PcVue Monitors U.S. Wind Farms

PC VUE SCADA

Iberdrola Renewables [1], the second largest energy provider in North America, has chosen the PcVue supervisory control and data acquisition (SCADA [2]) system to monitor its U.S. wind farms, producing 3,600 megawatts of wind power over 35 independent power plants. Each of the 2,479 wind turbine supplies about 300 to 350 data points, which equates to approximately 700,000 to 850,000 I/O data points on nearly two dozen servers.

The latest operation for Iberdrola Renewables is its National Control Center. In a room that looks like NASA Mission Control, systems analysts oversee every turbine at every wind farm throughout the U.S. They monitor the performance and efficiency of every turbine, and they keep an eye on approaching storms to warn technicians of the danger in the field.

A vital element of this operation is the SCADA system. Each wind turbine has a control box containing a programmable logic controller (PLC), power converter, control boards and an I/O device at the top. Sensors for wind speed, wind direction, shaft rotation speed and numerous other factors collect and transfer data to the PLC.

By detecting the wind’s direction, the control system can use a motorized yaw gear to turn the entire wind turbine in the proper direction for maximum power generation. All wind turbines are connected to a local area network (LAN), with each wind tower’s control box using Ethernet to link to the base of the tower where there is a fiber-based, redundant ring LAN connection. The LAN is connected to a remote

control station running a control system that manages and collects data, adjusts turbine settings and provides intelligent alarm, troubleshooting and reporting capabilities via a central data center and control facility located in Portland, Ore.

This central control station is equipped with a PcVue SCADA system that acts as a nerve center for the wind farms. It connects the individual turbines, the substations, the meteorological stations the bird/bat aviation radar and other wildlife preservation surveillance systems to this central control room. It provides visibility for the operator to supervise the behavior of all the wind farms as a whole. By keeping a record of the activity on a time interval basis, PC VUE allows the operator to determine what adjustments and corrective action, if any, need to be taken.

Iberdrola Renewables uses multiple turbine types and each turbine supplier provides their own control/ HMI system. The major advantages of using PcVue as the main SCADA system is that it is not tied to any one PLC vendor so that it operates irrespectively of turbine type. This was of particular importance to Iberdrola who have wind farm operators using multiple turbines and various PLCs.

During the implementation process, Iberdrola’s team liked how PcVue was easy to configure. Its ability to iconize animated mimics and use pop-up windows reduced the risk of overlaying crucial information helped simplify the view for Iberdrola’s team. Also, the creation of templates for contents and behavior, associated with each mimic and GUI (graphical user interface) animation, ensure consistency of the window display.

For more information, please visit www.arcinfo.com *[2].*

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