AVEVA

How REG and Allied Reliability used AVEVA™ Data Hub to enable real-time external analysis on its centrifuge units

Renewable Energy Group (REG) - www.regi.com
Allied Reliability - www.alliedreliability.com
Industry - Oil and gas

Goals

- Reduce unplanned downtime of centrifuge units

- Enable smart, real-time maintenance strategies to prevent equipment failure

- Securely share data with trusted partners for deeper insights

Challenges

- Centrifuges have a high number of recurring faults

- Centrifuge downtime can shut down the entire biodiesel plant

- Repair and maintenance is costly for centrifuges

Results

- Enabled simple, secure sharing of AVEVA™ PI System™ data using AVEVA Data Hub

- Gave Allied access to real-time and historical data to predict failures

- Solution can potentially reduce centrifuge downtime by up to 90%

Solutions

- AVEVA PI System

- AVEVA Data Hub

Every oil and gas company depends on its critical assets to keep production moving at the speed of demand. Internal teams of process engineers, subject matter experts, and other key stakeholders constantly analyze operations data to detect performance anomalies and ensure assets are running at optimal levels. In addition to internal resources, many oil and gas companies also use trusted partners and consultants to optimize asset performance and maintenance strategies while preventing failures. These trusted partners rely on vibration data located within AVEVA PI System to offer key insights. While external data sharing is critical, doing so quickly and securely is incredibly complex.

Renewable Energy Group (REG) relies on an external vendor, Allied Reliability, and its SmartCBM© solution to detect performance anomalies in its centrifuge units and make maintenance recommendations to prevent unplanned downtime. For an AVEVA PI System user, it is imperative for REG to quickly share its real-time and historical PI System data with Allied. Allied can analyze that data to predict disruptions and make proactive maintenance recommendations. To securely enable external data sharing, REG and Allied AVEVA Data Hub (formerly OCS) cloud sharing capabilities to open up a bi-diretional, real-time data highway of information to mitigate centrifuge failures.

Spinning out biodiesel

For REG, an Iowa-based biodiesel producer, centrifuges are the kingpins of production. Centrifuges enable the company to produce cleaner, environmentally-friendly fuel. Similar to washing machines, centrifuge compartments hinge on a central axis that spins to separate and clean materials. Liquid is dispersed outward, which converts feedstock into biodiesel fuel.

Centrifuges vibrate during the spinning process, and vibration data is collected and monitored. Excessive vibration can indicate unplanned downtime is looming, or worse, total asset failure. Centrifuges not only have a high number of recurring vibration faults, maintenance costs are extremely high. Unplanned downtime halts production completely, costing REG valuable revenue in addition to repairs.

REG uses AVEVA PI System as its operations data system of record, enabling teams to analyze real-time and historical data. AVEVA PI System isn't just valuable internally. Allied's SmartCBM solution relies on REG's AVEVA PI System vibration data to perform analyses to predict future centrifuge downtime and reduce unplanned disruptions. However, REG was unable to create an automated data connection, which meant AVEVA PI System data was sent manually. By the time Allied analyzed the data, resulting recommendations were outdated before they could be implemented.
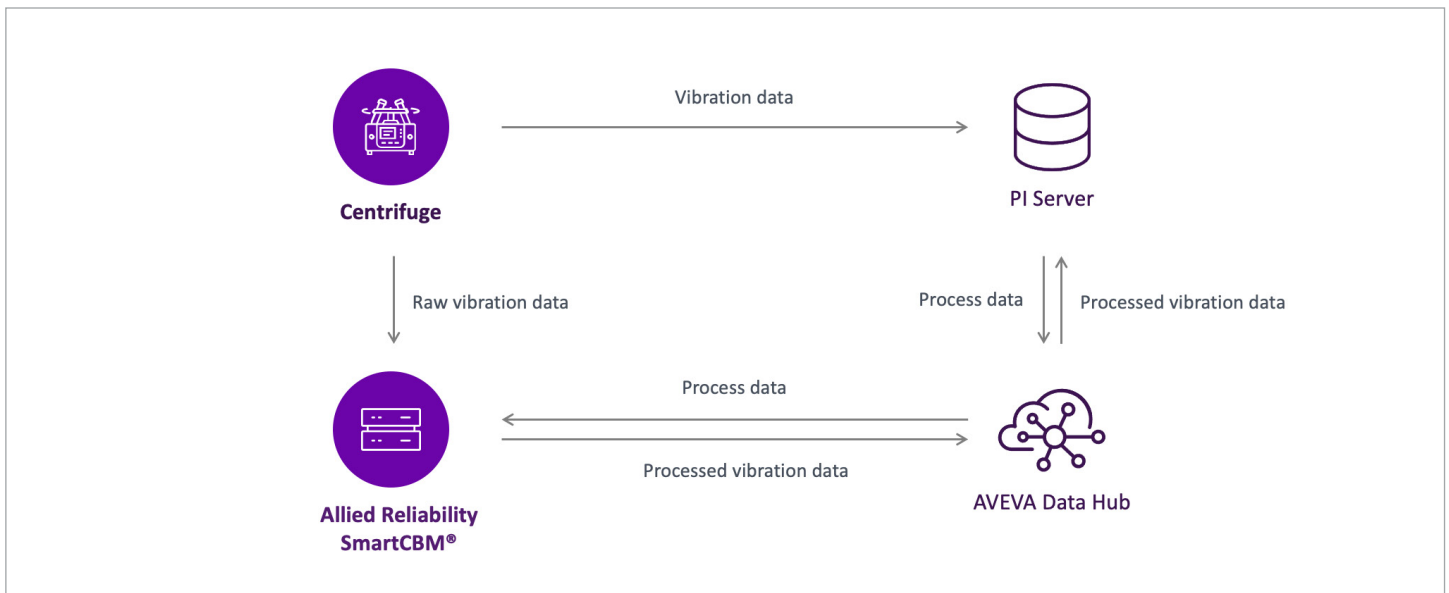
REG's real-time and historical AVEVA PI System data is sent to Allied using AVEVA Data Hub. Allied's SmartCBM solution performs data analyses and sends recommendations back to AVEVA PI System using the REST API.

Simplified, secure data sharing

It was imperative for REG to make AVEVA PI System data available to Allied in near real time. With no quick way to share AVEVA PI System data, REG and Allied embarked on a Lighthouse project to deploy AVEVA Data Hub and enable rapid, secure data sharing. Starting with four analysis points on a single centrifuge, REG streamed both its process and vibration data to the cloud in real time through a connection from AVEVA PI System to AVEVA Data Hub. Process and vibration data was immediately sent to SmartCBM for analysis via the Data Hub REST API. The combination of real-time and historical process and vibration data allowed Allied to perform root cause analysis and identify the reason for the vibration problems that were shutting down plants.

After analysis in SmartCBM, Allied used the Data Hub REST API to securely send 12 predictive analytic results directly back to AVEVA PI System via Data Hub. These predictions accurately pinpoint downtime and when it will occur and make recommendations, enabling REG teams to take preventative action.

Thanks to AVEVA Data Hub, REG and Allied now has a real-time data highway that automates the flow of operations data between systems. Not only is data sharing secure even outside of the REG organization, Allied identifies anomalies and detects issues faster than ever before. These insights enable REG to plan downtime and subsequent maintenance rather than halting production completely during an unplanned outage or centrifuge failure.

Secure, smart CBM

Overall, AVEVA Data Hub decreased diagnostic time while enabling a secure, scalability method to share real-time and historical AVEVA PI System data with external stakeholders. The solution maintains data integrity without exposing any unwanted access, and all results are stored in a system of record for future analyses. By creating a closed loop, two-way data sharing process in AVEVA Data Hub, REG leverages Allied's instruments and capabilities for vibration analysis and receives recommendations directly in AVEVA PI System. The AVEVA Data Hub setup not only reduces reactivity, it has the potential to reduce equipment downtime by as much as 90%.

REG's Lighthouse program started with one centrifuge unit. Given the success of the program, the biodiesel producer plants to roll out the AVEVA Data Hub solution to its other units located across production plants. In addition, AVEVA Data Hub enables Allied to gain secure access to its customers' AVEVA PI System data. This opens up opportunities for connected services agreements as well as accelerates market opportunities for various products.

"Utilizing AVEVA Data Hub, we now will have the ability to securely share our machine data with our partners, in a real-time setting, so that we can reduce downtime. Process is efficient, secure, and enables us to react quickly."

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Simon Duster,
Project Integrator, Renewable Energy Group

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