

Axis network cameras stand guard over remote power plants.

Cameras detect motion, monitor maintenance and daily operations, and deliver a dramatic drop in vandalism.



Organization:

GDF Suez Canada

Location:

Toronto, Ontario, Canada

Industry segment:

Critical infrastructure

Application:

Security surveillance, remote monitoring, vandalism prevention

Axis partners:

Freedom Lock and Security, Inc., Luxriot

Mission

GDF Suez is the world's largest independent electricity producer, generating more non-nuclear electricity than any other provider. GDF Suez Canada operates two large 10-megawatt solar facilities and thirteen wind-turbine sites, each producing 10 to 99 megawatts of power. These sites are all in remote locations, so managing and securing them would be expensive and labour intensive were it not for modern networked security cameras.

Solution

GDF Suez Canada partnered with systems integrator Freedom Lock and Security to install and manage AXIS P3364-LVE Fixed Dome Network Cameras and AXIS P5534-E and Q6034-E PTZ (pan/tilt/zoom) Dome Network Cameras at its wind and solar sites. The cameras record still images of the equipment for maintenance and management, and the PTZ units are set to "patrol" specified areas.

In-camera analytics detect motion and trigger alerts, and the system is connected over fibre to central GDF Suez facilities, where the data is stored on two terabyte video servers running Luxriot VMS. GDF Suez staff can view the feeds on computers, tablets or smartphones.

Result

The cameras have produced significant reductions in both vandalism and theft. Power plants use a great deal of copper wiring, and this makes them high-value targets for thieves. The cost of shutting down to replace lost wiring climbs quickly. GDF Suez found that preventing even one theft more than pays the hardware and operation costs of networked surveillance cameras.

“On a 100 megawatt wind farm, the revenue we make on an hourly basis is fairly significant, so if I can avoid being down for three hours for repairs because of vandalism or theft, then I have paid for all the cameras. We have seen that type of deterrence, and that is a huge return.”

Augusto Di Maria, Director of Project Management, GDF Suez Canada.

Security challenges

The solar and wind power-generation facilities operated by global power company GDF Suez are vast installations set in remote areas of Ontario. The seven wind-power sites are located on working farm land and each has six turbines scattered across unfenced land. GDF's two 80-acre solar sites are fenced but, with approximately 42,000 solar panels at each site, they are still vulnerable to determined vandals.

Value of deterrence

Vandals are drawn to power facilities, according to Augusto Di Maria, Director of Project Management at GDF Suez Canada. “At one site, on an annual basis, we would get a pickup truck driven down one of the roads and lit on fire. We always had to go in and clean up the mess. You also get people with golf clubs and a bunch of balls who come out to see what damage they can do to solar panels. The panels are surprisingly strong, but if you hit them just right you can do damage.”

To secure its sites, GDF partnered with Freedom Lock and Security to install a total of 40 Axis network cameras at its wind and solar plants. The all-IP cameras are a mix of AXIS P3364-LVE Fixed Dome Network Cameras, and AXIS P5534-E and AXIS Q-6034-E PTZ Dome Network Cameras.

“Since we've had the cameras, the vandalism issue is gone. The cameras are a deterrent, because when you are out to cause mischief, you look around to see if there are security measures. If you see cameras, you leave.” While the presence of Axis cameras alone has kept vandals at bay, the intelligent network video has allowed GDF to take security to the next level.

Image usability matters

When an incident does occur, image quality is paramount, as Di Maria learned at a previous job. “We had people steal a lot of copper and copper connectors, and the video system captured them doing it. But the quality was horrible: we couldn't read a license plate or see a face, or even tell what color the car was. If we had better cameras, we could have figured out who did it.”

Di Maria wanted a better system at GDF Suez, and Gord van der Grinten of Freedom Lock and Security recommended Axis. “As an integrator, Axis is a win-win. If you put in second-rate equipment it will inevitably fail, and that is bad for the client and bad for my business.”

The cameras use existing fibre connections at the power plants to link to video servers at GDF Suez' offices. The cameras are all made by Axis, and the VMS is from Luxriot. The PTZ cameras pan through a preset surveillance area. If onboard analytics detect motion, the cameras lock in on that area. “The cameras record 24/7 at a lower resolution, transmitting the images to the GDF servers, but anytime they sense motion, they immediately begin recording in high-definition and trigger an alert to GDF Suez,” van der Grinten said. “The analytics have proven to be very effective in this environment.”

In many areas, ambient light is strong enough to provide adequate illumination even at night, but when that is not the case, the sites employ the cameras' Lightfinder technology. The cameras also take regular snapshots of the far-flung equipment to monitor issues such as snow loads on solar panels. These images are used daily by maintenance staff. “We have them rotating at intervals to take snapshots of solar panels and email those to maintenance personnel. We are looking for factors such as snow loads, and we chose the cameras based on their ability to take still photos and send them off,” van der Grinten said. Di Maria added that “part of our role is to ensure we know when the panels are covered in snow, and that is much easier to do if they can refer to these photos.”

Worthwhile investment

The return on investment has been immediate. “Copper theft is a huge problem, and not so much because of the actual value of the copper but because of the delays caused by theft,” Di Maria said. “We have to isolate a station—turn everything off, and lose that revenue—and then send someone in to replace the copper, fix the fence, etc. It's costly and it's a huge nuisance. If I can prevent one theft of copper, then I've paid for the cameras 10 times over — easily.”



“Security may be your main motivation for installing cameras, but once you have them installed, take a look at what else you can do with the system. Look at the maintenance opportunities, such as snapping photos on a regular basis, or email notifications. With the structure already in place, this will add to your return on investment,” says Gord van der Grinten, owner, Freedom Lock and Security Inc.

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