Power Station Transformer Monitoring with the DT9832

Application Summary

Transformers are an electrical device that transfers energy from one circuit to another by magnetic coupling with no moving parts. Transformers are used to convert between high and low voltages, to change impedance, and to provide electrical isolation between circuits. Electrical power transmission is one process in the delivery of electricity to consumers. Typically, power transmission is between the power plant and a substation near a populated area. Due to the large amount of power involved, transmission normally takes place at high voltage (110 kV or above). Hence with these high voltages comes the need to monitor the transformers and insure they are running at an optimum and that no catastrophic events (explosions) can happen. Not only can these catastrophic events cause financial losses but they can take a human toll as well.   As you can imagine, the environment in which these transformers are located are remote and sometimes difficult to reach as well as dangerous, due to the high voltages.

Potential Solution

A solution was achieved by remotely monitoring the transformers for early partial discharge. Highly sensitive sensors were placed in key areas near the base of the transformers so that the engineers could monitor the "noise" which the transformers were emitting. The cables from these sensors were then fed back over 100 ft to a remote monitoring device which incorporated the DT9832 USB module. The DT9832 offers simultaneous, high-speed channels with the portability of the USB. The software was set up to provide automatic shutdown of the unit if the threshold (+- 5mV) of excess noise was created by the transformer. This solution provides the following advantages:

- Gives accurate and precise early detection due to the high-speed signals that allows for almost instantaneous shut down.
- Due to the portability of USB, this solution is non-invasive and no shut down is required for installation.
- Efficient and cost-effective.
- This system is expandable by using with multiple DT9832's e.g. 4 sensors, 8 sensors, 12 sensors etc.

Click here for full information on the DT9832 series.