Measuring Real-Time Gas Specific Gravity Saves Hutchinson Utilities Money

RESULTS

- Continuous real-time gas specific gravity measurement
- Significant cost savings due to increased accuracy in measurements
- Robust measurement with no moving parts
- More accurate billing from direct mass measurement and gas specific gravity measurement

Maximize up-time and minimize shut-downs

APPLICATION

Natural gas transmission and distribution companies move large volumes of gas over great distances and need to measure how much gas is received, moved, sold, or consumed along the way. The gas serves residential needs and a wide variety of industrial end uses from fuel to feedstock. In these pipelines, the flow rates and gas composition can vary greatly depending on end user consumption and fluctuations in the sources of the natural gas. Gas is typically measured at locations where gas changes custody or is internally allocated.

CUSTOMER

Hutchinson Utilities Commission

CHALLENGE

Hutchinson Utilities Commission, a municipal utility company, operates a 93-mile natural gas transmission pipeline in Minnesota, USA, which transports over 6 billion cubic feet of natural gas each year. For more than a decade, they have successfully used Micro Motion® ELITE® Coriolis mass flowmeters at each of their interconnect stations to accurately measure the mass of gas removed from the pipeline.

Hutchinson sells its natural gas in units of gas standard volume. They were previously calculating the gas standard volume using the gas mass flow rate and a representative fixed factor gas specific gravity value (i.e. base density). This method was accurate for many years until natural gas producers with varying natural gas compositions started supplying into the system. Recently, the specific gravity began fluctuating by more than 0.2 percent within a given day because of varying composition of the gas entering the pipeline. One year saw

ELITE CMF Coriolis Meter installed with SGM and Sample Conditioning System

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specific gravity differences as high as 7 percent! They began regularly updating the configured fixed factor gas specific gravity value, but this introduced significant measurement challenges and was time consuming.

SOLUTION

Hutchinson installed Micro Motion Gas Specific Gravity Meters (SGM) with sample conditioning systems at each one of their 6 interconnect stations alongside the Micro Motion ELITE Coriolis mass flowmeters that had been placed into service in previous years. The benefits of the SGM include real-time gas specific gravity measurement for a trusted standard volume calculation that is accurate regardless of composition changes and a meter health diagnostic (Known Density Verification – KDV). Micro Motion Coriolis meters have the benefit of direct gas mass flow measurement, in-line health diagnostics (Smart Meter Verification – SMV), and simple system integration to easily calculate the standard volume output, all of which help Hutchinson maximize up-time and minimize shut-downs.

Hutchinson is now able to easily calculate the gas standard volume of their natural gas as it is removed from the pipeline, in real-time. As a result, Hutchinson saves more than $60,000 for every 1 billion cubic feet of natural gas transported by eliminating the measurement variation associated with changing composition.

Micro Motion Gas Specific Gravity Meter (SGM) with Sample Conditioning System, which measures specific gravity, base density, and can calculate calorific value and BTU.

Micro Motion ELITE CMFS with 5700 Transmitter, which can calculate the real-time gas standard volume of natural gas with external specific gravity or base density input from the SGM

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