NRG Case Study

Creating a Flood Detection System for a Utility-Scale PV Plant

PROBLEM

Utility-scale PV plants are large projects that require many acres of undeveloped land to build. Frequently, land plots with lower commercial value, such as areas that are prone to flooding, are utilized. Many developers choose to perform pre-construction flood risk analysis and monitor flood levels on operational plants to ensure the safety and productivity of their array hardware and PV panels. The 200 MW Hillcrest Solar Project in Ohio is one such project sited on land with significant flooding potential. When Ulteig was enlisted to lead the SCADA integration at Hillcrest, they were also tasked with developing a flood monitoring system to help anticipate rising water levels and mitigate any potential damage to the plant.

Flood detection system at Hillcrest Solar Project, Ohio.

SOLUTION

Ulteig, who had already utilized NRG Systems' Solar Resource Monitoring (SRM) Systems for Hillcrest, approached the company about a flood detection system that could be integrated into the plant's SCADA platform. While NRG had no previous experience creating flood detection systems, they were able to partner with a nearby ultrasonic sensor provider, Senix Corporation, to design and build a solution. The system involves placing a Senix sensor inside a stilling tube to measure the distance from the top of the tube (where the sensor is located) to the ground. If the water levels rise, the sensor can detect the increase and it is logged via analog voltage signal to a SymphoniePRO Data Logger from NRG Systems. These signals are then passed along to Hillcrest's SCADA system, alerting the operator that water levels are rising.

RESULTS

Ulteig was able to integrate the NRG flood detection system into Hillcrest's SCADA HMI. If water levels exceed a predetermined limit, the plant's PV panels are triggered to stow, protecting the equipment from damage, and limiting impacts on subsequent energy production.

> *"Our partnership with NRG helped us to deliver on our core strength – offering our clients creative solutions for challenging conditions."*
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> *-Mike Crawford, Senior Market Development Manager-Renewables, Ulteig*

BENEFITS

The NRG flood detection system provides constant monitoring of increasing flood levels, which allows for proactive management and planning during flooding events. The system's components, including the stainless steel IP68 sensors from Senix and SymphoniePRO Data Logger from NRG, are all designed to withstand harsh environments and provide long-term use in a wide range of conditions. Mike Crawford, Senior Market Development Manager-Renewables from Ulteig said, "With this unique design approach, our partnership with NRG helped us to deliver on our core strength – offering our clients creative solutions for challenging conditions."

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About Ulteig

Ulteig delivers comprehensive engineering/design, program management, technical services and field services that strengthen infrastructure vital to everyday life. An employee-owned company, Ulteig connects people and resources to develop compelling, integrated solutions across the Lifeline Sectors® of power, renewables, transportation and water. Ulteig leverages its expertise throughout North America with a wide range of public and private clients.

About Senix Corporation

Senix Corporation is a small, privately-owned high-tech engineering, manufacturing, and sales company nestled in the town of Hinesburg in the scenic foothills of the Green Mountains of Vermont. Since 1990, Senix has been the example of Yankee ingenuity, continually improving products and serving a gradually increasing number of customers around the world. Senix is a small player in the hundred-million-dollar ultrasonic distance and level measuring industry but is a recognized leader in a couple of niche markets.