test background

Filter Technology Australia Pty Ltd (FTA) commissioned Parsons Australia Pty Ltd of Lidcombe New South Wales to conduct a study of exhaust emissions from a diesel powered vehicle, both with and without FTA's fuel and oil systems.The study would provide comparative information. Parsons Australia Pty Ltd was selected for several reasons:

Parsons Australia Pty Ltd has a set test protocol based on the Complex Urban Emissions Drive Cycle (CUEDC) that was recently developed by the Australian National Environment Protection Council (ANEPC).

Parsons Australia Pty Ltd has recently completed testing of 700 vehicles for ANEPC.

The vehicle selected for this study was an Iveco Powerstar 6500, fitted with a Caterpillar C12 Euro 3 diesel engine with 68,314 km / 42,696 miles. The Caterpillar C12 engine was considered a suitable engine due to the high volume of units in the transport sector, both in Australia and the United States.

test procedures

The vehicle was prepared in accordance with PA procedures which included draining and flushing the fuel system, installing new original manufacturer's (OEM) filters and refueling with controlled fuel. This controlled fuel has 1700 ppm of sulphur. Baseline testing measured gaseous emissions, oxygen, fuel consumption, smoke, and particulate matter using the CUEDC test cycle and measurement of power and torque delivered by the vehicle at the wheels. Three segments were recorded to simulate the following:

Segment 1 - **Congested**

Segment 2 - **Arterial**

Segment 3 - **Freeway/Highway**

The tests were repeated after the installation of FTA filtration systems to both fuel and engine oil.

test results

	NOx g/km	HC g/km	CO g/km	CO_2 g/km	Particulate matter g/km	Total g/km	Fuel Consumption L/100km
Diesel only	15.03	0.35	4.20	1479.97	0.52	1500.07	55.36
Diesel + Filters	12.78	0.48	4.15	1406.84	0.38	1424.63	52.65
Change (g/mile)	2.25	(0.13)	0.05	73.13	0.14	75.44	

fuel analysis

Fuel samples were taken and sent to the lab for analysis.The results were as follows:

sample 27780: taken from the truck's fuel tank returned ISO code 19/16.
sample 25126: taken after the OEM secondary filter returned ISO 18/14.
sample 25129: taken after the Filter Technology fuel filter was fitted returned ISO 15/12.

Oil samples were taken before and after testing and sent for analysis.
Results showed a reduction in: soot of 17%
copper of 18%
iron of 16%

operational gains

Fuel economy improved by 4.9%

Engine Horsepower increased by nearly 2.0%

Extends life of OEM filters and oil by 300%

Extends the life of fuel pumps and injectors by maintaining fuel cleanliness.

Improves risk management and extends engine longevity.

Reduces NOx by 15.0%

Reduces CO by over 1.2%

Reduces CO2 ..... 4.9%

Reduces Solid Particle Emissions by 25.7%

conclusion

As depicted by the above table, the reduction of polluting emissions is 75.44 g/km.
For every 13.25 kilometres driven, polluting emissions are decreased by 1 kg.
Testing protocol "CUEDC" performed by PA was recognized by ANEPC.
Lower emissions were reported with the fitment of Filter Technology Australia's filtration system and large reductions were recorded as noted above.
Reduction of emissions are of benefit to the whole community and the environment.
A fuel saving of 4.9% demonstrates considerable financial savings to an end user.