



Customer Success Story

AES Wind Generation Palm Springs, CA



*AES Wind Generation at the
Mountain View IV Wind Energy Project*



An AES Turbine Screen, Built with GENESIS64

About AES Wind Generation

AES is an international power company located in North Palm Springs, California and specializes in power generation, utilities and renewable energy. Dedicated to providing cleaner and more sustainable ways to create energy, AES invests in hydro, wind, solar, biomass generation and carbon offsets as alternatives to traditional fossil fuels. AES Wind Generation, a special division of AES, explores worldwide opportunities for wind energy creation based on more than 25 years experience in the power industry. They currently manage over 1,700 megawatts of wind capacity across the US, China, and Europe. In 2010, AES Wind Generation initialized a 49 turbine (one megawatt each) wind farm as part of the Mountain View IV Wind Energy Project and began searching for a dependable SCADA and alarming system to operate it.

ICONICS Software Deployed

With the 49 wind turbines (built by Mitsubishi Heavy Industries) running, generating a megawatt of energy each, AES understood that they needed a robust system that could perform calculations in real time from both user input and data coming from the field. The Energy industry is primarily concerned with the status of the units as an availability measurement, as well as validating the amount of energy produced versus the amount of energy predicted by the manufacturer's published power curve. After an exhaustive search for which software was the best fit, AES found in ICONICS GENESIS64™ and Hyper Historian™ a complete SCADA and Data Historian solution that would connect via open standard protocols (including OPC) and provide both instantaneous and aggregate data for monitoring and reporting.

Project Summary

Wind farms, in general, can be time-consuming to implement due to the high amount of repetition involved with each unit having identical inputs and outputs. The global aliasing functions in ICONICS software gave AES a great advantage in quickly implementing the 49 turbines, once the first turbine was configured. AES brought all the data sources into OPC via various interfaces, such as the Modbus/TCP so the SCADA suite has a standard source of data. They also commissioned an OPC server to be built by Matrikon to convert the MHI CNET protocol into OPC. AES wanted something that was not directly programmed to the turbine protocol, so the turbine data process and the monitoring process could be changed out independently. Additionally, the HMI interface needed to be delivered without software installation on the client computers and without authorization issues outside of the portal itself. In

other words, AES would not need to share the NT authorization outside of their domain, but control users could still access the control functions of the SCADA system. AES also wanted a system that would fit into a virtual machine environment to facilitate backup and recovery should they experience a hardware or software failure. The graphics tools available as a Windows Presentation Foundation (WPF) client were ahead of all of the competition and gave AES the ability to publish a best-in-class interface from an aesthetic perspective.

ICONICS' Hyper Historian maintains all data from the turbines at the wind farm as well as overall production data and substation parameters. The ICONICS Universal Data Management, part of GENESIS64 Platform Ser-

was able to quickly and cheaply bring the new indication into the monitoring system without additional costs.

Conclusion

Using approximately 30 points per turbine (plus 300 digital points), and another 100 points from the substation (plus 100 digital alarms and statuses), Hyper Historian indirectly attaches to:

- CNET interface of the MHI MRC (turbine controller)
- CR1000 data logger for meteorological data
- DVAR system (Modbus)
- SEL 3530 (real time automation controller functioning as a data concentrator)



An Overview, with Alarming, of the Wind Farm



Display of all Data Acquired by a Met Tower

vices, is used to create numerous calculations that feed Hyper Historian and other applications.

Benefits of the System

AES was looking to provide monitoring and control to operators from both AES and MHI, as well as supply aggregate data for their reporting systems. Using ICONICS, AES met these goals and kept development costs to a minimum as they didn't have to use a third party whenever a change was required. For example, they added an indication for low wind speeds at the turbine controller and integrated this into the SCADA system shortly after the park was put online. This would have been a substantial cost if they had gone back to a developer, but AES

ICONICS' system gives AES the ability to centrally manage a data delivery system that is available to all users via a Web interface, without installing software on the client computer. It also allows them to keep the system completely in-house, with no future dependency on third-party development or integrators. AES expects this to provide considerable cost savings as they accommodate changes in both turbine controller logic and shifting operating systems and hardware available in the future. With this in mind, Greg Howard, AES' Systems Integration Manager, said, "We are pleased with ICONICS' ability to provide a solution that can be built, maintained and controlled without paying consultants at every turn."