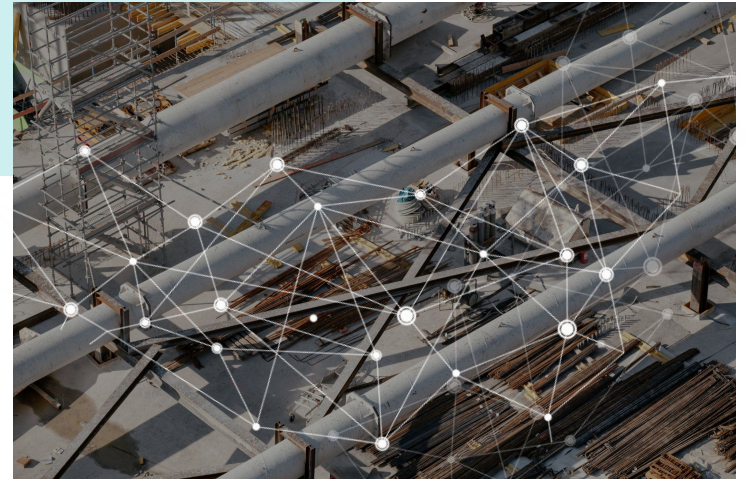VALIDERE

CUSTOMER STORY

Digitizing product quality management for crude oil operations.

CUSTOMER

A world-scale energy infrastructure business engaged in the transportation, processing, marketing, and storage of commodities and petrochemical products across multiple global locations.

$500k monthly savings through a digital and analytics-driven quality management system

CHALLENGE

Tackling product testing cost and complexity

Given the company's support of a wide range of producers of both conventional and oil sands crude, the complexity of product quality management is enormous. Inaccurate product quality measurements could result in custody transfer disputes amongst parties, lost arbitrage opportunities to boost profitability, and the potential for production downtime.

As a result, the company was knowingly over-testing product quality using both internal resources and third-party laboratories. Not only did this result in higher testing costs, it also did not address other ongoing issues. Measurements for basic sediment and water impurities were inaccurate and recorded manually, resulting in data errors. Test results were scattered through the business – teams were not operating off a single source of truth, and ability to provide a trusted audit trail of results was extremely limited. Real-time decision making based on the measurements was not possible.

APPROACH

Digitizing product quality management

Validere partnered with the customer to introduce multiple capabilities, all based on the Validere Product Data Cloud that delivers improved data management and actionable insights for the business.

To address the measurement accuracy, cost, and speed issues, Validere deployed an IoT solution for a Laboratory Information Management System (LIMS). LIMS allowed the company to easily aggregate test data taken in remote locations and push it to a centralized cloud repository. Validere also provided Centrifuge Tube Readers (CTRs) that were connected to LIMS that substantially improved the accuracy and automation of measurements.

Aggregating the sources of product data quality can be challenging as the oil and gas industry has unique data format and types that can include Excel spreadsheets, SQL databases, PDF documents, and vendor-specific data formats. Using its data engineering and industry expertise, Validere was able to collect all the disparate data types into a single location in the AWS cloud.

Once the data was aggregated, it needed to be validated and augmented. The sensitive scientific measurement instruments are often prone to data errors. Gaps in the data may also exist as not every possible sensor needed for every type of measurement may have been deployed. Validere used its physical and data science expertise to cleanse and validate the data to get to the truth. It also used ML models that have been trained using industry-wide data sets to fill in data gaps. The result was a single system of record for product data across more than 15 different facilities.

At one facility, Validere also deployed a digital "twin" of the physical analyzer that the customer was considering. The virtual analyzer leveraged the consolidated data and advanced analytics to replicate the measurement capability of the physical instrument.

Key to enabling the product data cloud and advanced analytics were AWS S3 and Lambda services. By building out a cloud native data pipeline, Validere is able to extract, transform and load data in real time. AWS S3 provides low-cost storage of raw data, and event triggered serverless Lambda functions allow for immediate data transfer without having to run a dedicated server.

The Validere platform is built using AWS cloud native services including AWS RDS and multi-node EC2 containers. This architecture allows for immediate scalability of the platform to handle any sudden increase in traffic and load.

OUTCOME

More efficient and agile operations

With a digital and analytics-driven quality management system in place, the customer was able to substantially improve measurement accuracy and lower costs to the tune of nearly **$500,000** per month in savings.

The company now has better real-time notification of off-spec shipments, and a trusted audit trail for investigations and dispute resolution with third party partners.

Communication and decisions amongst different operations teams can be done more efficiently. It also can lower the risk of production downtime.

Talk to a Validere expert

Learn how Validere can transform your business.
Email **contactus@validere.com**

Data Science

Industry

Physical Science

Technology