Remote Monitoring, Safety & Security of Electric Distribution Substations

Case Study

Situational Awareness • Centralized Access Management • Smart Sensor Connectivity

Background
The security and progress of nations depend on the reliable functioning of increasingly complex and interdependent critical infrastructure. More specifically, our energy, water, transportation and communications systems. Geographically distributed and increasingly interconnected, the long lifecycle of critical infrastructure is becoming more and more vulnerable to disruptions that can result in wide-ranging, costly impacts.

Ensuring the resilience of critical infrastructure requires a holistic solution that accounts for legacy technologies and operational models. This solution must also leverage the latest sensor-based and communications technologies, enabling situational awareness and decision support across security, maintenance and operational domains.

AGT International’s SafeGRID solution meets these stringent requirements.

The Situation
Elenia, an electric distribution system operator in Finland with 140 geographically distributed substation sites and nearly half-a-million customers, needed a cost-effective way to improve physical security and manage authorized access of employees and visitors at its remote, unmanned substations.

The Solution
AGT International installed an integrated primary substation monitoring solution at one of Elenia’s substations. The integrated SafeGRID solution consists of an easy-to-use software application (AIMS) for central monitoring of remote substation sites, plus an all-in-one sensor connectivity platform that can be quickly and easily deployed.

The solution automates monitoring and control of site access, monitors employee safety in high voltage areas, prevents and alerts unauthorized site access using integrated perimeter security and video surveillance systems and integrates operational data from other connected sensors such as weather stations. Connection to the substation is provided by FieldCom, a high-security communications system from AGT International’s partner Emtele. The system is optimized to work with limited bandwidth and will continue to operate autonomously in the event of a communication failure.
AIMS, which stands for Asset Integrity, Maintenance, Safety and Security, supports a wide range of integrated sensor interfaces, ready for deployment. These include access control systems, video surveillance, license plate recognition (LPR) readers, smart fences, voice communications, advanced sensors (e.g., LADAR) and weather stations. With an option to integrate with legacy systems, AIMS provides operators and decision-makers with real-time, unified situational awareness for both routine and emergency events. The solution also helps to achieve more efficient, lower-cost operations and maintenance.

The Result

The pilot has been in full operation since July 2012 and provides Elenia with optimized substation security (reduced theft and vandalism; centralized, remote access management) as well as ancillary benefits such as a condition-based, cost-effective maintenance program, high-efficiency operations and both immediate and long-term ROI.

AIMS shows the status and exact location of an attempted security breach and guides operators to manage the situation

AGT International is a privately held technology company based in Zurich, Switzerland. AGT provides strong analytics and prediction software solutions that connect to a wide variety of devices and sensors, including social media. These solutions enable customers to sense the world, analyze complex environments, and predict events with a focus on providing return on investment. For more information, please visit www.agtinternational.com.