

Talking 6x2

This article shares information on the use of 6x2s overseas. Use of a 6x2 instead of a 6x4 offers a potential way of reducing costs and improving efficiency. However, note that New Zealand legislation requires at least two motor-driven axles when operating a combination vehicle with a GCM greater than 39 tonnes.

A report from www.transportengineer.org.uk suggests that 6x2 tractor units are the workhorse of the UKs road freight industry.

A 2013 Confidence Report produced by the North American Council for Freight Efficiency (NACFE) <https://nacfe.org/>, and updated in 2017, found that the uptake of 6x2s in the US market is steadily increasing as truck manufacturers and OEM suppliers improve their products and product choices. There are suggestions that by 2027 30% of all new class 8 vehicles in the US may be 6x2. In the 2017 update of the NACFE report the study teams were able to group 6x2 configurations into three generations as shown in the following table, replicated from the NACFE report. The generations tend to illustrate the impacts of changes in technology rather than design improvements.

Generation	Configuration	Comment
1	6x2 with tag axle, no-load shifting technology, manual differential locks.	2 – 3% fuel savings, weight saving of 130 to 180 Kg compared to 6x4s, issues with accelerated tyre wear and traction under certain conditions resulting in poor driver perception.
2	6x2 with tag axle, manual or automated load-shifting, traction control, engine operating parameters adjusted to reduce low-speed clutch engagement and engine brake torque.	Load shifting and traction control mitigates traction issues, limiting torque can improve tyre wear significantly.
3	6x2 with liftable pusher axle, automatic load-sensing/load-shifting, traction control, engine operating parameters adjusted to limit speed/brake torque.	An option for fleets expecting to carry less than 28,000 kg at least 30% of the time giving the potential for an additional 2% fuel savings, improved traction and tyre wear compared with Generation 2 under lightly loaded conditions; a heavier front axle, suspension and tyres and other equipment may optimise this configuration.

Styles

In the UK, the predominant 6x2 is the fixed mid-lift or pusher axle where the non-driven axle is in front of the drive axle whereas in the US tag axles, fitted behind the drive axle, are more common.

There are common advantages and disadvantages of both styles. Common advantages include lower tare weight providing the opportunity for an increased payload, lower capital cost, an average 2-3% reduction in fuel use compared to 6x4s engaged in the same work, improved stability under some operating conditions and, with fewer components, 6x2 axles need less maintenance resulting in lower operating costs and reduced downtime.

Both styles have some disadvantages, when lifted, tag axles do lengthen rear overhang. Inefficient load shifting can increase tyre wear with potential for loss of traction although technology is rapidly overcoming this. In a semi-trailer - tractor configuration with the axle lifted weight transfer onto the kingpin may result in the kingpin becoming overloaded.

For mid-lift axles, as used in the UK, disadvantages cited include decreased manoeuvrability in tight spaces, increased maintenance and tyre scrubbing on driven axles if load sharing is not accurate.

Driver perception of 6x2s is often poor citing safety and traction as significant issues. The NACFE report suggests that some of this negativity could in part be due to the fact that the in service use of 6x2s is that not great compared to 6x4 and many drivers have not been trained to drive, or driven, 6x2 vehicles instead they have formed an opinion based on what others tell them.

Resale value of a 6x2 is often less when compared to a similar 6x4.

In New Zealand, some vehicle suppliers offer 6x2 configurations as a production option.