



OptaSense Delivers Perimeter Intrusion Detection for Nuclear Site

Layered Solution Protects Critical Infrastructure

The Challenge

Nuclear power plants provide one fifth of the electricity in the U.S. Running a plant has always carried risks. It can be dangerous work on the inside – and on the outside, especially in the new era of terrorist threats.

While nuclear facilities and materials have always been inherently safe, terrorist events of September 11, 2001, created a paradigm shift in security philosophy. Advent of the military's Defense-In-Depth (Deter, Detect, Deny, Delay & Defend) provided a model for security professionals to begin to think strategically and proactively about solving the problem of third-party intrusion.

Security enhancements put in place after September 11 include upgraded

technologies, security officer training, increased patrols, additional physical barriers, greater stand-off distances and more restrictive access controls.

Layered Defense-In-Depth

In addition, as technology has evolved, new potentials for more effective and efficient measures have become available, and with that, integration between detection and assessment devices. Now, intelligent early detection systems can feed directly into a video platform for machine to machine validation.

This creates a need for a wholistic system approach which can provide operators lower overall "alarm fatigue" and quicker response time to the potential threat.

Problem:

- Terrorist threats to critical infrastructure
- Slow response time to potential threats
- Exposure to water-borne threats

Solution:

- OptaSense Perimeter Intrusion Detection System
 - Detects and classifies intrusion activity
 - Integrates with camera systems
 - Delivers real-time redundancy

Value Delivered:

- Fast, reliable detection system
- Wholistic security system
- Decreased alarm fatigue



The Solution

In order to meet and exceed regulations, the client began researching which perimeter detection systems could provide the required detection and classification. OptaSense's buried fiber solution using distributed fiber-optic sensing (DFOS) was selected. Using a single strand of single-mode fiber to detect acoustic activity, combined with advanced software algorithms, the OptaSense Perimeter Intrusion Detection System (PIDS) detects activity and classifies on stealth approach, personnel, vehicles, manual and mechanical digging. When integrated to a camera system, a "slew-to-cue" feature is exploited, giving operators an immediate alert with visual validation of the intrusion activity.

Using OptaSense's DFOS solution, an integrated platform was designed with the goal of creating a real-time and redundant intrusion detection system.

Results

OptaSense, the client, and a partner developed a site "nervous system" from which alarms along the perimeter detected and classified on digging, personnel and vehicles and then cued cameras to not only verify the target but begin interacting immediately.

Additionally, most nuclear power stations are located near an abundance of cooling water and it is an essential resource for not only generating steam but is also used in the reactor cooling process. Any disruption to that water supply can be crippling to the plant's production. The threat of water-borne intrusion or disturbances can also be thwarted using the OptaSense PIDS solution.

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