



ALUMINIUM IN TRUCKS, TRAILERS & BUSES

In the commercial road transport industry, aluminium's success is not only due to its lightness; aluminium applications also provide great design flexibility for manufacturers, lower costs for operators and improved ergonomics for drivers. Furthermore, as aluminium components are recycled in a fully economical way, land-filling is avoided. Use of aluminium components also increases the residual value of vehicles.

For these reasons, aluminium use in trucks, trailers and buses will continue to grow significantly.

The history

- 1910: First aluminium components in Parisian buses
- 1930: Industrial development of commercial vehicle components in Europe
- 1950s: First aluminium road tankers, vans and tipping vehicles
- 1976: All-aluminium truck prototype by Alusuisse
- Today:
 - Most fuel tankers and silo semi-trailers are made entirely of aluminium
 - Aluminium is frequently used for vans, tipping and self-discharging bodies
 - Aluminium components are used for a diversity of applications (see Figure 2)
 - Without aluminium, the average articulated vehicle would be 800kg heavier
- Tomorrow:
 - The weight of the average articulated truck could be 2000kg less if all existing aluminium applications were used

Reduction of CO₂ emissions

Aluminium contributes to the reduction of CO₂ emissions from road transport in two ways:

- When carrying heavy goods, it increases the load capacity of vehicles and therefore improves transport performance, allowing more goods to be carried per trip
- When carrying voluminous goods or numerous passengers, it reduces the overall weight, lowering fuel consumption per kilometre

Life-cycle reduction of CO₂ emissions:

- **1kg** of aluminium in today's average articulated truck saves **28kg of CO₂**
- Every additional kg of aluminium in tomorrow's average articulated truck would save a minimum of **20kg of CO₂**
- **1kg** of aluminium in a city bus typically saves **45kg of CO₂**

Recycling

Unlike traditional vehicles that are exported to end their life a long way from Europe, aluminium-intensive trailers often spend their entire life in the same region, where they are eventually dismantled.

Due to the high value of aluminium scrap, the motivation to sell to a scrap merchant is very high.

Passive safety

In the context of its Road Safety Action Programme, the European Commission is looking into the introduction of energy absorption criteria for trucks. The aluminium industry has already developed several solutions for the automotive and railway sectors and would be ready to take up this challenge for trucks (see Figure 1).

Regarding metal deformation that energy-absorbing elements undergo upon impact, aluminium systems make it possible to absorb significantly more crash energy per unit of weight than traditional systems. As a rule of thumb, the lightweighting potential exceeds 40%.

Finally, it should be stressed that other parts of the vehicle, such as front and rear end under-run protection devices, could also play a significant role in energy absorption.

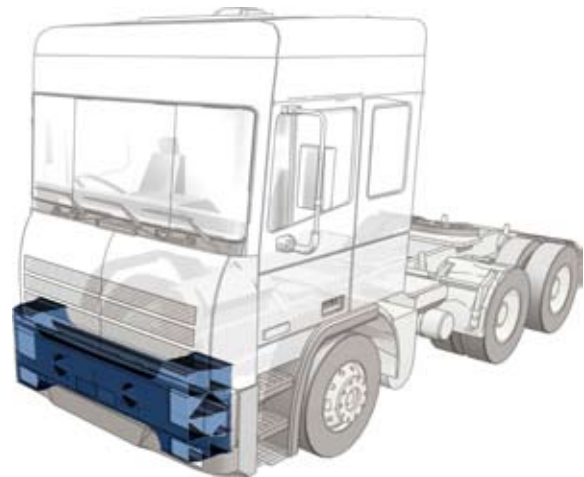


Figure 1

Some applications of aluminium in trucks

Components for tractors & rigid trucks:

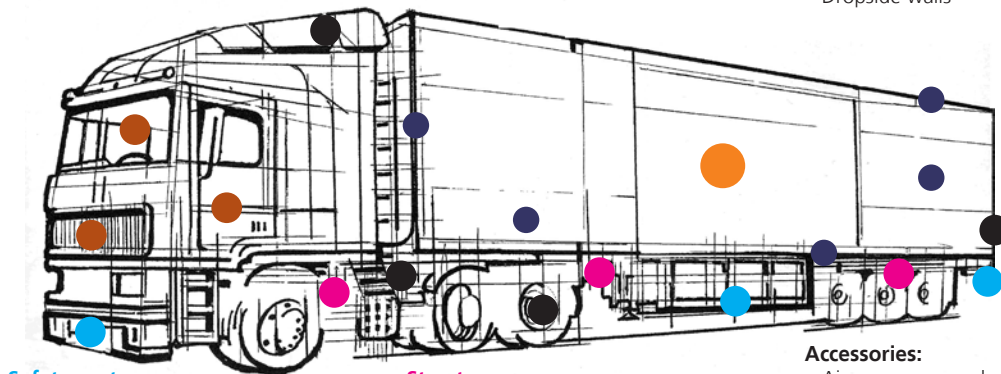
- Cabin
- Doors
- Powertrain parts
- ...and many others

Complete superstructures:

- Rigid body
- Tipping body
- Self-discharging body
- Tank or silo

Components for superstructures:

- Curtainsider frame
- Front wall
- Rear door
- Floor
- Dropside walls



Safety parts:

- Bumpers
- Front and rear under-run protection
- Side bumpers

Structures:

- Chassis
- Suspension parts

Accessories:

- Air pressure vessels
- Diesel tanks
- Toolbox
- Mudguards
- Spoiler
- Tail lift
- Wheels

Figure 2

For further information, please contact us or go to our website:

Email: eea@eea.be

Website: www.aluminium.org

Thanks to its unique properties, aluminium is able to provide intelligent solutions for present and future generations. It is lightweight yet strong, durable and corrosion-resistant, formable, highly conductive, aesthetically pleasing and, above all, recyclable. The European Aluminium Association, founded in 1981, represents the European aluminium industry, from alumina and primary production, to manufacture of semi-finished and end-use products, right through to recycling. This industry currently employs around 255 000 people in Western Europe.