



Industry Information on the Effects of Improper Tire Inflation

National Tire Usage Survey indicates that over 80% of all tire problems experienced by US fleets are a direct result of improper inflation.

Studies from leading US universities, the US GAO and several tire manufacturers indicate that most vehicles have some degree of underinflation, 25-50% of all tires are underinflated by 8 psi or more, and 40% of vehicles have at least one tire severely underinflated (defined as more than 25% below recommended pressure.)

FUEL COSTS

- A 10 degree drop in air temperature will reduce tire pressure by 1 psi. The difference between summer and winter tire pressures can be as much as 8 psi, causing a fuel penalty.
 - Sikorsky "How to get more MPG in the 90's"
- For truck tires, a 10 PSI drop in tire pressure will increase rolling resistance by 2%.
 - Goodyear Tire & Rubber Company
- Tires under-inflated by 15% will cause fuel penalties of around 2.5%, and a 30% under-inflation will increase fuel consumption by 5%.
 - Goodyear Tire and Rubber Company
- Maintaining tire inflation pressure is the most important tire maintenance function. Cost per mile benefits will directly result from good tire pressure control.
 - Goodyear Tire & Rubber Company
- In the US alone the overall deterioration in fuel economy due to underinflated tires is 3.3% and the average annual wasted fuel is between 1.2 and 2.8 billion gallons.
 - NHTSA, US EPA and US GAO studies
- Over 2 billion gallons of fuel are wasted in Europe annually due to underinflation.
 - Bridgestone Europe



TIRE COSTS

- An industry average of 20% of the annual maintenance budget is spent on tires and tire maintenance programs.
 - National Tire Usage Survey
- Running tires at 20% under-inflation can reduce tire life by up to 50%.
 - Goodyear and Michelin
- Under-inflation will cause increased tire running temperatures and leads to premature removal of the tire.
 - Goodyear Tire and Rubber Company
- Industry surveys indicate that consistent proper tire inflation for the trucking industry would increase fleet wear by 17%.
 - Michelin
- A 20% under-inflated tire will, over the life of the casing, reduce the effective life of that casing by 30%.
 - Retread Industry report
- Tire under-inflation will reduce tire life as follows: 20% pressure reduction causes a 25% tire life reduction, and corresponding figures for 30% under-inflation are a 55% tire life penalty.
 - Schrader – Bridgeport
- A 100 PSI tire under-inflated at 80 PSI will lose 15 – 20% of its life, and damage its further life as a retread candidate.
 - Bandag Corporation
- Most vehicles have some degree of underinflation, 25-50% of all tires are underinflated by 8 psi or more, and 40% of vehicles have at least one tire severely underinflated (defined as more than 25% below recommended pressure.)
 - Bandag Corporation

TIRE DEBRIS

- Tire abuse causes rubber debris on the road. Almost all debris comes from dual tires, primarily from the inner tire.
 - Tire Retread Bureau
- “Zipper Tire Failure – the tire has been operated in an under-inflated condition which weakened the sidewall cables.”
 - MTD Magazine



ROADSIDE REPAIRS

- The average cost for an emergency roadside assistance call was \$775.00.
 - National Tire Usage Survey

ENVIRONMENTAL ISSUES

- Retreads use 7 gallons of oil to re-manufacture a tire, versus 22 gallons for a new tire.
 - Tire Retread Bureau
- Underinflation produces an unnecessary 250 lbs. of CO2 annually per automobile on the road.
 - Various studies (Bridgestone, StopGlobalWarming.org, US EPA)
- Globally the annual total unnecessary CO2 production is estimated to be more than 200 billion pounds. Elimination of this unnecessary and harmful CO2 production every year would have the atmospheric cleansing impact of a rainforest roughly twice the size of California.
- Increased tire life via ATIS means fewer tires need to be disposed of via landfill or recycling, and less energy is used in the production of replacements for failed tires.

LEGAL and LIABILITY CONCERNS

- ***23,000 tow-away crashes occur annually due to blowouts and flat tires and 33,000 injuries occur annually due to underinflated tires.***
 - ***NHTSA***
- ***600 fatalities occur annually due to underinflated tires.***
 - ***The Rubber Manufacturers Association***



THE CASE FOR AUTOMATIC TIRE INFLATION AND ROI

Tires represent the single greatest maintenance expense that fleets have, taking more than 20 cents of every maintenance dollar, according to a 1999 study by the Technology & Maintenance Council (TMC).

The TMC study concluded that the average fleet lost at least \$750 per tractor-trailer each year because of underinflated tires (1999 figures, estimated to be double that amount in 2010.) It also showed that a fleet with a consistent problem of under-inflated tires required 12% more new tires and 10% more retreads, and incurred a 6% fuel loss.

Many studies and calculators exist to attempt to quantify the ROI period for automatic tire inflation systems. Despite significant variations in methodology, assumptions, etc. they are nearly unanimous in estimating a 6 to 12 month payback.

Even with the best possible seal between beads and wheels, and no valve stem leaks, truck tires can lose as much as 3 psi per month – even when the vehicle is parked.

A dropped trailer can lose an average of 5 psi per week. When the PressureGuard Tire Inflation System is attached to the truck/tractor, the system automatically releases compressed air to inflate the tires back to the manufacturer's suggested pressure without using an outside source.

“Air pressure is the key. Air is a structural part of every tire, as much as the cords and the rubber. The cords are there to shape the rubber casing that holds the air in, while the air supports the tread that provides traction. If you think of air as part of a tire's structure, you can understand that running with less air pressure than the tire maker specifies is like running with less steel in your chassis or with fewer leaves in your springs. It will work for a while, but it's a recipe for overstress and premature failure.” (Michelin North America 2002)

