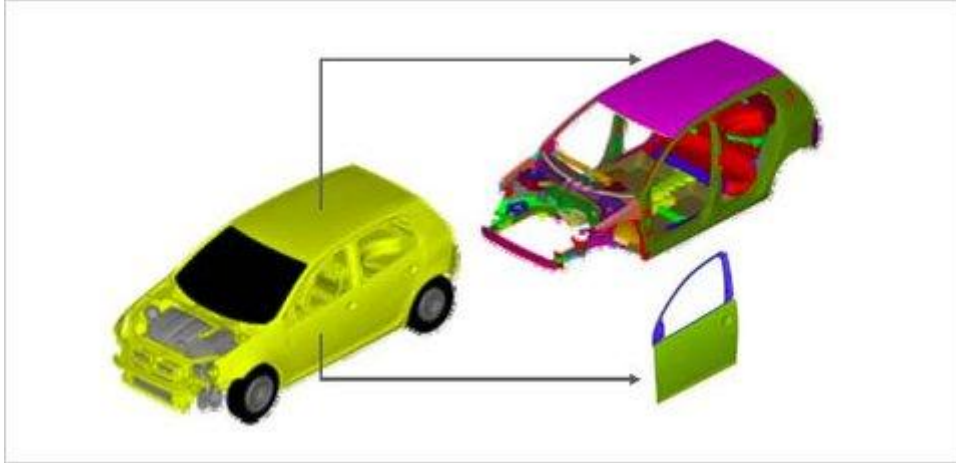


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A Gas Mileage Bonus From Aluminum

By [MATTHEW L. WALD](#)



European Aluminium Association Researchers analyzed what parts of a car's frame could be built from aluminum rather than steel.



Business

Stricter gas mileage requirements may be a headache for car manufacturers, but the aluminum industry views them as good news.

In the last few years, car makers have switched from steel to aluminum for wheels, hoods, transmission cases, heat exchangers like radiators, and other components.

With tougher standards looming, the aluminum industry is taking aim at the basic shell and skeleton of the car, known in the industry as the "body in white."

"If you look at the last 40 years, aluminum has been marching through the car, through the power train, heat exchangers and other parts," said Randall Scheps, an executive at Alcoa who is the head of the transportation group at the [Aluminum Association](#), an American trade group. "The next big thing is the body."

The [European Aluminium Association](#) sponsored [a study](#) by the University of Aachen in Germany on the energy savings from an aluminum body.

The American trade association, extrapolating from that study, calculated numbers for a sedan the size of the Ford Fusion, weighing 3,500 pounds. For that car, the so-called body in white weighs about 900 pounds if made from ordinary steel, but only about 500 pounds if made from aluminum.

Making the body lighter means that the engine and brakes can be smaller, too, without affecting performance, so the total weight savings comes to 525 pounds. That would yield 2.7 extra miles per gallon, the group said.

Extrapolating, if a car covers 120,000 miles in its lifetime, a traditional steel version getting 30 M.P.G. would burn 4,000 gallons of fuel. The aluminum body version would burn about 330 gallons less. That would mean a lifetime reduction of more than four tons in carbon dioxide emissions.

“Aluminum is a little more carbon dioxide-intensive to make,” Mr. Schep said. But when it comes to the life cycle emissions a of car “over 10 or 12 or 15 years of life,” he added, the emissions savings outweighs any difference in the manufacturing phase. “The way you reduce carbon dioxide emissions is to make things lighter.”

Not everyone is sure aluminum is the answer. At the [American Iron and Steel Institute](#), Nancy Gravatt, a spokeswoman, said the biggest substitution under way is not aluminum for steel, but newer, high-strength, lighter-weight steel for the older forms of steel.

A switch to aluminum bodies would create a few other complications; aluminum often requires laser welds rather than spot welds, which are familiar to the automakers and cheaper to accomplish.

Mr. Scheps said that aluminum has followed the pattern of many new automotive technologies, starting out with top-niche models and gradually working its way down. The Audi A8 and Jaguar XJ are the two-best known all-aluminum vehicles, he said, but the [midmarket models](#) are using more and more.

Even lighter materials are available, like composites. The Corvette has a fiberglass body. But the aluminum industry does not consider it a long-term threat in the automotive business; for one thing, aluminum and steel are almost entirely recycled, but the composites are not.