

Transmission & Distribution

Customer case study



Keeping the power grid safe from attack

Summary

- Surveillance systems guarding critical infrastructure cannot afford to lose power or communications
- SpotterRF partnered with IndustrialENET and Phoenix Contact to improve the reliability of its newest compact surveillance radar system

Protecting critical infrastructure from physical attacks is a growing concern. The SpotterRF Compact Radar systems ensure that security personnel have 100 percent coverage in all weather conditions, both day and night.



Customer profile

SpotterRF provides perimeter protection beyond fences for critical substations with its patented Compact Surveillance Radar (CSR) systems. CSR is a radar small enough to hold in your hand. It was designed for elite forces and is now available to electrical utility security professionals. The SpotterRF Compact Radar systems ensure that security personnel have 100 percent coverage in all weather conditions, both day and night.

Over the years, SpotterRF has worked closely with IndustrialENET, one of its preferred Tier III channel partners. IndustrialENET is also a Phoenix Contact system integrator. IndustrialENET is expert in delivering networking, IP video security solution for Intelligent Transportation Systems and critical infrastructure projects. They partner with premier suppliers, like SpotterRF and Phoenix Contact, to deliver a plug-and-play complete solution. Working together, IndustrialENET and Phoenix Contact partnered with SpotterRF to create an improved, extended-temperature interface panel that was flexible, small, and OEM-priced. The project used Phoenix Contact's manufacturing facility and expertise, and benefited from system pricing and technical support from engineers at both IndustrialENET and Phoenix Contact.

Challenge: High security requires reliability

Protecting critical infrastructure from physical attacks is a growing concern. Utilities and other responsible entities are looking for ways to improve surveillance at remote locations. They also face new regulations, such as NERC-CIP-014-1, which requires entities to take steps to reasonably protect against physical security attacks on the Bulk Electric Power System (BES).

Video cameras around the perimeter are an important step, but the utility must make sure the system is always available and transmitting the required data. SpotterRF and IndustrialENET had collaborated on an earlier surveillance system but wanted to improve the reliability of the system's power to help clients meet NERC-CIP-014-1.

These panels are generally located throughout substation yards in sealed enclosures and are exposed to wide temperature ranges depending on the geographic location. Many locations also experience high EMI, which can lead to signal disruption or failure.

Originally, SpotterRF created the panels in a more conventional way: by ordering the individual components, building the panels in-house, and conducting the factory acceptance testing and quality assurance testing itself. Panel manufacturing, however, was not SpotterRF's area of expertise. The time and effort



The improved reliability of the new interface panel gives utility operators peace of mind.

required to build the panels distracted the team from its core business of focusing on radar.

To further improve the overall uptime of the full system and protect the SpotterRF radars from surge and power supply

disruption, SpotterRF found the Phoenix Contact panel to be a good solution that significantly reduced in-the-field failures.

Solution: Custom panel with high availability

“Both the SpotterRF C20D and C40D models result from our constant quest for advancing perimeter security for partners and customers,” stated Logan Harris, SpotterRF CEO. “The new interface panel developed by IndustrialENET allows clients to connect quickly and better protect the Spotters from surges on power and communication lines during inclement weather.”

The new panel integrates IndustrialENET technology and SpotterRF radar with rugged cameras to protect bridges, tunnels, and electrical substations in harsh conditions.

The solution includes a system level integration with Spotter radar and industrial-grade cameras. The radar system can track and detect objects reliably in any visibility or environmental conditions and steer the cameras to provide visual evidence for the operators. The wide dynamic range and starlight technology allows the cameras to deliver full visual details during day or night. The camera also supports an optional IR illumination, which can provide clear visual evidence even in scenes with no ambient



SpotterRF provides perimeter protection beyond fences for our nation's critical electrical substations with its patented Compact Surveillance Radar systems.

lighting up to 1,200 feet away. This significantly reduces install cost and camera count when combined with SpotterRF radar technology.

One C40D can cover as much area as 20 fixed thermal cameras. It works through rain, fog, and snow, and tracks any moving target in its line of sight, with ranges of up to 600 meters for a walking person and a field of view of 90 degrees. A C40D weighs less than 1.5 pounds, making it easy to place anywhere on existing structures, such as poles, fences, or trees. It easily connects to existing Ethernet networks with Power over Ethernet switches, making it suitable for many applications, such as oil wells, petrochemical plants, utility substations, power plants, cell phone towers, and mines. Both the C20D and the C40D models are RoHS compliant and have passed CE testing.



To comply with NERC-CIP-014-1, utilities must make sure their security systems can transmit important data even in rugged conditions.

The upgraded SpotterRF C20D and C40D radars include added short-circuit, over-voltage, and reverse-voltage protection to better streamline setup and installation. Phoenix Contact's expertise in power reliability ensures that the system operates even in extreme conditions.

Results

By working with Phoenix Contact and IndustrialENET, SpotterRF could focus on maintaining the quality of its radars while giving its customers turn-key installation and power management for SpotterRF radars, cameras, and more. The user simply has to mount the cabinet to the pole, terminate the power and the network, and the shield enclosure does the rest.

"This new panel meets our high standard for providing critical system networking with high availability video surveillance," stated Jon Amack, EE, IndustrialENET President. "Using Phoenix

Contact's world-class manufacturing resources, we can offer the highest standard of protection for SpotterRF solutions at very competitive prices."

SpotterRF radically reduces the risk of repeat attacks experienced by the electricity industry. The improved reliability of the new interface panel gives electric utility operators even more peace of mind that their surveillance systems will operate through even the harshest conditions.

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