

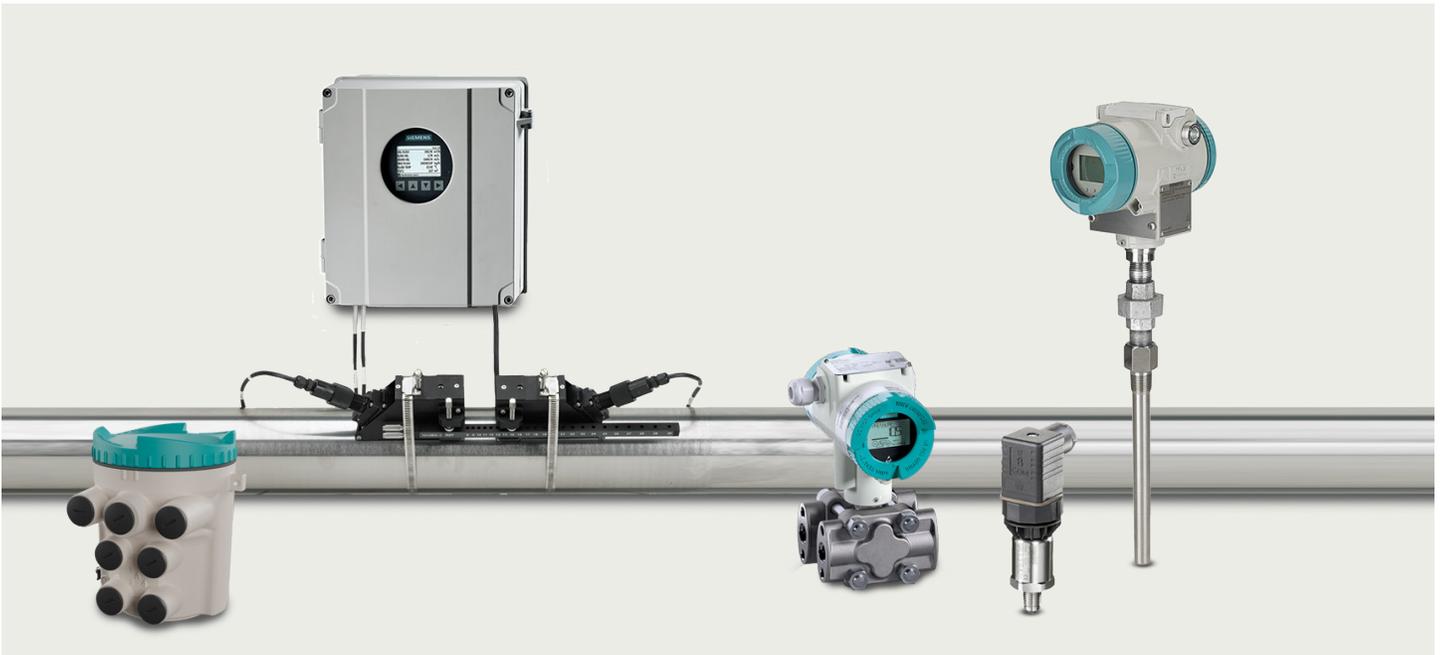


PROCESS INSTRUMENTATION

# Instrumentation Solutions for Leak Detection of Hazardous Liquid Pipelines

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### Current situation:

The Pipeline and Hazardous Materials Safety Administration (PHMSA) has issued directives for effective leak detection and location systems (LD) on all hazardous liquid pipelines. Both environmental and personal safety issues have created this need.

According to PHMSA's database of hazardous material transportation incidents, 43 percent of all hazardous liquid pipelines were installed prior to 1970. As a result, these pipelines are becoming fatigued and outdated, and closer monitoring of pipeline performance is now required.

PHMSA released a "Final Rule" primarily designed to mitigate or prevent hazardous liquid pipeline incidents, and which is expected to reduce pipeline incident damages including injuries and fatalities, cleanup and response costs, property damage, product loss, and ecosystem impacts.<sup>1)</sup>

The pipeline industry now faces the challenges of meeting the PHMSA LD leak detection deadlines while also ensuring each pipeline will accommodate the passage of an instrumented internal inspection device (pig).

### Key PHMSA dates:<sup>1)</sup>

1) October 1, 2024: Each pipeline constructed prior to October 1, 2019 must have a system for detecting leaks that complies with the PHMSA requirements.

2) July 2, 2040: Pipeline operators must ensure that each pipeline is modified to accommodate the passage of an instrumented internal inspection device.

<sup>1)</sup> Pipeline and Hazardous Materials Safety Administration 49 CFR Part 195

### Siemens solution:

Siemens provides a broad portfolio of process instrumentation, including flow, pressure and temperature solutions, to support internally based leak detection systems.

The Siemens SITRANS FS230 is a non-intrusive clamp-on ultrasonic flow measurement technology that can be installed without pipeline interruption and allows for the passage and detection of an instrumented inspection device (pig). The FS230 provides the measurements required for supervisory computational monitoring (CPPM) in accordance with API RP1130.

### The FS230 provides the following advantages:

- Non-intrusive
  - Easy installation with no process shutdown required
  - Uninterrupted passage of an instrumented inspection device
- Robust (IP68) sensors and NEMA 4X enclosure for the harshest environments, with FM, ATEX and IECEx Zone 0, 1, 2 (Div 1, 2) approvals
- Single and multi-product identification, batching, interface detection, and flow measurement
- Measurement of 1-4 paths
  - Wide bi-directional flow range and high flow range sensitivity to detect the smallest flow rates
  - 100 Hz update rate for all outputs on all primary process values
  - Standard volume and/or mass flow measurement in accordance with API MPMS 11.1
- Automatic correction for the effects of pressure and temperature in accordance with ANSI/ASME MFC-5.1-2011
- Pig detection capability for detecting the passage of an instrumented inspection device
- Digital and analog I/O
  - Easily adaptable to various LD software suites
  - Monitoring and control

### Legal Manufacturer

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