THERMOMETRICS
A COMMITMENT TO EXCELLENCE

Application Spotlight

Thermal Runaway Detection in Lithium Ion Batteries

Challenge

While generally an uncommon event, stressed lithium ion (Li-ion) batteries can undergo failure through a variety of causal factors. This failure can result in an internal reaction that generates heat and chemical decomposition of the battery cell. When this occurs, the cell may vent flammable gases. Under certain conditions, these gases can ignite and spread to other cells within the battery pack, which is known as Thermal Runaway.

Thermal Runaway can occur in any Li-ion battery pack application, and in any of these applications, it is important to detect Thermal Runaway as soon as it occurs, regardless of cell size, electrochemistry and/or pack design.

One of the more common uses of Li-ion batteries is in Electric Vehicles (xEV). In this application, early detection of Thermal Runaway venting is especially important because flammable vent gases in the pack pose an immediate danger to the vehicle and its occupants.

Solution

Robust Early Detection of Thermal Runaway (REDTR)

Amphenol Advanced Sensors offers a revolutionary new sensor technology for Robust Early Detection of Thermal Runaway (REDTR) to warn of Thermal Runaway by detecting flammable gases vented during Li-ion battery cell failure.

Within seconds of initial cell vent, REDTR can identify and qualify whether the event is contained or cascading to adjacent cells by monitoring various physical aspects of the cell ejecta plume within the enclosure. This quick detection provides the Battery Management System (BMS) the opportunity to engage timely countermeasures to protect the occupants.

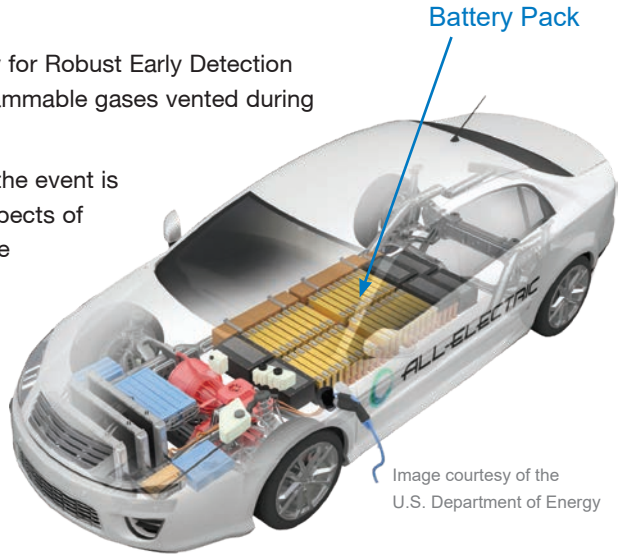

Image courtesy of the U.S. Department of Energy

Features:

- Fastest detection of cell venting from a single point within the pack, regardless of cell size, electrochemistry and battery pack configuration
- Demonstrated performance life up to 20 years
- Compact configuration
- Can be used as a standalone device or integrated directly into the Battery Management System (BMS) architecture
- Able to detect Hydrogen (H) and Carbon Dioxide (CO_2), as well as monitor internal pack pressure, temperature and relative humidity (RH)

For more information, please contact us at:
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