

CASE STUDY:

VERIFYING SWITCHING OPERATIONS - HOW OZARKS ELECTRIC COOPERATIVE WENT FROM HOURS TO MINUTES WITH REMOTE MONITORING

Ozarks Electric Cooperative is a non-profit, member-owned cooperative that provides power to more than 86,000 customers in Northwest Arkansas and Northeast Oklahoma.

The cooperative operates a 69 kV loop that connects distribution substations. Motor-operated switches allow the loop to be reconfigured to connect to different sources, respond to load problems, or restore power after outages.

The highly manual process often took upwards of three hours to verify that the switches were fully opened or closed. Not only did this increase the cost of reconfiguring the loop, but it also reduced the cooperative's ability to react quickly to changing grid conditions.

In response to these challenges, Ozarks Electric Cooperative needed a solution to verify switching operations and ensure switches were fully opened or closed without a manual inspection.

THE REQUIREMENTS

During the planning phase, the Automated Systems team identified several technical and strategic requirements.

- Reduce time and cost of switching operations
- Limit need for manual verification and inspection of switches
- Operate through existing SCADA
- Determine open/closed positions of switches with high-resolution sensor
- Partner with experienced and knowledgeable vendor

THE ENGAGEMENT

Ozarks Electric Cooperative was already familiar with Systems With Intelligence and had implemented visual sensors on a previous intrusion detection project.

After researching other solutions, the cooperative chose Systems With Intelligence visual sensors to verify switching operations.

Systems With Intelligence designed and delivered the sensors on time despite global supply chain challenges. The visual sensor has a high-definition lens with 38 times zoom capability that provides a detailed view of the switch operation. The sensor can be programmed to automatically scan the areas of interest in the substation or operated manually from the control center. The team provided initial installation guidance before the cooperative's in-house team took over the deployment and configuration of subsequent sites.

Ozarks Electric Cooperative was impressed with the resolution and capabilities of the visual cameras. They valued the team's experience and understanding of the unique challenges of working within a substation.

THE BENEFITS

Switching operations can now be conducted in as little as 10 minutes. Visual sensors allow the cooperative to verify the position of the switches remotely without the need for a manual inspection.

The sensors provided unexpected benefits as well. Soon after the first sensor was deployed, a lightning strike on a regulator started a large fire. The sensors not only allowed the cooperative to monitor the fire in real time but also provided video footage for insurance purposes and safety training following the incident.



Switch operation can be verified with the visual sensor to confirm proper opening and closure.



The high-power zoom can be used to inspect switch contacts and connections.



The visual and thermal sensors can be installed close to high-voltage lines due to their high levels of immunity to electromagnetic interference.

THE RESULTS

Sensors have now been widely deployed to substations with motor-operated switches. Future installations are planned at substations without motor-operated switches to provide 24/7 monitoring and improve visibility across the entire grid.

Going forward, Ozarks Electric Cooperative is also testing the capabilities of thermal sensors for asset monitoring applications.

By reducing the cost and time required to reconfigure the loop, Ozarks Electric Cooperative can effectively respond to changing conditions and deliver reliable power to customers.

About Systems With Intelligence Inc.

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 focussed on their operations.

The Systems With Intelligence™ management and technical teams are comprised of professionals with extensive experience in advanced technology for mission critical applications in harsh environments. With domain expertise in substation and industrial automation, communications and utility operations our team is uniquely positioned to deliver effective and intelligent monitoring solutions.