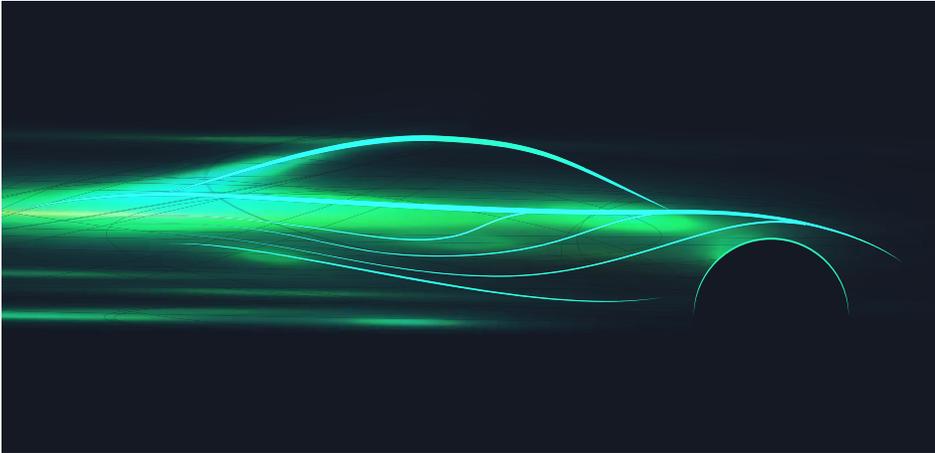


DuPont Adhesives Provide Structural Strength for Luxury EV Battery Pack



Project

Working together with a global German OEM, a longtime valued customer, the DuPont R&D team formulated custom adhesives for the battery pack for the manufacturer's first all-electric luxury sedan. The primary goal was to reinforce the battery pack to increase structural integrity.

Adhesives from DuPont improve battery structural integrity, crash durability, and production efficiencies.

Challenges

Strength and safety

During the design stage, the automaker's technical team concentrated on fulfilling a need for greater stiffness and strength of their battery pack. With EVs, the massive battery pack must be crash durable for safety purposes as well as durable for long service life.

Adhesion to multiple substrates

The automaker requested a structural adhesive that could bond the battery lid to electrocoated steel or aluminum substrates.

Rapid cure time

Cure-time couldn't slow production and the adhesive solutions needed these qualities:

- enough open time for manual and automatic application
- the ability to accelerate handling strength through induction curing to achieve short process times
- structural bonding properties with high G-modulus and lap shear strength

Solution

In response to this challenge, the DuPont team tailored BETAMATE™ and BETAFORCE™ structural, multi-material bonding adhesives to achieve the automaker's goals for crash durability and manufacturing efficiency.

BETAMATE™ 2090 toughened, two-component structural epoxy adhesive is designed to adhere to aluminum and meets the automaker's specifications for battery box bonding. This crash-durable adhesive significantly improves the luxury sedan's structural integrity, torsional stiffness, and strength while providing long-term durability. BETAMATE™ 2090 demonstrates fast curing that allows for short cycle times to keep production moving quickly.

BETAFORCE™ 9050 structural, two-component PU adhesive is specially formulated for bonding crash profiles to the battery box lid and adheres to electrocoated steel and aluminum. Like BETAMATE™ 2090, it offers crash-durable strength and curing times that can be accelerated by heat.



Results

BETAMATE™ 2090 and BETAFORCE™ 9050 provide the necessary balance between stiffness and elongation at break to achieve the German OEM's battery box performance goals for its all-electric luxury EV and will help give drivers years of safe travel.

Additionally, these two EV battery adhesives optimize manufacturing efficiency, allowing bonded components to move from one assembly location to the next more quickly.

A Portfolio of Advanced Adhesives for EVs

BETAMATE™ 2090 and BETAFORCE™ 9050 are part of a broad portfolio of adhesives for numerous EV applications.

BETAMATE™ structural adhesives deliver advanced solutions for bonding similar and dissimilar substrates, closures, and body structures, enabling improved load carrying capabilities, vehicle/component stiffness, durability, design flexibility, and weight reduction.

For high-performance bonding of lightweight multi-material applications, BETAFORCE™ composite bonding adhesive enables significant weight reduction, acoustic performance, and lean manufacturing processes made possible through tailored heat-accelerated curing to achieve fast handling strength. Design flexibility is maintained while processing performance and sustainability goals are achieved.

Additional DuPont products specifically address opportunities in lightweighting, thermal management, safety, acoustics, vehicle structure/durability, sensing, control, and connectivity.

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