

Aerodynamic Devices

A significant factor affecting fuel use is aerodynamic resistance, commonly known as drag. Drag is the force that resists movement through a liquid or gas (like air).

Studies by RMI and others have shown that drag is a large factor in fuel use and a reduction in drag will reduce fuel use in both urban and highway speeds. For tractor trailer combinations about 70% of drag is due to the trailer.

Source: Presentation by Richard M. Wood, to Mid-Atlantic Regional Air Management Association

A state of the art study by the US Lawrence Livermore Labs (pdf) analyzed in detail the impact of drag on fuel efficiency in large tractor-trailer combinations. Using supercomputers the Lab was able to develop a computer simulation of air flows between the tractor-trailer (see a below) and at the back end of a trailer (b below). Using different technologies to smooth out this air flow will reduce drag and fuel use.

Some of the devices that reduce drag include:

Tractor

- Low drag bumpers
- Special wheel flaps
- Wake boards
- Aerodynamic mirrors
- Centre and rear chassis fairings
- Under-hood air cleaners
- Full roof fairings

Trailer

- Tractor-trailer gap fairings
- Trailer side skirts
- Trailer tails (pdf)

Aerodynamic mirror design

Many OEM and aftermarket manufacturers are selling these devices today.