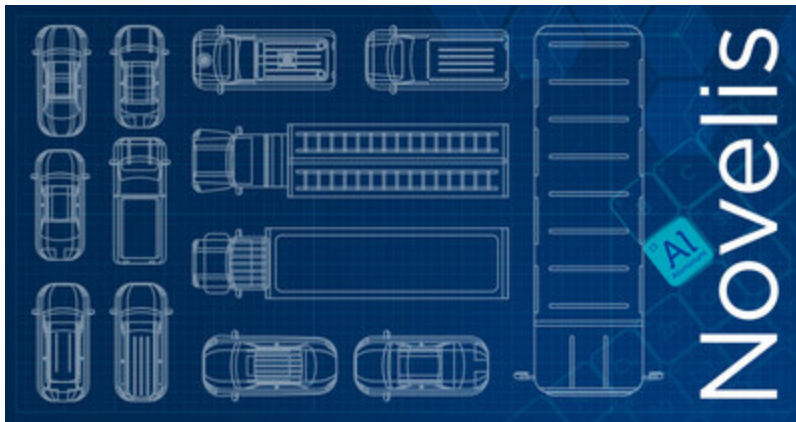


January 22, 2025



Aluminum: Driving Efficiency and Sustainability Across All Vehicle Segments

ATLANTA, Jan. 22, 2025 /PRNewswire/ -- The following is a blog post by Daniel Kern, Vice President, Global Automotive Development, Novelis



Traditionally, aluminum was reserved for luxury and high-performance vehicles. However, advancements in material science, recycling capabilities, and design innovation have transformed aluminum into a cost-effective and sustainable choice for all vehicle categories—from compact cars to SUVs and trucks.

Cost-Effective Lightweighting for Mass-Market Vehicles

Lightweighting with aluminum is both practical and economical. Modern manufacturing techniques, such as hot stamping and adhesive bonding, enable significant weight reductions without substantial cost increases. For example, incorporating aluminum components like doors and hoods into existing steel platforms can achieve up to a 50% weight reduction at a competitive cost.

Aluminum's lower density—approximately 67% less than steel—means that less material is required to achieve the same structural integrity. This reduction in material usage can offset the per-unit cost of aluminum compared to steel, leading to overall cost savings. Additionally, lighter vehicles benefit from secondary weight savings. For instance, replacing 400 kg of steel with 240 kg of aluminum results in a primary weight reduction of 160 kg, which can lead to an additional 40 kg to 60 kg reduction in other components, such as brakes and suspension systems¹.

Advancing the Circular Economy

We believe we are the world's largest closed loop aluminum recycling partner, returning

automotive makers' production scrap to our facilities to be melted down and reintroduced into the supply chain. This process not only reduces costs but also significantly lowers carbon emissions, aligning with the growing sustainability priorities of both automakers and consumers. Recycling aluminum uses approximately 95% less energy than primary aluminum production, resulting in 95% fewer carbon emissions².

Beyond production scrap, Novelis is also pioneering end-of-life vehicle recycling initiatives. Through innovative scrap sortation and segregation technologies, we believe we can capture specific aluminum alloys from decommissioned vehicles, preserving their value and quality.

In collaboration with key industry partners, Novelis is driving an end-of-life vehicle circularity platform in order to optimize material flow, increase access to high-quality recycled aluminum from decommissioned vehicles, and minimize waste to landfill³.

Recognizing that recycling starts with thoughtful design, Novelis also works closely with automakers to develop sustainable solutions like uni-alloy designs for components like hoods and doors, simplifying recycling processes and enhancing material recovery.

Customized Solutions for Diverse Automotive Needs

Recognizing that each vehicle has unique material requirements, Novelis collaborates with automakers to develop tailored aluminum solutions that meet specific performance, design, and sustainability objectives. We believe our low-carbon alloys offer exceptional versatility and strength, enabling innovation across a wide range of applications—from electric vehicle (EV) platforms to high-performance SUVs. Even smaller vehicles benefit from lightweighting, as reducing weight enhances fuel efficiency and lowers emissions.

For EVs, lightweighting is crucial to offset the significant weight of battery packs. The result is improved range and overall performance.

In commercial vehicles, the advantages of aluminum lightweighting are even more pronounced, as it enhances fuel efficiency, increases payload capacity, and helps fleets meet stringent emissions regulations.

Moreover, reducing any vehicle's weight with aluminum not only improves efficiency but also enables automakers to use smaller engines – or fewer batteries – and lighter suspensions and brake systems, resulting in additional weight and cost savings.

A Collaborative Approach to Innovation

Transitioning to aluminum extends beyond material supply; it necessitates partnership and innovation. At Novelis, we work closely with automakers, providing comprehensive support from early-stage design consultations to advanced R&D testing at our Customer Solution Centers around the world. Together, we seek to redefine the possibilities in automotive design and manufacturing.

Embrace the future of automotive manufacturing with Novelis. Partner with us to leverage aluminum's full potential, achieving cost efficiency, sustainability, and superior performance across all vehicle segments.

¹ Alumobility, "Alumobility Outlines 8 Reasons Why Aluminum is the Material of the Future for Automakers", [Alumobility Outlines 8 Reasons Why Aluminum is the Material of the Future for Automakers - Alumobility](#)

² Aluminum Association, "Recycling Aluminum: Energy and Environmental Benefits", [Sustainability – Recycling | Aluminum Association](#)

³ Novelis, News, [Novelis and thyssenkrupp Materials Services Partner to Drive Circularity](#)



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