CUSTOMER CASE STUDY

The PI System™ makes Exelon a leader in nuclear power

Exelon - www.exeloncorp.com
Industry - Power generation

Goal

- 10% reduction in engineer workload

Challenge

- Better vibration analysis so that experts can spend time on diagnostics, not data collection

Solution

- The PI System

Result

- 20% maintenance reduction as a result of switching from time-based to condition-based maintenance

The nuclear power industry faces constant pressure from other energy sectors like natural gas and renewable energy. Both offer customers cost-effective alternatives to nuclear energy without the safety risks that come from nuclear accidents. As the largest nuclear operator in the United States, Exelon was well aware of these constraints but hindered by its inability to identify and diagnose issues in real time. The PI System transformed the company's diagnostic process, helping engineers and operators make good decisions quickly based on a shared set of automatically collected data. Thanks to the PI System, Exelon's staff can now focus on analysis and decision-making, rather than on data collection.

Achieving a delicate balance

With 23 nuclear reactors at 14 facilities in Illinois, Maryland, Nebraska, New Jersey, New York, and Pennsylvania, Exelon produces nearly 34,000 megawatts and powers millions of homes. The company believes that the safety of the community and its workers is its highest priority and that good maintenance ensures safety.

However, industry standards for good maintenance procedures were traditionally based on manual data collection and analysis, time-based maintenance schedules, and resource-intensive preventive maintenance. Plant engineers physically collected plant data from sources and assets all over the plant, including areas that might pose a radiation-exposure risk. Collection occured every 12 hours based on worker shifts, leaving long periods for a fault to develop undetected.

Saving time, saving money

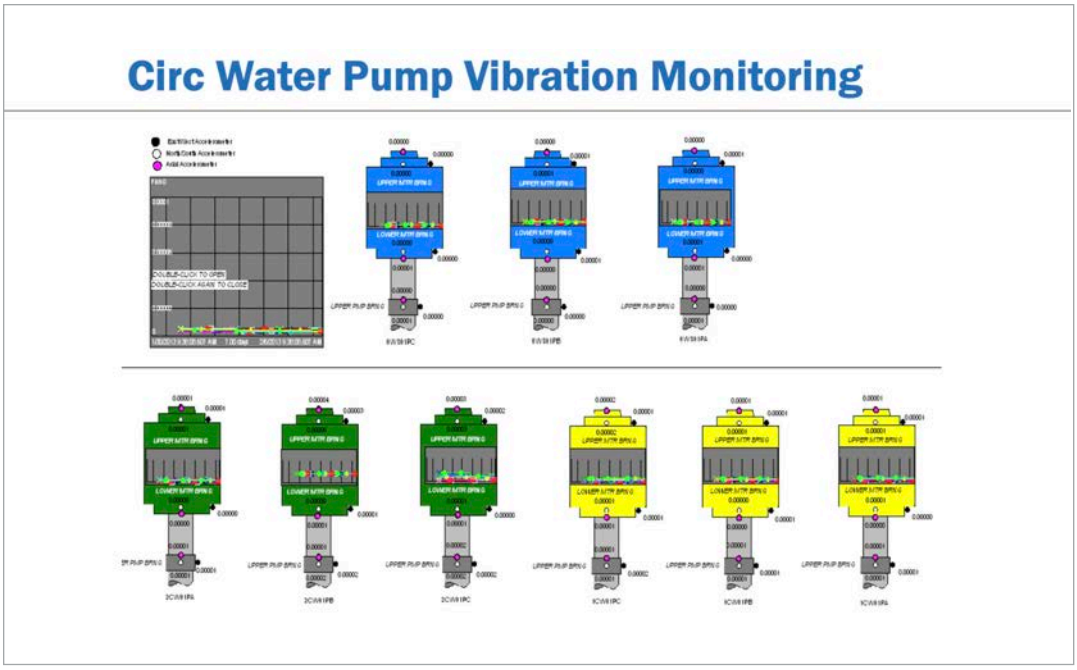
The old way of doing things left Exelon caught between a rock and a hard place – how could the company get the data it needed quickly and efficiently while still keeping workers safe? The PI System helped successfully balance these factors and improve overall maintenance along the way. Exelon now uses the PI System for online monitoring. By automating data collection, plant engineers now focus on analyzing data rather than manually collecting data and risking radiation exposure. “With this technology, you use a condition-based cycle,” said Mohammed Yousuf, senior staff engineer at Exelon. “You don’t have to access the asset until the asset tells you something is going wrong.”

Using the PI System and advanced pattern recognition (APR), Exelon’s engineers collect plant data, retrieve it for analysis, receive alerts for anomalous operating conditions, and correct faults. The PI System gives them enough time to prevent system problems that could force the company to derate, shut down a unit, or compromise safety. “Time is of the essence,” said Yousuf. “The sooner you find out there is a problem, the sooner you can do something about it.”

The early bird catches the error

In one example of the PI System in action at Exelon, operators detected a control-card failure and manually adjusted machine levels to prevent a unit trip. The combination of the PI System’s monitoring and predictive maintenance and the team’s decades of firsthand experience created a combination that’s second to none in the nuclear industry.

> “Time is of the essence. The sooner you find out there is a problem, the sooner you can do something about it.”
>
> -
>
> **Mohammed Yousef,**
> Process Control Engineer, STM



Exelon's advanced monitoring system enables plant engineers to devote more time to analyzing data and identifying potential maintenance issues before they occur.

The new, combined approach merged the knowledge plant personnel have gained over time with hard data gathered from thousands of wireless sensors. This information was combined to create a detailed database of asset conditions that can be monitored instantly. As a result, the data is accessible – and actionable – in real time.

The move to automated data monitoring provided clear benefits for Exelon. While plant monitoring has been in place for decades, online monitoring using the PI System makes better use of plant personnel in operations, engineering, and maintenance.

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