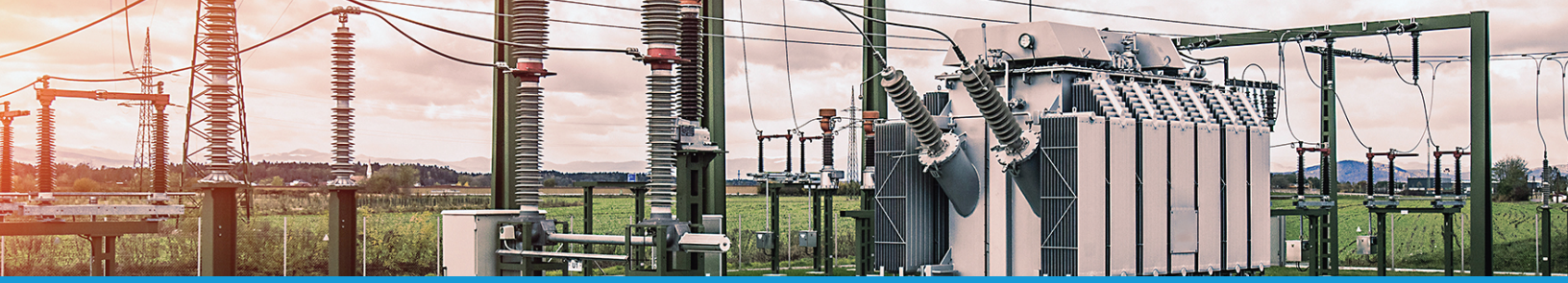

SUCCESS STORY

REDUCING REACTIVE REPAIRS

The electrical utility spends millions of dollars on transformer maintenance each year. Much of this expense results from emergency responses to restore service due to failures in the field.

This Dianomic client is one of the largest community-owned electric utility companies in the United States, servicing nearly 500,000 customers in the southeastern United States. It operates five generating plants, about 750 circuit miles of transmission lines and nearly 7,000 miles of distribution lines. It also purchases energy from several solar sites located across its service territory, including one producer with more than 200,000 solar panels.

To manage the edge data, the utility deployed FogLAMP software supported by Dianomic Systems. FogLAMP is an open, industry-wide solution for monitoring the Internet of Things that collects data from sensors, processes it at the edge and delivers it to data systems or the cloud. FogLAMP's open-source architecture provides a rapid, low-cost way to achieve complete visibility into information needed by business to operate more reliably and productively.

Reducing Reactive Repairs

The electrical utility spends millions of dollars on transformer maintenance each year. Much of this expense results from emergency responses to restore service due to failures in the field. They wanted to reduce these reactionary expenses and move to a proactive model where they could forecast systems requiring maintenance before failures actually occur. This will allow them to decrease outages while saving money by using their maintenance crews more effectively.

Proactive maintenance requires a great deal of instrumentation and trend data on each transformer. This information needs to be available to multiple organizations across the enterprise for planning, analytics, monitoring and scheduling.

FogLAMP Enables Predictive Maintenance

The company decided that IIoT technology offered the best solution for this project. While they considered leveraging existing SCADA systems, they determined the cost to scale the hardware and licenses for these systems would be excessive. Further, security and NERC CIP regulatory concerns made it challenging to provide broad access to data residing in SCADA. Because of this, they decided to focus their SCADA systems on operation and controls and to use IIoT for condition-based monitoring and maintenance.

The company deployed Dynamic Ratings B100 Electronic Temperature Monitors at their substations. These measure power transformer top oil temperature and LTC temperatures and calculate winding temperatures. In additional, they made use of existing fan sensors to monitor ambient temperature.

DIANOMIC

Simplify IoT Data

Dianomic Systems
3723 Haven Avenue, Suite 118
Menlo Park CA 94022
T: 650.587.8787
E: info@dianoomic.com
www.dianomic.com

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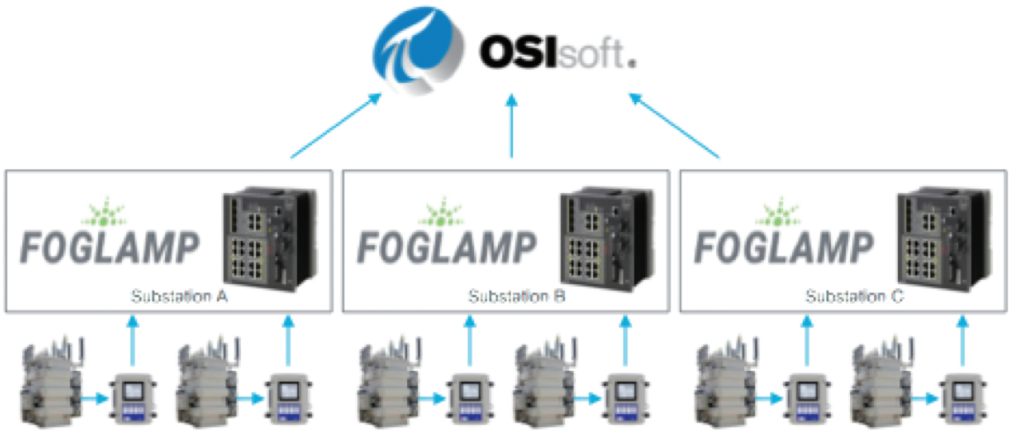

Achieve complete visibility into information needed by businesses to operate

The implementation has proven to be highly cost effective. FogLAMP's flexibility enabled the company to leverage all its existing edge and back-end systems. Other than sensors, no new hardware was required for the deployment.

FogLAMP collects data from multiple B100s at the substation. It reliably delivers the data to OSIsoft PI for long-term trending, visualization, advanced analytics and event detection

Because of FogLAMP's open nature, the company was able to deploy it on their existing Cisco 4000 integrated services routers, saving the expense of additional ruggedized hardware.

Lower Costs and Fewer Outages

FogLAMP-based monitoring has enabled the utility to move to a much more proactive maintenance strategy. From OSIsoft PI, they can now detect the warning signs of transformer core, coil and LTC switch failures. Further, PI analytics can calculate cumulative thermal aging of the transformer to forecast life expectancy. Crews can be scheduled to perform maintenance before a failure occurs, resulting in much lower costs and less downtime.

The implementation has proven to be highly cost effective. FogLAMP's flexibility enabled the company to leverage all its existing edge and back-end systems. Other than sensors, no new hardware was required for the deployment.

The utility plans to leverage FogLAMP's flexibility to support additional IIoT use cases for field data management, integrating additional sensors and edge-based analytics to identify service requirements. Using Apache Kafka, FogLAMP will integrate with Oracle ERP to automatically generate maintenance work orders.

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