

Automatic Tire Inflation Systems

A Glance at Clean Freight Strategies

Energy and Fuel Savings

Gallons Saved:

100 gallons

CO2 Savings:

1.12 Metric tons

Increase in Fuel Economy:

.604%

New MPG:

6.03 mpg

Fuel Cost Savings:

\$380



Automatic tire inflation systems can save tire maintenance costs and improve fuel economy by nearly 1 percent, saving 100 gallons of fuel and eliminating 1 metric ton of greenhouse gas emissions per year. Properly inflated tires also have fewer punctures and a longer life expectancy.

What is the challenge?

When not properly inflated, tires flex more under load. This produces heat and increases rolling resistance, which wastes fuel. Truck tires inflated 10 pounds per square inch (psi) below recommended air pressure levels can reduce truck fuel economy between 0.5 percent and 1 percent. Since the bulk of the load is carried in the trailer, a 10-psi underinflation in a trailer tire may have nearly twice the impact on truck fuel economy as the same amount of underinflation in a drive tire.

Heat and stress from improper inflation softens and deflects tire components, causing faster and more uneven wear, which shortens the life of the tire. Underinflated tires have more frequent punctures, increasing the risk of tire failures that could lead to costly road service and loss of revenue.

Despite the importance, a recent survey of combination trucks found that less than half the tires surveyed were within 5 percent of the recommended inflation pressure. Another industry survey indicates only 8 percent of truck drivers check tire pressure with a tire gage before each trip. One reason fleets may find it difficult to keep tires properly inflated is because truck tires can lose up to 2 psi each month, even if the rim seal and valve stems are tight. A fleet may not be able to inspect or monitor its' trailer tires regularly due to the fact that extended periods of time are spent away from service yards and because trailers are interchangeable. This places greater responsibility for checking tire pressure onto drivers.

What is the solution?

Automatic tire inflation (ATI) systems monitor and continually adjust the level of pressurized air in tires, maintaining proper tire inflation automatically even while the truck is in motion. One ATI system uses the vehicle's own air-brake compressor to supply air to all the tires. Once an ATI system is installed, it should not require any special attention from the drivers. This eliminates the need to check tire pressure manually, which saves time and labor while ensuring consistent and proper tire inflation.

Next Steps

1 Long-haul carriers that evaluate their fleets and determine it is too difficult or expensive to monitor tire pressure on a regular basis can consider installing automatic tire pressure inflation systems on drive and trailer tires.

2 Interested fleets can check with ATI manufacturers and truck and tire dealers for more information. ATIs can be readily retrofitted onto existing trucks and trailers.

3 Fleets can also contact tire manufacturers or their state or national trucking associations for more information about the benefits of proper tire inflation.

Savings and Benefits

ATI systems can not only extend tire life but truck fleets can also see additional savings from reducing the risk of expensive tire failure caused by underinflation. Installing an ATI system on a truck's drive axles and trailer costs up to \$800. For a typical long-haul combination truck, annual fuel savings could reach 100 gallons, saving \$380 in fuel costs and eliminating 1 metric ton of greenhouse gas emissions. Annual tire maintenance costs can also decrease. The cost of installing an ATI system in a long-haul truck is generally recouped in just over 2 years through fuel and maintenance cost savings.