

**Enabling safe,  
reliable and efficient energy**

Hikvision Power & Utilities Industry Solution

**HIKVISION**



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## What is Hikvision's solution for power & utilities?

Keeping sites secure. Keeping production up and running. Keeping staff safe. These are the three major concerns for managers in the power and utilities industry. And the whole aim of Hikvision's solution.

Today's global energy crisis presents new challenges, demanding these sites operate more effectively. Hikvision's end-to-end solution for power and utilities leverages world-leading cameras, thermal technologies, and intelligent analytics, as well as third-party integration.

We provide robust and reliable security monitoring while enabling efficient operations and timely maintenance. Read on to learn how this solution can safeguard your unique scenarios.

### Asset Security Management

- Intrusion Detection for Numerous Scenarios
- Early Stage Fire Prevention

### Safety Enhancement

- Operations Monitoring
- Remote Field Operation Supervision

### Production Continuity and Operational Efficiency

- Early Anomaly Detection with Industrial Thermal Technology
- AI-powered Analytics
- Accessible Third-party System Integration
- Intelligent Remote Inspection



## Security Solutions

Safeguarding Your Core Assets

### Intrusion Detection

Critical power sources have long suffered from threats of intrusion, theft and malice.

Hikvision provides advanced, intelligent products including optical and thermal cameras and radar units tailored for the users' needs. These tools protect the vulnerable power-generating components – from power plants and substations to electrical facilities.

### Fire Prevention for Remote Sites

Transmission lines often pass through mountainous areas and farmlands where wildfires can threaten reliable, uninterrupted service.

Here, Hikvision's Thermography Cameras have been used widely in detecting temperature anomalies and finding hot spots before a fire starts. Actions can be taken early to prevent a fire before the worst happens.



## Offshore Wind Farms

### Vessel verification & cable damage prevention

Wind farms face threats such as cable theft, vandalism, and an inherent vulnerability to ocean-going vessels. Additionally, constant variations in weather can make security monitoring even harder.

Here, Hikvision's Cooled Bi-Spectrum Sphere PTZ Cameras can be linked to AIS and radar systems, delivering instant visual check-ins and alerts on approaching vessels up to 32 km (17.28 nmi) away. These systems can also detect other approaching threats, mitigating damage to submarine cables.

Our solutions also provide system health monitoring. This means that failing components can be detected before they break down, assisting with the preventative maintenance of offshore wind turbines.

#### Cooled Bi-Spectrum Sphere PTZ

- Bi-Spectrum PTZ capabilities, cooled MWIR thermal detection and high-quality optical imaging
- Long-range detection in any light
- Precise distance-data on targets via laser rangefinder

## Power Grids

### Overhead transmission line protection

Where long-distance transmission is required but power and data resources are lacking, standalone 4G Solar-Powered Security Camera Setups excel. These kits provide continuous operation for up to 7 days – even in cloudy or rainy weather.

Based on AI analytics, solar camera setups enable security monitoring while deterring trespassers, reducing external risks and triggering alerts automatically. And no data or power cables are required for installation.

#### Solar-powered Security Camera Setup

- Large F1.0 aperture, captures colorful images even in darkness
- Battery and smart power management
- Built-in 4G (LTE-TDD/LTE-FDD/TD-SCDMA/EVDO)
- IP67, designed for outdoor use
- 80 W panel, fully charged within 1.5 - 4 days



## Solar Power Plants

### Perimeter protection with thermal cameras

In unguarded areas such as solar plants, thermal cameras boost environmental adaptability and accuracy to detect trespassers, day and night.

Also, fire prevention is a top concern for solar power farms. Weeds and trees growing around the farm can ignite photovoltaic modules, inverters, and other equipment and facilities. The fire can even destroy an entire electrical power plant.

Now with thermography technology, abnormally high temperatures can be detected before disaster strikes.



#### Thermographic Bullet Camera

#### Bi-Spectrum Thermal Positioning System

- 24/7 monitoring in any weather
- Early warning for temperature anomalies
- Wide spatial coverage with thermal speed domes or positioning systems
- High accuracy rates, leveraging both thermal and optical smoke detection technologies





# Operational Efficiency Solutions

## Protecting Operations against Costly Downtime

The failure of power plant assets and equipment, caused by a variety of factors, are among the primary causes of production downtime and quality concerns, greatly jeopardizing profitability.

By combining AI-powered imaging analytics, industrial thermography, and system integration with third-party systems like SCADA or DCS, Hikvision provides deeper understanding in operating conditions of critical assets and processes from several perspectives. Our systems help prevent costly downtime.



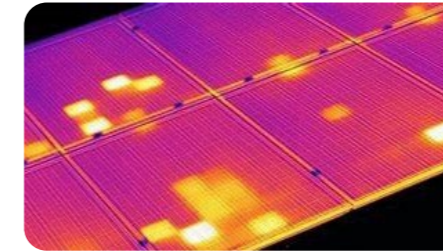
## Anomaly Detection with Industrial Thermal Technology

Hikvision's Thermography Products are perfect for monitoring temperatures from a safe distance at electrical installations. These cameras detect accurately with alarms for temperature anomalies, locating problems and enabling timely responses to risks before real failure occurs.



### Wind Turbines

Component inspections are conducted inside the turbines



### Solar Panels

Points of failure can be located on a solar panel to enable further diagnosis



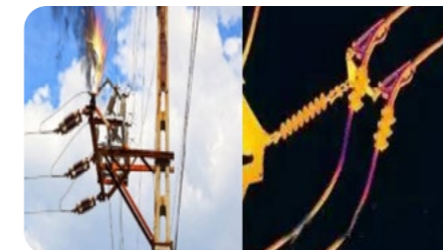
### Electrical Engines

Overheating detected, often on worn or aged components



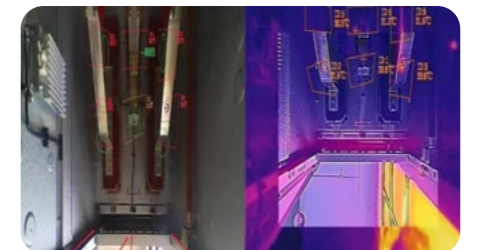
### Transformers

Elevated temperatures on the surface of each transformer are detected before failure occurs



### Transmission Lines

Temperature of wires, surge arresters, and insulators are monitored, preventing short circuits



### Distribution Panels

Failing fuses and switches are detected via cube cameras installed inside the cabinet

### Meet Hikvision's Thermography Camera Family for the Power Industry!

Thermographic Positioning Camera



Thermographic Cube Camera

Bi-spectrum Mini Positioning System

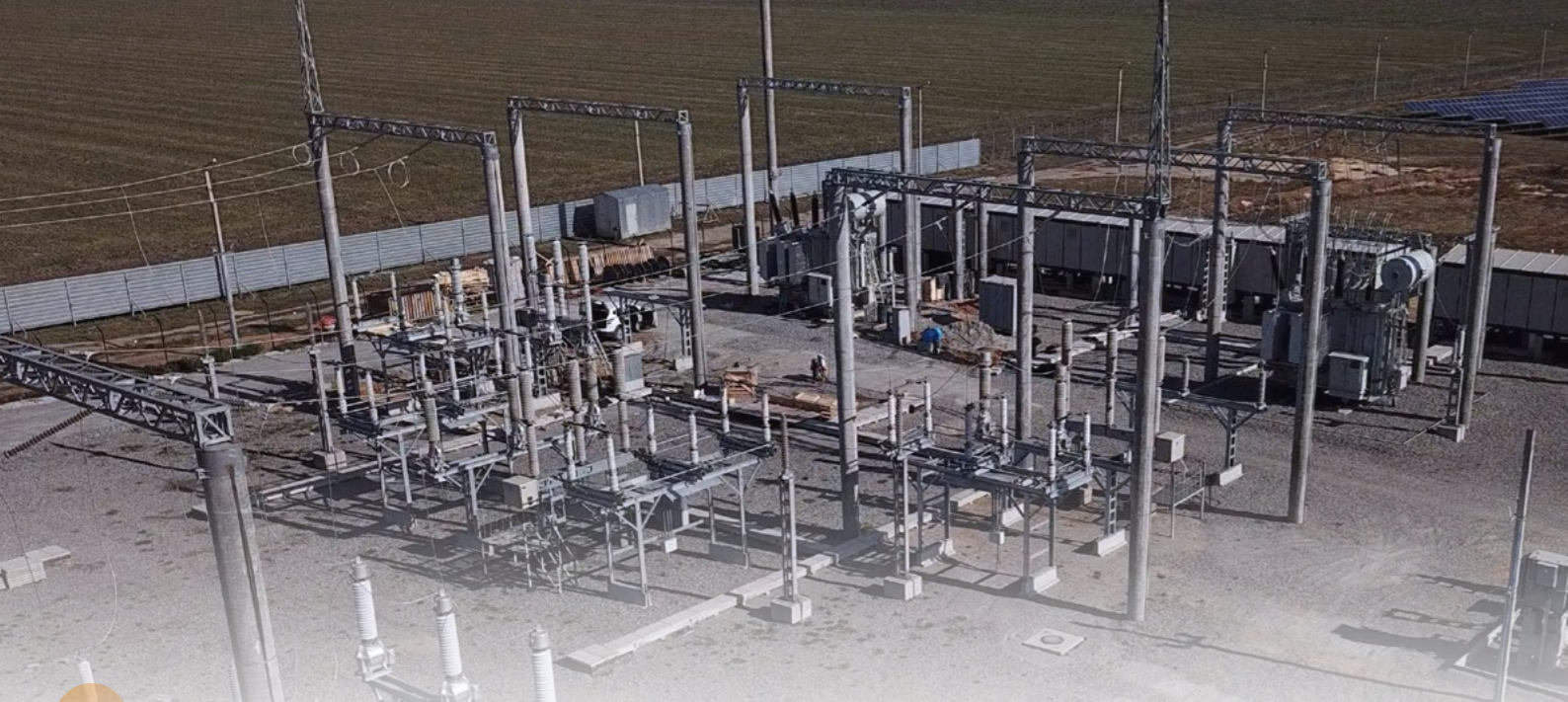


Handheld Thermography Camera



Thermographic Bullet Camera

- **Real-time monitoring 24/7 with sharp imaging**  
Crisp and clear thermal imaging with advanced features like automatic gain control, digital detail enhancement, and 3D digital noise reduction
- **Accurate temperature measurement**  
High accuracy – up to  $\pm 2^\circ\text{C}$  or  $\pm 2\%$
- **Heat distribution displayed clearly**  
A quick overview of observed targets
- **Remote inspection via software platforms**  
Smart temperature analysis on thermal imaging

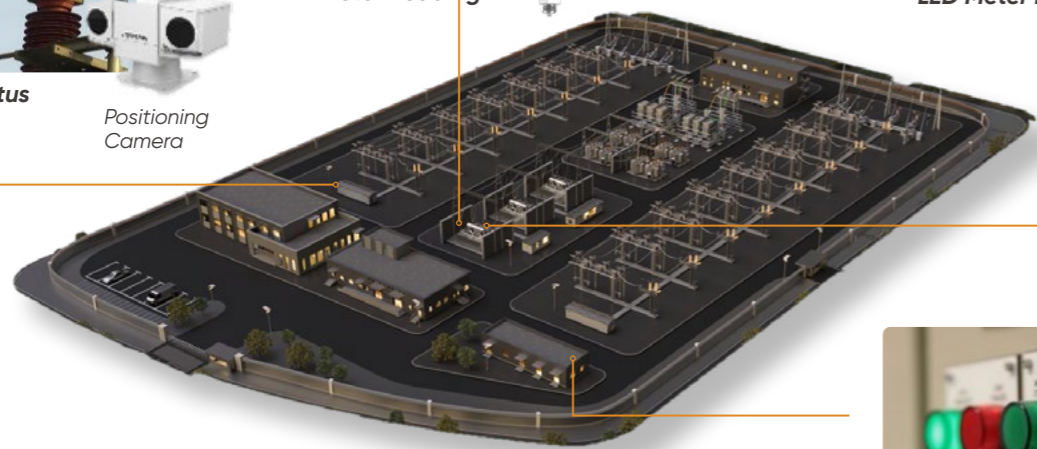


## AI-powered Imaging Analytics for Quick Asset Status Detection

With the rapid development of AIoT devices, critical data can be collected automatically to relay real-time asset status and/or defects, keeping operations up and running.

Hikvision's AI Training Platform provides integrated solutions including data calibration, algorithm training, hardware equipment, and more. For example, conveyor belt detection and PPE detection in substation can be created using the AI open platform, hassle-free.

### Securing Critical Operations in Substation

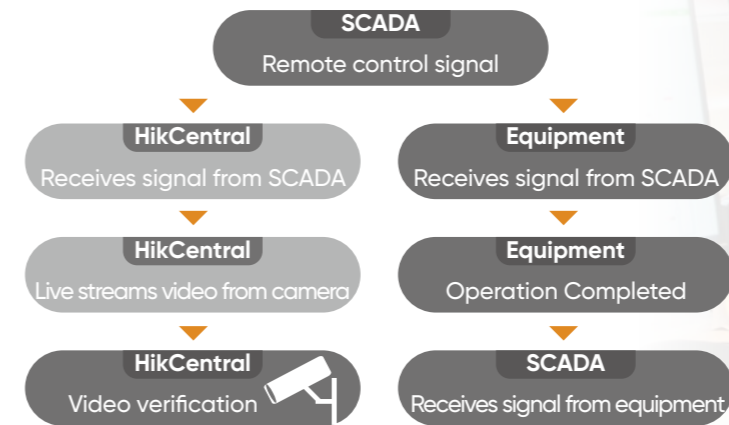


Cameras and edge devices are empowered with AI to identify status or defects of electrical assets. AI is advancing and playing a crucial role in reducing manpower and improving productivity.

## Accessible System Integration

Video monitoring systems can seamlessly integrate with SCADA through OpenAPI, providing visual validation of the equipment. When an alarm is generated, the HikCentral platform provides the related live stream for manual verification.

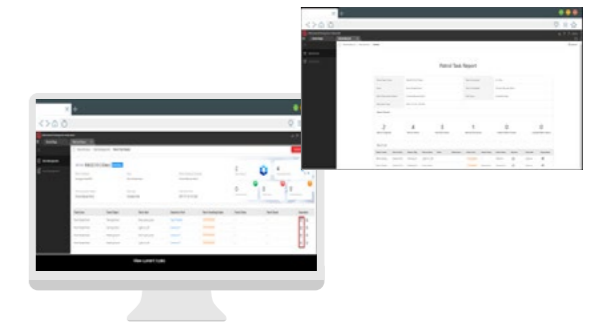
It's also possible to view power equipment-related videos remotely on a daily basis to ensure that equipment is operating well, reducing unnecessary on-site visits and travel costs.



## Moving Forward with Intelligent Inspections

As power grids are expected to grow by millions of kilometers in tomorrow's low-carbon energy systems, inspection work is moving forward to automation and intelligence.

Automating inspections with intelligent video gives operators robust data analysis and maximizes efficiency.



- **Integrated central management**  
Online planning, inspection, and real-time responses
- **Time and risk reduction**  
Remote check-ins on all sites, reducing manual inspection and unnecessary risks
- **Visualized data reports**  
Inspection processes and results get reported on the HikCentral Enterprise (HCE) platform, helping trace problems and assisting in decision-making

# Operation Maintenance Vehicle Management



- Mobile Recorders**
- Video recording & related data storage
  - Built-in GPS
  - G-Sensor – Collision detection



- Thermography PTZ Camera**
- Vehicle-roof installation & deployment
  - Electrical asset temperature monitoring



- Interior Mobile Cameras**
- On-board video monitoring



- Exterior Mobile Cameras**
- Front / side / rear views



- Fuel Level Sensors**
- Periodic measurement of fuel levels



- ADAS, BSD & DBA**
- Forward collision warning (FCW)
  - Lane departure warning (LDW)
  - Pedestrian collision warning (PCW)
  - Blind spot detection (BSD)
  - Driver behavior analysis (DBA)



- LCD Monitors**
- Embedded installation
  - **Panic Button**  
Emergency alerts
  - **Intercom**  
Two-way audio



**Asset inspection**

- Monitor real-time temperatures of critical components on the transmission line
- Control thermographic PTZ cameras via touchscreen inside the vehicle



**Vehicle tracking & monitoring**

- Monitor real-time locations and driving routes on the E-map
- Get live views and use two-way audio with the driver if needed



**Driving safety management**

- Intelligent collision warning
- Blind spot detection
- Driver behavior analysis



**Driving performance & operations analysis**

- Check the mileage on a vehicle
- Show a vehicle's online hours
- Display on-time rates of the driver



# Safety Solutions

## Ensuring Employee and Operational Safety

Safety is the first priority. Power and utilities companies bear the responsibility of protecting the well-being of employees.

With leading-edge technologies and products, power companies and utilities comply with HSE regulations and ensure on-going operations. The real-time detection and quick alerts delivered by video security system result in fast response to incidents, reducing risks and costs in all areas of operations.





## Health and Safety Protection

### PPE Detection

Requirements for Personal Protective Equipment (PPE) – the protective-wear that ensures worker safety – is a must in these industries. But enforcement can be a challenge across the worksite.

Remote PPE checks intelligently use video imaging to help managers ensure that employees are wearing helmets and other PPE, which could mean the difference between life and death in hazardous environments.



Fall Protection



Solitary Worker Detection



Safety Appliance Placement

### Remote field operation supervision

Field Operation Supervision plays a critical role in high risk operations such as maintenance, repairs, and all the various labor-intensive processes.

Our solution helps digitize the forms and checklists required in field operation supervision, so the workflows can be configured to tailor the application to any unique protocol. This streamlines the whole process. It also ensures operational safety and compliance by replacing manual supervision with 24/7 real-time monitoring and AI-powered analytics through existing video security system.

Moreover, imaging evidence and data can be leveraged to provide insights when assessing the qualifications of contractors.



#### Real-time detections

Monitoring and detection of non-compliance according to HSE guidelines



#### Notifications & alerts

Immediate notifications on any type of safety violations



#### Safety dashboards

An overview of the key metrics of safety compliance

# Visualizing Data for Better Insights

Hikvision's solution for power and utilities operations also features an all-inclusive dashboard to present perceived data in an intuitive, visualized way.



The dashboard equips operations teams with a bird's eye view and multidimensional analytics, displaying on-going site operations and real-time inspection status with detailed information and data indexing, which aids decision-making.

AR Live Interaction integrates video with data, which gives users a more immersive experience, improving situational awareness and timely emergency dispatch.



# Success Stories

## Helping safeguard South Africa's electricity supply

Hikvision is helping to ensure a safe and reliable supply of electricity across South Africa, with the deployment of a massive remote security monitoring solution, covering thousands of electricity substations and power transmission lines.

*"We have been so impressed with the Hikvision video security technology and the support we have received that we are continuing to roll out this Hikvision based security blueprint to many other power substation sites across South Africa. To date, over 1,000 electrical substations are protected by Hikvision systems – making a real difference to the provision of a reliable power service to all sections of industry and society across South Africa."*



**Roy Robertson,**  
Principal Director of  
Combined Private  
Investigations (CPI)

