

Emissions reducer

Company claims Tadger reduces emissions while improving fuel mileage

By James Menzies
GRIMSBY, Ont. – “Emissions” is one of the biggest buzzwords in the trucking industry today – so not surprisingly there’s a growing contingent of companies offering products aimed at reducing harmful pollutants.

One such company is Tadger Group International, which in its fourth year in business is turning some heads as it continues to accumulate data suggesting its product is capable of dramatically reducing emissions, while improving fuel economy.

The Tadger is a device that is attached to the fuel line to turbulate

the fuel. If you’re a techno-geek wanting a more scientific explanation on how it works, see the sidebar on pg. 27.

Otherwise, Tadger Group general manager Bill Johnston sums it up in layman’s terms for the rest of us.

“In setting up a turbulation in the fuel, we allow it to burn more efficiently and when it burns more efficiently we produce less emissions and we use less fuel,” Johnston explains.

About 25 per cent of the Tadger’s customers are heavy-duty truck operators but it’s also used by ships and coaches and in the construction and mining industries as well as other sectors. In trucking, environmentally conscious municipal fleets have been quick to embrace the technology while other fleets and owner/operators have been making the investment due to fuel economy improvements they say it has delivered.

But Johnston himself is wary of selling the Tadger based on fuel economy enhancements alone.

“It’s an emissions product that, ‘Oh, by the way will save you some fuel too,’ but it was invented as an emissions product and that’s what we market it as,” explains Johnston, adding the company doesn’t want to be lumped in with the countless gimmicks on the market that promise improved fuel economy but rarely deliver.

That said, the company has posted testimonials on its Web site (www.tadgergroup.com) that suggest many fleets and O/Os are equipping their truck with the device primarily for fuel economy reasons.

One customer raves: “I drive a 1999 Western Star with a Detroit Diesel Series 60 engine; 430/470 horsepower, 390 rear ends, 13-speed. I haul freight between Oakville, Ont. and Los Angeles, Cal., averaging speeds of 65 to 68 mph. Prior to the installation of the Tadger I was averaging 5.91 mpg/US and I now average 6.52 mpg/US. The average savings is 10.3 per cent.”

Johnston says there are many variables affecting fuel mileage including the driver, loads, routes and weather and so he is reluctant to hazard a guess as to a typical improvement in fuel economy.

“We would rather underpromise and overperform,” he says, but adds one well-known Ontario fleet has just completed a test showing an average improvement of three per cent. That’s based on one year of baseline data compared to 18 months of running Tadger-equipped units.

With the Kyoto Accord looming and politicians jumping on the environmental bandwagon, the company is looking to government to help promote products such as the Tadger, which have proven to re-



COST SAVER?: The Tadger is being marketed as an emissions reducer, but users also claim to be saving money on fuel.

duce emissions.

“Unless we get their buy-in, fleet managers can only do so much because they’re restricted by budget,” laments Johnston.

He says the Tadger reduces Particulate Matter, NOx and CO2 “in varying degrees” and Ontario Drive Clean emissions tests have shown a substantial improvement in opacity. And testing has suggested the Tadger also reduces soot buildup in the oil, a major attraction for owners of the new I/G R-equipped engines. (In some cases they’ve been found to produce more soot buildup).

“That should be a motivator to buy because soot in the oil is going to increase wear and they’re

going to get less life out of those engines,” Johnston says.

The Tadger costs \$699 and can be installed by a mechanic in about 20 minutes. It takes 60 to 90 days to deliver any noticeable results because it takes that long to clear out existing buildups of soot and carbon. It is warranted against manufacturing defects for life and will generally outlast any engine, Johnston says.

“It will work until the engine dies and when the engine dies you take the Tadger off and put it on the new engine,” he says. “You only buy the product once.”

For more information, visit www.tadgergroup.com or call Johnston at (705) 760-0191.

How it works: The scientific explanation

GRIMSBY, Ont. – The following is a scientific explanation of how the Tadger works, as explained by John Mogford, president of Tadger International:

“The molecules in diesel fuel are positioned in a chain of carbon atoms, hydrogen atoms and sulphur atoms. The atoms cluster together in a ball with the outside atoms insulating the inside atoms from exposure to the eventual oxygen burn. At the point of combustion, swarms of oxygen atoms attack the carbon, hydrogen and sulphur atoms. Every place an oxygen atom contacts a carbon, hydrogen and sulphur atom, energy is released. Carbon atoms cluster together insulating inside carbon atoms from exposure to the oxygen atom resulting in some carbon atoms going unburned and being blown out the exhaust as pollution.

As fuel enters the Tadger, the area of fuel is decreased resulting in an increase in the fuel velocity (Continuity Equation & Bernoulli Equation).

The fuel continues through the Tadger and passes over two baffles fixed at 90 degrees to each other. This section also increases the fuel velocity as well as creates an initial disruption in the viscous forces (laminar flow). The fuel then enters a fixed venturi configuration causing fluid inertia to further disrupt the already disrupted flow. The factor that determines which type of flow is present is the ratio of inertia forces to viscous forces within the fluid, expressed by the non-dimensional Reynolds Number.

Fluid flows are laminar for Reynolds Numbers up to 2000. Beyond a Reynolds Number of 4000, the flow is completely turbulent. The fuel flow exiting the Tadger exhibits a controlled turbulence with a Reynolds Number between 2000 and 4000. This controlled turbulence uniformly separates the clustered molecules. By exposing more of the fuel molecules with oxygen, more of the fuel will be burnt. The result of a better burn is less fuel needed to make horsepower and less unburned fuel being blown out the exhaust as pollution.

The net result is a continuously consistent combustion process.” □

– Information provided by the Tadger Group

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