

HOW TO USE THE LATEST ADVANCED ANALYTICS AND IIOT ENABLED TECHNOLOGY TO REMOTELY ASSESS AND VERIFY CUSTODY TRANSFER MEASUREMENTS

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In the day-to-day operations of measurement systems, fiscal measurement accuracy remains critical to pipeline profitability, as vested parties require assurance of the exact quantity and quality of the transferred material. Measurement drifts caused by failures, maintenance issues and errors could have an impact of up to \$5M per year for each percentage unit of uncertainty for a certain size pipeline. The provided solution leverages the latest IIOT enabled technology to allow for remote collection of diagnostic information from smart devices. This information is then analyzed at the device level and the system level to provide reports and actionable information as well as more advanced features and capabilities such as exposing the system's uncertainty and performing mis-measurement calculations.

The exact quantity of material passing through a custody transfer point is assumed to be accurate to a percentage that has been contractually agreed. However, the actual accuracy or uncertainty of the measurement drifts due to failures, maintenance issues and errors. These changes in uncertainty could result in substantial fiscal risk to the operator.

To effectively maintain, audit and manage measurements, operators often must send personnel to each metering system, physically connecting to individual meters to access their diagnostics. This is very time consuming and inefficient.

Technologies that leverage the Industrial Internet of Things (IIoT) provide new methods that allow for more timely and efficient collection of diagnostic information from smart devices. These technologies provide a methodology to switch from reactive maintenance to condition based maintenance and predictive maintenance.

The solution provides a platform to collect data from remotely distributed systems and visualize the data and analytics in a central location. In addition, Connected Services efficiently provides customers with access to third party expertise.

Implementation of this solution provides a surefire way to improve accuracy of the measurement and reduce uncertainty. As an example, a 1% drift on a 500Mcf pipeline could have a \$5M impact per year at \$3/Mcf, if left undetected. The proposed solutions would assist in detecting those issues faster and minimizing the time that the system is operating with that level of drift/error. Also, the IIoT tools can transform the current process of traveling from site to site to diagnose issues by making all the data centrally available. This would lower SG&A costs (e.g. travel and salaries) and would allow workers to focus on other more productive activities.