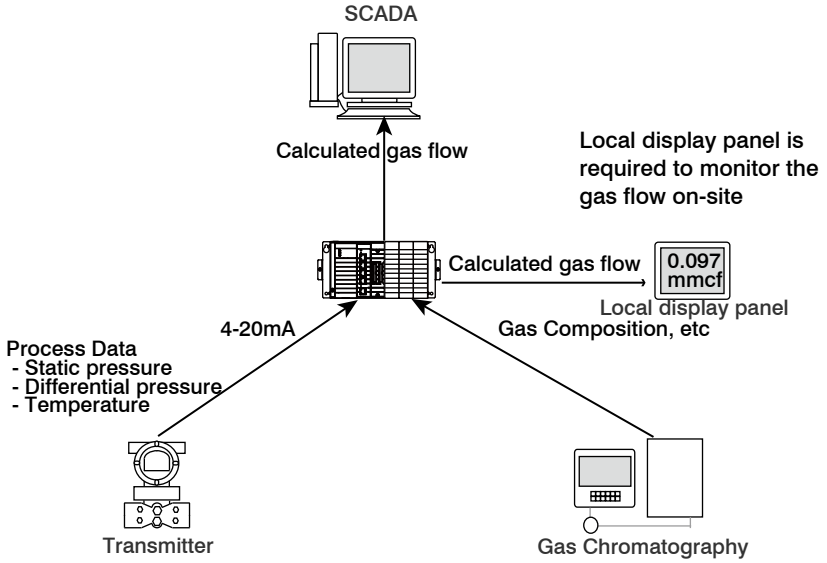
FOUNDATION fieldbus technology enables all-digital, two-way communications between field devices and control systems. While the advantages of using digital communications for sharing maintenance-related device information with an asset management system are well known, there are other benefits from using the FOUNDATION fieldbus technology. This paper introduces an application that relies on the two-way communications capability of FOUNDATION fieldbus.

Expected benefits

Reduced total cost of ownership (TCO) by eliminating the need for local display panels

Application

As shown in figure 1, gas flow is calculated by a remote terminal unit (RTU) using process data received from a transmitter. Although such data can be monitored on a SCADA system, a display panel is required to monitor the gas flow on-site.



What is 4-20mA?

4-20mA is an analog signal that has been used as a process signal for decades. It is limited to sending process data.

Fig. 1 System configuration using 4-20mA

Solution

With conventional 4-20 mA communications, it is impossible to send the data calculated by an RTU back to a transmitter because this technology only supports one-way communications. However, as shown in figure 2, gas flow data calculated by an RTU can be sent back to a transmitter using the two-way communications capability of FOUNDATION fieldbus. The gas flow data can thus be displayed on the transmitter's LCD, eliminating the need for the use of a local display panel or hand-held terminal.

Process data measured by transmitter (INDEX 1-3), output data calculated on RTU (INDEX 4-6) and configuration parameters set to RTU (INDEX 7-10) are periodically displayed on transmitter's LCD with measurement units and comments.

INDEX	Parameters
1	Static Pressure (psi)
2	Differential Pressure (inH2O)
3	Flowing temperature (degF)
4	Previous day gas volume (mmcf)
5	Flow rate (mmcf/d)
6	Specific gravity
7	Meter run inside diameter (in)
8	Orifice bore (in)
9	Atmosperic pressure (psi)
10	Physical location (1: Upstream, 2: Downstream)

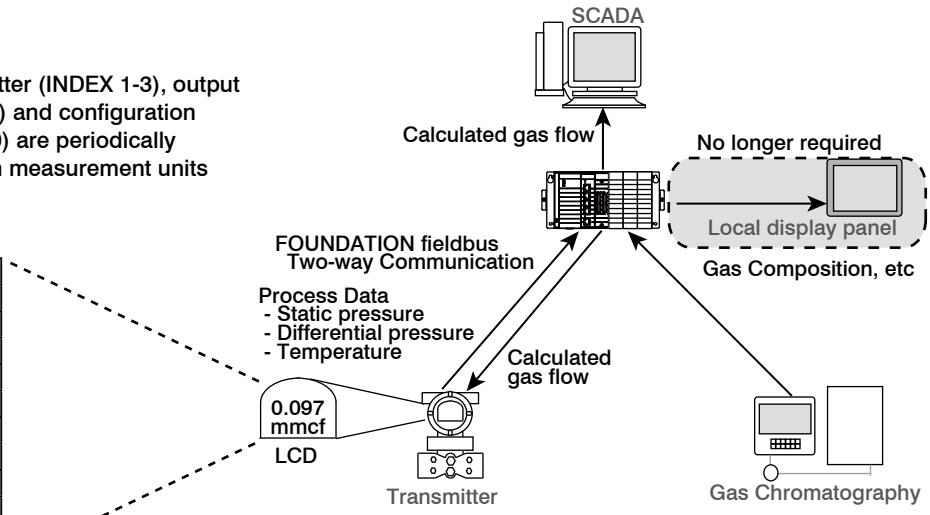


Fig. 2 System configuration using FOUNDATION fieldbus

Customer site

The United States Department of the Interior Bureau of Land Management (BLM) published a notice of the minimum standards and requirements for the sale and allocation Electronic Flow Computers (EFCs) in 2008. The requirements for EFC displays are mentioned in this notice. *"The display shall be readable on site without the need for data collection units, laptop computers or any special equipment, shall be onsite, and shall be in a location that is accessible to the BLM."*
To meet these requirements, Yokogawa Corporation of America proposed using the transmitters' LCD as a substitute for local display panels, reducing the total cost of the ownership (TCO) of the projects.

What is FOUNDATION fieldbus?

FOUNDATION fieldbus provides all-digital communication. It provides two way communications between devices and their information in addition to process data.

Related products

STARDOM autonomous controllers FCN/FCJ (intelligent RTUs)

EJX multivariable transmitter

YOKOGAWA