

Global Specialty Chemicals Company

APERIO enabled a global specialty minerals & chemicals company to consistently avoid equipment failure using APERIO DataWise™

A \$15B global specialty minerals and chemicals company creates key products and inputs to the global food, agriculture, and industrial markets and looks to improve manufacturing uptime by preventing equipment failure.

Cost of equipment failure

The chemicals manufacturing industry loses over \$50B annually due to unplanned downtime. This high figure is a combination of:

- Lost or slowed production
- Transition and off-quality losses
- Maintenance repair costs

When a major piece of equipment breaks in a chemical plant, it can slow production and/or cause a partial or complete shutdown of a particular unit or production line. In continuous plants, the entire plant may go offline. For plants operating at full capacity, the smallest waver in production can put the entire plant behind schedule. Such is this customer's situation.

Challenge

- Prevent equipment failure due sensor data integrity issues and avoid product line shutdown

Solution

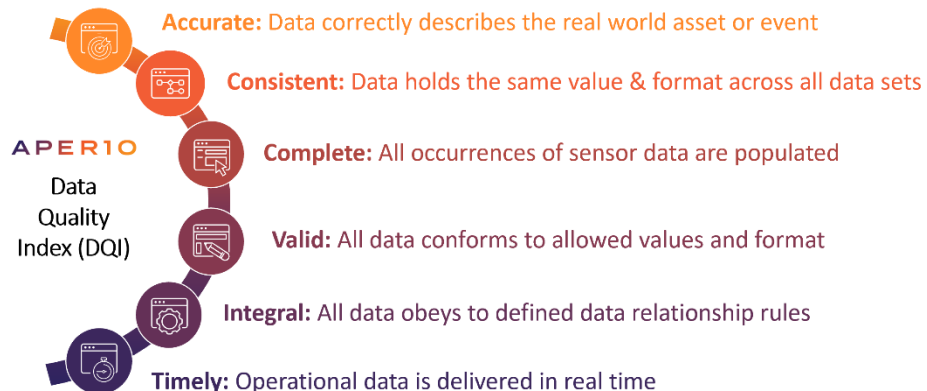
- Connect to the PI historian and integrate into process tools
- Monitor data quality index over time to identify sensor and data issues immediately

Results

- Avoiding a single production line shutdown saves \$250K+

Tracking DQI over time guarantees reliability

APERIO's Data Quality Index (DQI) allows you to measure, visualize, and improve the accuracy of your operational data. It has six attributes.



Monitoring data quality index (DQI) over time can help identify where anomalies occur. The DQI indicates data quality level for each individual tag as a function of time and anomalies detected, as shown below. On the right is an overview of the type and extent of anomalies present in the data set, by date. Anomalies are the most prevalent, and there is some overlap across channels which indicate operational events. Filter to focus on required tags.



The APERIO DataWise Channel Explorer allows users to view detailed behavior of individual tags of time series data.

Deploying APERIO DataWise™ to measure and improve DQI

Among the selection criteria for the APERIO DataWise was its ease of deployment, the speed with which DataWise Data Quality engines train and become operational, the accuracy of the APERIO analyses, and the flexibility in how users access the results and insights.

APERIO DataWise was deployed using [light touch] software agents located on premise which communicates securely with APERIO's cloud service. This ensures a smooth process in terms of customer IT approvals combined with the speed and scalability of a cloud service.



Once the DataWise agent was deployed, users at sites selected for initial deployment easily connected to their OSIsoft PI database directly and selected the channels to monitor on a continuous basis. This is done in bulk and leverages any and all asset frameworks (hierarchies) and meta-data available in the PI database. As such, APERIO builds on investments customers have previously made in their OT data infrastructure.

As the historian database often contains a wide variety of both critical and non-critical process-related channels, typically users will load a subset of the most critical tags. In this case, this amounted to about 30% of total tags, which is in line with the proportions at an average industrial operation.



Once deployed and connected, APERIO DataWise builds digital fingerprint models for each channel and determines correlated channels based on historical data. It then automatically deploys its data quality engines for continuous monitoring after rigorous internal model quality and capability checks.

APERIO's engines, with high accuracy fingerprints and established workflows, allowed operators to identify sensor data issues as they were occurring (e.g. flat-lining temperature sensors). Insights ranked by impact risk, with notifications sent directly to the operators' devices for critical issues, provided a detailed understanding of the state of sensors across multiple production lines. These insights provided broad pre-emption of process issues.

Improved sensor reliability increases plant uptime

Success was already demonstrated during the first months of APERIO DataWise deployment where specific Spike anomalies and Flat lines were spotted in several cases and consequently, investigated uncovering issues with the equipment. These proactive/preventive measures avoided certain equipment failure and production line shutdown.

Following the initial findings, the customer improved several processes related to sensors and data flows. APERIO DataWise enabled this customer to keep DQI above 95% for all tags over a six-month period, which is a strong baseline for data in any large-scale, complex operating environment. At this rate, several failures were certainly prevented.

Avoided mechanical failure of a single blower would shut down the production line costing \$250K+.

Learn more about APERIO DataWise: [download the eBook](#) or [book a demo](#).