CUSTOMER CASE STUDY

Alectra monitors performance to manage maintenance with the PI System™

Alectra - www.alectrautilities.com
Industry - Power Generation
Partners - Cascade

Challenge

- Identified a transformer issue and spent $100,000 to repair it, avoiding a potential $3 million replacement cost

Solution

- Repaired a hydrogen monitor prior to failure, preventing major replacement costs as well as power outages for customers

Result

- Increased power-supply reliability for customers and created a safer working environment for employees

Alectra, a power-distribution company located just north of Toronto, Canada, was operating on a scheduled maintenance plan. But as its vast network of transformers and other assets kept growing, it became more difficult to prioritize maintenance work and prevent outages. Scheduled maintenance just wasn't cutting it anymore. It couldn't prevent 89% of failures, which were often a result of premature failures, rather than aging assets. To combat this problem, Alectra embarked on a digital transformation with the PI System to lay the groundwork for a new advanced reliability-centered maintenance (RCM3) strategy. This approach enabled the company to maintain critical assets, prioritize repairs, and decrease failures that could lead to outages.

The Alectra intelligent maintenance system

RCM3, part of the 4th generation of maintenance strategies, uses risk-based analysis to optimize maintenance programs. For Alectra, an RCM3 strategy meant more than just condition-based maintenance and compliance. It also involved failure finding, scheduled discard, scheduled restoration, and even weighing the risk and cost of letting an asset fail. The company faced the challenges of limited resources and a massive transformer network to service. As a result, the new strategy meant prioritizing maintenance work around the risk of transformer failure that could potentially leave thousands of customers without power.

Alectra needed to incorporate RCM3 into its maintenance management systems. Therefore, it used the combination of the PI System and the Cascade utility asset management system to form the Alectra Intelligent Maintenance System. Alectra's SCADA system collects asset performance data. The PI System then collects this SCADA data and sends it to the Cascade maintenance system. The PI System also pulls in other kinds of data, including outage and customer information for reporting and analysis. The PI System enables real-time analytics and notifications to keep Alectra informed of any changes in performance. Using real-time data and notifications, the Cascade system tracks assets and triggers maintenance orders, creating a fully automated maintenance process.

Automatic reporting for complete visibility

Using asset data models built within Asset Framework, Alectra now has access to analytics and can use PI Vision to monitor all its equipment. Every day at 3 p.m., Alectra receives an automatic PI Vision report on transformer health. Using Notifications, the team can quickly identify whether there is an issue with any part of any asset. From dissolved gases and load transfer to feeder availability and transformer temperature, Alectra can now easily understand its entire transformer ecosystem.

PI System reporting also allows Alectra to optimize asset performance. For example, it's important that transformers remain temperature-controlled, as weather can dramatically affect their internal temperature. Before the PI System enabled Alectra to view real-time analytics, however, the company ran its fan cooling systems all summer. This strategy, however, increased fan wear and tear as well as failure risk. Once Alectra analyzed the data, it determined that the temperature could be adjusted by 10 degrees. This margin meant that the fans needed to run for only a few hours per month, which significantly reduced operational costs and potential failure rates.

"We're leveraging our PI System with our maintenance management systems. It does the analytics, collecting that real-time information. It's also a fantastic system ...you can write simple reports really, really quick."

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Vince Polsoni,
Manager of Station Sustainment Department, Alectra

PI Vision dashboards provide crews with a 360-degree view into Alectra's transformers.

Proactive repair prevents outages

Using PI Vision dashboards, Alectra's crews noticed that dissolved-gas levels were increasing in one of its larger transformers. The team sent the data to the vendor, and, at a cost of $100,000, Alectra extended the life of the asset and prevented a potential $3 million repair.

Overall, since the deployment of Alectra's Intelligent Maintenance System, asset visibility and reliability have increased, and emergency maintenance has decreased.

The company can now quickly identify deficiencies. Today, Alectra has a comprehensive view of any open work orders, backlogs, and issues and can adjust maintenance resources accordingly. And, thanks to the system's ability to prioritize work orders by urgency, crews are no longer missing equipment failures. The result: a safer work environment, as well as a more reliable power supply for the customers they serve.

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