CUSTOMER CASE STUDY

Vattenfall discovers new efficiencies with AVEVA™ PI System™

Vattenfall - group.vattenfall.com
Industry - Power generation

Goals

- Reduce unplanned maintenance costs with a proactive, real-time approach
- Identify potential maintenance issues before they occur

Challenges

- Legacy systems could not provide real-time insights
- Reactive approach to maintenance was ineffective

Results

- Total maintenance costs reduced by 1.5% within the first year
- Employees get alerts via email and text message when potential issues arise

Solution

- AVEVA PI System

Vattenfall needed a way to reduce unplanned maintenance and troubleshoot issues promptly at its hydropower plants. AVEVA PI System allowed the company to do both – reducing its overall maintenance costs by 1.5% in the first year alone.

Vattenfall is one of the largest producers of electricity and heat in Europe. In addition to generating from wind, solar and other sources, it operates around 100 hydropower plants. Its hydropower operations have a total capacity of 11,475 MW and generate around 40 TWh of electricity annually.

"The benefit is that we can find a failure before it occurs, and then we can have a planned maintenance activity instead of an unplanned one."

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Magnus Holmbum
Maintenance Development Engineer, Vattenfall

Ambitious goals, rapid implementation

In 2013, Vattenfall's management recognized that the company had to change its approach to asset maintenance. "We've used condition-based monitoring for the last 15 to 20 years, but we've relied on an old system that uses static data based on periodic inspections, tests, and a data historian," said Magnus Holmbolm, Maintenance Development Engineer at Vattenfall. "We ended up using a lot of reactive maintenance practices. We needed to move forward in an instrumented way to real-time, condition-based monitoring to improve our efficiency and reduce our cost of operations."

Since the management team had some experience using AVEVA PI System, they decided to evaluate if it could replace the existing system, support this new maintenance strategy, and add value by integrating with other existing systems for the planned Hydro Information Portal.

In April 2014, a six-person product team began setting up AVEVA PI System in a pilot project. "Our colleagues in Germany came up for a week to teach us how to set up the system and it seemed very intuitive, so we adopted it very quickly," Holmbolm said. The pilot system was fully secured using SSL for web apps and firewalls. The team could log in remotely to AVEVA PI System on tablets using two-factor authentication.

"With the new system, we're starting to perform trend analytics on about 25 basic conditions on each unit," said Holmbolm. "We're using templates in the asset framework of AVEVA PI System to perform trend analysis of single values and then create new elements from those templates to capture a trend. It's very easy to use."

Reducing complexity, increasing value and preparing for the future

Thanks to AVEVA PI System, the Vattenfall team can now perform on-demand trend analysis and give plant operators a quick overview of conditions across the system. The system uses a simple traffic light representation from five (green) to one (red). If a value goes above four, the system notifies users via email. "I can use the asset framework in the system to perform trend analysis by getting the highest value out of all of these readings and then do an analysis on that value instead of doing hundreds of calculations on each value inside a population," said Holmbolm.

Now the team can move into failure-mode analysis and address an issue's root cause before it escalates into a full-blown crisis. "We choose one subsystem, see what components are part of it, and we can see what kind of maintenance activities we have today," said Holmbolm. "We can find a failure before it occurs, and then we can have a planned maintenance activity instead of an unplanned one."

As a replacement for the Conwide system, AVEVA PI System met Vattenfall's maintenance and safety needs and offered more stable data capture. Plus, the system has a richer analysis functionality and highly flexible integration capabilities, including the ability to support a future Hydro Information Portal that would make process data, analyses and KPIs available in real time. "We concluded that AVEVA PI System could replace our old system and fulfill our requirements as we move into this new maintenance strategy," said Holmbom.

By minimizing unplanned maintenance events, AVEVA PI System has reduced total maintenance costs by at least 1.5%. It has also improved the continuous monitoring capabilities of each hydropower plant and increased the accuracy of each plant's equipment. Holmbom concluded his presentation by saying, "We don't feel like we're buying a function – we're buying the infrastructure we need to grow in the future."

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