Cameras protect a solar power plant.

Photon Energy sees instant results from using
Axis thermal camera solution.

Organization:
Photon Energy N.V.

Location:
Almásfüzitő, Hungary

Industry segment:
Critical infrastructure

Application:
Perimeter security and
protection

Axis partner:
MMS servis s.r.o.

Mission

The customer requested the perimeter protection of its photovoltaic power plant based on thermal cameras. Per their insurance agreement, they need to have their facility secured either through a physically constantly present security guard service or electronically with a system connected to their central security desk. They tried several different solutions in the past, but were not satisfied with the number of false alarms generated, so they searched for a better alternative.

Solution

The perimeter is protected by 8 AXIS Q19 Series thermal cameras. They are mounted on special poles at various heights exactly as recommended by the Axis application to ensure optimal distance and angle for perimeter detection at a given location. AXIS Perimeter Defender, which runs directly inside the camera, is used for video analytics and intrusion detection.

Four AXIS C3003-E Network Horn Speakers secure the audible warning. AXIS Camera Station on the AXIS S10 Series server is used as VMS software. However, the whole solution works autonomously and requires no server application installation.

Result

The whole system is still in its test operation mode at customer's photovoltaic power plant, but it is expected to be fully reliable to protect a guarded perimeter day and night and in any weather. Since the system meets its purpose for which it was designed, it does not have to be further expanded at its installation site. However, if it proves successful in the long term, it is likely to be deployed at other photovoltaic power plant operations.

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COMMUNICATIONS

> "Originally, we thought about using microwave detectors; however, due to the potentially high number of false alarms, after a series of tests, we finally decided to select a more sophisticated solution based on thermal cameras. From this solution we expect complete reliability in the protection of our guarded perimeter day and night."
>
> Michal Weltler, Project Manager, Photon Energy .

Number of potential triggers

The solar power plant is built literally on a "green field" where usually no special landscaping or construction works are required (small concrete foundations are only made for transformer stations). The structure that holds the panels can be placed directly on the bare ground and fixed with special anchors.

In attempts to protect the perimeter in the past, the highest number of false alarms were generated by the fence sensors, upon sudden weather changes (in rain and snow), and infrared barriers proved unsuitable as well. The same applied to microwave radars, which generated false alarms caused by overgrown grass in wind gusts. These false triggers can be eliminated relatively simply by the thermal camera technology with AXIS Perimeter Defender analytical application.

The original design contained PTZ cameras for visual verification, but since the security service is obliged to investigate every electronically evaluated alarm in person, these cameras lost their relevance. The final solution only includes one small AXIS M2025 Network Camera, which provides the centre operator with a remote visual overview, e.g. to be able to check the current weather from the central office when there is an unexpected drop in solar electricity production.

Custom poles for the cameras

For the time-lapse videos from the construction site, MMS servis developed its own poles with a max. height of up to 9 meters (diameter 140 mm). These poles are composed of two parts and are placed on a hinge for easier installation. The cameras, lighting, speakers, etc. can be conveniently placed on the pole still on the ground, and the pole post is then simply "erected" and fixed. All the cabling leads through the poles, i.e. it is protected against any potential intruder. In the bottom part, there is a technology box with terminals, power supply, backup batteries, etc.

First, only an audible warning

When the thermal camera detects any external perimeter disturbance, it sends a command to its AXIS C3003-E Network Horn Speakers to play an audible warning. This warns random passers-by, or scares off animals that would come too close to the fence. This first audible warning usually has a sufficient deterrent effect on any accidental intruders.

However, if any intruder climbed the fence to get inside, the camera will trigger a loud alarm and send a warning to the central security desk. The security guard will immediately send a patrol to the scene to handle the situation. However, every security guard dispatch costs money, so it is very important to eliminate as many false alarms as possible.

A few hours even without servers

All the devices work autonomously, without the need to install any additional applications on any external servers. A server is used here only as data storage on which the camera records are backed up and archived. In the event of a complete power supply failure, the server is powered from its UPS for about 30 minutes, but the cameras and other devices have their own backup batteries, which supply power for more than 8 additional hours of operation. Even in the event of a complete server failure, the system works reliably for at least a few more hours.

About Photon Energy – www.photonenergy.com

Photon Energy N.V. is a global solar energy solutions and services company covering the entire lifecycle of solar energy systems. Since its foundation in 2008, Photon Energy has built and commissioned 75 MWp of solar power plants across two continents of which 50 MWp for their own portfolio. Current project development includes a project pipeline of 884 MWp in Australia (out of which 580 MWp in partnership with Canadian Solar) and 35.8 MWp in Hungary, with a target of 75 MWp by 2021. The O&M division provides operations and maintenance services for over 260 MWp worldwide. Additionally, its subsidiary Photon Water Technology (PWT), focuses on developing and providing water purification, remediation and treatment systems for worldwide deployment. Photon Energy is headquartered in Amsterdam and has offices across Europe and in Australia.

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