FEBRUARY 2021 | CASE STUDY

We Energies Deploys Remote Monitoring to Keep an Eye on Transformer Bushings

Background

With over 1.1 million electric power customers in Wisconsin and Michigan, We Energies has a huge responsibility to keep the power on. Given the size of territory, one of the challenges We Energies faces is maintaining its critical assets and prioritizing maintenance. At one of its key industrial customers, We Energies needed to keep an eye on a transformer bushing that had a suspected oil leak. We Energies was looking for a non-invasive way to monitor the condition of the bushing until they could schedule an outage to replace it. Knowing the value of thermal imaging technology but with a lot of ground to cover and assets to inspect, We Energies was looking for a technology that would be easy to install and that would allow operators to perform thermal inspections remotely.

The Solution

The IM500 is a programmable IoT module that scans key points on critical assets and doesn't require an outage to install it. The IM500 includes a thermal sensor and adds an additional visual sensor to provide the user a dual view of the asset. With built in cellular connectivity and low power requirements, the IM500 is easy to install and is up and running in minutes. It has a solar power option and connects automatically to the Systems With Intelligence cloud that stores and processes the collected temperature data. The IM500 has thermal analytics designed for electric power applications allowing comparative measurements on 3-phase systems and automated alarms to notify operators when temperatures exceed the defined limits.

Figure 1 *– IM500 thermal plus visual sensor module can be installed close to high power.*

The Project

The bushing in question sat on a 90MVA, 138/13 kV transformer. The IM500 was mounted with the transformer bushings in its' line of site. Temperature monitoring boxes were configured around each of the bushings so specific points could be monitored. Comparative analytics were configured since the system was balanced and the bushings should be running at the same temperatures. The IM500 was configured to take temperature measurement every 15 minutes to give a clear picture of temperature changes over time.

IM500

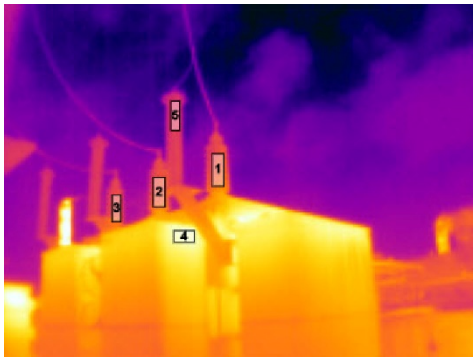

Figure 2 *- Thermal snapshot of the transformer with boxes around the areas of interest where temperature will be measured.*

Figure 3 *- Visual image of the transformer recorded with the IM500 daily snapshot.*

The Outcome

We Energies was able to monitor the problem bushing and document the condition so the customer could schedule an outage to perform the maintenance. Over the course of the monitor period the divergent temperature of the problem bushing was graphed, and the system generated alarms on two occasion when the differential temperature reached exceeded the set threshold.

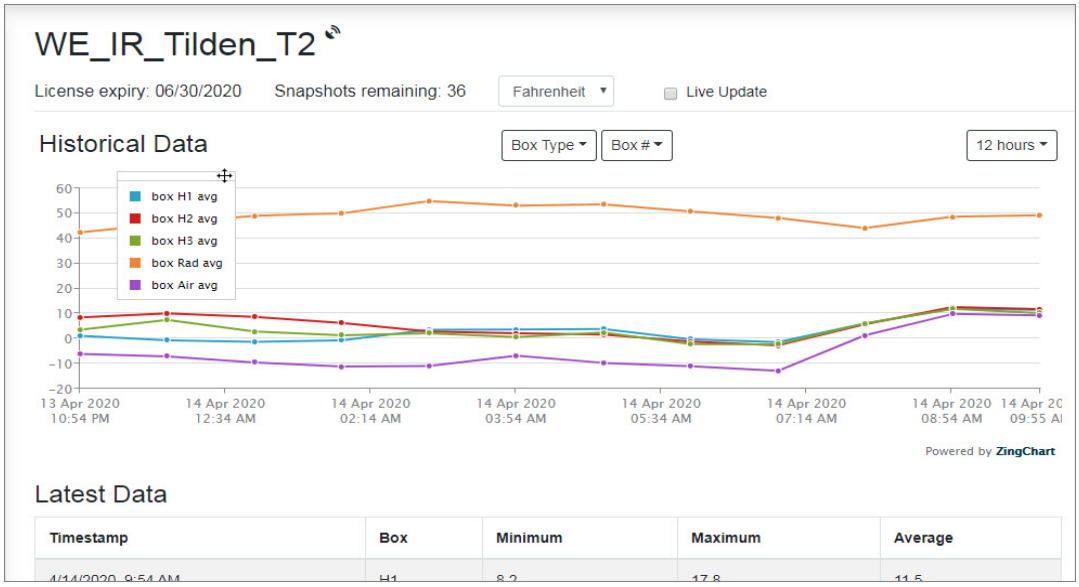

Figure 4 *- Comprehensive dashboard provides temperature graphing, alarms, and visualization information.*

Summary

With the IM500 and the SWI Cloud interface, We Energies was able to remotely track the condition of the transformer and bushings 24/7 and record all the temperature data until the repair could be performed. The IM500 proved to be a good solution that installed quickly and easily due to its small and lightweight form factor, low voltage requirements and built-in communications. Continuous thermal monitoring ultimately improves utility safety and reliability while reducing operating costs.

For more information contact us at info@systemswithintelligence.com, or visit our Website at www.systemswithintelligence.com.

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