Inventions & Innovation Project Abstract

Freight Wing Trailer Aerodynamics

Aerodynamics plays a very large role in the efficiency of semi trucks. Most of the power generated by a tractor (50%-70%) is utilized to overcome drag at highway speeds. The Freight Wing is an aerodynamic attachment designed to minimize the fuel wasting drag caused by the flat end of semi trailers. The Freight Wing is comprised of three composite panels that curve together from the top and sides of the trailer's end to create the most aerodynamic shape possible for the given amount of space. Scientific research indicates that a streamlined trailer could save up to 15% of a truck's fuel. However, significant design challenges have prevented past concepts from meeting industry needs. Consequently, there are no similar products on over three million applicable vehicles in the United States. The Freight Wing represents the first effective trailer end drag solution that would not interfere with a truck's normal operation. The benefits of Freight Wing aerodynamics are made possible through the design's unique ability to automatically transform into an out of the way, stored configuration.

Enhanced truck aerodynamics may be the most cost effective solution to reducing atmospheric pollutants available today. Semi trucks are one of America's largest sources of pollution, dumping 55 million tons of noxious emissions into the atmosphere every year. The 18 billion gallons of fuel consumed by semis annually represents over 12% of America's total oil consumption. If the applicable American fleet employed aerodynamic trailers, our country could save approximately 2 billion gallons of fuel a year. In terms of environmental savings, that much fuel represents 6 million tons of harmful emissions. Economically, the trucking industry would save approximately 3 billion dollars annually.

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