Adrilltech's FlowIN service uses advanced flow sensors to measure actual drilling fluid consumption by the rig pumps in realtime. Traditionally pump performance, a key input for calculated hydraulics, is based on a presumed efficiency percentage. Not only can this disguise early indications of pump failure, but using an inaccurate assumption of flow per stroke gives misleading hydraulics, with potential for misplaced confidence in well balance, mechanical stability or hole-cleaning, and subsequent risk of unexpected well issues and costly NPT. FlowIN constantly measures actual fluid volume and flow being pumped, providing early indication of decreasing pump efficiency for preemptive maintenance, and reliable measurement of fluid flow driving confident hydraulics and downhole equipment operation.

FlowIN provides immediate quantitative indication of changing pump efficiency and resulting subtle variation in wellbore hydraulics.

Features and Benefits

- Cost-effective, highly accurate measurement for all fluid types including multiphase systems.
- Eliminate pump repair NPT proactively with immediate indication of pending pump failure.
- Immediately diagnose surface equipment issues via downhole washout to reduce NPT costs related to tripping.
- In conjunction with high-accuracy flow-out measurement quantify delta-flow.
- Can be placed upstream of the pumps to measure pump efficiency and provide accurate hydraulics monitoring.
- Confident flow measurement as input for motor and MWD performance.
- Eliminate false-positive kick/loss alerts and unplanned flow-check ILT.

Challenges and Solutions

- To immediately determine and diagnose pump-related issues and repair without downtime.
- To provide measured input to confident, accurate hydraulics monitoring along the wellbore, at the bit, and across downhole tools.
- To give accurate flow-in data to compare with flow out kick detection.

- FlowIN is a proven, cost-effective, minimal footprint solution applicable for all fluid types, drilling conditions, and rig installations.
- Provides constant measurement of volume and flow entering each pump, and so accurate pump efficiency.
- Works in conjunction with other service providers to give reliable consistent and accurate measurements of flow.

Applications

FlowIN sensor installation is surveyed and managed by Adrilltech specialists, with minimal rig footprint required, and is suitable for use in any operating environment and fluid conditions. Measurement can be either upstream or downstream of the mud pumps depending on the service level selected. Physical measurement of FlowIN parameters is particularly valuable in HTHP/ERD wells with narrow-weight windows, and geomechanically/geopressed formations where effective hole stability and/or solids removal is essential.
When drilling 8½” section onshore Germany the Adrilltech specialists noted a gradual 12 bar drop in standpipe pressure over a several minutes.

The Adrilltech team were immediately able to diagnose a surface equipment issue rather than a downhole washout as Adrilltech’s FlowIN service was installed, providing realtime quantitative measurement of the decreasing drilling fluid flow passing through the rig pumps.

This allowed the specific problematic pump to be identified, isolated and repaired without any rig downtime, while continuing to drill uninterrupted with full flow and hydraulics, thus not only preventing any NPT but also maintaining safe and effective well balance throughout.