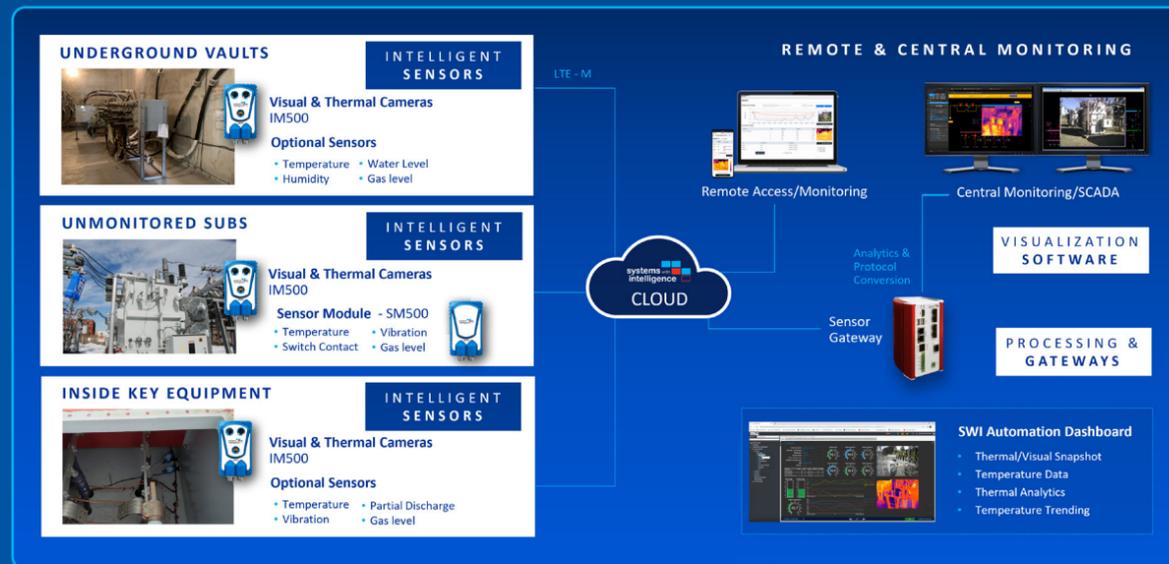


SUBSTATION ARCHITECTURE



IOT CLOUD ARCHITECTURE



COMPANY OVERVIEW

Systems With Intelligence Inc. is a global provider of Touchless™ monitoring solutions for industrial applications in harsh environments. Our systems improve reliability, safety and efficiency of operations with real time visualization and inspection of remote sites. The Systems With Intelligence management team is comprised of professionals with extensive experience in applying leading edge technologies in the electric utility industry. Our background in substation automation, information technology and utility operations makes us uniquely positioned to deliver effective intelligent monitoring solutions for electric utilities.

The Systems With Intelligence solutions are designed and manufactured to the highest substation standards demanded by customers in electric power, oil and gas, and renewable energy for maximum performance and reliability. The solutions provide visual and thermal asset monitoring with automated notifications of triggered events. Infrared technology allows continuous thermal condition monitoring of assets to detect potential problems before failures occur.

INTELLIGENT MONITORING SOLUTIONS

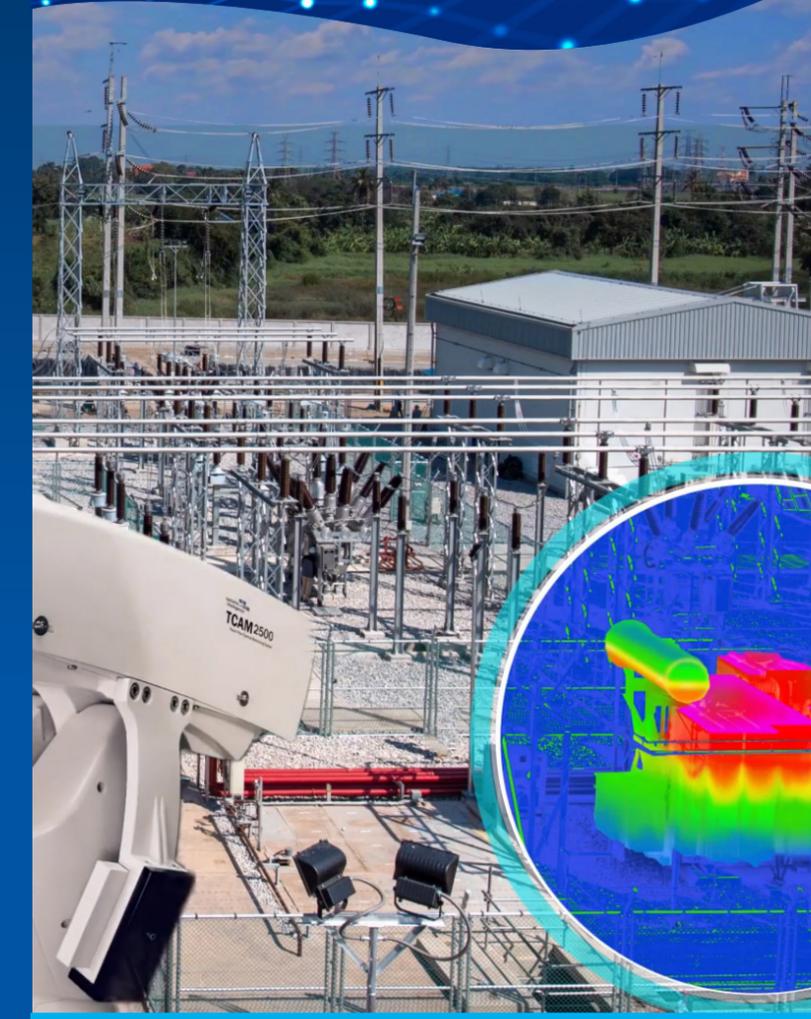
- Automated asset monitoring for Condition Based Maintenance
- IEC 61850-3 and IEEE 1613 rated for Electric Power Applications
- Integration into SCADA/GIS and asset management systems

Systems With Intelligence Inc.,
6889 Rexwood Road, Unit #9,
Mississauga, Ontario, L4V 1R2 Canada
Phone: +1-289-562-0126



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TOUCHLESS™ MONITORING SOLUTIONS



The Systems With Intelligence Value DESIGNED FOR ELECTRIC POWER APPLICATIONS

SWI solutions are designed to protect and prolong the life of electric utility assets in substation environments. Our systems combine thermal and visual imaging to monitor remote locations and increase efficiency, reliability and safety of operations. Remote inspections provide real-time visualization of sites allowing utilities to save the time and cost of truck rolls.



How We Provide It:

AUTOMATED VIDEO INSPECTIONS AND ASSET MONITORING

Video automation takes the manual work out of the monitoring process. Intelligent analytics monitor and detect fault conditions and sends alarms when operator attention is required. Processing at the network edge increases speed and reliability while reducing strain on the network.

Analytics:

- Absolute and differential thermal temperature measurement
- Temperature rate of change

SUBSTATION RATED HARDWARE

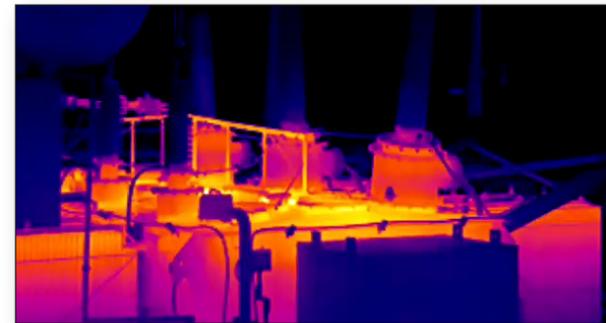
SWI equipment is engineered to provide highly reliable and maintenance free operation in substation environments. The substation rated hardware is designed and tested to the IEC 61850-3 and IEEE 1613 standards to withstand high levels of EMI, ESD and voltage surges/interrupts with -40°C to +85°C operating temperature.

SCADA INTEGRATION

Data and alarms are sent directly to SCADA/GIS and Asset Management applications by DNP3 protocol for further analysis and storage. Data can be visualized in real-time and stored in a database for further trending analysis and health indexing by asset management applications. Operators will have thermal and video information available in a familiar HMI for faster response to finding and fixing issues in the grid.

THERMAL SUBSTATION ASSET MONITORING

Excessive heat generated by substation equipment is an indicator of an impending fault. SWI automated monitoring systems provide continuous real-time thermal information on substation assets. Each thermal camera can be programmed to scan and analyze hundreds of points in the substation.



Thermal monitoring can uncover impending faults in:

- Transformers, cooling systems, breakers
- Insulators, arrestors, switches
- Connection points

UNDERGROUND SYSTEM MONITORING

Underground systems are more difficult to monitor due to their location and lack of power and communication infrastructure. SWI provides a system to monitor and inspect the condition of underground cables, connections and transformers in underground vaults.

PRODUCTS

MV1000

MOBILE MONITORING TRAILER

The SWI mobile trailer offers the same reliability and performance in a portable system. It can be setup to temporarily monitor trouble sites or sites under construction/renovation. The system communicates wirelessly over a cellular network and has a variety of power options. It supports up to three visual, thermal and PTZ camera options.



MV1000

Mobile Monitoring Trailer

TCAM2000

SUBSTATION THERMAL CAMERA



- Monitor asset operating temperature
- Cycle through preset points
- Analytics for absolute, relative, rate of temperature change
- Integrate alarms into SCADA
- Fixed or Pan/Tilt base

TCAM2500

SUBSTATION VISUAL PLUS THERMAL CAMERA



- Thermal plus visual day/night zoom camera
- Preset monitoring points
- Thermal and visual analytics
- Integrate alarms into SCADA
- Track temperature trends

IPCAM2000

SUBSTATION IP CAMERA



- Utility grade IP camera
- Fiber optic network connectivity
- High Definition image resolution
- Day/Night operation
- Power over Ethernet

IPTZ1016

IP66 INDOOR/OUTDOOR IP PTZ CAMERA



- 2MP, 38x Zoom
- High Definition 1080p 60fps / 30fps
- Onboard 250m Infrared Illuminator
- IP66 rated, -40°C to +60°C Operating Temperature
- Digital Noise Reduction and Image Stabilization

DVS2500

SUBSTATION HARDENED DIGITAL VIDEO SERVER



- Dual redundant power supplies
- Up to 16 Fixed, PTZ and Thermal IP cameras
- Serial, USB and Digital I/O interfaces

SWI Servers and Gateways are IEC 61850-3 and IEEE1613 substation rated to provide built in immunity to the effects of EMI, ESD and power fluctuations. The units have standard solid state drives and flexible network interfaces for reliable low bandwidth connections.

DVS500

COMPACT SUBSTATION DIGITAL VIDEO SERVER



- Up to 4 Fixed, PTZ and Thermal IP cameras
- Dual power input, 20-60VDC power source
- USB and Digital I/O interfaces

IM500

IOT MODULE



- Thermal plus visual day/night sensor
- Cellular connectivity
- Dashboard and analytics
- Integrate alarms into SCADA
- Track temperature trends

SM500

SENSOR MODULE



- Digital I/O, RS485 Modbus
- Cellular connectivity
- Dashboard and analytics
- Integrate alarms into SCADA
- Trend data points

ISG500

SUBSTATION RATED SENSOR GATEWAY



- Manages up to 10000 data points
- Retrieves data from SWI Cloud
- Connects to SCADA /GIS and asset management systems

IoT DASHBOARD



- GPS location of devices
- Thermal and visual snapshots
- Historical data and analytics
- Status and alarms
- Real time temperature readings

VMS2000

VIDEO MANAGEMENT SOFTWARE



SCADA Integrated Video System



Hot Spot Thermal Monitoring

The VMS software manages live video viewing, remote camera control, video data recording, video and thermal analytics, alarm and event notification.