

'N' FACTOR BOOSTS FLEET OPERATIONS

Truck operators, deflated by the crippling economic downturn, can roll to sustainable business if they switch fleets to run on Nitrogen inflation and save on labour, fuel, and tyre costs. There is enough research to highlight its advantages, Konrad Mech, Vice President and a Principal of Drexan Corporation, manufacturer and distributor of equipment and processors for the trucking industry, says in an interview



Konrad Mech

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How can fleet operators in China and India facing economic downturn be convinced of the advantages of Nitrogen inflation?

There is a lot of information on the Internet about the benefits of nitrogen tyre inflation for fleet operators. Some of the claims are legitimate and are backed up by science, while others are spurious and lack credible evidence. One resource I suggest is the Get Nitrogen Institute (www.getnitrogen.org). The data is well presented and references are cited. While this site is developed for North American operators, it has many resources on the scientific research and the operating benefits for various fleets – taxi operators, bus operators, and freight delivery operators. Another publication is our own study, which was performed with a contribution of funding from the Canadian Federal Government's Ministry of Transportation (Transport Canada) on the benefits of nitrogen to long haul trucking. The study and its appendices can be downloaded from our company website at http://www.drexan.com/market_tiresaver.php. The challenge for users in China and India is one of access to this data. Not everyone in these developing economies has Internet access, so the information must still be disseminated by the printed media. The information needs to be made available by nitrogen tyre inflation system suppliers, tyre-servicing companies, and perhaps by the national and regional governments who have an interest in promoting these benefits. Government does play an informational role in advising

on the benefits: fewer scrap tyres, longer lasting tyres, better operating safety, less emissions pollution, lower operating costs for fleets, the ability to retread tyres more times, and less use of petroleum (gasoline and diesel) which becomes available for other uses in the economy. All of these benefits directly accrue to the country in which the fleets operate.

Do you think fleet operators plying on poor roads in China and India would still gain benefits from nitrogen?

I strongly believe there are benefits to Asian users. While I have never experienced road conditions in Asia, I can tell you that road conditions in North America vary wildly due to the harsh climate. Many regions of North America are subject to severe temperature cycling about the

water freezing point, which results in heaving roads and deep potholes. This causes impact damage on underinflated tyres. Also, North American road construction has black top with concrete curbs. For freight carriers, this causes sidewall damage due to curb - scrape when making turns or when pulling close to curbs. The advantage of nitrogen tyre inflation is not only in maintaining tyre pressure at the manufacturer's recommended inflation pressure. It is in eliminating or drastically reducing the damaging effect of rubber oxidation, which weakens tyre rubber. Fleet operators using nitrogen in North America and elsewhere report reduced tyre failures of nitrogen inflated tyres when compared to air inflation. But a real benefit in China and India is in reducing blowouts from operating tyres at very hot temperatures.



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Therefore, Asian operators can expect a reduction in tyre failures and tyre damage when compared to compressed air inflation operating on the same road network.

In Asia, cost of nitrogen inflation is high and there is a lack of availability. It is a chicken-egg situation, and how could market be developed?

If my company did business in Asia, we would make the investment in providing equipment and in promoting the use of nitrogen. There is money to be made. The situation is not chicken or egg, it is to be the farmer and profit from both! The economics of nitrogen inflation has changed with the advent of low-cost membrane nitrogen generators. Before these machines were available, the only source of nitrogen was from industrial gas suppliers. Nitrogen was supplied in either gas bottles or in liquid nitrogen dewars, and nitrogen pricing was high to protect profits from other established nitrogen user markets. Now, with the availability of low-cost membrane nitrogen generators, high purity nitrogen can be produced locally at the point of tyre inflation at much lower cost than using industrial nitrogen from bottles. While the business case and paybacks in India and China may be quite different from North America, the elements of developing the business case are the same. The fleet manager needs to recognise that the three largest operating costs are labour, tyres, and fuel. The operator can establish what the expected increase in tyre life is by referring to existing studies. Then he can develop a formula to calculate the expected fuel savings against the cost of nitrogen tyre inflation. Of course, for smaller fleets the ideal situation is to develop a partnership with their tyre supplier instead of buying their own generator. But I suspect that even in Asia, if a fleet is over 100 vehicles, then they should consider buying their own nitrogen generator. In North America, the savings are quite substantial. I am personally unaware of any fleet that has adopted nitrogen and has subsequently dropped it.

Most truck operators in China and India are yet to switch to radials. Can those who still use bias ply tyres take advantage of nitrogen inflation?

The original benchmark study on nitrogen tyre inflation for long haul freight trucking was done by Lawrence R. Sperberg in



1985, Million Mile Truck Tires Available Today – One of the World’s Best Kept Secrets. It was performed on bias ply tyres. The author claims that bias ply tyres are capable of a million miles of service including retreading. While the paper was written years ago, its findings are as valid today as they were in 1985. The author states: “The exhaustive study concluded when a truck tyre is new nitrogen inflation will add from 25% to 30% more miles to the initial wear life in comparison to air inflation, while simultaneously reducing tyre failures by one half. When the worn tyre is retreaded, nitrogen inflation will increase the resultant tread life by over 50% in comparison to air inflation while continuing to protect the tyre from failure by roughly the same ratio of 2 to 1.” One could ask why nitrogen tyre inflation was not eagerly adopted at that time. The answer was addressed above – membrane nitrogen generators only became widely available in 2004. Back in 1985, bias ply tyres were cheap and so was fuel – but nitrogen was expensive. The economics have changed significantly over two decades. Ironically, the reason my company Drexan Corporation had to do a trial on radial tyres was because North American users did not want to rely on data pertaining to bias ply tyres! So the scientific case is clearly made for both tyre technologies.

How to improve tyre life and slash tyre-

ageing process?

Tyres are an asset just like any other asset. Fleet operators should know what their operating costs include tyre service life. If they do not know, they need to capture this information. Then after understanding their costs, they need to review their tyre maintenance procedures. The most important thing regardless of the inflation gas used is maintaining correct tyre inflation. This requires regular pressure checks by trained tyre technicians using calibrated pressure gauges. Thumping tyres with mallets is simply not acceptable practice due to its gross inaccuracy. Then the final element is to maintain quality assurance of the inflation gas. I mentioned above the issue of hot operating temperatures. Compressed air contains a great deal of moisture and it is this water vapour in the tyre that generates a high amount of heat. If a fleet operator converts from compressed air to nitrogen, then the maintenance system must ensure that nitrogen purity is maintained. This needs to be done in order to determine if the driver added compressed air with water moisture while on his driving assignment. Checking tyre gas purity can be performed by using low cost hand held nitrogen analysers at the same time the tyres are inspected for inflation pressure, tread depth and casing damage. While this sounds like a lot of work and effort, it really is not. Proper tyre maintenance should be done regularly anyway. The payback on cost savings of fuel and tyres amply rewards the efforts. Drexan has a document on the various issues to be considered by fleet maintenance managers when adopting nitrogen tyre inflation, which can be requested from the company. ▲

A real benefit from nitrogen inflation in China and India is in reducing blowouts from operating tyres at very hot temperatures