EQT’s PI System Adoption Starts Midstream, Expands Across Value Chain

In 2015, EQT, the country’s largest natural gas producer, was facing an enviable problem. With the rapid expansion of its drilling and production sites in the Appalachian Basin, the company needed to substantially increase product volume to keep up with rapidly growing demand in a bullish market. Facing new extraction opportunities in the Marcellus and Utica shale plays, EQT wanted to optimize the company’s midstream business unit, EQT Midstream, whose processing and transmission facilities gather gas from the wells across thousands of miles of pipelines and clean and compress it before shipping it to distribution channels.

“EQT has always needed a system to assist with monitoring and analyzing all the pipeline information,” said Oscar Smith, a Senior Principal Engineer for EQT Midstream, during PI World 2018 in San Francisco. “We needed to safely maintain product and transportation services, while managing the demands of increasing capacity.”

To enable a digital transformation in its midstream operations, EQT engaged OSIsoft. EQT Midstream put the PI System™ to the test in a pilot project. The results were dramatic. The initial test was so successful that the PI System was eventually rolled out across 36 midstream locations, and later adopted by EQT’s upstream gas production operations. Today, EQT Midstream uses the PI System to monitor more than 50 Engine/Compressor Units with more than 678,000 horsepower, which are critical assets for moving natural gas across its gathering, transmission and storage facilities.

CHALLENGE:
Establish proof of concept for PI System implementation for Midstream O&G assets to set a new standard.

SOLUTION:
PI System data structured with Asset Framework (AF) provides insights for midstream and upstream natural gas operations.

BENEFIT:
Obtained cost savings of over $1.1 million per year — more than double the predicted savings — with over $2.8 million in savings forecasted for 2020.
For EQT Midstream, the journey to digitalization began with a single compressor station in West Virginia. Once the PI System was installed, EQT Midstream deployed Asset Framework (AF) as part of the PI Server, to organize the station’s equipment into a consistent, context-rich data model. “When you use AF, you stop worrying about naming,” said Smith. “It just organizes and contextualizes the data, so it really makes you fast.”

Since compressor facilities often contain similar equipment, EQT was able to utilize AF’s template feature to digitally replicate the asset hierarchy across 16 more stations and nine transmission sites. “Templates help us to just cut and paste and apply to the next station with the same tags coming from the same PLCs,” noted Smith. EQT Midstream now gathers more than 100,000 data streams each second, all of which are structured with AF.

EQT also created a large quantity of notifications to optimize troubleshooting, failure detection and condition-based maintenance tasks.

With the PI System, Field Operations has reduced its reliance on calendar-based maintenance. Instead, they have tested a predictive maintenance approach that will eventually automatically trigger work orders from their work management system, IBM Maximo, when maintenance is required.

New analytics capacities have helped EQT predict pipeline interrupts caused by gas hydrate buildup that can cost hundreds of thousands of dollars.
of thousands of dollars per day. Savings also accrue by isolating failures of small replaceable units, such as compressor valves and spark plugs, which often would be changed out of engines en masse and at high cost. “We had secondary voltage data available to us for years we didn’t know was there,” said Smith. With the PI System, downtime and unnecessary equipment changes reduced sharply.

Three years into EQT’s digital transformation with real-time data, the aggregate annual savings to midstream operations has topped $1.1 million and is projected to surpass $2.8 million by 2020. The proof of concept has been an unqualified success, but the value to midstream operations is just the beginning. “Because the PI System integrates with many systems, we’re just at the tip of the iceberg,” Smith reported.

EQT is already exploring more of this iceberg. Its PI System adoption strategy and business success have been reproduced at EQT drilling sites. Through sharing of servers and data, OSIsoft and EQT Midstream helped the first drilling site pilot get up and running within a single week. Now drilling operations rely on the PI System to optimize rig processes, automate artificial lift intervention and prevent bit failures. In the future, EQT is planning to integrate PI System data with other platforms such as ESRI ArcGIS and financial data systems to break down the divide between operational technology and IT, drive enterprise performance and capture more value from its operational data.

For more information about EQT and the PI System, watch the full presentation here.

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