

The new Sitrans FS230 clamp-on ultrasonic flow system

SIMPLIFYING flow systems



Exploring the benefits of the next generation of clamp-on flowmeters

Clamp-on ultrasonic flowmeters are among the most cost-effective technologies for measuring the volumetric flow rate of liquids. As their name suggests, clamp-on sensors are mounted to the exterior of a pipe, eliminating the need for line alterations or process shutdown prior to installation. Their non-intrusive nature also keeps maintenance requirements to an absolute minimum since the sensors never come into contact with the fluid.

Yet despite their low cost of ownership and increasingly advanced capabilities, clamp-on flowmeters have been slow to gain acceptance from engineers and plant managers as a viable alternative to more traditional methods of flow measurement. Many end users are reluctant to switch because they perceive clamp-on meters as overly complicated to order and install.

To bridge this gap and successfully integrate clamp-on technology into a broader segment of the process industries, instrumentation suppliers must build a higher level of user-friendliness into the next generation of clamp-on ultrasonic flow systems.

A DEMANDING TECHNOLOGY

In general, getting a clamp-on meter up and running is an intricate process that calls for more in-depth technical knowledge than most other types of flowmeters. But why is this the case?

Firstly, clamp-on sensors are available in four different models – universal, high-precision, high-temperature and Doppler – to address a wide range of media, pipe materials and operating environments. Most suppliers also offer multiple sizes of each model to ensure the best possible match between the frequency of the sensor and that of the pipe wall. To order a flow system, the customer must know how to determine the correct model and size for their specific application as well as how to select the appropriate mounting accessories (e.g. frames and tracks) for the chosen sensors.

Secondly, the sensors must be installed at particular locations on the pipe and precisely configured to achieve optimal measurement performance. Most clamp-on flowmeters offer some form of electronic assistance to properly place the sensors and prepare them for operation, but these functions

usually depend on the end user to input application data using complex, non-intuitive menu interfaces. These same convoluted menus must also be navigated to adjust system parameters for flow anomalies.

Simplifying these processes is one of the guiding principles behind the new Sitrans FS230 clamp-on ultrasonic flow system from Siemens. The system, which combines a Sitrans FST030 digital transmitter with Sitrans FSS200 external sensors, has been engineered to streamline every aspect of the user experience.

Until now, knowing the proper sensor model, size and associated hardware has almost always been a prerequisite for ordering a clamp-on ultrasonic flowmeter from any supplier. If the customer does not have access to this information, they must rely on a sales representative or service technician familiar with clamp-on technology for support.

The Sitrans FS230 sets out to change this landscape. The meter can be ordered via the PIA Life Cycle Portal, a web-based application for product engineering, selection and configuration. In lieu of prompting the customer to

choose specific sensors, the portal now asks a series of straightforward questions about the process to be measured, including pipe material, pipe diameter, wall thickness and fluid temperature. It even offers a pre-determined selection of ranges for questions requiring a numerical response. With this information in hand, the portal identifies exactly which sensors and accessories should be ordered - eliminating the potential for costly mistakes.

DESIGNED TO BE USER FRIENDLY

The new solution has been designed to make installation and configuration easier and more efficient, even for those previously unfamiliar with clamp-on technology. The basis for this is the transmitter's advanced human machine interface (HMI), which features a customisable 240x160 graphic display - one of the largest of its kind - and four capacitive navigation keys, along with a comprehensive set of help texts that clearly define every individual menu item.

To ensure that the meter is optimally configured to measure a particular application, the HMI walks the end user through every step of the installation process via a series of setup wizards, including: sensor setup; process values; communications; and copy setup.

Correcting for non-ideal piping conditions is another critical step in configuring a clamp-on meter, and the

Sitrans FS230 streamlines this process as well. Its pipe configuration wizard allows the user to select from multiple anomalies – e.g. 90° elbows or valves not far upstream – and input the anomaly's distance from the sensors. The meter then automatically compensates for any impact of the anomaly on the flow profile, which might otherwise result in measurement errors and a considerable reduction in accuracy.

Over the past five decades, clamp-on flowmeters have developed into an exceptionally well-rounded option for measuring liquid flow in industrial applications. They perform with high levels of accuracy and repeatability, require almost no maintenance and are versatile enough for use with a variety of conductive and non-conductive fluids. Most importantly, they offer the flexibility for installation in virtually any location at any time.

To ensure that the process industries fully embrace these advantages in the years to come, the newest clamp-on meters must be designed with the customer in mind. Next-generation systems are simplifying complexities, reducing start-up times and making clamp-on ultrasonic flow technology a wiser investment than ever before. ■

For more information visit
www.siemens.com/fs230

ACTUATORS for HEATING/COOLING and METERING APPLICATIONS

AUMA's compact electric actuator ranges offer precise, robust and reliable flow control solutions for chemical, food and other industries. Applications include demanding temperature control systems, for example preheating and cooling systems, and fluid metering duties.

AUMA offers two families of compact actuators: Basic Range and Smart Range. Both ranges are designed for harsh industrial environments. Their compact design makes them ideally suitable for space constraints and small valves.

The Basic Range comprises SBA linear actuators and ED/EQ part-turn actuators. They offer simple control and essential functions as well as feedback signals, paired with robust design. SBA linear actuators provide high positioning accuracy and are suited for modulating applications.



AUMA SDL linear actuators provide high positioning accuracy for modulating applications, for example in heating or cooling circuits

The Smart Range includes SDL/SDG linear actuators, SVC globe valve actuators and SGC part-turn actuators. All have variable-speed motors that provide

soft starts and stops, ensuring gentle treatment of mechanical components. Variable-speed operating profiles help to avoid critical pressure surges and cavitation. Parameters can be set via software, and both Modbus RTU and Profibus DP interfaces are available.

SDL/SDG linear actuators feature low energy consumption, making them particularly suited to remote sites and solar PV systems. They are also insensitive to voltage fluctuations.

AUMA's compact linear actuators cover thrusts of 0.6-25kN and strokes of 35-300mm. Part-turn actuators are available for torques of 25-1,000Nm. Globe valve actuators offer torques of 10-100Nm, with strokes from 60-70mm. ■

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