

Let tyres take the pressure

The results of a commercial five-month investigation of using tyre pressure control (TPC) on timber lorries are now available. The report shows that TPC could offer real improvements to the efficiency and effectiveness of timber haulage.

The report by Jonathan Ritchie, harvesting and transport manager of James Jones & Sons covers the study, which was funded by Moray, Badenoch and Strathspey Enterprise with the intention of investigating the costs and benefits of fitting TPC to a timber lorry and decide if TPC can be justified taking into account financial issues and human factors. This piece is taken from Jonathan's report.

What is TPC?

This is a system which electronically controls tyre pressures from the cab of the lorry while the vehicle is moving. TPC has also been referred to as central tyre inflation (CTI). At the start of the study, there were only four TPC systems fitted to lorries in the UK. The first system was fitted last year.

The TPC system increases traction. The diagrams illustrate how this footprint is enlarged when the tyres are deflated producing significantly increased traction.

TPC claims up to 34% better traction in sand and 17% in mud. This has been proven on some road surfaces in a report by FERIC (www.feric.ca).

Benefits claimed for TPC and tested in the pilot

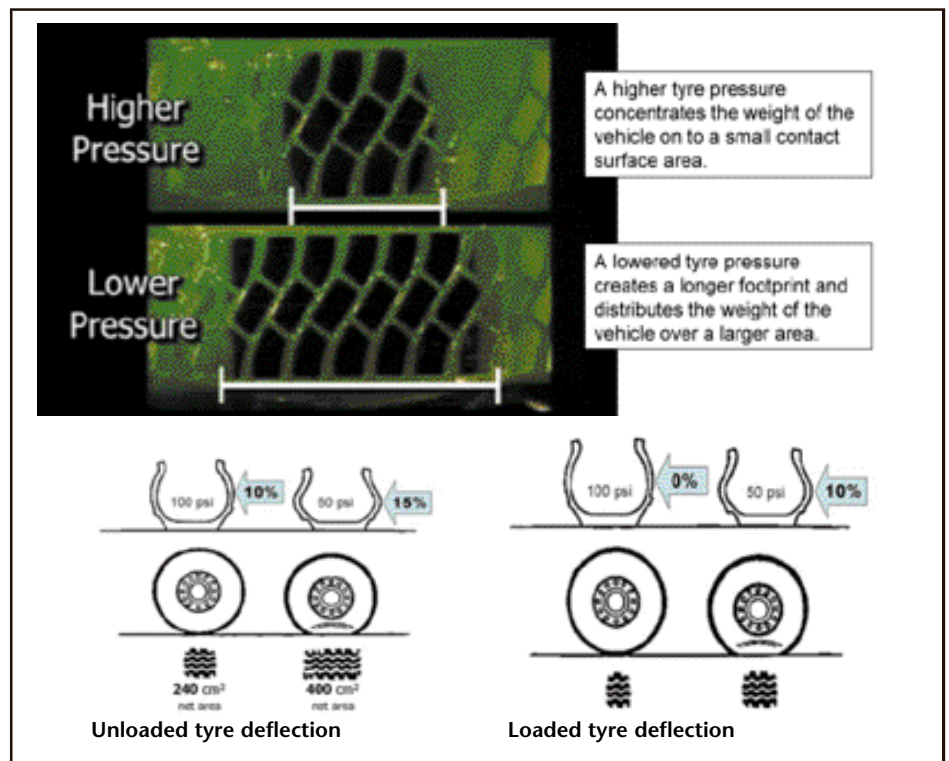
Increased traction

The pilot found that this was by far the best advantage of the system with very positive feedback and results. It is hard to measure financially, but definitely more efficient and effective as you have the confidence the lorry will get in/out of forests without being bogged or having to be re-routed. Double drive with TPC is the most effective, but tag-axle with TPC being the lorry with the most improved traction (comparable to double drive without TPC).

Jonathan Ritchie kept a log during the trial: 07 September - Double drives struggling at Deishar but are managing...just...TPC lorry is coping rather well; 14 September - Lorry with no TPC, struggled to get out of Deishar. Had to take load off and have second attempt. (Raining most of the day); 19 September - Double drives still struggling with Deishar while TPC marches on.

Increased tyre life

Most lorries run with tyre pressures which are set for tarred roads when loaded. It is recognised that tyres should have different pressures for when they are loaded and unloaded. They should also have different



pressures for when they are on tarred or forest roads. The TPC system allows this change to be made when the lorry is moving. The system also keeps all individual tyres at the pressure required, which should result in better and more even tyre wear. The trial concluded that it was difficult to prove at this stage with tyre wear itself, although there were signs of tyres wearing more evenly across the tyre. Another advantage is with slow puncture, when the TPC system is capable of keeping the tyre inflated until it is sorted, saving on downtime and callout charges.

Reduced vehicle maintenance

The softer tyres on the forest roads should reduce the vibration on the lorry, which can then increase the life of components. TPC systems have proved reduced vibrations coincided with fewer replacements of light bulbs and tightening of bolts. This is supported with feedback from drivers/mechanic.

Logbook entry: 08 August - No work carried out by mechanic yet. He commented on fewer light bulbs needing to be changed and less tightening of bolts. Munro Foulis - TPC lorries are into a field 10 yards off the forest road to pick up logs. The driver reckons normal lorries could not do that.

Road costs and maintenance

Depth of road surface material needed can be reduced. Lower tyre pressures reduce the amount of rutting which occurs with fully inflated tyres. Grading of roads can be reduced by 75%. It is fair to say that moderately rutted roads caused by vehicles with "fully inflated" tyres can be "healed" by the lower inflated tyres. The impact on road maintenance is difficult to assess as it is not a direct cost to the haulier. Provisionally, it looks like there is a significant reduction in damage to roads. This will be looked at in more detail in the next Roadex project.

Log book entry: 15 October - New road constructed at Achnacloch. Previously told

to keep off road for 10 days to let settle. Landowner allowed TPC lorries to use road to see if there is any damage - none of course.

Driver benefits

Using TPC should significantly reduce the vibration and make driving the lorry a lot smoother and more comfortable. This should also reduce the incidence of backs pain, which drivers suffer from. The improved traction also reduced the risk of bogging, which represents a major safety benefit.

During the trial, drivers reported that they were delighted with the new system. They use it all the time, which speaks for itself. They have a smoother ride, which, in their own words, allows them to go faster. This should therefore increase productivity. They are more confident, which also means less stress and fatigue levels.

Fuel economy

TPC claims a fuel saving of 3-4% can be achieved. I have monitored the fuel for this year on the lorries before and after TPC was fitted. The trial suggested that fuel consumption was down, if only slightly.

Conclusions

TPC is certainly a promising innovative system designed for lorries which have 'on' and 'off' road activities such as timber haulage. During the short trial, the feedback from everyone involved has been very encouraging. There are already signs that the efficiency and effectiveness of timber haulage is improving. On-going monitoring is needed to establish actual results, which can then be compared to results in Canada and Sweden. In future, these will then be able to be used as performance indicators.

Since the trial started, there are now eight TPC systems either installed, or on order, for timber lorries in Scotland.

The full report is available from <http://timbertransportforum.org.uk>