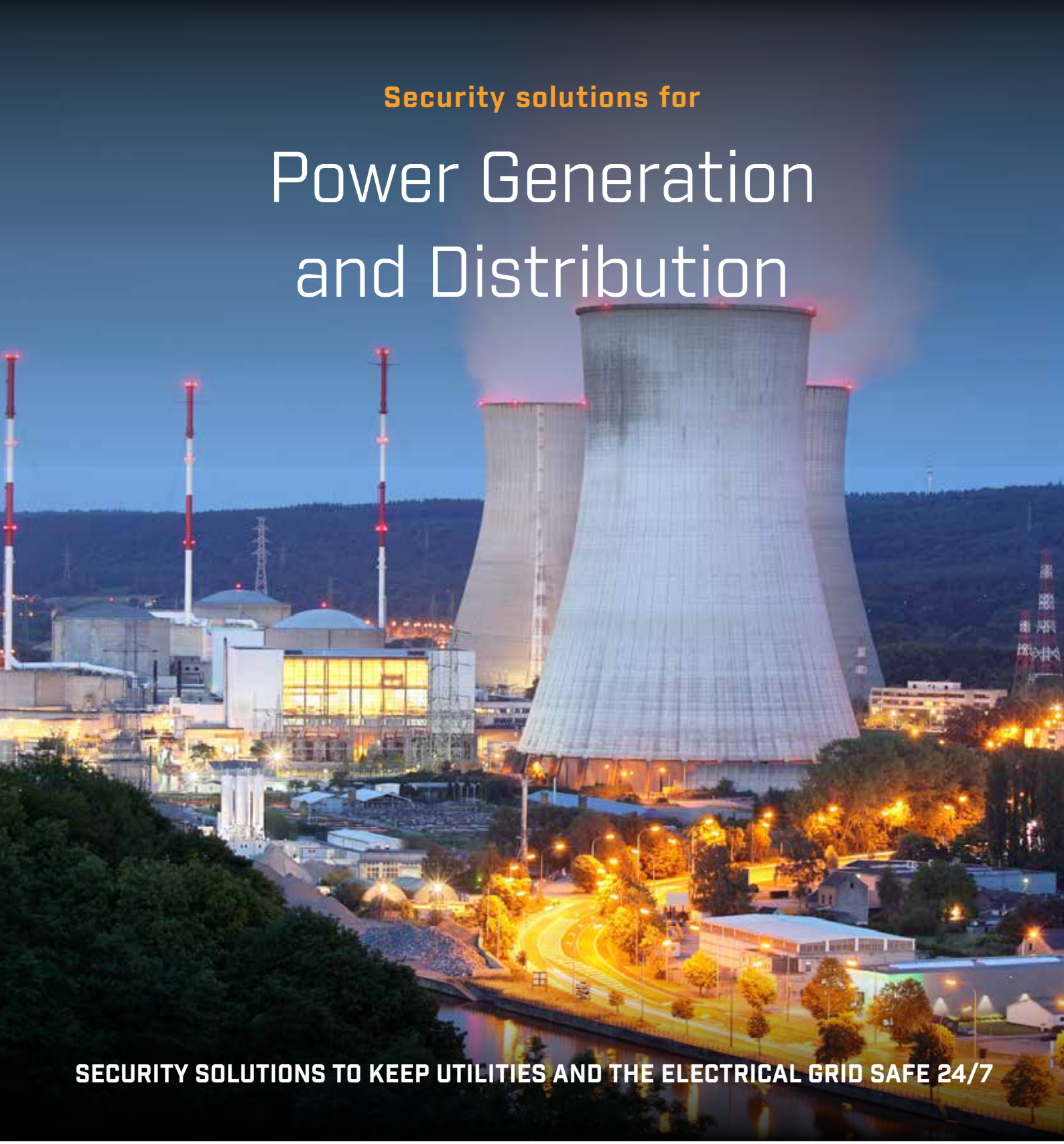
Security solutions for

Power Generation and Distribution



SECURITY SOLUTIONS TO KEEP UTILITIES AND THE ELECTRICAL GRID SAFE 24/7

FLIR® | The World's Sixth Sense®

FLIR SYSTEMS SECURITY SOLUTIONS FOR POWER GENERATION AND DISTRIBUTION

Electrical power utilities face a wide variety of safety and security challenges – geographically dispersed operations, complex facilities, high-risk equipment, and an ongoing need for maximum uptime. They need to be protected against both physical (theft, vandalism and terrorism) and cyber-attacks. Protecting power generating sites as well as transmission stations or substations and their associated primary control centers that if rendered inoperable or damaged as a result of a physical attack is of primary importance. (NERC-CIP-014 standard). Upon alarming security professionals need to be able to conduct visible verification, collect evidence and size deployment of emergency support functions to assure adequate response and recovery. Risks should be identified and managed in a cost effective way whereby lower risk assessment can potentially reduce insurance costs.

FLIR's video surveillance and imaging products deliver the scalability, flexibility, and affordability that utility operators need to recognize threats in real-time, and respond to safety, security, and operational issues both faster and more effectively.

Moreover, electric power utilities are faced with an aging infrastructure, increasing risk of blackouts. Utilities are looking for ways to address these issues in order to improve the reliability of electric power delivery while at the same time reducing costs.

FLIR solutions integrate easily with access control, gunshot detection, and other alerting technologies. Video management takes place locally, at centralized command centers, and via secure smartphone- and tablet-based remote access.

- **Visible and Thermal imaging. Including temperature monitoring of critical components.**
- **Remote site monitoring**
- **Networked Digital Video Recorders**
- **Centralized, User-Friendly Video Management**
- **Access Control, PSIM, Gun Shot Detection, Fence Sensors and Analytics Integration**

POWER GENERATION

- Identify unauthorized intrusions and physical attacks sooner with real-time threat recognition and video verification
- Reduce disruptions and minimize downtime due to nuisance alarms, animal intrusions, and equipment failure
- Meet Nuclear Regulatory Commission rules for 24/7 surveillance monitoring of perimeter and control area
- Meet video surveillance requirements to identify threats in real time as part of a Detect, Delay, Respond strategy. Security forces gain time to locate and neutralize adversaries before assets can be damaged or nuclear materials put at risk
- Prevent even minor disruptions that cause major issues and can cost millions of dollars. Blackouts can cost billions

POWER DISTRIBUTION

- Reduce the risk of terrorist adversary, effects of extreme weather conditions and underinvestment or low maintenance on national power infrastructure. Extreme cold or hot weather conditions can cause electrical loads and temperature rises in excess of tolerances causing critical equipment failures
- Maintain 24/7 video surveillance at remote locations, including rain, fog, smoke, and extreme weather
- Identify temperature variances that indicate fire or equipment failure in remote locations
- Improve total electrical grid security and resilience as the cascading effects of incidents can be severe and the interdependencies are often unpredictable

SUBSTATIONS

- Prevent theft of copper and other resources using real-time video verification with two-way audio
- Identify temperature variances that indicate potential equipment failure in transformers and other substation electrical and mechanical equipment (power transformers, load tap changers, insulator bushings, standoff insulators, lightning arrestors, circuit breakers) without having to dispatch staff into potentially dangerous situations
- Operate cameras remotely to focus attention on crucial areas under active threat
- Maintain 24/7 video surveillance at substations that are often unattended and located in remote and harsh environments with low bandwidth connections

RENEWABLE ENERGY

- Prevent theft of solar panels through 24/7 video surveillance, real-time video verification and two-audio challenge for unauthorized access
- Monitor remote and easily targeted facilities with large perimeters, or where fences are not allowed for aesthetic reasons
- Separate active threats from natural activity, such as animal migrations
- Maintain operational integrity by identifying improper activity in real time (eg, cars generating dust that settles on solar panels)
- Maintain 24/7 video surveillance at local and remote locations, including rain, fog, smoke, and extreme weather
- Provide true day/night video verification using both visible light and thermal camera technology with no need for additional lighting

FLEXIBILITY, PERFORMANCE AND VALUE

Advanced Video Protection Without Compromise

Real-Time Threat Detection and Video Verification
Utilities of all types face similar safety and security challenges – geographically dispersed operations, complex facilities, high-risk equipment, and an ongoing need for maximum uptime. FLIR's broad range of cameras, advanced video management system (VMS) solutions and state of the art video analytics delivers the scalability, flexibility, and affordability utility operators need to recognize and respond to safety, security, and operational threats in real time.

Superior All-Weather Performance
FLIR is the world's leading provider of thermal and visible light cameras. Whether in daylight or nighttime, across clear skies, or during extreme weather, FLIR's technology delivers extremely crisp, clear imaging with high contrast. FLIR's fixed, dome, bullet, mini bullet, and pan-tilt-zoom (PTZ) cameras provide the breadth of coverage that utilities operators need to monitor critical areas for inappropriate activity and operational safety.

Enterprise Video Management
FLIR's networked video recorders (NVRs) and video management system (VMS) solutions provide comprehensive video management from local facilities to centralized security operations centers. Video imaging, collection, index, storage, and retrieval integrates with other security technologies to create comprehensive situational awareness across the enterprise.

Remote Temperature Measurement
FLIR's thermal imaging cameras deliver temperature measurement as well as intrusion prevention. The same fixed thermal imaging cameras used for perimeter and critical asset security can also gather non-contact temperature measurements of electrical switchgear or transformers. Operators gain the ability to recognize imminent equipment failure sooner, without having to dispatch staff into the field.

Simultaneous Analog/Digital Operations
Total systems replacements are expensive and time consuming. FLIR connects older analog systems to the flexibility, performance, and value of IP-based surveillance infrastructure. Customers can integrate legacy equipment with digital systems as a hybrid solution now, then migrate to a more advanced, all-digital solution when time and budget permit.

SOLUTION COMPONENTS	
Cameras	
FC-ID and PT-Series thermal imagers. Radiometric cameras (A310F, A310 PT, FC-Series R)	Thermal imaging cameras that offer long range day-time and night time surveillance in all weather conditions. Radiometric cameras for temperature measurement of electrical/mechanical components for plant predictive maintenance applications, notably high voltage equipment and transformers in substations
FLIR Low light camera line	IP-based HD visible light surveillance that operate without requiring additional illumination to deliver highest levels of resolution, frame rate, color, contrast, and clarity
Video Management	
United VMS	Enterprise-grade video management using an open standards approach that helps integrate surveillance, audio, and other technologies into a centralized operating environment
Cameleon	Cameleon™ is a full-featured PSIM that allows you to view and control IP and analog video simultaneously with radar information through a single interface. Camera control is a snap thanks to drag-and-drop selection of cameras and mouse movement control. Cameleon scripting language and configurable desktop for system customization. Combine equipment from different manufacturers and link external access control and alarm systems to create an integrated security solution.
Other	
Video analytics	Best in Class Human Detection Analytics Temperature Measurement and Alarming
Integrations	Integration with gunshot detection systems, perimeter intrusion detection sensor technologies (ex: Senstar) or Access control (ex: Lenel)

For more information visit our website:
www.flir.com/security