



How Panametrics clamp-on flow meter technology modernized critical mud wash measurement and enhanced refinery performance

Summary

A major oil refinery in North America required a reliable flow measurement to replace aging and obsoleted Panametrics liquid clamp-on ultrasonic flow meters used to monitor critical mud wash flows. These measurements play a vital role in optimizing refinery performance and maximizing production yield.

Application

Medium:	Water
Pipe size and thickness:	3" and 4" Sch STD (DN80 and DN100 with 5.42 and 6.02 mm thickness)
Pipe material:	Carbon steel
Flow rate:	30 – 150 GPM (6.8 – 34 m ³ /h)
Temperature:	Ambient
Requested accuracy:	±2% of reading

Benefits:

- Easy to install with no process shutdown
- Very low maintenance
- No pressure drop
- Long term stability and drift characteristics
- Proven field performance
- Enhanced process control to optimize refinery performance



Fig. 1: PanaFlowLC installed in 2025 (with transducers at the top right)

Challenge

Accurate mud wash flow measurement is essential to maintain distillation efficiency, prevent equipment fouling, avoid hydrocarbon losses, and minimize wastewater treatment loading.

Mud wash is used throughout refineries to remove sediment, scale, iron sulfide, and coke-like deposits from desalters, tower bottoms, and drums where solids can accumulate in low-velocity areas. Maintaining the proper mud wash flow rate is critical to efficient refinery operations.

When mud wash flow is too low:

- Solids accumulate and reduce the effectiveness of distillation equipment
- Deposits can build up and eventually migrate downstream
- Fouling of valuable process equipment may occur, resulting in reduced performance and increased maintenance costs.

When mud wash flow is too high:

- Settled solids can become re-entrained into the process stream instead of being removed
- Valuable hydrocarbons may be lost with the mud wash effluent
- Increased water consumption places additional load on the refinery's wastewater treatment system

While the existing Panametrics liquid clamp-on flow meters were still providing measurements despite being obsoleted for more than 15 years, the customer recognized the need for a modern solution that would deliver enhanced accuracy and reliability.

Solution

Panametrics recommended the PanaFlowLC ultrasonic flow meter with XMTXP R10 transducers as the ideal replacement solution for the aging installations. Following the successful replacement of one meter in 2025, the PanaFlowLC has operated flawlessly, delivering the reliability and measurement confidence needed to expand the upgrade program.

As a result, six additional obsolete flow meters will be replaced with PanaFlow LC units on the same critical mud wash service. The upgraded solution will enhance reliability, improve long-term maintainability, and ensure the accurate flow measurements needed to optimize mud wash performance, helping the refinery maximize yield and operational efficiency.