SpotSee®
Global. Connected. Condition Monitoring.

Formula E Batteries: SpotBot Cellular & SpotBot BLE Case Study

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Electric Car Battery Maker Uses SpotBot Devices to Flag Potential Damage

Formula E auto racing is electric. Literally. Electric vehicles reach speeds of 174 miles per hour on the race circuit -- street courses in 11 cities on 5 continents. After each race, the car batteries are removed, crated, and shipped to the next venue, where they are reinstalled in time for the next race. Sometimes there's only one week between races. Unfortunately, the batteries sometimes arrived damaged and unusable, leaving race teams scrambling.

A major race team's sole battery provider for the 2019-2020 season was determined to fix the issue. Knowing – in real time – when damage occurred would provide the precious hours or days necessary to ship a replacement battery. Knowing exactly where and how the damage occurred would allow it to make changes that could minimize similar damage in the future. And, tracking damage throughout the racing season would provide a benchmark and the foundation for subsequent logistical improvements.

Initially, the battery company tested six SpotBot Cellular monitors to provide real-time impact and temperature alerts anywhere in the world there is cellular coverage, and one SpotBot BLE. At about one quarter the price of the SpotBot Cellular, the SpotBot BLE monitors impact, in addition to temperature, humidity, and tilt. Incident reports can be downloaded once the cargo is received.

As part of the real-world test, battery company personnel crated the batteries, passed them to a third party carrier, and boarded a plane to the next venue. About the time they landed, they received an alert that one of the crates had experienced an impact that exceeded its set tolerance. When the crate arrived, an inspection revealed that the battery was damaged irreparably. With that knowledge, the company immediate shipped a replacement battery, saving the team time and alleviating any worry.

SpotBot BLE Overview

Spot Potential Damage

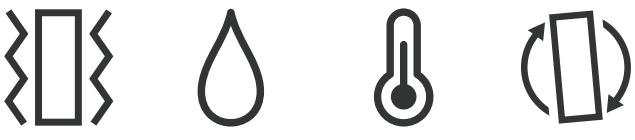
The SpotBot BLE makes the supply chain transparent. Once attached to the shipment, the SpotBot BLE measures and records temperature, humidity, tilt, and shock, with the data visualized through a mobile application. The limits of each parameter can be individually configured, and any violation is traceable (with time/date stamp) and clearly assignable throughout the entire supply chain.

Product Benefits - SpotBot BLE

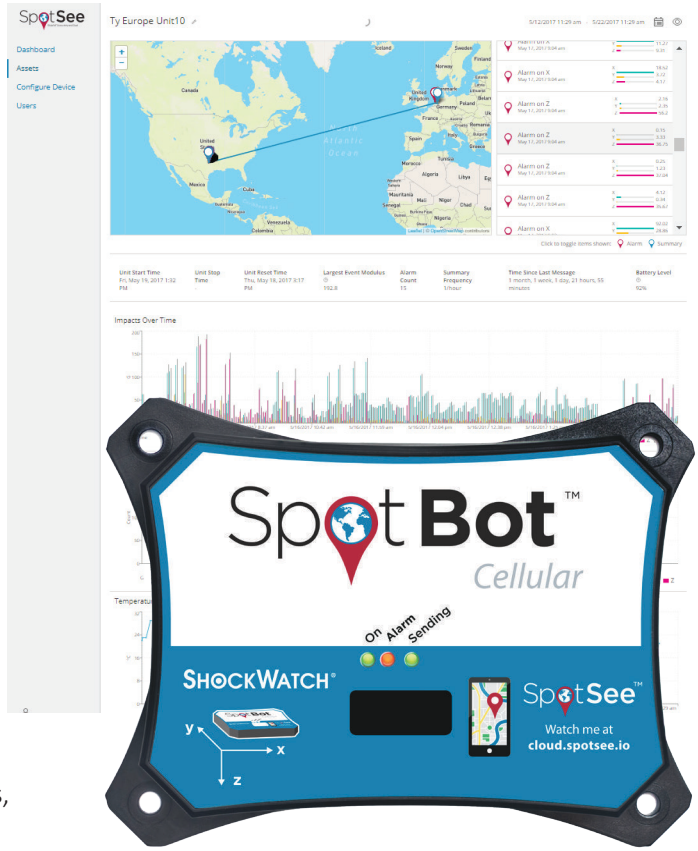
- Cost-effective, simple, all-purpose and reliable way to bring transparency to the entire supply chain, with exceptional Bosch quality.
- The SpotBot BLE gives the initiator of a delivery peace of mind and supply chain transparency. In the event that a parameter threshold is exceeded, the SpotBot BLE provides verifiable proof and a reliable indication of possible primary and secondary damage.
- Individual configurability, ease of use and integration with little effort and without prior knowledge of the processes of a logistics chain.
- Provides an added value for every logistical effort. It creates trust between partners and provides important data for the optimization of logistics processes. If there is no parameter violation, the SpotBot BLE is the evidence of a failure-free transport chain.

Characteristic Features

- Simultaneous monitoring of multiple crucial parameters
- Up to two years battery lifetime
- Cost-effective, simple, and robust
- Free and user-friendly mobile application



SpotBot Cellular Overview



Best in Class Impact Data

SpotBot Cellular generates accurate data on impacts up to 65G providing more than four times (4X) the range of the best competitive alternative (which captures impacts up to 16G). This range of impact monitoring is best suited for products between 100-60,000 lbs.

Longest Battery Life

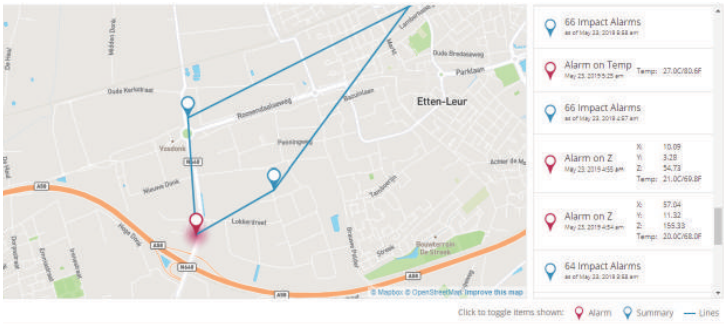
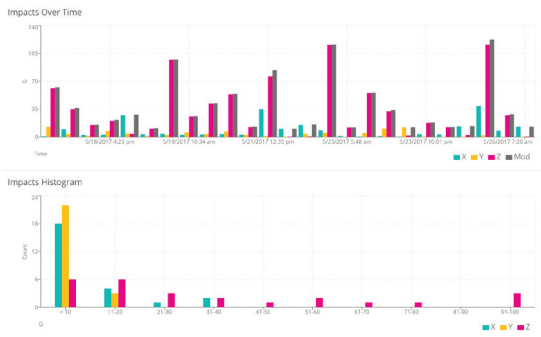
With off-the-shelf lithium batteries, SpotBot Cellular delivers up to 80 days of monitoring (set to hourly summary reporting). This represents a battery life that is greater than 50% (1.5X) more than the next best competitor.

Flexible Settings & Download Capabilities

The user easily defines impact settings specific to the product being monitored and SpotBot Cellular will deliver a location and time stamp of alerts from impacts over the threshold. After the trip, the user can easily download a PDF file with the top ten largest impacts, a CSV file with the top 50 largest impacts, and a slot-time report from the SpotBot Cellular.

SpotSee Cloud

The SpotSee Cloud is where trip data is aggregated in real-time. Graphs are easy to read and include data such as specifics of impact with locations, impacts over time, impact histogram, and temperature.

SpotSee Cloud Features

- Access to your data from anywhere with a secure web portal
- Real-time reporting and tracking of incidents
- Alarms with location, time, impact g-level, direction of impact, and temperature
- Impacts-over-time visualization of each asset
- Histogram of the total impacts to an asset
- Temperature over time graph