

BushingGard Predicts Generator Step-Up Transformer Failure



Customer

Major Midwestern Investor- Owned Utility Generating Plant

Situation

The customer was concerned about thermal problems its Generator Step-Up Transformer had previously experienced.

Customer's Need

The utility needed a way to continuously monitor the health of its Generator Step-Up Transformer.

Eaton's Solution

Eaton offered the [BushingGard™](#) monitoring relay, a proven predictive diagnostic tool in utility operations. It is compact, can monitor the transformer's condition, accepts inputs from other sensors, and can perform Partial Discharge Analysis. Eaton also offered around the clock monitoring of the device.

To learn more about utility solutions contact:

Eaton's electrical business
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Story

The utility's BushingGard™ purchase was almost perfectly timed. The first phase of installation went smoothly. However, before the system could be integrated into the plant's control and alarm system, the transformer suffered a catastrophic failure. The resulting fire caused serious damage.

[Click to see a transformer failure.](#)

An investigation of the event revealed that the BushingGard™ had survived the fire with its data record intact. A detailed analysis showed the bushing capacitance and power factor remained at normal levels during the service life of the transformer. However, the temperature-monitoring feature showed the unit had experienced a thermal event in the transformer top oil that had exceeded the alarm threshold.

Unfortunately, the predictive relay had not yet been connected to the plant's monitoring system and as a

result, the plant operators did not receive the alarm. Had the BushingGard™ been connected, the transformer could have been diagnosed and repaired and the failure could have been averted.

The utility suffered significant losses as a result of the transformer failure:

- **\$3.8 million power transformer replacement cost**
- **\$1.5 million lost generation revenue per day**
- **Back-up diesel generator was disabled**
- **Collateral damage to bus and control wiring**

Customer Benefits

- **Ability to obtain and use critical transformer data from the BushingGard™ monitoring relay, to analyze and resolve the failure**
- **Every Generator Step-Up Transformer will now have a BushingGard™ monitoring relay.**

Take Action

Most major utilities are using [predictive monitoring devices](#) to implement advanced maintenance and operating practices. Monitoring devices provide alarms when equipment values move out of acceptable ranges and they provide the ability to trend important data. This data provides valuable intelligence to Standards Engineers, Maintenance Supervisors, and System Operators.

This utility is committed to Eaton's BushingGard™ monitoring relay as a critical tool to maximize its maintenance and operating practices. Look to Eaton for innovative solutions that will add value to your business.