

# Battery monitoring for non-technical users

Engineers at Tarian Technology have developed a new battery monitoring system that can be viewed remotely and requires no training to use.

**S**tandby batteries are widely used across industry to provide power when the mains electricity fails. Although they may seem rather low tech, they are used in high tech industries such as computer data centres to keep the internet running and even in power stations to keep the control and monitoring system running when the grid fails.



Example of standby batteries



A battery in a standby application can be made up of many strings of individual cells or blocs. Voltages can be in the range 48VDC up to 600VDC, with currents ranging from a few amps to thousands of amps, which can be dangerous for untrained staff. The battery is usually contained within a secured battery room, where only suitably qualified and experienced personnel are permitted entry.

Status monitoring the condition of batteries is vital to maintain their efficiency and efficacy. Nobody wants to discover that when the power has failed, the standby battery is useless. Although there are a number of monitoring systems currently available, they can be expensive and provide so much information that it needs a trained operator to understand the results.

Engineers at Welshpool-based company Tarian Technology were asked by Northern Industrial Battery Services (NiBS) to develop a battery monitor system that could be viewed from outside the battery room and would provide information in a form that even untrained people could understand easily. They identified three key parameters that need to be measured in a standby battery system – current, voltage and temperature.

The current of a battery can vary widely. While charging, the initial current flowing into the battery can be hundreds of amps. As the battery reaches a fully charged state, this current will go down to just a few milliamps. This is known as the ‘float’ charge. The current should never drop to zero as this could indicate that the system has become disconnected. When ‘on load’ the flow of current is out of the battery and can be thousands of amps.

The voltage of a battery should remain constant within close limits when on float charge. If it goes outside of this small range, it is an indication that something is wrong. Temperature is also important to the lifetime of the battery. Working a battery outside of its manufacturer’s nominal temperature specification will reduce its performance, as well as invalidating any guarantee.



Engineers developed sensors for each of the three key parameters. The voltage sensor is qualified to 1000VDC without exposing the operators to dangerous voltages. The current sensor can withstand the very high charge and load currents, but can still measure down to milliamps to detect disconnects.

The temperature sensor is small enough to slip between the batteries of a battery pack to get a good reading of the temperature. These sensor values are displayed on a remote screen outside the battery room and are colour coded so that warning levels and alarm levels are instantly visible. This means that anyone can read the display and know either that the battery is in good health or that there is a problem, which can then be reported.

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