



Battery Safety Throughout its Life Cycle

White Paper “Shorts” Series

xEV Battery Safety Planning

Best practices For Automotive Dealerships

Ronald M. Butler
Managing Partner
e-cell secure, LLC
ron@e-cellsecure.com

2/26/2020

The Problem

As we race towards world-wide adoption of xEV technology, we need to continuously be aware of new safety concerns. Anyone who has read anything that I write on this subject-matter knows that I am a huge fan of electrification. From my perspective, batteries are generally safe, and don't possess a high potential for random failure. However, I am also one encourage serious research into battery safety risks and the creation of sound safety metrics that can be created and adopted throughout all stages of the battery life cycle. If the industry is going to make this type of massive sea change, then is should be done correctly, the first time around, with safety being a core concern.

As part of an ongoing discussion about hidden safety risks in the xEV life cycle continuum, we will highlight the safety risks that face automotive dealerships and what these organizations can do to protect their employees and customers ensure that problems don't occur and, in the event that they do, business continuity is maintained. This process is not only encouraged, but will soon be required through safety standards and guidance.

Background

As the automotive use of Li ion batteries grows, so will the safety threats they pose. Manufacturers, shippers, warehousing, distributors, and yes, automotive dealerships, will have to become more aware of the safety hazards that accompany these powerful tools. Every partner in the xEV supply chain assumes part of the responsibility for the safe transport, storage, and handling of batteries.

As a result, automotive dealership risk managers will have to develop a real understanding of the potentially massive impact that a battery failure event would have on their business and the industry as a whole. Currently, interest in digging into the risk issues and identifying best practices and tools for better managing xEV/battery ownership can be described as limited, at best.

The Risk Profile

As we begin to map out a set of dealership best practices, we might begin by assessing the safety differences between xEV's and their cousins, powered by the internal combustion engines (ICE). Do xEV's, and li ion batteries, present a higher risk profile than ICE vehicles? Well, many experts have different responses to this question. I contend that each presents a unique set of safety hazards that should be approached differently. There has been an absolute freak out over the assumed fire and explosion potential of lithium ion batteries. Some of this concern is deserved, but is it worthy of the meltdown?

Car carrier containing electric vehicles burns on a highway



ELKO COUNTY FPD via ELKO COUNTY DAILY FREE PRESS

"... [we] have 100 years of experience dealing with internal combustion engines, but it's a very different situation when it comes to EVs"

Andrew Klock,
NFPA

Cars burn at an auto dealership



Credit: Twipo.com

The reality is that each should be treated differently from a safety mitigation perspective. As we build out our best practices, we might start by asking important questions relative to dealership activities and where xEV's/batteries come into play. These include:

- **New and Used Vehicle Sales**

Can we leave xEV's on a lot for an extended amount of time as we do with ICE's? Are batteries negatively impacted by "shelf time"? Are they affected by exposure to high or low temperatures over time? Should they be housed indoors? The science tells us that, for most intents and purposes, they are the same. However, there may be other factors that figure into this equation that shapes the practice differently.

- **Vehicle Repair**

Should we assume that batteries may not be safe? When an xEV comes in for repair, a best practice might be to assume that the battery is compromised in some way. This is not to say that the battery has been damaged or tampered with to the point where it is dangerous, but the dealership has no way of knowing, at least initially, that it is sound and behaving normally.

- **Vehicle/Battery Recall**

If an OEM issues a recall on an xEV, the practice should take into consideration the cause of the failure and treat the situation accordingly. This might often mean adopting the same xEV repair protocol mentioned above. However, if a recall is issued that is specific to the battery itself (performance issues, fire, etc.) then a separate protocol must be initiated that takes into account the associated safety risk. Of course, this protocol will be much more cautious in its design and implementation.

xEV Safety Planning for Dealerships

As we continue to develop our best practices, we should create a set of detailed standard operating procedures (SOP's) for all dealership activities associated with an xEV. I can't emphasize enough the fact that these procedures must be extremely detailed. Each step in the procedures have to be considered down to the minutia. This is a daunting task, but is one that will ultimately protect the dealer, its employees and customers. Some of the core considerations when developing SOP's include:

- **Storage**

Where will batteries be stored when removed from a vehicle or intended as a replacement? Since, in the case of a vehicle repair, and certainly in the case of a battery

recall, the battery will be considered compromised, they must be isolated, or quarantined in a dedicated space. It is essential that they be housed in a confined space that is designed specifically to control failures. This would include a container that features fire suppression, pressure release technology (explosion), and communications/notification capabilities. This systematic approach to battery safety will soon be a requirement standards and risk guidance.

- **Emergency Response Planning**

In the event of an emergency, the dealership has to be prepared to contain a failure (storage) and most importantly, protect their employees and customers. Knowing the specific risks associated with lithium batteries allows for the development of a more effective emergency response. It is not recommended that employees attempt to intervene in a failure such as a fire. A hidden benefit to proper emergency response planning will be the savings that will become apparent when the insurance underwriter comes knocking.

- **Business Continuity Planning**

Detailed safety planning always leads to better business continuity outcomes. In the event of an xEV/battery failure, it is critical that business ramps back up ASAP. Well-developed business continuity plans make sure that processes for failure remediation, repair and post-event facility occupation approvals are in place. Stronger safety mitigation effort limit failure damage potential and provides allows for business resumption in a quicker, more efficient manner. The planning is well worth the effort.

Conclusion

It is clear that the value of xEV/battery safety planning for dealerships has extreme value. Not only does it represent good business practice, but will, in very short order, become a requirement.

Please forgive all errors, omissions, and mistakes. I like writing, but I'd much rather talk with you!