Operational Insight Improves Data Visualization For AES Wind Generation

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Greg Howard, Project Information Manager

Challenge

Wind energy is increasingly looked to as a source of renewable green energy, contributing to a reduction in fossil-fuel dependence and associated carbon emissions. While wind-power generation has its own unique technical considerations, the central challenge is the same as that faced by conventional utilities: getting data from disparate, geographically dispersed sources to the people that need it, when they need it, in a form they can use.

Combined with Operational Insight, a web-based data visualization product that connects to any real-time, historical and relational data sources to trend, chart, monitor, report and display, OPC technology allows AES Wind Generation to eliminate multiple SCADA systems and make their fleet data universally available to anyone, anywhere.

Operational Insight is Powered by Matrikon, which represents vendor neutrality. This product works with third-party control systems and applications.

Advantage

- Universally accessible by employees, regardless of location, without installing software on each employee's computer.
- Data accessibility from legacy systems and newly built wind farms.
- Data from multiple substations and different manufacturers' SCADA systems combined in a single screen to support operational decisions.
- Real-time and historical data access.

Technology Advances Creates Disparate Data Environment

A wind-power developer, owner and service company, AES Wind Generation manages 17 different wind farms across the United States, including five with more than 500 turbines each. AES's

total generating capacity is over 700 MW. There are six different turbine models from four different manufacturers in the AES fleet, representing 20 years of wind turbine evolution, SCADA system development and data formats. anchored to the caption copy. To move or duplicate the picture placeholder, copy the caption.

"This is in an environment where each manufacturer's turbines present a different data set driven through different SCADA systems," explains Greg Howard, Project Information Manager for AES Wind Generation. From that flow of disparate data, not only do basic measurements such as production and power factor need to be taken, but also analysis data such as temperatures, pressures, response times and fault indicators.

Historically, says Howard, this data was gathered by going through individual manufacturers' data access systems. "Rather than having a web-based system where we could go and see values and data for all these different models, types, marks and areas, we would have to go into individual systems to look at data."

These barriers to data access, says Howard, were potential barriers to optimal marketplace performance. "You simply can't have operators logging into six SCADA systems to evaluate the electrical status of a park when your power purchaser is demanding instant decisions," he says.

In order to get the most from their technically disparate and geographically dispersed fleet of owned assets and third-party service contracts, AES faced the formidable task of bringing all the data into a system that allowed them to compare wind parks, evaluate turbine performance, perform analysis of problems and maximize the output of individual turbines.

A Web-Based, Universal Solution

After evaluating all their options, AES Wind Power decided on a system using MatrikonOPC technology for real-time and historical data access.

OPC technology is based on open standards, allowing data from disparate sources to be accessed without requiring specific, proprietary software or hardware for each data standard. In this case, MatrikonOPC's Desktop Historian was chosen for its ease of use and store-at-the-source data handling capability.

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Operational Insight makes it easy for users to share their ideas and best practices, no matter where they are located. When a new way of analyzing data yields results, says Howard, "[This system] makes it easy to say, 'This is the way I'm looking at my turbines in Wyoming. Why don't you try looking at your turbines in Palm Springs the same way and see if you can find a benefit from it?'"

According to Howard, the ease with which Operational Insight allows access to data and customization of data views lends itself well to encouraging use and innovation. "It's almost like a toy," he says, "but it's a toy that when you play with it, you learn. It's almost inescapable that you'd do that learning. So we encourage playing."

Pervasive Benefit

As with any system or process focused more on the intangibles of operations and information-sharing rather than purely on the nuts and bolts of increasing production, Howard finds the benefits of the Operational Insight and OPC solution "tough to quantify" in dollar terms. "It's not so much about 'How much did you increase your generation?'" he says.

Instead, he offers the story of how, before it was even fully commissioned, the software showed its potential.

"When I was building the monitoring screens for the Texas substations," he recalls, "I put a screen together so you could see all the Texas substations, and that was the first time we'd been able to see it like that. And while I was putting the finishing touches on it, one of the farms' breakers came back as 'OPEN'. I thought I'd messed up the screen. Well, I went into some other data systems, and sure enough, they were open. I called the local support staff, who were at home in bed. Turns out, a snake had crawled up into an electrical setup and shorted out the park. How long would it have taken them to notice it? We would have noticed it eventually, but having these screens that are so encompassing, it's easy to pick out operation-critical factors in a short period of time."

AES Wind Generation's current goal, says Howard, is to continue to integrate new wind farms into the system as they come online. "We will continue to internally develop content to share that is designed by the end-users, rather than using third parties. This ensures that the data is delivered in the ways that our users understand, yet still has a polished look."

"We have to learn to share and to get this stuff where it's accessible and easy to get to," he concludes. "The performance-engineering aspect of it is a bonus to us. We don't need it to justify the cost."
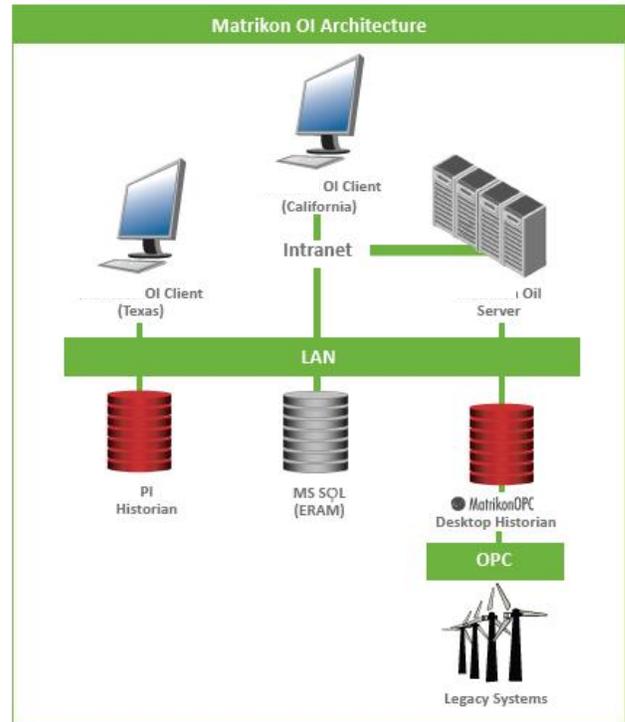
For More Information
Learn more about Honeywell's Operational Insight visit our website www.honeywellprocess.com/software or contact your Honeywell account manager.

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