**Enabling safe,
reliable and efficient energy**

Hikvision Power & Utilities Industry Solution

HIKVISION®

HIKVISION®

Headquarters
No.555 Qianmo Road, Binjiang District,
Hangzhou 310051, China
T +86-571-8807-5998
overseasbusiness@hikvision.com

in Hikvision   ⊙ hikvision   ✕ HikvisionHQ   f HikvisionHQ

◎ Hikvision_Global   ▶ Hikvision Corporate Channel

Hikvision Power &
Utilities Industry Solution

**Enabling safe, reliable
and efficient energy**

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

Production Continuity and Operational Efficiency

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

Safety Enhancement

- Operations Monitoring
- Remote Field Operation Supervision

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

NO NETWORK   NO ELECTRICITY

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

Fire detected by forest keeper

Intrusion Detection

Alarm System LED Screen

Fire Detection

Alarm Management

Security Dispatch

Fire alarm from the camera

Security Dispatch

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.
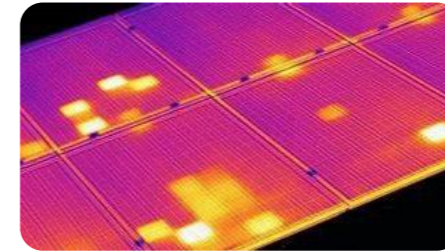
Anomaly Detection with Industrial Thermal Technology

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.
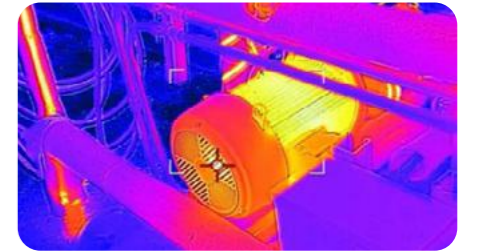
Wind Turbines
Component inspections are conducted inside the turbines

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

Bi-spectrum Mini Positioning System
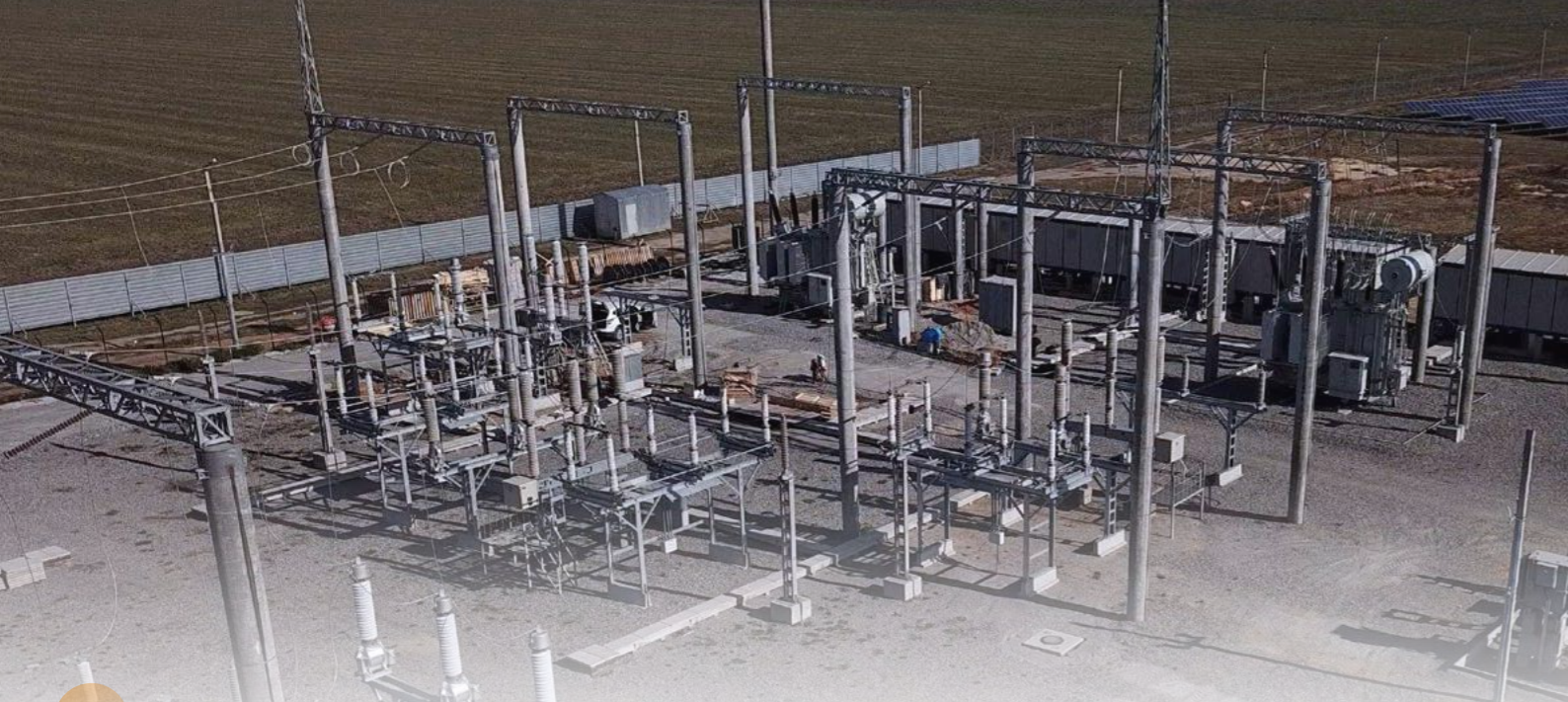
Thermographic Cube Camera

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 ± 2° C or ± 2%
- **Heat distribution displayed clearly**
  A quick overview of observed targets
- **Remote inspection via software platforms**
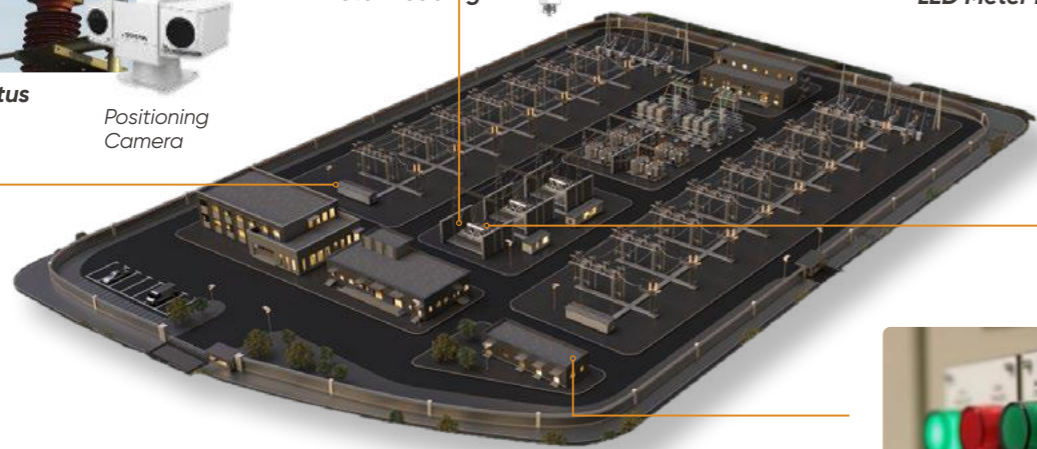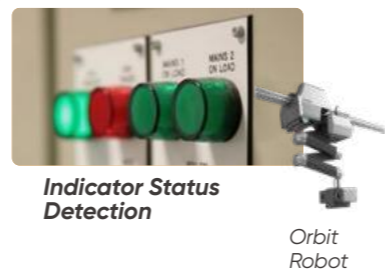 Smart temperature analysis on thermal imaging

![HIKVISION]

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

Meter Reading

Covert Camera

LED Meter Reading

Speed Dome

Isolator Status Detection

Positioning Camera
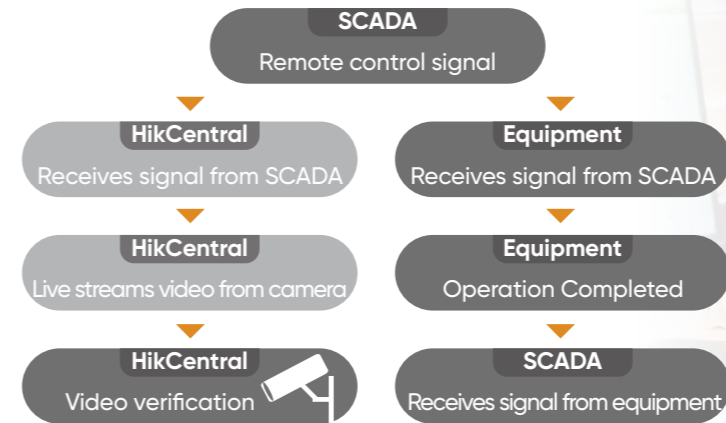
Indicator Status Detection

Orbit Robot

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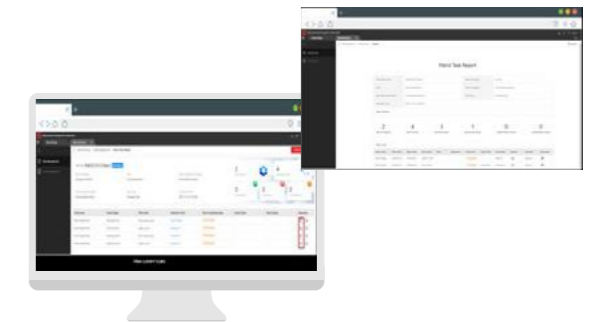
It's also possible to view power equipment-related videos remotely on a daily basis to ensure that equipment is operating well, reducing unnecessary on-site visits and travel costs.

SCADA — Remote control signal

HikCentral — Receives signal from SCADA
Equipment — Receives signal from SCADA

HikCentral — Live streams video from camera
Equipment — Operation Completed

HikCentral — Video verification
SCADA — Receives signal from equipment

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.

Protective helmet

Eye wear

VIS clothes

Protective boots

Dust mask

Ear plugs

Safety gloves

Fall Protection

Solitary Worker Detection

Safety Appliance Placement

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

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.
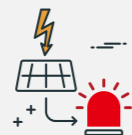
Our solution helps digitize the forms and checklists required in field operation supervision, so the workflows can be configured to tailor the application to any unique protocol. This streamlines the whole process. It also ensures operational safety and compliance by replacing manual supervision with 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.

Field Operation Manager

Body Camera **Portable PTZ**

· Deploy portable PTZ Domes on a site, or use body-worn cameras
· Follow HSE procedures and offer real-time recordings of field operations
· Take snapshots and video clips as evidence when completing each step

HSE Field Supervisor

HSE Manager

Monitoring Center
Remotely manage the planning, execution, and reporting of safety inspection tasks within a single system

Mobile Application
· Perform site safety inspection and respond quickly to threats
· Submit inspection records, including images and footage, to the HSE manager for further handling

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)**