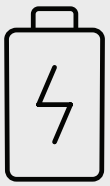
Battery Enclosure Material Screening (BEMS) offerings

In today's rapidly growing battery-powered marketplace, the need for safe and efficient lithium-ion battery systems is ever increasing

Lithium-ion batteries are the energy accumulator of choice for portable electronics and cordless machines and tools. In addition, they are also the driving force behind the electric vehicle (EV) industry. Most EVs use powerful lithium-ion batteries, but these kinds of batteries come with safety concerns, making a battery's enclosure in the vehicle incredibly important. The enclosure must protect the battery from outside elements and accidents, and it must also contain the risks it could pose to the vehicle and the occupant. For automotive original equipment manufacturers (OEMs) and their suppliers, choosing the most suitable EV battery enclosure material is a critical step toward minimizing potential hazards — thermal runaway chief among them.

Thermal runaway, one of the leading lithium-ion battery risk factors, occurs when a lithium-ion cell enters an uncontrollable, self-heating state. Thermal runaway presents dangers such as extreme heat, fire, smoke and violent cell venting (the ejection of gas, shrapnel or particulates).

In an electric vehicle, the battery enclosure must be able to shield the vehicle and its occupants from these potential dangers. To do this, the enclosure must be exceptionally strong, as well as heat- and pressure-resistant — all while remaining relatively lightweight.



"What causes thermal runaway?" The phenomenon may result from flaws in the lithium-ion cell caused by internal failure or extreme external conditions.

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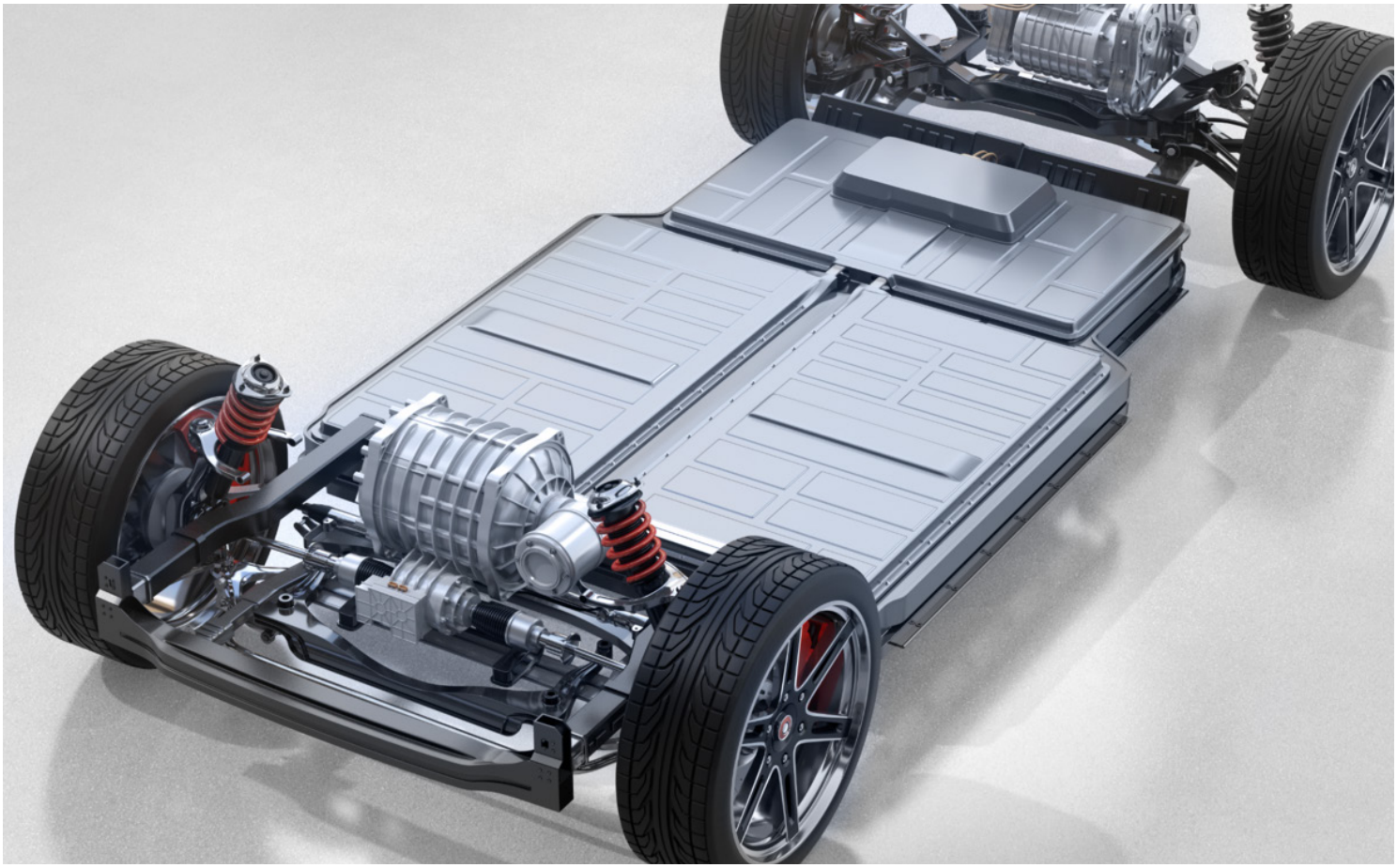

At UL Solutions, we developed a unique set of test methods, known as Battery Enclosure Material Screening (BEMS), to evaluate the performance of different battery enclosure materials in response to a thermal runaway event, outlined under UL 2596, Test Method for Thermal and Mechanical Performance of Battery Enclosure Materials. Our Torch and Grit (TaG) test method screens for the dynamic stresses found in a thermal runaway event, focusing on the evaluation of temperature and mechanical abrasion. We have also developed the Battery Enclosure Thermal Runaway (BETR) evaluation to rigorously test material performance in a simulated thermal runaway scenario, which includes evaluating temperature, mechanical abrasion and pressure elements. Our offerings are designed to help material manufacturers, suppliers and automotive OEMs select EV battery enclosure materials with greater confidence.

We help you:

- Test material plaques versus the entire battery assembly, helping to reduce cost and development time.
- Screen formulas and constructions during research and development, providing material producers with better solutions for OEMs.
- Compare performance between materials.

At UL Solutions, our services support you at different stages along the entire product development and automotive supply chain, from planning and design to material selection and the final production part approval process (PPAP), optimizing your time to market.

Learn more at UL.com/BEMS or contact us for more information.

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