AIR CTI

THE ULTIMATE

Tyre Pressure Managment System

TYRE TORQUE

Issue: 2 November 2017

The team at AIR CTI welcome you to the second issue of our company's Newsletter,

It has been another busy period for AIR CTI. The company continues to grow month upon month. Our expert team has fitted multiple AIR CTI units with Harvestco, Toll, SA Power Networks, Tas Power Networks, AusNet Services as well as Tippers and a Recreational Vehicle. Two of our team spent the week in Adelaide, battling the heat and the locals!, to attach AIR CTI on time and under budget. For more details refer to our facebook page.

I didn't receive any complaints from the first issue and no-one has egged my house yet so I have been entrusted with the job of writing the second edition — you only have yourself to blame!!! Seriously though, I have only received positive comments, so thank you for those.

I have also had requests for more information about Whole Body Vibration and have provided same from our extensive company library on the subject. It is a pleasure that AIR CTI can offer our knowledge, skills and resources to assist. Of course, we extend the same to all our readers.

Congratulations to 24-year-old trainer Joseph O'Brien as he overshadowed his father Aidan O'Brien to win the 2017 Melbourne Cup with Rekindling. His father's Johannes Vermeer was second and Max Dynamite third. Commiserations to those who lost their money and to those who won, I have a great investment in Brazil that you may wish to be part of.

A congratulations is also due, albeit belatedly, to David Reynolds, Luke Youlden and team owner Betty Klimenko for their 4 second win at the Bathurst 1000. Reynolds drove through horrid conditions — the track drenched most of the day — to pull off the remarkable, unexpected win.

Our Managing Director, Mr Chet Cline, is presently in China with one of the company's long term partners investing their time and money in developing business contacts and extending the hand of Aussie friendship to this great country. China is going through an immense change and is positioning herself to be a economic superpower of the future. I had the opportunity myself to work in China for 18 months and I was very impressed by the growth and thirst the country and its people have to succeed. A big nǐ hǎo to our Chinese readership.

Mr Cline will be back in the office on Tuesday 14 November.

ALL THE BEST FOR THE COMING MONTH

The AIR CTI team

WORK SMARTER , NOT HARDER

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TECHNICAL DISCUSSION (Feedback sought and welcomed)

It is of great concern to me that the current Performance Based Standards are ignoring one of the fundamental causes of many heavy transport vehicle accidents as well as the major preventable cause of road infrastructure and damage.

I am currently reviewing the document,

'Rules for assessment of potential performance based standards vehicle, Discussion Paper, June 2005'.

This document was the discussion paper that set out the ground rules for the PBS system and as such it is worth reviewing. It is always good practice to reassess one's starting ideals to determine progression toward those initial goals.

It is in this context that I turn to page 1 of this paper and quote directly,

The aim of the Performance-Based Standards (PBS) project is to improve road safety, protect road infrastructure and promote innovation through the adoption of a performance-based system of regulation for heavy vehicles.

It is to the underlined and italic text to which I direct your attention,

(a) to improve road safety
(b) protect road infrastructure

Presently the campaign by the government and Victorian police to reduce the road toll is, in my opinion, myopically focused on speed. It is this sole focus on speed as the only cause of road death that is detrimental to a balanced conversation on the issue.

To explain further; when a vehicle is in motion there is a fine balance between the driving force of the motor and the opposing frictional retarding forces. The difference being the cause of the car's forward, or under braking, retarding motion. Regardless of the direction, these forces need to be transferred to the road surface via the tyre's contact with the pavement. This contact point is the footprint of the tyre. The tyre footprint is influenced by the terrain or road conditions, the speed of the vehicle, the load or weight of the vehicle and, most importantly, the tyre pressure.

Clearly as the footprint is vital to road safety awareness the intelligent optimizing of a vehicle's tyre pressure is essential. In fact, it has been determined that the footprint of a tyre under optimal pressure should have a contact area with the road of 440 cm^2 (68.2 in^2) whereas an unloaded vehicle with a tyre pressure of 100 psi has less than a quarter of this area. In the latter case 100 cm^2 (15.5 in^2). Thus, the driver now has over 4 times as much ability to influence his braking decisions through his tyre's contact with the pavement.

An optimal footprint, determined by reference to the three criteria above, ensures maximum control of the vehicle under all conditions. The most vital condition being under braking. An optimal footprint will not only reduce braking distances by up to 30% but also allow the driver to control the braking behaviour of his vehicle to a far greater extent. Research has shown that optimal tyre pressure virtually eliminates jack-knifing. This is because the larger contact area ensures the sheer stress at the tyre/pavement interface is now below failure. Thus, one of the main injury concerns of a driver, ie crushed in his cabin by his jack-knifed trailers is removed. Not only is optimal tyre pressure intuitively obvious there are numerous supportive tertiary research papers on this very topic.

A driver has numerous warning systems in his cabin, eg oil pressure, temperature gauges etc BUT the most vital safety factor, the ability to control his braking vehicle under an adverse event, is not even part of the driver's consciousness yet alone being carefully observed. When one reflects, if the engine fails the vehicle comes to a stop but if the tyres fail the consequences are far more severe and often, can be, life threatening. Present day logic of 100 psi regardless of conditions is clearly skewed and misinformed.

I now wish to address the second point, protect road infrastructure.

Once again it is the tyre footprint that is in contact with the pavement. All loads from the vehicle are transferred through this area and thus the wear and tear and degradation of this surface is directly linked to the footprint and, by extension, tyre pressure,

A smaller footprint, caused by overinflated tyres, imparts a higher stress loading onto the pavement whereas an optimal footprint ensures minimal pavement damage. Imagine the truck's load pounding into the pavement like a jackhammer. Natural undulations in the pavement set up an oscillating cycle as the vehicle alternatively rises and falls onto the roadway. As vehicles travel at roughly the same speed, the same area is pounded by every vehicle. The result is pavement destruction and potholes. Notice how potholes are usually evenly spaced – this is the wavelength of the oscillations. It can be viewed in this way; when one uses the cheek or flat side of a hammer to hit a desk very little damage is done, but when a desk is hit (with the same force) using the peen or even the face (of the head) considerably more damage results. Simply put a smaller area ensures greater stress loading to the pavement and consequently far more roadway damage.

By ensuring vehicles use the optimal tyre pressure the road infrastructure is protected from overloading stress. After all, much of the supporting underlying structure of the nation's road network was designed and laid down when the maximum loading of vehicles was much less than today. As a group, the transport industry need to protect this asset simply because it is our lifeblood that we use every day. Ensuring it is maintained is simply looking after a partner in business. We need good roads and so we need to accept part of the responsibility of preventable damage.

The cost to maintain the country's aging infrastructure Is astonishing yet monitoring and ensuring optimal tyre pressures is ignored as part of the Performance-Based Standards when it would go a long way toward addressing this issue.

Consequently, I keep coming back to the same questions,

* Why do most transport companies ignore tyre manufacturers recommendations?
* Why is tyre pressure, and in particular optimal tyre pressure, being ignored?
* Who authorised the removal of systems that can maintain optimal tyre pressures?
* Why is it that optimal tyre pressures or Central Tyre Inflation systems (systems that allow drivers to monitor tyre pressure) have been dismissed?

Tyre pressures were **part of the original discussion paper.** How, why and by whom authorised and approved its removal?

It is even more baffling when one realizes and understands that AIR CTI will pay for itself over and over again and add valuable profits year after year.

How can the transport industry be so negligent?

Yours sincerely

Julian Taylor B.E. (Hons)., B.Comm., B.A., B.Acc.

I would like to continue our conversation this month about Whole Body Vibration. Readers may recall the tremendous toll road vibration can have on the health of drivers. In fact surveys and research have shown up to a twenty year deficit in life expectancy of truck drivers when compared to the Australian average. An astonishing figure in itself and yet this doesn't even include a quality of life component. Not only are truck drivers living up to twenty years less than their counterparts — their quality of life is diminished as well! This is a public scandal.

Yet if you asked Australians I think most would say that Australian roads are good. We whine and complain but Australians would consider their road quality (not congestion which is a different topic altogether) is, in general, at least comparable to European and American standards. Certainly our government encourages us to take that view.

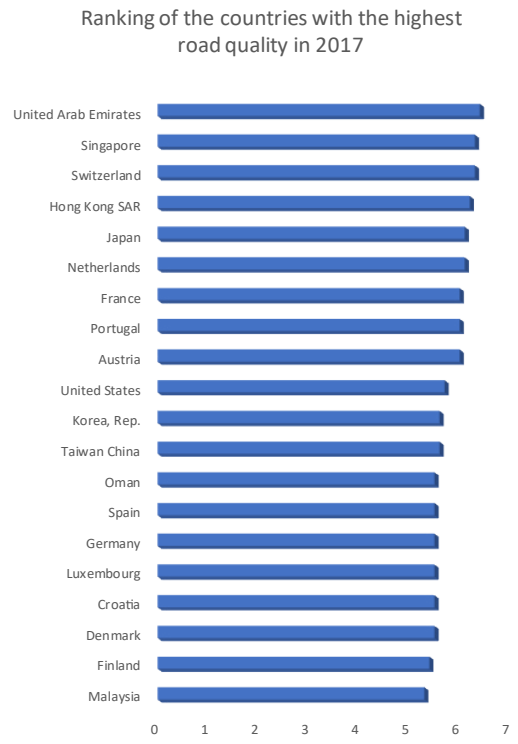
Fact 1.

Australia ranks 43th in the world in terms of road quality (WEC Sept 2014). With no disrespect, these countries rank above Australia — Spain, Portugal, Cyprus, Namibia!, Puerto Rico, Chile, Sri Lanka, Slovenia, Turkey, Swaziland! Australian roads are rated one of the worst in the developed world and are barely keeping pace with developing countries.

Fact 2.

The myopic Sydney-centric Australian government will continue to turn a blind eye to the quality of Australian roads — especially the country roads — so this situation is not going to change very soon AND probably will get much worse.

Now putting 2 and 2 together — isn't it time to be proactive and, do what truckies have always done, fix the problem themselves? **Time for AIR CTI?**



The adjacent graph shows the countries with the highest road quality in 2017. Austria for example received a rating of 6 on a scale of 1 (= under-developed) to 7 (= extensively developed according to international standards) and was ranked ninth.

Road infrastructure is an important factor for the productivity, safety and satisfaction in a country. Roads are used daily for a variety of reasons, and in order to build and maintain roads, costs are often high for the government. A poor road quality could also lead to potential accidents and carelessness. In 2011, road injuries were among the ten leading causes of death worldwide, taking about 1.26 million lives that year.

Not only does the government have to appropriately divide the territory, it is also important that these roads have a high efficiency to allow commuters to reach their preferred destinations with as few struggles as possible. This is particularly important in larger countries, where cities are further spread out from each other. In terms of mileage, the United States has the longest and largest road network in the world, with approximately 6.6 million kilometers of paved or unpaved roads, while road density is highest in Western Europe and Asia. Monaco is ranked as the country with the highest road network density, followed by Macau (one of the two Special Administrative vRegions of the People's Republic of China).