Case Study: SCADA Solutions

System integrator brings 30-year-old wind turbines into the 21st Century

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THE CHALLENGE

California is seeing strong growth in the use of wind energy, building on its success in this area during the past 30 years.

For many aging wind farms and their utility owners, however, older wind turbines do not have remote monitoring and control systems that simplify curtailment when utilities must scale back power generation during periods of low demand.

"Ironically, too much electricity flowing into a state's electrical grid can be just as disruptive as too little, hence the need for occasional curtailment," says Craig VanWagner, engineer for SCADA Solutions, a provider of SCADA communications, automation, and integration services for wind farms through its WindCapture online monitoring and control system.

"New California guidelines require these older wind farms to be able to curtail whenever energy regulatory companies say so."

When the California Independent System Operator (CAISO) tells a wind farm operator it needs to curtail power production, the company has as little as five minutes to respond.

Before WindCapture, the utility would have to staff the wind farm around the clock with technicians to physically turn on or off individual turbines within the required time frame or face considerable financial penalties. When the wind picked up and the grid was ready, the technicians would bring the turbines back online.

> **"New California guidelines require older wind farms to be able to curtail whenever energy regulatory companies say so."**
>
> **- Craig VanWagner, SCADA Solutions**

THE SOLUTION

With Opto 22's SNAP PAC industrial controllers supervising individual I/O controllers on each turbine, a wireless mesh radio network for communications, and Opto 22's *groov* View operator interface for mobile devices, SCADA Solutions was able to quickly develop an affordable solution to remotely monitor and automatically manage wind farm electrical power generation output down to the individual turbine.

"Opto 22's platform has proven very versatile," VanWagner explains. "We can take the analog and digital data from the field and bring it into control software that monitors and manages the whole wind farm.

"Opto 22's software application suite gives us a variety of interfaces and protocols and the ability to push OPC data to the cloud, while *groov* View allows our customers to access live turbine data and control those turbines from a smartphone or other mobile device."

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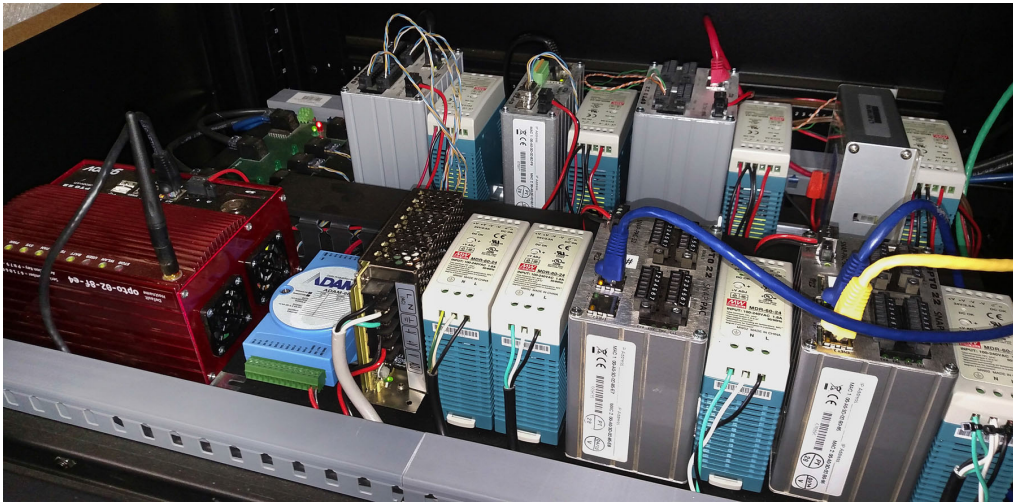
The Opto 22-based WindCapture system allows SCADA Solutions to quickly scale back power generation during periods of low demand.

Adds VanWager, "It also makes it really easy to get in front of new customers when you show them, on their own personal phone, how they can monitor and control their wind turbines from anywhere."

SCADA Solutions has installed the Opto 22-based WindCapture system at two wind farms and is working on a third. VanWagner expects utility owners to see significant additional revenue from enabling wind farm control systems that automatically optimize generation for maximum revenue.

He also expects substantial savings from reducing technician travel and labor costs—not to mention the benefits of the system's preventive maintenance capability.

"If at any time a turbine starts to degrade from a pre-established baseline, WindCapture can send an alert to the customer before there's a failure," VanWagner notes.

Together, SCADA Solutions and Opto 22's SNAP and *groov* solutions are helping to keep the lights on in California in a sustainable way.

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Watch the video case study.

ABOUT SCADA SOLUTIONS

SCADA Solutions specializes in restoring infrastructure integrity through integration of all communications and SCADA systems. The company utilizes the latest technologies in its communications networking designs, resulting in an integrated control configuration that is essential to critical renewable energy assets.

Scada Solutions' capabilities in system design engineering, coupled with our experienced and professional installation knowledge, allow for seamless implementation with minimal operational interruption. Our superior communication, automation, and integration capabilities, and our ability to serve all brands of turbines, both old and new, sets us apart from other third-party SCADA providers. For more information, please visit: scadasolutions.com

ABOUT OPTO 22

Opto 22 was started in 1974 by a co-inventor of the solid-state relay (SSR), who discovered a way to make SSRs more reliable.

Opto 22 has consistently built products on open standards rather than on proprietary technologies. The company developed the red-white-yellow-black color-coding system for input/output (I/O) modules and the open Optomux® protocol, and pioneered Ethernet-based I/O.
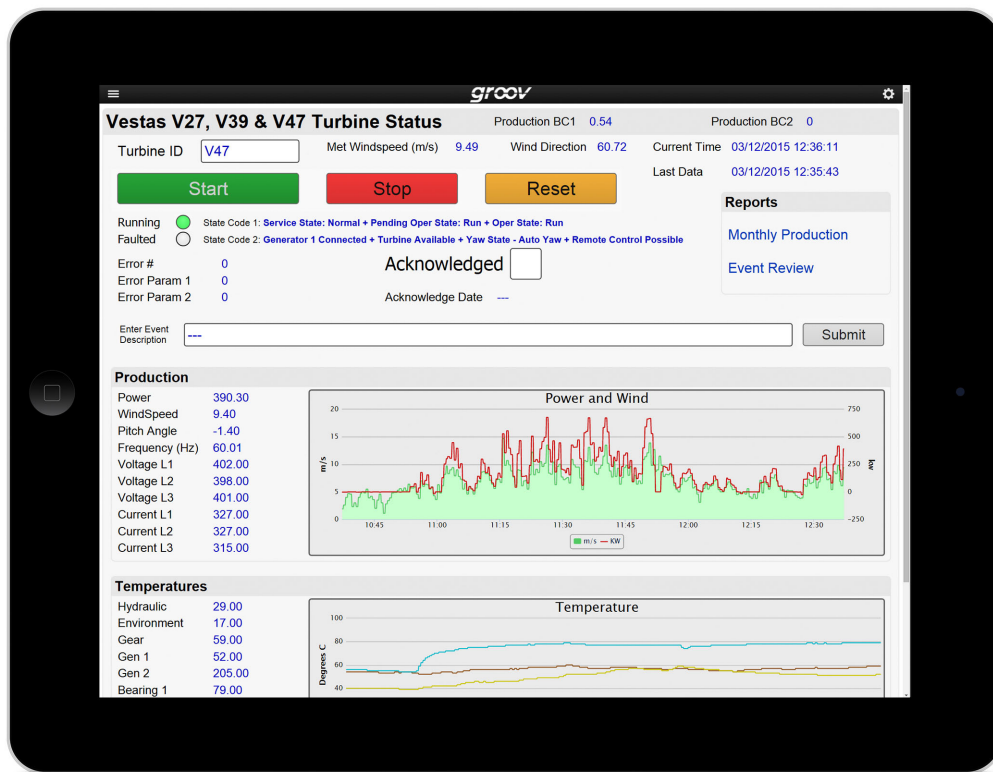
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Opto 22's *groov* View interface makes it easy to monitor and control wind turbines from anywhere, using a smartphone or other mobile device.

In early 2013 Opto 22 introduced *groov* View, an easy-to-use IoT tool for developing and viewing mobile operator interfaces—mobile apps to securely monitor and control virtually any automation system or equipment.

Famous worldwide for its reliable industrial I/O, the company in 2018 introduced *groov* EPIC® (edge programmable industrial controller). EPIC has an open-source Linux® OS and provides connectivity to PLCs, software, and online services, plus data handling and visualization, in addition to real-time control.

All Opto 22 products are manufactured and supported in the U.S.A. Most solid-state SSRs and I/O modules are guaranteed for life.

The company is especially trusted for its continuing policy of providing free product support, free online training, and free pre-sales engineering assistance.

For more information, visit opto22.com or contact **Opto 22 Pre-Sales Engineering**:

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