Telematics Streamlines Battery Tracking for Commercial Vehicles

XALT Energy's XALT Battery Viewer (XBV) Optimizes Commercial Vehicle Performance through Monitoring Solution

CUSTOMER
XALT Energy

TECHNOLOGIES
CANect® Telematics

SERVICES
Over-the-Air transmission, collection, visualization & monitoring

PROJECT TYPE
IoT

INDUSTRIES
Transportation

Overview

As commercial vehicle manufacturers and fleets transition toward battery electric powertrains, they face a range of new challenges. Among the most critical is keeping track of the battery system's state-of-charge (SOC), driving range, charging times and overall health - all vital information in terms of optimizing vehicle operation.

HED® Intelligent Vehicle Controls

CASE STUDY

Vehicle operators rely on telematics systems to collect and process essential data on vehicle operation and status. Installing a telematics network focused on battery performance and analyzing the data it generates present challenges of its own.

Pursuit for a Robust Telematics Solution

At its heart, telematics combines GPS, wireless technology and on-board diagnostics with data analytics to track vehicle variables such as speed, distance, direction, location, stops, performance and more. A transmitter on the vehicle relays system information to a network receiver via Wi-Fi access points and/or cell towers. Raw data is processed through back-end software and compiled into useful vehicle system information for vehicle manufacturers and fleets to track.

XALT Energy began pursuing telematics system technology in 2015 as a means for tracking data on the performance of the lithium-ion batteries it was supplying commercial vehicle manufacturers. "Our initial telematics efforts were geared toward troubleshooting customer systems out in the field," said Casey Hourtienne, Telematics manager at Midland, Mich.-based XALT Energy.

The Opportunity

Starting in 2018, XALT took its pursuit of telematics to a new level of sophistication. Fleet owners needed performance data about how their battery-electric vehicles were being charged and driven and XALT decided it needed to provide telematics service to its fleet owner customers.

In an effort to streamline battery tracking options through a single-source solution, XALT Energy, the division of Freudenberg Sealing Technologies that specializes in lithium-ion technologies and HED Inc partnered to develop a proprietary system designed to provide complete battery monitoring solution to optimize electric vehicle performance.

Battery electric powertrains require charging stations to recharge. They also require fleet drivers who have been trained to optimize vehicle performance between charges to avoid overcharging the battery and potentially voiding the system warranty.

The Solution

XALT Battery Viewer (XBV) is a telematics system sold as a companion tool for the heavy-duty lithium-ion batteries the company provides to commercial vehicle manufacturers. The system offers users access to sophisticated system data in a simple-to-install-and-use telematics package that delivers critical operational information through a user-friendly portal.

XBV was designed to allow fleet operators access to dashboards that monitor drive cycles, routes and charging times of individual vehicles on the road. This data can be extrapolated by XALT technicians to determine the size of the battery system an individual vehicle actually needs to optimize performance.

The system provides multiple connectivity options, was engineered to be easily integrated into new and existing configuration designs and uses an adhesive mounting system to quickly and securely attach the telematics antenna. HED's CANect® portfolio of hardware, software, cellular and portal technologies provided an established path to support XBV development.

The XBV system tracks critical information such as charging status, energy generation and consumption, maximum and minimum cell and string voltages, temperatures, state of charge, diagnostic

HED CANect® T-17 module utilizing Wi-Fi, cell and GPS

occurrences, location tracking and route map views. Information is accessible on a global basis through an XBV portal that uses intuitive dashboards to view critical battery data at all times.

"By working in partnership with HED, we are able to provide our customers with a substantial variety of telematics tools including Wi-Fi, Ethernet, cellular and dedicated portals," said Hourtienne. "HED has been growing with us on this project, approaching every feature of the system with a forward-thinking perspective. This has resulted in some very interesting telematics innovations."

Because XBV is focused on providing battery-specific data to customers, Hourtienne pointed out, XALT technicians also track diagnostics codes to alert fleet operators anywhere in the world about potential issues on a 24/7 basis. This collaborative approach is intended to help customers address maintenance and repairs proactively, resulting in less unscheduled vehicle downtime.

Solution Benefits

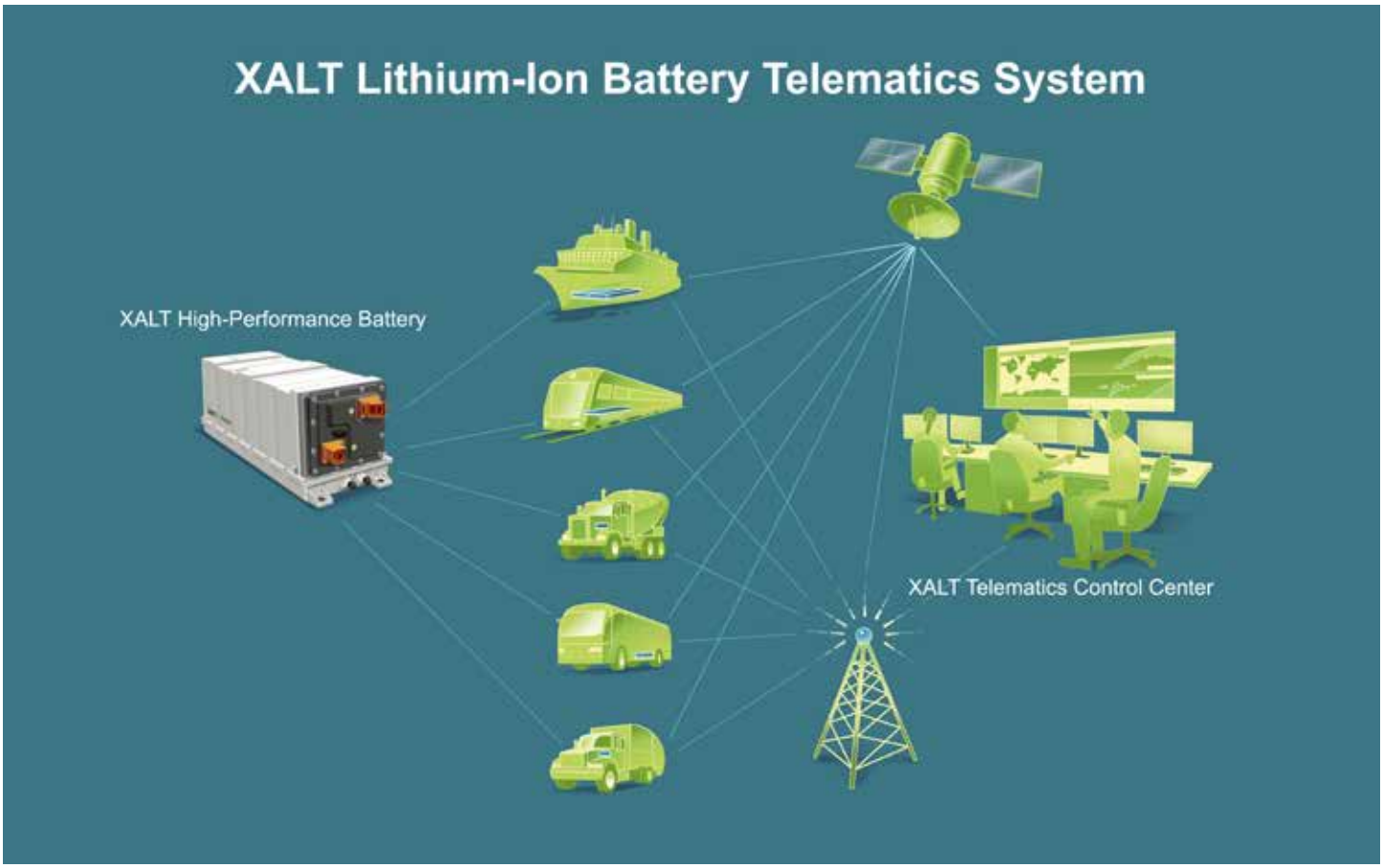
Speedy deployment
By streamlining the path to the cloud with fast connectivity.

Reduced downtime and waste
By identifying issues before they happen.

Lowers costs and variability
By identifying proper battery sizing.

Enhances quality control
Insights can be compared to changes for enhanced product quality.

Advancing battery knowledge
By providing industry awareness about new battery technology.



Real-Time Data Monitoring

The Results

The complex telematics capabilities that have emerged out of the XBV development process have led to important applications for the data generated by the system, Hourtienne said. "The most complex component of an electric vehicle is the battery," Hourtienne noted, "and understanding energy requirements is no small task. We can now offer customers trustworthy data that shows energy usage and energy requirements so they can design an optimum battery system for their application. "Such data may show, for example, that they could reduce the original design of the battery system size by 20% for a particular use case. This saves money for our customers and enables them to sell their product at a lower price point."

As manufacturers, fleet owners and municipalities continue to invest in battery-electric vehicles, their familiarity with the technology will grow. As it does, so will their ability to identify and request unique system designs to resolve their specific transportation challenges.

Information collected by XBV units will serve a crucial function in helping XALT technicians and engineers apply actual field data to address these requests. XALT said that detailed technical reports from XBV data are already helping it focus product development efforts on specific areas of the battery.

"We have a data-driven means for focusing our engineering and development efforts going forward," Hourtienne said. "When we can optimize our battery designs based on actual data, it's a significant benefit to industry and to customers. They will get more satisfaction and value from every system they install."

About XALT Energy

XALT Energy is a global innovator in energy storage technologies, offering solutions from long cycle life cells to complete DNV-GL type approved battery packs, advanced battery management systems with telematics and innovative battery racking systems. Our headquarters and manufacturing site is located in Midland, MI USA and our research and development center is in Pontiac, MI. We are able to have global reach through our majority parent, Freudenberg, who has been in business since 1849 and has operations in more than 60 countries. Visit www.xaltenergy.com to learn more.

About HED

Located in Hartford, Wisconsin, HED, Inc. is a leading designer and manufacturer of electronic controls and telematics solutions for mobile equipment applications. Incorporated in 1986 and privately held, the company maintains a broad, comprehensive line of products to meet the growing and changing needs of the off-highway heavy equipment markets it serves. Whether a simple on-off control for a hydraulic valve or a complex distributed intelligence system for total machine control, HED's mission is to help vehicle designers engineer optimized solutions to challenging vehicle control and monitoring applications. Visit www.hedonline.com to learn more.