



Alcoa: The Race to Light-Weighting

Raj Reddy, vice president of strategy for global rolled products at Alcoa, looked at the latest article praising the success of the new Ford F-150. Thumbing through the glossy photos, he read about how the new truck used “aluminum as its secret weapon.”¹

Reddy reflected on his 23-year career with Alcoa. When he started his career with Alcoa in 1992, as an Engineer at the Alcoa Technical Center, the company was in the middle of a collaboration with Audi to develop an aluminum-intensive car. Almost a decade later, in the early 2000s, CAFE standards were getting more stringent.² These standards continued to tighten over the years, and auto manufacturers prepared to adjust to the newest standards regulating all 2017-2025 models in the United States.³ Tighter regulations increased the urgency to find methods to reduce emissions, leading many manufacturers to turn to vehicle light-weighting. These regulatory changes drove automakers to choose aluminum over steel for a number of applications.⁴

Reddy knew that the market shift would invite competition from steel producers and other aluminum manufacturers. Alcoa was poised to ramp up production to cater to demand, but Reddy wanted to ensure that Alcoa remained a premium supplier within the commoditized industry while demonstrating to automakers that aluminum was worth the higher sticker price and capital investment to pivot from the steel-centric industry norm.

Corporate Average Fuel Economy (CAFE) Standards

Congress implemented CAFE standards in 1975 in response to the 1973 oil embargo.⁵ These standards, imposed by the Department of Transportation, outlined a minimum level of fuel efficiency for vehicle fleets, which automakers had to meet by a predetermined date. The standards differed by vehicle class, with the smallest vehicle classes being held to the highest mile-per-gallon standard. CAFE standards were enforced at the fleet level as a weighted average over all cars and car types sold by a particular automaker,⁶ which allowed manufacturers to take many different approaches to comply with the regulations.⁷ This could be

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