

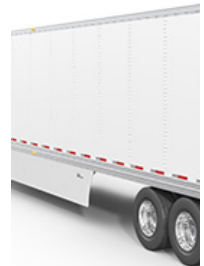
## Aerodynamics 101



HOW FUEL IS CONSUMED IN A HEAVY TRUCK ENGINE



TRACTOR-TRAILER AERODYNAMICS



HOW TRAILER

HOW FUEL IS CONSUMED IN A HEAVY TRUCK ENGINE



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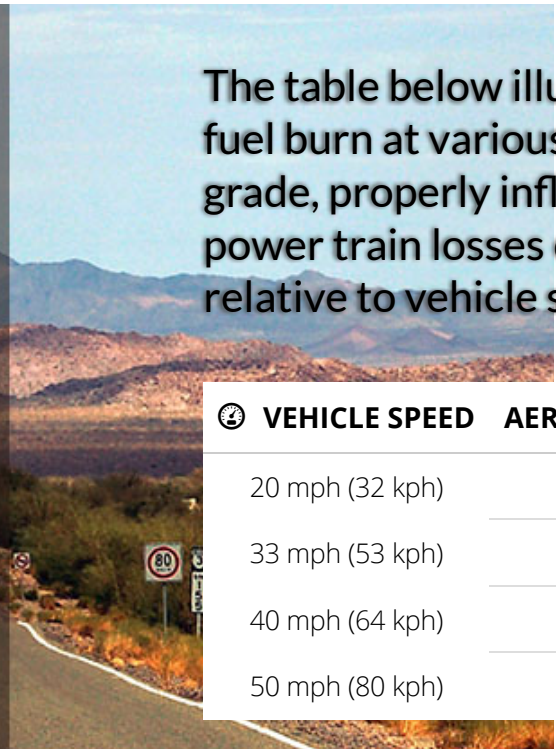
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THE CONTRIBUTION TO FUEL BURN CAN BE DIVIDED INTO FIVE EL



At highway speed, aerodynamic drag accounts for over 65% of the fuel consumed by a tractor-trailer.



The table below illustrates fuel burn at various grades, properly influenced by power train losses relative to vehicle speed.

VEHICLE SPEED	AER
20 mph (32 kph)	_____
33 mph (53 kph)	_____
40 mph (64 kph)	_____
50 mph (80 kph)	_____

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Since aerodynamic drag is but one source of fuel consumption, reducing aerodynamic drag by 20% will result in a 20% reduction in overall fuel consumption. Rather, it will be 20% multiplied by the percentage contribution of drag at that particular speed.

For example, a 20% reduction of aerodynamic drag via the use of aerodynamic devices would have an effect of reducing fuel consumption by approximately 9.4% at 50 miles per hour.

These fuel savings would rise as speed increased to a maximum value of approximately 14.4% at 75 miles per hour.

**As a rule of thumb, aerodynamicists approximate the percentage of fuel saved by an aerodynamic device as the percent change in drag.**

## TRACTOR-TRAILER AERODYNAMICS

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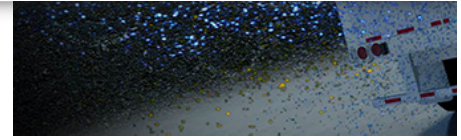
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A truck in motion encounters resistance from the air flowing into and around it. This drag is made up of pressure drag and skin friction drag.

The truck moving forward in the **low-pressure region** behind the semi-trailer: these areas "suck" the vel

The oncoming airflow pushes against the front of the tractor, creating a **high-pressure region**, just as it does on the wheels and the front of the semi-trailer.



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The most fuel efficient and profitable trucking fleets utilize aerodynamic trucks, minimize the gap between the tractor and trailer, install side skirting to prevent air from hitting the trailer's rear axles and TrailerTail® technology to streamline the rear of the vehicle.

## HOW TRAILERTAIL® TECHNOLOGY WORKS

TrailerTail® technology lowers vehicle fuel consumption by reducing low-pressure suction drag that occurs directly behind the tractor-trailer.

The large low pressure area at the back of the trailer acts as a vacuum causing drag and a turbulent vortex is created by the unstable airflow.

TrailerTail® technology diminishes the low pressure area by reducing drag and streamlining the airflow, increasing air stability and fuel efficiency.

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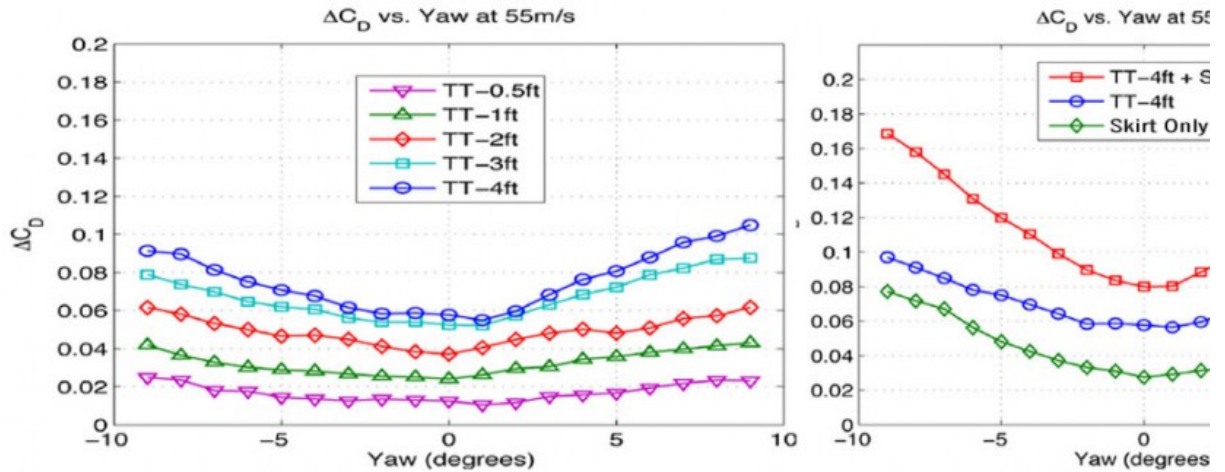
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Drag reduction for different TrailerTail® lengths (left) and drag reduction for AeroTrailer™ (Trailer combination package).

The higher the bar on the graph, the greater the reduction in aerodynamic drag

TrailerTail® fuel savings are complimentary to other aerodynamic technologies. TrailerTails® reduce aerodynamic drag over 12%, equating to over 5% fuel efficiency improvement at 65 mph and over 12% efficiency improvement with ATDynamics side skirts and other minor trailer modifications.



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