Thermal Runaway Solutions for EV Batteries

Electric vehicle (EV) batteries are getting smaller and more powerful and that comes with increased thermal runaway event and fire risk. Boyd creates thermal runaway protection (TRP) solutions for multiple EV battery types, including pouch cell, cylindrical cell, and prismatic cell batteries.

Pouch cells

Pouch cells do not have a rigid structure; they use flexible materials, typically foil, to create a pouch that contains the battery cell. This reduces battery weight and provides greater design freedom.

Cylindrical cells

Cylindrical cells place stacked and rolled-up battery materials in a cylinder-shaped container. A single AA battery is a good example of this type of structure.

Prismatic cells

Prismatic cells press stacked or rolled battery materials into a rigid housing typically made from plastic or metal.

Compression pads

Battery cells swell and compress as battery temperature cycles. Boyd’s compression pads fit between cells to apply consistent pressure on the cells during these cycles. Compression pads reduce heat-generating friction, protect cells against mechanical shock and impact to prevent damage and spark or shorting issues, and block or isolate thermal runaway.

Cell-to-cell bonding

Boyd custom fabrics a wide range of pressure-sensitive adhesives from 3M™ that require no cure time to efficiently bond battery cells to one another and enhance EV battery pack assembly structural integrity. Flame-retardant and dielectric tapes bond with immediate strength and are easier to work with than liquid adhesives in manufacturing environments.

Thermal Insulation

Just like with pouch cells, Boyd wraps cylindrical cells with flame barrier and thermal insulation materials to isolate flame or thermal runaway events and prevent spark voltage between internal critical components that can lead to device shorting or fire.

Electrically insulating materials protect cells from spark voltage, create flame barriers to isolate fire, and prevent batteries from overheating. Each OEM uses a different kind of electrical insulator with adhesive system based on individual design and performance needs.

Work with Boyd to enhance user safety by developing fully custom TRP solutions.

Contact us to start your next project today.

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Thermal Insulation
- Boyd is an expert in specifying integrated flame barrier materials that block flame within a battery to isolate catastrophic events and prevent thermal runaway propagation.

Flame barriers
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Explore our solutions below and see how Boyd can add value to your next EV battery project.

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Adhesives

Foams

Thermally insulating tapes and films

Insulating foams

Thermal interface materials (TIMs)

Advanced engineered materials

Add insulating foams and other compressible materials to reinforce prismatic cells and enhance impact and thermal runaway protection. Compression pads reduce the negative impact of friction, mechanical movement and swelling forces.

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