PROCESS INSTRUMENTATION

Digital clamp-on flow meters:
The eyes and ears of your hydrocarbon transmission pipelines

www.usa.siemens.com/clamp

The newest generation of digital clamp-on ultrasonic flow meters are a process-optimizing solution for measuring flow in virtually any fluid application. Designed to provide both exceptional performance and outstanding cost savings, clamp-on ultrasonic flow meters are an ideal fit for applications requiring high-quality liquid or gas flow measurement without disturbing the pipe. Suitable applications abound in the oil and gas industries as well as water and wastewater, power, chemical and mining, to name just a few.

Ultrasonic manufacturers that are integrating the latest ultrasonic “Wide Beam” or Lamb wave transmission technologies are finding significant performance benefits specifically when measuring in challenging oil and gas flow applications. Flow meters using these types of advanced

transducers are also ideal tools for addressing lost and unaccounted for (LAUF) analysis, check metering, allocation, flow survey verification and production/storage accountability. Clamp-on ultrasonic meters offer exceptional performance, minimal maintenance and low cost of ownership, with a sensor design that eliminates the need to modify/hot tap pipes or interrupt flow.

Wide Beam transit-time ultrasonic flow measurement technology has been used extensively for liquids since its introduction in 1972. After years of research and extensive product development, independent laboratory tests and field trial installations have confirmed that Wide Beam technology can also be utilized to provide cost-effective and reliable gas flow measurement.

Clamp-on meters present many advantages over the leading process instrument manufacturers' product offerings:

- No need to modify the pipe or stop the flow
- Built-in adaptive ability to handle less than optimal installations, e.g. not enough straight run
- Transducers do not require periodic maintenance when using permeant couplant
- No moving parts to wear or foul
- Wide turndown ratios
- Tolerant of wet gas conditions
- Relative immunity to valve noise
- Accuracy of 0.5 to 1.0% of flow rate and repeatability of 0.25%
- 100 Hz update rate, providing fast response and allowing low volume proving to save time and money

Hydrocarbon flow in the modern era

Today's pipeline companies are faced with the very real struggle of aging and re-purposed pipeline performance, coupled with the integration of new lines, compressor stations and transmission hubs. Discrepancies between receipt and delivery metering stations are costly and challenging to track down normally, but even more so now with all the changes infrastructure pipelines are undergoing.

Pipeline owners have found that by retrofitting easily installed clamp-on meters for verification purposes, they can identify exactly what is flowing, and where and when losses occur. Pipeline project managers are employing clamp-on sensors at key junction points to improve their ability to keep track of every barrel or cubic foot of product that moves though their pipes. These sensors make pipeline systems easier to use and more cost-effective by providing added security and intelligence about the product in their lines.

In today's modern pipelines, dedicated clamp-on meters are located at the inlet, compressor, delivery and outlet stations, feeding control centers with constantly updated and accurate flow data. By comparing this day-to-day data, operators get an exact picture of the pipeline performance – making discrepancy and measurement issue detection effortless and timely. This solution offers a significant improvement when compared to older systems.

Easy to use and interpret "Data Views" provide data readouts with straightforward diagnostic capabilities, providing key information in real time. The application data and onboard operation diagnostics systems assure calibration and operational confidence for many years in the field. The AGA (American Gas Association)-10 speed of sound calculation is commonly used in the flow transmitters' software for verification of natural gas flows. An internal AGA-8 table for fixed gas composition is also often available to handle standard volume computation. The premiere hydrocarbon clamp-on systems are available in single-, dual- or four-beam versions. Rugged stainless steel transducer enclosures allow for permanent and direct burial installations if that is what the application requires.

Hydrocarbon transmission companies today offer a balanced approach to meeting the growing demands for affordable and speedy product transfer, while supporting, developing and utilizing various programs that enhance environmental compliance and minimize waste. Part of this strategy is to make sure that little to no product is lost in transmission over thousands of miles of pipelines.

Increasingly, pipeline companies are taking advantage of the benefits of advanced digital clamp-on flow measurement equipment to enhance pipeline surveillance, protect their infrastructure and product, and improve their bottom line.

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