

UPM 17030

Metrology Data Acquisition

Marc Talamantez, Summit Midstream Partners

Abstract

Flow measurement is critically important to the energy industry. The process of accurately measuring the flow and volumes of produced oil and gas is of fundamental importance to all oil and gas companies, upstream, midstream and downstream alike. These measurements are the basis of the financial accounting for the industry.

To ensure the accuracy of measurement requires a disciplined approach to the installation of the metering stations based on sound fundamentals and industry best practices. Once installed the environment must be maintained over the lifetime of the system based on the Life Cycle Measurement Program developed specifically for the metrology assets. This program consists of standards, processes and procedures ensuring a proactive approach to system developments rather than a reactive one. A well designed, well maintained metering station is the basis of a measuring system. However, it is only the first phase of an accounting process, there is still a requirement to retrieve the measurement data, often from many remote locations, and then process, validate and disseminate the data.

The data acquisition requirement is often the neglected aspect of the overall system, and is generally an afterthought wrapped around existing measurement systems and then stretched to accommodate new installations. The metering stations, the flow computers and control systems are either designed in isolation or attained through acquisition and then bent to fit in to an inadequate and sometimes proprietary data acquisition system. Control SCADA, metrology engineering and accounting all are competing for elements of the measurement data, each with differing time scales and objectives.

Today there are better solutions that leverage modern software technologies that can transform the retrieval of metrology data.

This paper outlines the approach and technologies that are currently available to implement improved ways of retrieving metering data that are not constrained by existing systems. Sharing the same carriers but accessing precise information using cyber secure protocols, that are able to communicate high resolution information, without constraining bandwidth. This measurement data can then be presented to modern metrology software tools that can rapidly validate measurement data, identify points of error, and rectify them.

These improvements to the overall Life Cycle Measurement Program of metrology assets will have a positive impact on understanding the gains and losses, balancing the hydrocarbon inventory, reduce the time to invoice, increase efficiency and contribute to operational safety.

The overall gain are the savings sent to the bottom line.