Remote supervision of substations
Solution blueprint for Power Utilities

Answers for infrastructure.
Our world is undergoing changes that force us to think in new ways: demographic change, urbanization, global warming and resource shortages. Maximum efficiency has top priority – and not only where energy is concerned. In addition, we need to increase comfort for the well-being of users. Also, our need for safety and security is constantly growing. For our customers, success is defined by how well they manage these challenges. Siemens has the answers.

“We are the trusted technology partner for energy-efficient, safe and secure buildings and infrastructure.”
Continuous energy supply plays a vital role in today’s global economy and in the daily lives of citizens around the world. Failure of individual sites poses a threat to power grid stability, resulting in potential blackouts for large geographical areas.

The continuous remote supervision of substations increases the security and reliability of the power grid, optimizes operational efficiency and prevents costly direct and consequential damages.

Substations form an integral part of the power network and, are prone to threats such as vandalism, metal theft or SCADA system attacks.

Siemens offers integrated security and safety solutions for the remote monitoring of substations and enables power utilities to supervise and control all sites from one central location. The software suite from Siemens software suite integrates comprehensive access control, video surveillance and intrusion detection systems through a common architecture and flexible network, increasing situational awareness and operational efficiency.

Feature-rich access control solutions from Siemens effectively prevent unauthorized persons from entering substations. The platforms support keypad readers, contactless encrypted access data ID cards, biometric sensors as well as combinations of these technologies to control access to high security zones.

With powerful reporting capabilities on all cardholder activity, real-time attendance reports, restricted access rights for contractors and verification of live video feeds against cardholder database photos, Siemens provides highest security levels for remote, unmanned sites. Site access rights are centrally managed and offer live integration into corporate HR databases such as SAP R/3. Granting of access to sites together with general access validation can be configured and distributed to all sites in real time 24/7.

Changes in data can be conveniently managed from a central location, with immediate effect in the substation. Complete situational awareness Real-time video solutions from Siemens provide intelligent surveillance for remote sites. Integrated detection and video analytic algorithms minimize false alarms and reduce operational efforts. Remote visual verification of individual switch positions maximizes operational uptime and reduces unnecessary inspections. Remote video surveillance supports in routine maintenance and real-time equipment status supervision. Thermographic cameras can be added to centrally monitor power transformers, relays and switchgear status for early fire detection.

Abnormal temperatures can be automatically detected ahead of planned maintenance and operating staff notified immediately.

High-resolution IP cameras enhance the quality of video feeds facilitating remote inspection. To increase network efficiency, solutions from Siemens support flexible storage regardless of camera location, and the security system can be tailored to accommodate available bandwidth and maximize capability. Control center staff can remotely access live or recorded video streams of all substations tracking suspicious behavior through the use of enhanced pan-tilt-zoom (PTZ) camera features.

Preventing unauthorized access To manage vehicle access to critical remote sites, license plate recognition systems from Siemens can be deployed. Any movement is automatically logged, with the option of creating global watchlists or allocating temporary access rights for subcontractors as required.

Preventing unwanted intruders from entering electrical substations is of utmost importance to protect the site, its assets and the SCADA network. Siemens supports a wide range of technologies such as fiber-optic fence sensors, microphonic sensor cables, ground and fence sensors or microwave motion detectors to secure substation perimeters. If an event is detected, affected zones can be automatically illuminated, centrally monitored and the security level of the substation can be elevated or control center and field personnel alerted in real time.

Remote solutions from Siemens facilitate multiple substations being monitored simultaneously from one central location. In an emergency, real-time notifications such as event type, location or even sensor status can be sent to field personnel via portable devices to ensure timely and appropriate response. In addition, GPS receivers allow control center staff to monitor and track the status of available security resources on site.

To complement state-of-the-art technical solutions, a comprehensive range of services is available. Siemens offers risk assessments, design and engineering services together with technical system maintenance to support power utilities in securing their distributed sites. Advanced service offerings from Siemens include hosting and management of safety and security applications or comprehensive outsourcing services. With remote management 24/7 or also limited to non-office hours, the services can be tailored to specific customer requirements.

Remote supervision – from one central location