

Touchless™ Monitoring Solutions to Improve Reliability and Safety at Remote Utility Substations

Touchless™ Substation Monitoring Solutions Designed For:

- Operations & Maintenance
- Safety & Security

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Touchless™ Monitoring for Critical Substation Assets

The electric utility industry is in the midst of a transformation. As demand for electricity continues to grow, utilities are investing in new infrastructure, modernizing existing equipment, and implementing new technologies that provide greater visibility and control of the entire transmission & distribution network.

Touchless™ Monitoring solutions from Systems With Intelligence provide utilities with real-time, continuous monitoring of remote substations and their critical, high-value assets. By leveraging the complete range of Intelligent Sensors and Visualization Software, the Operations & Maintenance teams can improve reliability and uptime, reduce the cost of maintenance, and enhance safety for workers and surrounding communities.

Key Substation Challenges

- Growing demand for electricity
- Aging transmission & distribution infrastructure
- More frequent and severe weather events
- Shortage of skilled technical labor

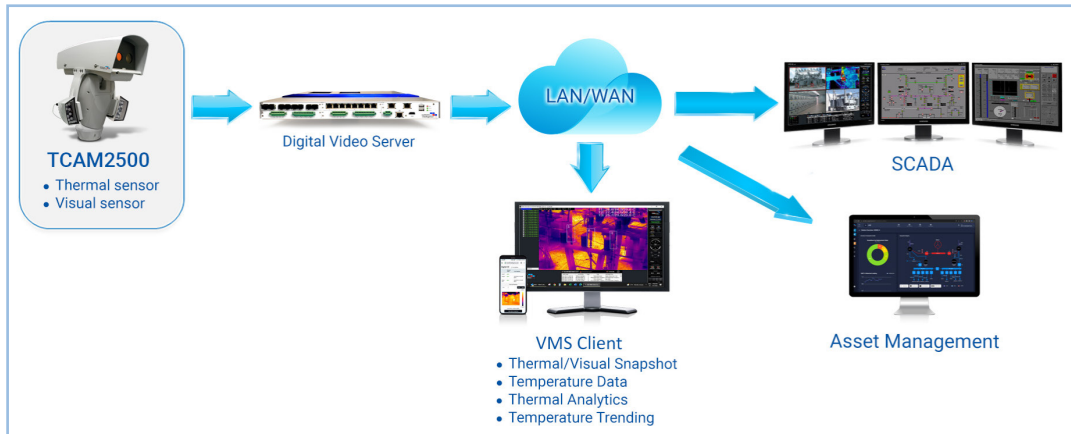
Key Solution Requirements

- Remote monitoring of critical, high-value assets
- Real-time video or thermal snapshots of equipment
- High reliability and performance
- Secure connection to SCADA or visualization software
- Integration with third-party sensors
- Immune to high levels of EMI, voltage surges, and interrupts

Solutions for Substation Monitoring

Substations are vital to ensuring the reliability, safety, and efficiency of the electric power system.

Visual and thermal monitoring solutions work alongside existing P&C sensors to provide a complete and real-time view of equipment in case of alarms, faults, or failures. With remote monitoring, technicians can immediately respond to alarms, pinpoint the issue, and prioritize a repair before sending a crew to the site.



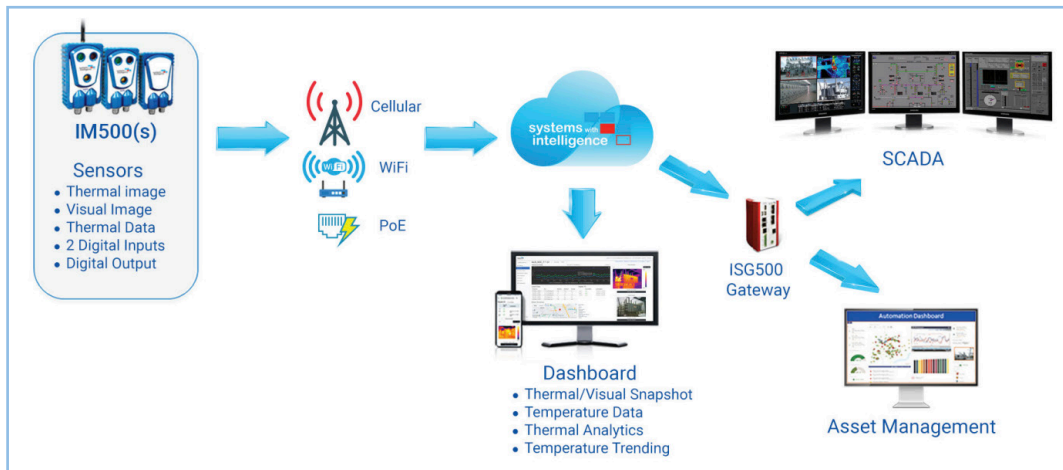
Solution Overview

- **Multiple Thermal & Visual Sensors deployed throughout the substation**
 - ◇ 24/7 coverage of critical assets and components
 - ◇ Detect hotspots and identify potential failures before they occur
- **Edge processing digital video server**
 - ◇ Sensors connected directly to the edge server to reduce bandwidth and minimize the effects of network interruptions
- **Secure connection to Operational Technology network**
 - ◇ Send alarms and data to SCADA
- **Video Management System**
 - ◇ Visualize and record data and video from multiple sensors at a centralized location
- **Integration with third-party SCADA systems**
 - ◇ Connect using DNP3, MODBUS or IEC 61850 protocols

Solutions for Operations & Maintenance

Traditional physical inspections and truck rolls are time-consuming and expensive.

Touchless™ Substation Monitoring solutions provide continuous, 24/7 coverage of remote sites, reducing the need for manual inspections. By taking a proactive approach to asset monitoring, utilities can transition away from scheduled maintenance and shift toward a Condition-Based Maintenance strategy that improves reliability and mitigates the risk of catastrophic failure.



Solution Overview

- **Multiple Visual & thermal monitoring sensors deployed throughout the substation**
 - ◇ 24/7 coverage of substation assets and components
 - ◇ Detect hotspots and identify potential failures before they occur
- **Secure connection to the SWI Cloud**
 - ◇ Connect via existing carrier-grade networks or in-house communication network
- **Visualization Software**
 - ◇ Easily integrate data from multiple sensors and sources into a single pane of glass

Solutions for Safety & Security Monitoring

Critical infrastructure presents an attractive target for vandals and other malicious actors. Damage or disruption to these facilities can result in downtime and put workers at risk of injury.

Continuous monitoring allows workers to spend less time on-site in hazardous environments. Further, visual sensors can be deployed for advanced safety and security monitoring, allowing operators to automatically detect potential security threats and take steps to resolve the issue remotely.



Solution Overview

- **Targeted Thermal & Visual sensors**
 - ◇ Thermal monitoring detects intruders in all lighting conditions
 - ◇ Video feed of substation and access points
- **Secure connection to the Information Technology network**
 - ◇ Connect via existing carrier-grade networks or in-house communication network
- **Visualization Software**
 - ◇ Easily integrate data from multiple sensors and sources into a single pane of glass

System With Intelligence Products

Intelligent Sensors

Utility-grade Thermal and Visual Sensors from Systems With Intelligence enable remote monitoring of high-value substation assets, allowing utilities to transition away from scheduled maintenance and toward a Condition-Based Maintenance strategy.

Choosing the right sensor depends on the application, the required level of performance, and the available budget.



TCAM2500 Visual & Thermal Monitoring System

The TCAM2500 Visual & Thermal Monitoring System is a comprehensive substation monitoring solution that provides continuous, real-time coverage of critical assets. Automated temperature monitoring of multiple assets allows operators to anticipate, detect, and rapidly respond to faults, while visual sensors reduce the need for manual inspections and truck rolls.

Designed for

Comprehensive coverage and better performance at large substations with numerous assets

Key Features

- Dual visual and thermal sensors for real-time remote monitoring
- 36x zoom to remotely inspect assets, read gauges, and assess damage
- Programmable pan and tilt to monitor multiple assets with a single sensor
- IP66 rated and utility-grade immunity to electromagnetic interference, voltage surges, and interrupts
- Storage of temperature readings for ongoing trend analysis
- Utility standard protocols and integrations

IM500 IoT Module

The IM500 IoT Module is a simple, cost-effective, and easy-to-use visual & thermal sensor that can be deployed out of the box to monitor substation assets. The on-board communications connects directly to the IoT cloud to transmit data without accessing the utility's internal network.



Designed for

Targeted and cost-effective coverage at small and mid-sized remote substations

Key Features

- Cost-effective visual and thermal sensor in a compact and versatile form factor
- Secure cellular, WiFi or PoE connection to IoT cloud
- IP67 rated and immune to EMI, ESD, and voltage surges and interrupts
- I/O connections for external sensors
- Easy-to-use cloud-based dashboard

Visualization Software

Systems With Intelligence offers a range of innovative visualization software solutions that have been designed and built around the needs of electric utilities. Choosing the right visualization software will depend on the type of data that will be captured and the application it will be used for.

Compatible with any camera
Connect any stream source such as IP camera or DVS to the platform

AI Cloud Analytics
Utilize cloud processing to cost-effectively deploy intelligent video analytics add-ons across all IP cameras

Push Technology
Simplify camera connection while maintaining a high degree of cyber security using the push module for plug and play connection

Scalable

Flexible

Secure

Management

Simple Setup

Intelligent

Unify multi-site surveillance
Remotely centralize multi-site surveillance viewing and administration. Receive real-time system health status and sensor alerts with built-in remote troubleshooting

Public and Private Cloud
Customize pure cloud hosting on the SWI Cloud or private cloud infrastructure

Multi-tier Administration
Rich remote administration tools enables management of all enterprise video security aspects including partitioning access to authorized user viewing and features

VMS2000 Video Management Software

The VMS2000 Video Management Software allows for central and remote management of the monitoring system. It can connect to multiple Digital Video Servers at a single location or across multiple sites and can monitor hundreds of visual and thermal sensors.

Designed for

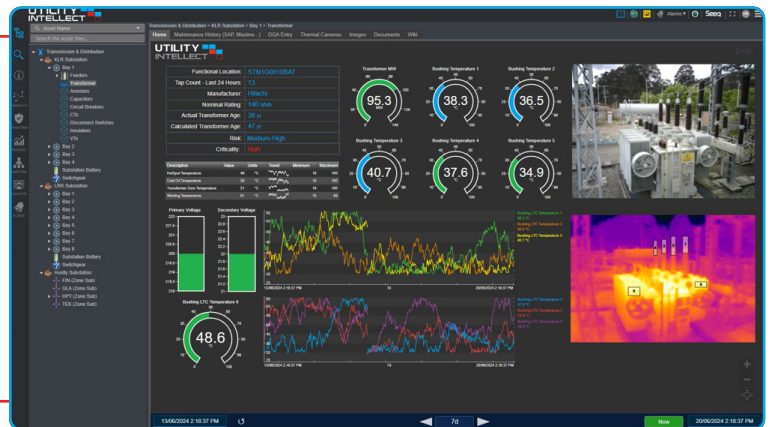
Centralized monitoring and alarm management of multiple remote sites and sensors

Key Features

- Live real-time video viewing and playback
- Remote control over settings, system parameters, and cameras
- Simultaneous view of up to 16 sensors
- Automated alarm and event notification
- Easy-to-integrate into existing system

Utility Intellect™

Utility Intellect™ provides fully customizable Enterprise Visualization of the entire power system. By integrating with standard utility systems, databases, and technologies, Utility Intellect™ provides a single pane of glass view for all data and allows customers to get the most out of their asset monitoring system.



Designed for

Utilities collecting and using data from various third-party sensors, data sources, technologies, and sites

Key Features

- Fully customizable and configurable dashboard with role-based views
- Integration with standard utility systems and databases
- Simple user interface with clear visualizations and reporting
- GIS interface for a system-level view of all assets on the grid



Cloud VMS

Designed for

Real-time video and event monitoring across multiple sites using any device

Key Features

- Available on any computer or mobile device
- Web-based video and admin portal
- Advanced cloud analytics alongside common camera-side analytics
- Multi-tier administration to manage all video security aspects



Benefits of Touchless™ Substation Monitoring for Operations & Maintenance Teams

- Early detection of issues before failure
- Greater reliability and uptime
- Reduced reliance on truck rolls and manual inspections
- Lower maintenance costs and improved asset performance
- Fast and easy to install for immediate data reporting
- Better allocation of technical resources



Deploying Touchless™ Monitoring Solutions

Touchless™ Monitoring solutions from Systems With Intelligence are designed and built for the electric utility industry. The solutions are easy to procure, deploy, configure, and use, allowing the Operations & Maintenance team to quickly gain access to data and improve operations.

Key Project Considerations

During the planning phase, the Systems With Intelligence team will help to determine the project requirements and identify the right solution:

- The number and position of sensors
- The location and type of mounting equipment
- The required power for the sensors
- Communications and networking requirements
- The type and number of servers for each location

About Systems With Intelligence

Systems With Intelligence Inc. is a global provider of Touchless™ Monitoring Solutions for electric utility applications. SWI systems collect and analyze the data that allows utilities to increase safety and reliability while reducing operating costs. Coupling thermal monitoring and visual imaging technology with advanced analytic algorithms, Systems With Intelligence solutions automate remote site monitoring.

Systems With Intelligence products are engineered to operate in the harshest environments, withstand high levels of electromagnetic interference, static discharge and voltage surges found in industrial applications to ensure uninterrupted operation. Providing a monitoring system that operates reliably and connects seamlessly allows customers to remain focused on their operations.

For more information about Utility Grade Video Automation Solutions for Substations please contact:

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