



PT900: the versatile clamp-on flowmeter

How Panametrics' clamp-on flowmeters support robotic pipe inspections

Summary

Panametrics' customer is a French-based startup specializing in water and wastewater infrastructure. It provides pipe inspection services for customers focusing on the detection of leaks, corrosion, rust, and structural defects such as cracks.

Many of the pipelines inspected are buried underground, making access challenging and most of the water grid has been in place for several decades. To address this, the company developed a proprietary, remotely controlled robotic solution that operates from inside the pipe. This system can perform inspections while the pipeline remains in service, minimizing disruption to normal operations.

The customer provides in-pipe photos and video captured by its robotic platform, along with key hydraulic parameters such as water velocity and flow rate. These values are used to determine the long-term quality and robustness of the pipes.

Recognizing the importance of providing accurate flow rate, the customer turned to Panametrics.

Benefits:

- Ease of installation
- Ability to run a quick and effective survey
- No process shutdown required for continuous operation
- Strong local support
- Low total cost of ownership



Fig. 1: PT900 attached to robot insertion mechanism (DN400)

Application

Medium:	Water and wastewater
Pipe size and thickness:	DN350 6.3 mm & DN 400 6.6 mm (14" & 16" sch. 10)
Pipe material:	Carbon steel / Ductile Iron
Pressure:	~6 barg (87 PSIG)
Flow rate:	0-180m ³ /h (0-792 GPM)
Temperature:	Ambient
Requested accuracy:	±5%

Challenges

Municipal water networks operate under strict reliability and efficiency constraints. Minimizing disruption is critical: any interruption can compromise water supply and trigger urban traffic congestion. Inspection tools therefore need to be efficient, quick to install, and able to deliver accurate results.

Meeting these requirements becomes especially difficult when only a very short straight pipe run is available. Even under these constraints, the inspection solution must deliver reliable measurements, comprehensive data logging for post-analysis, and built-in diagnostics to confirm the system is operating correctly. All functions must also be easily accessible through a smartphone-based interface.

In this case, the available straight run was extremely short (see Figs. 1 and 2).



Fig. 2: PT900 on the robot insertion mechanism (DN350)

Solution

The Panametrics team deployed the Transport PT900 ultrasonic flowmeter for on-site testing under real operating conditions. The instrument was installed using the clamp-on fixture in a two-traverse configuration with C-RR 591 transducers (0.5 MHz).

The test was run from a tablet using the PT900 application, which the customer could also install on its own devices. The built-in data logger was enabled directly in the app, and a digital output cable transmitted measurement data via RS485 to a laptop for additional monitoring and analysis.

The customer's operator, who has extensive field experience, initially questioned whether reliable measurements could be achieved with the minimum available straight runs.

During the test, flow rates reached up to 180 m³/h. At these conditions, the PT900 achieved an estimated measurement uncertainty of approximately ±5%, based on comparison with the pump performance curve.

Despite the tight installation constraints, the test results were highly positive. The customer was very satisfied with the PT900's performance, the ease of operation, and the short installation time. Following the trial, the customer purchased a PT900 to complement its existing robotic inspection solution.

Following this deployment, several utilities involved in these inspection programmes are now actively discussing adopting the PT900 to their maintenance toolkit.