

Nitrogen Tyre Filling

Rising fuel costs have brought greater attention to maintaining proper tyre pressure levels as a key to maximising fuel economy. In recent years the introduction of nitrogen tyre filling to the trucking industry is one that many operators have begun to get serious about. It may not be a new technology but for a trucking company any increase to fuel efficiency or reduced maintenance costs can produce big savings.

The majority of truck tyres within Australia are filled with compressed air. This air alone is about 77% nitrogen and 22% oxygen. So it might not seem the benefits of filling with around 95% to 98% nitrogen would produce tangible savings especially when coupled with the cost of purchasing and installing a nitrogen tyre inflation but operators who have invested in the systems are finding savings across three particular areas:

- Better mileage over compressed air
- Reduced leakage from tyres
- Increased lifespan of tyres

Better Mileage through reduced Leakage

Maintaining a tyre at optimum pressure ensures that a heavy vehicle has the potential to travel as efficiently as possible. Any reduction or increase over optimal pressure increases the total fuel needed to travel a certain distance. A nitrogen tyre filling system uses a membrane process to remove the oxygen from standard air to increase the percentage nitrogen in the compressed air. And because nitrogen is a bigger molecule it permeates slower out of a rubber tyre than oxygen. As a result a tyre filled with nitrogen will maintain optimal pressure for longer.

The tyre manufacturer Bridgestone in testing found that using compressed air in truck tyres are likely to lose two PSI per month, but with nitrogen filling it would take six months for these tyres to lose two PSI.

This may be of particular benefit to trucking companies that have a large trailer fleet that spend a lot of time away from a central depot where their tyre pressure may not be as regularly checked.

The benefits are clear for companies but the extent of that benefit will be reduced for companies that regularly maintain optimal pressure in their fleet's tyres or employ an automatic tyre inflation system.

Increased Lifespan of Tyres

Where nitrogen tyre filling might see its greatest benefit to trucking companies is in the reported increase in the lifespan of tyres. Oxygen by coming in contact with the steel cords in the tyre when leaking corrodes the cords over time reducing the lifespan of the tyre. Leaking oxygen also causes a tyre to oxidise, increasing the rate at which the rubber of the tyre becomes brittle.

For a trucking company with a fleet of 200 trucks a capital investment of approximately \$45,000 is needed to install the system. This works out at a cost of \$225 per truck. To produce a benefit nitrogen tyre filling would have to recover this from less failed tyres.

One American company Adams Motor Express noted that they have 2,800 tyres on nitrogen, and at the time they have not had a soft-tyre blowout in four years – in comparison to the 63 pressure-related failures they had the year before the switch.

Another US company Leather-Rich noted that their biggest benefit identified from switching their fleet to nitrogen has been in the saving of their tyre replacement costs. While before they were getting between 39,000 to 45,000 kilometres they are now getting between 64,000 to 72,000 kilometres.

While the same company pays about \$5 US more to inflate each tyre they believe the savings in fuel economy and tyre replacement more than adequately outweigh the costs.