CUSTOMER CASE STUDY

DCP Midstream achieves transformation and critical visibility with AVEVA™ PI System™

DCP Midstream - www.dcpmidstream.com
Partners - Rovisys, Concept3D, Dover/Windrock, LTI, Esri, Microsoft, Azure
Industry - Oil and gas

Goals

- Gain visibility into gas and fractionation plants, 57,000 miles of gathering pipeline, and 4,500 miles of natural gas pipelines
- Connect disparate systems and add reporting and analytics capabilities
- Give crews a single view of operations

Challenges

- Existing systems did not include reporting or analytics
- Field crews had to inspect sites in person and took many hours to finish their rounds
- The company lacked visibility into site and asset performance

Results

- DCP Midstream saved $25M in fiscal year 2017 thanks to improved plant operations
- Field crews can monitor sites remotely and receive earlier notification of issues at field sites
- End users can create visualization displays without additional programming resources

Solutions

- AVEVA PI System
- AVEVA™ PI Vision™

For over 90 years, DCP Midstream has provided natural gas gathering, processing, and transportation services for its upstream oil and gas customers. DCP Midstream is also one of the largest natural gas producers in the United States, fueling about 12% of the country. The company differentiates itself by using digital solutions to achieve operational excellence so it can deliver a high-quality product to its customers efficiently and reliably at an affordable price. In 2015, DCP Midstream launched DCP 2020, an operational excellence program to increase business sustainability through improved efficiency, reliability, and risk management.

Ambitious goals, rapid implementation

DCP Midstream knew that meeting the 2020 goals would be difficult without the right data. In 2015, the team lacked visibility into its 60 gas plants, nine fractionation plants, 57,000 miles of gathering pipeline, nearly 400 booster stations, 1,400 compression units, and 4,500 miles of natural gas pipeline.

Existing systems could not connect to one another and focused on control and operations, rather than reporting and analytics. Crews needed a single, contextualized view of all operations and real-time insights, and they needed it quickly. To solve these challenges, the company embarked on an ambitious digital transformation journey to implement AVEVA PI System.

DCP Midstream signed an enterprise agreement in December 2016 and installed AVEVA PI System across the entire organization in less than two months. The company designed and unrolled its Integrated Collaboration Center (ICC) at its headquarters in Denver. The ICC centralized operational insights and enabled coordinated, real-time decision-making across the organization.

To speed up the development of digital applications and solutions, the company created an energy lab team using an agile development process. The team used AVEVA PI System's asset framework to create smart asset-object templates for real-time analytics, alerts, and notifications.

DCP soon had over 580,000 tags, 8,200 asset framework elements, and 320 AVEVA PI Vision displays, most of which were created by the end users with no additional programming efforts.

The result is a hierarchical view of real-time operations data coupled with contextual information that crews can visualize to make data-driven decisions.

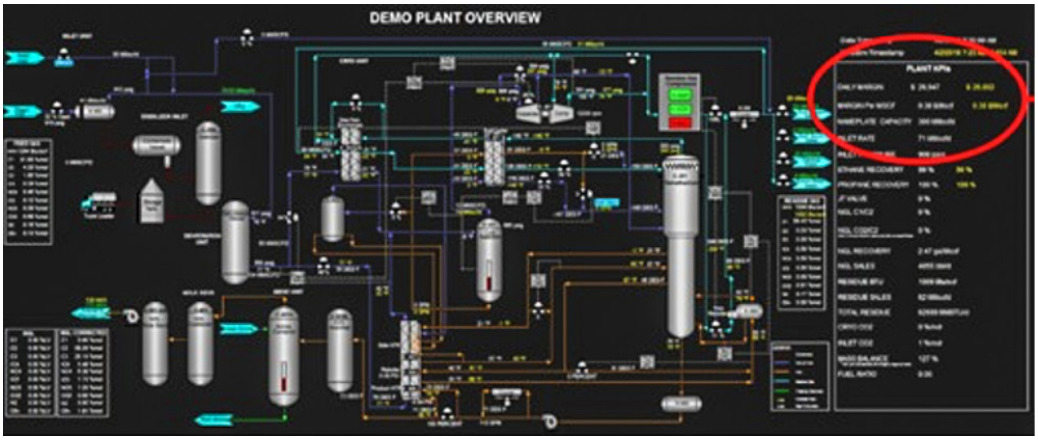
The view from the plant floor

While the ICC monitors operational performance and provides critical feedback, real-time data is also available on the plant floor. The company can visualize real-time plant operations for conditions like pressure and temperature and couple the data with simulated optimal performance metrics. The blending of data shows operators any deviations as they happen so they can understand how actual performance varies from set targets. In addition, the company links operational and simulated data to financial information, assigning a monetary value to any changes an operator makes.

Now, operators can make actual changes that affect the bottom line. DCP Midstream also receives notifications from AVEVA PI System when an asset is over 10% off its optimal operational capacity. The increased visibility helps the team understand the root cause of the performance failure and submit reason codes for the downtime. With this transparency, individual plant operators have become key stakeholders, all working toward a common goal.

Isolating issues in a pipeline maze

DCP has over 1,500 compressors and pumps gathering natural gas from the wellheads and transporting it to plants for processing and NGL extraction. The finished product then moves to the market through large transmission pipelines. These compressors and pump booster stations extend throughout the pipelines, and it's extremely important that they operate efficiently and reliably. Before DCP 2020, field crews made rounds to inspect the stations in order to keep them up and running. The crews began early in the morning and traveled for hours to reach all their assigned sites.



DCP Midstream uses AVEVA PI System's asset framework and first-principles models to predict and optimize compressor operations.

> "In 2017, which in my mind is the ramp-up year where we still have a lot of heavy investment, we're starting to see the return. We've already captured that payback."
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> Kevin Milliman
> Director, Capital Projects, DCP Midstream

Now, with AVEVA PI System, the team can monitor those sites remotely in real time and receive notifications when things change. For example, one operator awoke to an email notification about a change in compressor performance, and after reviewing data in AVEVA PI System, went to the site and quickly fixed the problem. Because of that notification, DCP did not need to wait for an inspector to show up at the site to discover the issue later in the day.

In 2017 alone, DCP Midstream saved nearly $25M, thanks to improved gas and NGL plant operation, asset reliability, and ICC coordination – effectively balancing out its initial investment. With the enterprise agreement, DCP can scale its data infrastructure with no licensing headaches or other barriers to growth.

Natural gas for the future

While the financial returns from AVEVA PI System are impressive, DCP Midstream's digital transformation is far from complete. The company plans to link its operations data with geographical data and geospatial maps as pop-ups within AVEVA PI System. That way, it can optimize gas routing across 57,000 miles of gathering pipelines. The organization is also exploring advanced machinery analytics enabled by the industrial internet of things (IIoT) for detailed data collection from compression units. It is also developing smart booster stations that display real-time data on virtual reality headsets.

For more information about AVEVA PI System please **click here.**