

Micro Motion® Coriolis Meters Improve Quality and On-Demand Supply of Drilling Fluids

BENEFITS

- Accurate delivery of drilling fluids in accordance with design parameters
- Non-nuclear technology reduces training, regulatory compliance, and transportation costs



PROCESS

Oilfield Services: On-the-Fly and Batch Blending of Drilling Fluid

During the oil drilling process, a continuous and accurate volumetric supply of drilling fluids is required to successfully complete the job safely and on schedule. In addition, the quality of the drilling fluid is crucial to the overall efficiency of the drilling operation. The quality of the drilling fluid is determined by the fluid properties, which are specifically engineered to the type of well being drilled and the drilling formation conditions. Drilling fluid blending (on-the-fly or batch) mixes liquid and weighting materials to achieve the specific fluid properties of the drilling fluid. A critical parameter and indicator of drilling fluid quality is the density of the blend, which is typically determined through manual samples and analysis in the field or with the use of continuous density meters.

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CHALLENGE

Taking a manual sample for density does not provide a real-time measurement and the process is subject to operator error. Nuclear density meters, used to provide continuous density measurements in the blending operations, require special handling, safety training, and licensing; and, do not measure the volumetric flow rate of the drilling fluid.

Achieving a reliable and accurate volumetric flow measurement of the drilling fluid is critical to ensure the proper supply of the fluid is delivered. This is especially true for on-the-fly blending operations where establishing the required volumetric rate of the drilling fluid



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with the right quality of the fluid is crucial. Additionally, the accuracy of the flow measurement devices can be affected by the type of base fluid or the changing fluid properties of viscosity, density, and conductivity. Thereby, the potential inaccuracies in volumetric rate can adversely affect the proper delivery of drilling fluids downhole.

The delivery of off-spec drilling fluids or the inability to meet volumetric demand can significantly contribute to Non-Productive Time (NPT) and the overall cost of the drilling operation.

SOLUTION

Micro Motion Coriolis meters measure both the volumetric flow rate and density, regardless of the base fluids, thereby eliminating the need for multiple measurement devices. The meter density accuracy exceeds the typical 0.1 lb/gal requirement and provides a continuous and reliable density measurement to help eliminate the delivery of off-spec drilling fluids. Because of the non-nuclear design of the meter, the Micro Motion meter also reduces the issues and costs related to safety compliance, licensing, transportation, storage, and disposal of the nuclear product. The meter's non-mechanical design allows it to be used in applications that involve the measurement of slurries and suspended solids without damaging the meter or impacting its measurement performance. This provides a reliable volumetric measurement of drilling fluid to ensure you meet the operating demand.

The ability of the Micro Motion Coriolis meters to provide real-time, continuous, and accurate density/volume measurement with non-nuclear technology contributes to:

- Reducing waste and disposal through more accurate volumetric measurement
- Improving NPT with on-target density measurements
- Reducing operational costs by eliminating the need for safety training and the regulatory, transportation, and disposal costs associated with using nuclear technology.



A full stream fluid density and flow rate skid system with a Micro Motion D300 meter installed