

A person wearing a blue long-sleeved shirt is holding a black rectangular electronic device with a cable attached. The device is connected to a yellow industrial generator. The background is slightly blurred, showing more of the generator and the person's arm.

CASE STUDY

Maxwell
TECHNOLOGIES
Enabling Energy's Future™

In Successful Field Trial Run, A Leading Communications Company Starts Standby Generator Faster with Maxwell's Ultracapacitor Starting Technology

CUSTOMER SYNOPSIS

A particular US-based global telecommunications company takes pride in serving its customers with high quality communications and data services, from high-speed Internet and TV to IT, hosting and managed services.

BACKGROUND

Smooth operation of the company's telecom sites depends on reliable, continuous power supply and efficient backup systems. If commercially supplied power fails, standby diesel generators usually come online to provide the long-term backup power necessary to ensure customer services

remain uninterrupted (batteries provide short-term ride-through power). Maintenance teams conduct monthly engine runs in addition to annual site blackout tests to verify optimal working order of the transfer systems and diesel generators.

CUSTOMER CHALLENGE

Successful starting rests on the generator's lead-acid battery starting system, and batteries require regular maintenance and intervals of replacement. NFPA 110, the standard for emergency and standby power systems, recommends replacing lead-acid starting batteries every 24 to 30 months to ensure reliable operation.

One challenge with lead-acid batteries is that they lose capacity in cold climates. To prevent low temperatures from affecting their performance, starting batteries for permanent engine-alternator sets are sometimes placed on heating pads. In addition, lead-acid batteries must be kept in a constant state of charge for generator starting, which degrades their lifetime. They also require regular tests to check their condition and estimate their remaining service life.

Streamlining these maintenance requirements with advanced, lower maintenance generator starting technology can help save time, increase reliability and reduce operation costs.

“Maxwell’s generator starting technology has impressive low temperature performance and starts the engine faster than a battery.”

Senior Power Technical Support Engineer

SOLUTION PROVIDED

To explore the possibility of a long life, lower maintenance starting technology, the company’s maintenance team conducted a 15-month field trial run with Maxwell Technologies’ Generator Starting Solution (GSS), an energy storage module based on Maxwell’s rapid response, high power ultracapacitor (supercapacitor) technology. The objective of the trial run was to compare the performance of Maxwell’s ultracapacitor system against traditional lead-acid batteries in terms of start time, cold climate performance and maintenance requirements.

One 24-volt GSS was connected to the starter motor of a 350 KW Caterpillar diesel generator. During the 15-month test, the Maxwell GSS performed 15 start events, four of which were true emergency power loss events.

RESULTS: Remarkably Fast, Efficient and Reliable

The findings of the field trial run support the ability of the Maxwell Generator Starting Solution to facilitate higher reliability, faster starts, less maintenance and significantly improved cold temperature performance when compared with lead-acid batteries.

Learn more about generator starting with the Maxwell GSS at maxwell.com/gss.

**Results may vary. Additional terms and conditions, including the limited warranty, apply at the time of purchase. See the warranty details for applicable operating and use requirements.*

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High reliability and fast start time

In one emergency event, the power to the telecom site failed due to damage caused by a storm. Once the control timer signaled the generator to start, the Maxwell GSS successfully cranked the engine in 1.5 seconds, compared with a 2 to 3 second start with lead-acid batteries. Maxwell’s ultracapacitors contributed to faster start times for all start events due to the lower internal resistance in the ultracapacitor module.

Long life, less maintenance

The maintenance team responsible for the test run reported that within the Maxwell GSS solution’s up to 10 year lifetime* there would be one to three lead-acid battery replacements, making the solution potentially more cost-effective in the long run.

Superior cold temperature performance

The trial run confirmed that the Maxwell GSS provided higher reliability and more resilience in cold temperatures due its ability to deliver high power cranks to the starter motor without the need for heating pads.

Simple installation, space and weight advantages

The Maxwell GSS is much lighter than lead-acid batteries and adheres with BCI standard dimensions for batteries, which made it relatively simple for personnel to handle and install.



The Maxwell GSS cranked the 350 KW Caterpillar diesel generator in 1.5 seconds, compared with a 2 to 3 second start with lead-acid batteries.

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