FlexZone® and Tungsten now standard for protecting major US electrical utility company substations*

In 2013, after years of false alarm issues with photobeam-based security systems along perimeter fences, a major US electrical utility company was in the market for a reliable perimeter intrusion detection solution to secure its electrical substations.

A meeting with Senstar set in motion a relationship that has grown from a one-product, one-site installation into a multi-product, multi-site partnership that will eventually secure substations supplying electricity for 95% of a state's residents.

Aerial view of an electrical substation

The challenge

Photobeam technology is not a good fit for variable weather conditions. Strong winds, heavy preciptiation, and intense UV radiation can wear down equipment and cause false alarms. A high occurence of false alarms puts a strain on human resources, from the time required to investigate and manage the alarms, to the risk of real threats not being treated with adequate priority.

The challenge of this project was to find a reliable perimeter intrusion detection system that could stand up to variable weather conditions and produce a low Nuisance Alarm Rate (NAR), as well as complement the video analytics systems already in place.

The solution

Senstar's FlexZone® ranging fence-mounted sensor addressed all elements of the challenge.

FlexZone detects and locates any attempt to cut, climb or otherwise break through the fence over a distance of up to 600 m (1,968 ft) per sensor processor, and within 3 m (or 10 ft) of accuracy. It accurately locates intrusions even when there are multiple simultaneous intrusions and in the presence of background environmental noise. One processor can support up to 60 distinct, customizable zones. Both power and data can run over the sensor cables, minimizing infrastructure requirements, and advanced Digital Signal Processing (DSP) enables FlexZone to adapt to a wide variety of fence types.

> With the implementation of FlexZone, the electrical utility company was able to turn its existing standard chain link fence into a "smart" fence. The cable and sensors were easy to install and a fraction of the cost of the fence itself.

FlexZone intrusion detection sensor

Senstar's Environmentally Derived Adaptive Processing Technology (EDAPT) ensures the FlexZone processor captures a precise picture of the fence signal and enables advanced algorithms to discriminate between intrusion signals and environmental noise. This maximizes the probability of detection while virtually eliminating nuisance alarms caused by environmental effects such as wind or rain.

FlexZone also easily integrates with other security system elements, including video analytics.

With a reliable perimeter intrusion detection system now in place, Senstar proposed an additional solution to protect the overall security network at each substation.

The Tungsten cyber security appliance is specifically designed to protect physical security networks and SCADA-based systems. Cutting-edge hardware, combined with network intelligence and policy enforcement software engines, create an effective tool for securing sites.

Tungsten detects and identifies every element and endpoint in the network, alerts and blocks any attempt to connect an unauthorized device to the secured network; inspects all incoming and outgoing traffic at port level to make sure that only known, safe and identified traffic from authorized entities is allowed; detects Layer 2 and Layer 3 cyber-attacks; and reports and takes automatic action to restore business continuity.

Tungsten security appliance

Tungsten complies with many NERC CIP requirements including CIP-005-3a "Cyber Security – Electronic Security Perimeter(s)" and CIP-006-3c "Cyber Security – Physical Security of Critical Cyber Assets".

At the substations, Tungsten is used specifically to power all cameras, carry all video traffic, and monitor live network activity and the overall health of the security network.

The results

Both FlexZone and Tungsten have proven very successful for this major US electrical utility company.

For example, soon after the first FlexZone installation, four major weather systems hit within a short period of time. While the video analytics systems recorded several nuisance alarms due to high winds, driving rain and blowing debris, FlexZone recorded none. In another example, with FlexZone on the fence and video analytics protecting the gates, guards missed a breach of a gate assuming it was another false alarm. It was only when FlexZone picked up the disturbance and sent an alert that guards took the threat seriously. As a result, FlexZone is now being installed on gates at the substations too.

A utility company representative said:

> "Our FlexZone systems have been going strong for a couple of years now and it is one of our Command Center operators' favorite security modules.
> I can't even remember the last time we had a false alarm on those systems."

Because of its results, FlexZone is now standard for all of the utility company's Tier 1 and Tier 2 substations. Tungsten's capabilities in monitoring security network activity and preventing cyber-attack has led to it becoming standard for all new security installations, regardless of the size of the site.

The utility company and Senstar continue to work on plans for protecting other substations throughout the state.

*Due to the sensitive nature of this project, the customer requested not to be named in this case study.

About Senstar

Senstar has been manufacturing, selling and supporting the world's largest portfolio of perimeter intrusion detection sensor technologies for more than 35 years. Senstar is also a leading provider of personal duress solutions.

Senstar products can be found around the world in more than 80 countries, in tens of thousands of sites including borders, ports, military and government, oil and gas, correctional, and other critical sites.

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