



Volvo Trucks. Driving Progress



How to make your truck more fuel efficient

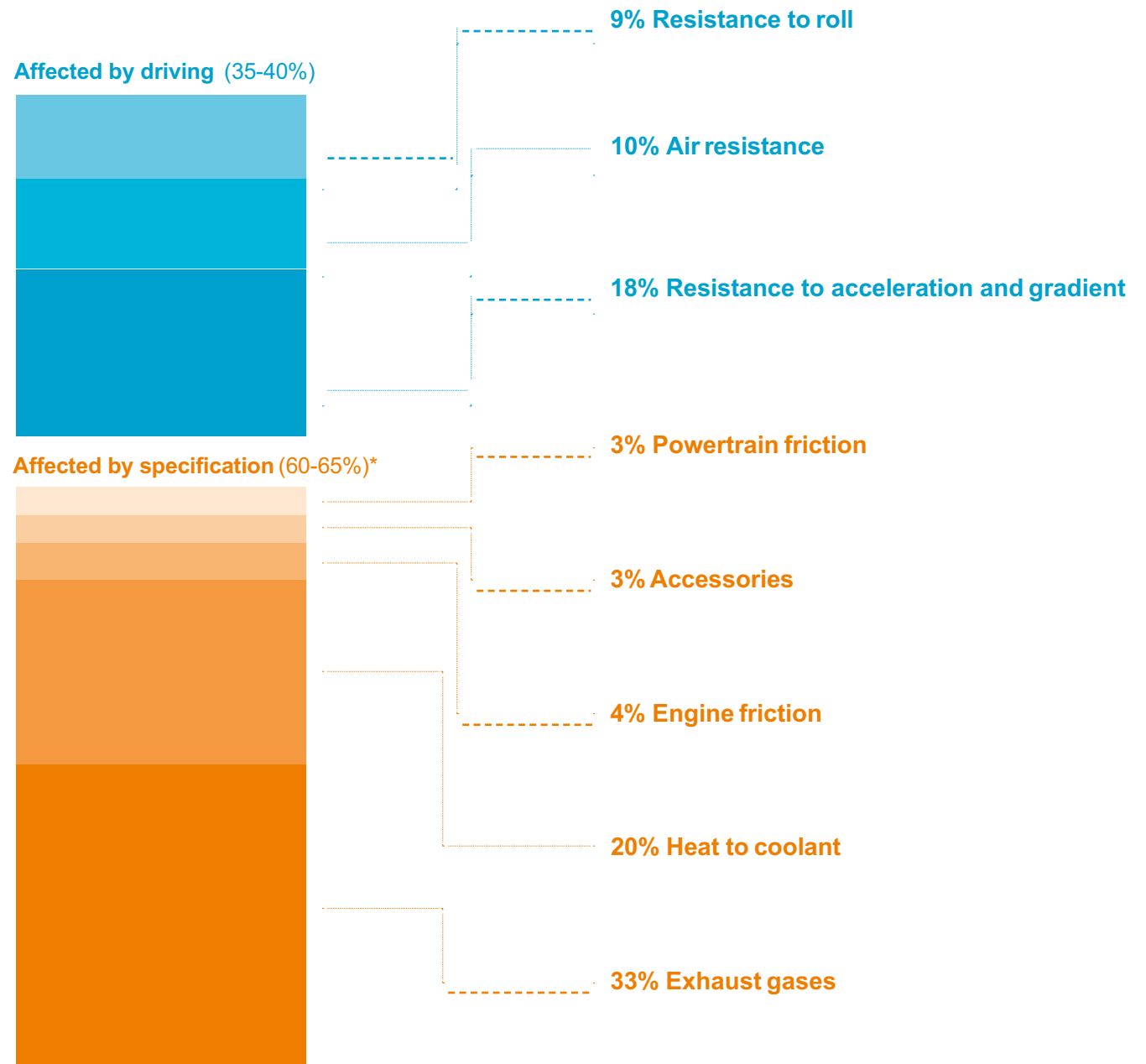
What affects fuel consumption?

How you specify and drive your truck has a huge impact on your fuel consumption.

Here is a breakdown:

Driving: How you drive and in what conditions, accounts for about 1/3 of the fuel consumption. Resistance to roll depends to a large extent on weather conditions and is hard to for the driver to influence. Air resistance and resistance to acceleration and gradient however, can be greatly reduced with a fuel efficient driving style.

Specifying: The specifications of the truck play an important role for fuel consumption. Once a truck has been specified, around 2/3 of its fuel-influencing factors are set and can no longer be changed. Always make sure to specify the powertrain so that it is optimal for your transport assignment.



* The figures in the slide are approximate and applicable for 4x2 tractors, 40-tonne application.

Parameters that are affected by driving:

9% Resistance to roll

Weather conditions and tyres are the biggest influencers on the rolling resistance.

Factors that affect tyre rolling resistance:

- Rib type tyres have lower rolling resistance than block type tyres. This is mainly due to less movement of the tread in the contact patch area.
- Low aspect ratio tyres are stiffer, allowing for less flexing under load, thus they typically have lower rolling resistance compared to high aspect ratio tyres.
- Worn tyres have less rolling resistance than new tyres - as a truck tyre wears down, the tread pattern stiffens, which leads to less flexing/deformation in the tread area.

The use of fuel efficient tyres on all axle positions can make a significant difference in fuel consumption. A reduction of 10% of rolling resistance on a complete vehicle results in approximately 3% reduced fuel consumption (approximately 0.9 litres/100 km on a vehicle which consumes 30 litres/100 km).

Of course, a 6x4 truck will have more rolling resistance than a 4x2 truck and a loaded has more resistance than an unloaded.

Alongside the vehicle specification, the powertrain and aerodynamics – rolling resistance has the largest impact on fuel efficiency.

To lower fuel consumption: Invest in fuel efficient tyres. Keep track of tyre pressure both on the truck and trailer.

10% Air resistance

External accessories and speed are the factors that have the greatest impact on air resistance. Higher speed also increases tyre wear and it requires more energy to handle the longer acceleration. Going down to 85 km/h from 90 km/h reduces fuel consumption by approximately 3.5%.

To lower fuel consumption: Minimise external accessories and lower the speed. Specify the vehicle with a suitable aerodynamic kit.

18% Resistance to acceleration and gradient

Driving in intense traffic and on a hilly route will of course influence the fuel consumption immensely.

To lower fuel consumption: Use cruise control and predictive cruise control.

Parameters that are affected by the specification:

3% Powertrain friction

Powertrains of today, regardless of truck brand, are very efficient but there will still be some energy losses in oil splash, gearbox and rear axle.

3% Accessories

Externally fitted parking coolers, extra lights and other accessories will give a noticeable increase in fuel consumption. They affect the aerodynamics of the trucks and therefore, require more fuel. Different options of air compressors, alternators and steering pumps also affect the fuel consumption.

To lower fuel consumption: Minimise the number of accessories.

4% Engine friction

The fuel consumption is less at lower revs, so the driveline should be optimized for this, for example, by using a faster rear axle and down-speeding. Moving parts in the engine, like pistons, bearings, cogwheels and belts, all generate heat which results in lost energy.

20% Heat to coolant

Due to the low efficiency in a combustion engine, not all heat is turned into energy to move the truck forward, which is why a running truck needs constant cooling.

33% Exhaust gases

The exhaust gas is basically waste heat from the engine that was not converted into kinetic energy. The higher the efficiency in the engine, the lower the temperature in the exhaust gases and the lower fuel consumption.

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