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**INFLATING TIRES
WITH NITROGEN
TO MAXIMIZE TIRE LIFE
AND INCREASE FUEL
EFFICIENCY**

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INFLATING TIRES WITH NITROGEN TO MAXIMIZE TIRE LIFE AND INCREASE FUEL EFFICIENCY

By Ron Eveson

Inflating fleet tires with nitrogen versus standard compressed air has multiple benefits that can reduce operating costs, improve handling and safety, and help control downtime on the job. Nitrogen inflation has long been accepted and used in race cars, commercial airplanes, and military vehicles to improve tire performance. Now, nitrogen is readily available as an important part of a fleet tire-maintenance program.

When users inflate with nitrogen versus compressed air, they are virtually eliminating the oxygen inside the tire. It is the oxygen that permeates through the tire to reduce pressure, deteriorate the tire wall over time, and corrode the rims and valves. Nitrogen is a dry, inert gas that stays in a tire three to four times longer than compressed air. Take the oxygen out, put nitrogen in, and get the best tire life and performance.

UNDERINFLATION: ENEMY NUMBER ONE

Maintaining proper inflation is recognized as the key to maximizing tire life for all types of vehicles in a fleet. But tires inflated with compressed air are constantly losing their pressure by the permeation of oxygen molecules through the wall of the tire. It is the same process that causes a balloon filled with air to shrink, but much slower. With compressed air inflation, an average truck tire will lose up to 2 pounds of pressure per month. That underinflation causes the following negative performance factors:

- Tire life is reduced by excessive tread wear.
- Tires may fail prematurely, causing multiple problems, such as blowouts and costly road repairs.
- Excessive flexing causes heat buildup inside the tire.
- Proper tire grip on the road is compromised.
- Vehicle safety is reduced.

Because of its molecular structure, nitrogen stays in tires much longer, maintaining the correct pressure to give them maximum tread life, proper contact patch on the road, and improved vehicle handling and safety.

Tires that are underinflated flex, causing heat to build up and increasing the potential for blowouts. When extreme

heat is applied to the wheel rim or to the tire wall, flammable gases can also build up inside the tire. A condition known as auto-ignition may occur, putting tires at risk for an explosion. Tire industry officials agree that keeping tires properly inflated

reduces the flexing and stress to sidewalls that can cause tire failures. Nitrogen-filled tires operating at their proper pressure will run cooler to limit these serious and costly hazards.

STOP THE OXIDATION

The oxygen in air corrodes the inner surface of both steel and aluminum wheels, as well as metal valve stems. Over time,

“MAINTAINING PROPER TIRE PRESSURE IN A FLEET CAN IMPROVE FUEL EFFICIENCY BY UP TO 3 PERCENT. WITH THE CURRENT PRICE INCREASES IN BOTH GASOLINE AND DIESEL FUEL, THAT IS A SIGNIFICANT POTENTIAL SAVINGS FOR COMMERCIAL USERS.”

ABOUT the AUTHOR



Ron Eveson is president of ANS America, Inc. The company offers nitrogen generator systems for all types of tire maintenance programs. All ANS equipment is Quality Made in the USA. For more information, please contact ANS at 800.526.0049, ext. 10, or visit www.gotoans.com.

it also attacks the inner liner of the rubber tire to allow more air molecules to pass through. Compressed shop air often contains excessive water vapor that only complicates the oxidation process, causing iron oxide rust or aluminum hydroxide to form. With dry, inert nitrogen inflation, the oxygen content of air inside the tire is removed, and the risk of oxidation is virtually eliminated.

NITROGEN INFLATION SAVES MONEY

In a controlled test involving 54 new truck tires, one tire group was inflated with nitrogen and the other with compressed air. The two tire groups were run side by side on the same tractors until they wore to the tread wear indicators. The nitrogen tires ran 26 percent more miles than those filled with air before they had to be removed. Take a conservative 20-percent improvement and do the math on a fleet's annual tire expense to see the potential savings from converting to nitrogen inflation.

The constant flexing of tires as they revolve is called deflection. With underinflation, this deflection is increased, consuming more energy—and fuel. Maintaining proper tire pressure in a fleet can improve fuel efficiency by up to 3 percent. With the current price increases in both gasoline and diesel fuel, that is a significant potential savings for commercial users.

ON-DEMAND NITROGEN GENERATOR SYSTEMS

State-of-the-art technology in membrane filtration equipment has brought nitrogen inflation into the realm of

any tire maintenance operation. These systems can easily be connected to the existing compressed air supply and be ready to generate nitrogen.

Inside the generator filter, thousands of permeable membranes are filled with air at high pressure. As the air passes through the membrane filter, smaller molecules of oxygen, carbon dioxide, and other rare gases are separated out while the larger nitrogen molecules travel into a holding tank to be used in the tire inflation. The system has no moving parts, is very quiet, and requires a simple annual maintenance program. A typical shop installation includes the nitrogen generator with a digital auto-inflator control unit and a multihose manifold allowing two or more tires to be serviced simultaneously. Using the auto-inflator, the operator sets the desired tire pressure and the purge cycle. During the purge, air is deflated out of the tire and nitrogen is pumped in until the set pressure is reached with an optimum nitrogen purity level of 95 to 97 percent.

After conversion to nitrogen inflation, the normal pressure check routine should be

maintained as part of a preventive maintenance program, but tires should be closer to their set pressure between top-offs.

Nitrogen generator systems are available in a full range of configurations, from small portable units for car and light-truck tire service to high-volume models that can handle even the largest equipment tires. Considering the potential savings in long-term operating costs, plus the improvements in vehicle safety and handling, converting a fleet to nitrogen tire inflation deserves a very close look. ♦



Using nitrogen to inflate tires allows owners to maintain proper tire pressure, reduce wear, and improve vehicle handling and safety.