Novelis Introduces Second-Generation Aluminum Intensive Battery Enclosure Solution for Electric Vehicles

Advanced design offers lighter weight, lower costs, and higher energy density

ATLANTA, Oct. 26, 2021 /PRNewswire/ -- Novelis Inc., the world leader in aluminum rolling and recycling, announced today the introduction of new design innovations with Generation II of its lightweight electric vehicle (EV) battery enclosure solution for the rapidly growing EV market. Building on the results achieved with the Generation I concept, which introduced the first of its kind sheet-intensive aluminum battery enclosure, Generation II expands the portfolio of innovations available for global applications. The advanced aluminum-sheet-intensive design maximizes weight reduction, reduces costs, and delivers higher pack energy density compared to traditional EV battery enclosures made from steel or aluminum extrusions.

Since launching the first-generation battery enclosure solution in 2019, Novelis has worked with industry partners and automotive engineers to optimize the design and introduce production-feasible innovations, including high-strength aluminum roll forming, advanced cell-to-pack (CTP) modular architecture and a structurally integrated thermal management bottom plate. These innovations, combined with Novelis' advanced material technology, result in a best-in-class frame mass efficiency of below 1.0 kg/Kwh, and a mass reduction improvement of more than 20% versus the benchmark aluminum production enclosure from a leading European electric SUV manufacturer. The improved CTP package efficiency and structural performance also delivers a 30% improvement in energy density versus the benchmark.

Designed using high-performing Novelis Advanz™ s650 alloy in roll-formed frame sections, the new EV battery enclosure is 50% lighter than traditional steel enclosures, and more cost-effective than extrusions in most cases. As a result, it can be easily adapted to accommodate specific OEM vehicle designs. By utilizing Novelis' highly formable alloys, the enclosure provides automakers the ability to achieve deep drawn, complex shapes. In addition to the detailed design solutions, Novelis has developed first-of-its-kind engineering methodology and design guidelines to specify lightweight aluminum for top cover applications, while referencing many of the most stringent global thermal runaway resistance requirements. The simulation-derived guidelines will allow companies to quickly determine the optimal specifications to achieve their unique vehicle objectives, replacing steel with aluminum in a top cover application.

"The Second-Generation battery enclosure is the direct result of listening to the feedback from the market and working in close collaboration with our partners and customers," said Pierre Labat, Novelis Senior Vice President, Chief Strategy & Sustainability Officer. "It is a benchmark in how the use of aluminum is yielding innovative, more sustainable solutions for the global automotive market and EV makers. Our new EV battery enclosure further positions aluminum as the industry standard for better-performing, longer-range and more competitive cost-to-weight electric vehicles."

The new enclosure is developed and designed specifically for automakers to use advanced, CTP battery packaging architecture, which is 15% to 20% more compact than traditional cell configurations and requires fewer parts to build. CTP enclosure architecture is lighter weight, lower cost and increases volumetric energy density.

The Second-Generation solution also demonstrates the inherent benefits of aluminum over other materials for EV battery enclosures. Aluminum is more corrosion-resistant, infinitely recyclable and has superior thermal conductivity properties. Those attributes promote more efficient battery use for longer range.

In addition to aluminum battery enclosure solutions for the EV market, Novelis also supplies automotive makers with high-quality, lightweight, sustainable aluminum sheet for all vehicle types.

About Novelis

Novelis Inc. is driven by its purpose of shaping a sustainable world together. We are a global leader in the production of innovative aluminum products and solutions and the world's largest recycler of aluminum. Our ambition is to be the leading provider of low-carbon, sustainable aluminum solutions and to achieve a fully circular economy by partnering with our suppliers, as well as our customers in the aerospace, automotive, beverage can and specialties industries throughout North America, Europe, Asia and South America. Novelis is a subsidiary of Hindalco Industries Limited, an industry leader in aluminum and copper, and the metals flagship company of the Aditya Birla Group, a multinational conglomerate based in Mumbai. For more information, visit novelis.com.

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