



From Instability to Accuracy:

Transforming Process Control with Panametrics Ultrasonic Technology

Summary

In many industrial processes, flow rates are not always stable. Rapid changes in operating conditions can lead to transient and turbulent flow regimes.

Selecting the right technology for a particular application is essential. It's important to recognize that manufacturers vary significantly in the quality, accuracy and reliability of their solutions – careful evaluation is required to ensure optimal performance and long term success.

Panametrics' utility customer in Sweden relied on an ultrasonic clamp-on flowmeter from another supplier to monitor flow rates across its industrial cooling system. However, the dynamic nature of the process led to highly erratic readings with measurements fluctuating by as much as tenfold between consecutive readings. These inconsistencies failed to accurately represent the true flow within the pipe, undermining both process control and operational reliability.

This issue was further exacerbated by the fact that the meter's output was used to control a pump flow rate integral to the process control scheme. As a result, the control system became highly unstable, subjecting the pump to extreme and illogical operating demands. This not only compromised process efficiency but also significantly reduced the pump's lifespan.

Application

Medium:	water
Pipe size and material:	SS316 406x6 mm (16"x0.25")
Flow rate:	unidirectional 0 to 1200 m ³ /h (5,284 GPM)
Temperature:	10°C (50°F)
Requested accuracy:	<±5% of reading

Benefits:

- Easy to set up and program
- No process interruption
- Strong reputation and local support
- Reliability and accuracy



Challenges

When faced with measurement anomalies, a key question often arises: are the inaccuracies caused by a fundamental limitation of the ultrasonic transit-time principle itself, or are they the result of inadequate signal processing and weak flow measurement algorithms?

In this case, the customer's confidence in ultrasonic technology had been significantly undermined due to poor performance from a previous meter using the same measurement principle.

Drawing on extensive experience, Panametrics carefully evaluated the application parameters and replaced the underperforming device with a suitable solution from its portfolio.

Solution

Panametrics AT600 ultrasonic flowmeter equipped with C-RS 402 transducers was selected for a trial. After conducting a series of diagnostic checks and testing the meter under the same demanding conditions that had previously caused measurement errors, the AT600 performed flawlessly.

The new meter delivered stable and accurate readings, even under these challenging flow conditions.

With its trust in ultrasonic technology restored reaffirming the importance of pairing the right technology with robust implementation, the customer placed an order.

This outcome underscored the reliability of the ultrasonic transit-time principle when paired with robust hardware and advanced signal processing. Panametrics' solution demonstrated its capability to deliver accurate and stable flow measurements, even in complex and dynamic flow environments.

