Technical Information

Emissions Tests

The following are taken from a summary of numerous reports showing emissions savings.

Distributed By: Syntek Global Inc.
12382 South Gateway Park Place Suite B800
Draper, UT 84020
801-386-5007

Summary

Having reviewed the environmental test results, the field carbon mass data, and the plant performance, I feel the following conclusions may be drawn.

Greater burn efficiency was achieved during the treated test than during the untreated test. It took an additional 0.39 GPT to heat the product with the untreated oil, thus a 9.7% reduction in fuel consumption was realized during the treated test. The carbon mass test showed a 70% reduction in volatile hydrocarbons reaching the stack with the treated fuel vs. the untreated fuel. **These tests confirm the earlier findings that the treated fuel yielded more BTU/lb than the untreated.**

Improved environmental conditions were achieved with the improved combustion of fuel. The reduction of unburned fuel in the gas stream improved opacity and lowered the stack temperature. This allowed for better gas stream scrubbing as shown in the environmental emissions test. The treated test had a greater potential for fluoride evolution than the untreated test, but had a 20.1% lower emission under the same scrubber conditions. **This confirms the earlier observations on fuel conversion with the improved flame characteristics with the treated fuel.**

Improving Air Quality

Test results have shown that the combined ingredients in Xtreme Fuel Treatment™ provides a synergistic effect to reduce deposits, minimize corrosion and reduce atmospheric pollution.

The surface modifier in Xtreme Fuel Treatment™ works during the combustion process by reacting with these contaminants: vanadium, sulfur and sodium, and changing the composition of the ash. It prevents high and low temperature corrosion specifically by:

Raising the melting point of vanadium compounds so they are non adherent and non-corrosive to high temperature services. Changing the crystalline form of the ash so that it is lighter, fragments easily and becomes easier to exhaust. Reduces necessary excess air thus preventing the convention of S02 to S03. Xtreme Fuel Treatment™ can substantially prevent the buildup of carbon deposits on the gas side of turbochargers. As a result, the rated efficiency of the turbochargers can be maintained and water washing can be significantly reduced. Xtreme Fuel Treatment™ has been found to lower the ignition point of the carbon in the air as much as 400 degrees F., therefore providing longer residence time for the combustion process.

Field test have proven just how effective Xtreme Fuel Treatment™ is at reducing the levels of harmful emissions. Portable analyzers using state of the art, non-dispersive infer red (N DIR) were used to determine the decrease in concentrations of carbon monoxide, hydrocarbons, carbon dioxide, oxygen and oxides of nitrogen in exhaust gases of test equipment of various fleets using Xtreme Fuel Treatment™.

CO and HC levels are related to cleanliness of burn, while CO2 levels are related to rate of burn. Therefore, with a decrease of CO and HC it can be gathered that the fuel is being burned cleaner. On the other hand, with the **reduction of $C0_2$ levels, the efficiency of fuel usage increases.**

Reductions in Emissions

Company	CO	HC	CO_2	O_2
X	-42.7	-44.8	-7.9	+5.1
X	-11.8	-22.1		
X	-34.64	-41.76	-2.5	-7.3

Executive Summary

A decrease is hard carbon allows an increase in efficiency of the engine. With the system free from hard carbon buildup, an additional 3% - 5% increase in fuel savings can be expected. Scientific data on comparable equipment has shown the need for varying minimum treated operating periods based on equipment type and application. Locomotive type applications require a minimum of 800 hours-treated operation. Factors such as high idle time and not operating under a full load require increased treated operating periods to properly document the product's effectiveness.

Please note the lab report #31-2271 in this report that advocates the field data as presented. Additionally, the exhaust filter from the pretreated test is .72 grams heavier than the comparable post-treated filter. As the accompanying photographs make clear, this is the result of soot deposits caused by incomplete combustion. The decrease in carbon compounds in the exhaust shows that less hydrocarbon fuel was consumed due to more complete combustion. This is confirmed by the decrease in excess oxygen in the stack gas.

Total fleet reduction in harmful emissions are as follows: CO levels were reduced 34.6%, HC levels were reduced 41.76%, CO2 levels were reduced 2.6%, O2 levels were decreased by 7.3%. Test data for fuel consumption on unit #3236 had relative reductions in the range of 1.72% to 2.84% with a test run average of 2.12%.

Reduction in NO_x:

The amount of NOx generated in a combustion process is directly related to the amount of excess air required to achieve complete combustion. The nitrogen is fixed from the amount of air brought in to the system. Seventy toeighty percent of the air brought into the combustion process is exhausted as NOx.

Executive Summary

Total fleet reduction in harmful emissions are as follows: CO levels were reduced -42.7%. HC levels were reduced -44.8%. CO2 levels were reduced -7.9%. O2 levels were increased by +5.1%. The overall reduction in fuel consumption in the test stacks, on the two locomotives were in the range of -2.73% to -15.89% with a test stack average of 8.65%. The more residue to clean-up the greater the percent increase in efficiency. When the system is clean an additional three to five percent fuel saving can be expected.

The decrease in carbon compounds in the effluent shows that less hydrocarbon fuel was consumed. This is confirmed by the increase in excess oxygen in the stack gas. Additional proof of improved combustion is the removal of solid hydrocarbon deposits from within the combustion chamber, plus the intake and exhaust ports.

Conclusions

The overall levels in harmful emissions of Carbon Monoxide, unburned Hydrocarbons and Carbon Dioxides were reduced in the fleet. Table 2 shows CO (Carbon Monoxide) levels were reduced -42.7%, HC (Hydrocarbon) levels were reduced -44.8%, CO2 (Carbon Dioxide) levels were reduced -7.9%, O2 (Oxygen) levels were increased +5.1%. PV (pressure values) were not recorded on unit #1555 due to high fluctuations in pressure output. A placebo number was substituted for the computer to facilitate a formula computation. Because this number was duplicated from the base-line to treated; it had no effect on values.

Noticeable effects at the test sight, during the treated portion, should be noted. There was an increase ability to breathe without the aid of a filter mask. The decrease in emissions enabled this. There was also a noticeable increase in particulate being emitted from the exhausts. This is indicative of the cleaning phase of the product. Eventually wth continued product use, this will decrease to less than noticeble.

A qualitative smoke reduction test was performed during the test. this was done by attaching a 25 micron filter to the exhaust gas sampling train for each test. The filter traps unburned fuel exhausted from the engine as visible smoke or particulate. An new filter was installed at the beginning of each test.

**SEE: Carbon Mass Balance Technique (Appendices)

CO and HC levels are related to cleanliness of burn, while CO2 levels are related to rate of burn. Therefore, with a decrease in CO and HC it can be gathered that the fuel is being burned cleaner. On the other hand, with the reductions of CO2 levels, the efficiency of fuel usage increases.

Table 2

Reductions in Emissions

Unit # 1555	CO	HC	CO_2	O_2
Stack 1	-44.4	-42.3	-7.7	+.47
Stack 2	-41.6	-47.5	-6.0	+9.7
Stack 3	-53.3	-42.4	-4.5	+5.6
Stack 4	-41.2	-35.1	-1.8	+1.6

Unit # 2010	CO	HC	CO_2	O_2
Stack 1	-30.7	-36.2	-10.7	+8.8
Stack 2	-50.0	-59.3	-10.6	+2.9

Table 2a

Overall Average Stack Reduction in Emissions

	CO	HC	CO_2	O_2
Unit # 1555	-45.0	-41.8	-5.0	+4.3
Unit # 2010	-40.3	-47.8	-10.7	+5.85
Overall Average	-42.7	-44.8	-7.9	+5.1

As the above tables indicate, Harmful Emissions (CO, HC, CO_2) were reduced.

Conclusions

The series of tests conducted on a number of vehicles confirms that the fuel will reduce fuel consumption and increase the efficiency of each engine.

The overall levels in harmful emissions of Carbon Monoxide and unburned hydrocarbons were reduced in the fleet. For the first treated test (table la). CO levels increased an overall 5.45% HC levels increased an overall 22.1%.

For the treated test the overall reductions in fuel consumption in the mobile fleet were in the range of 1.92% to 21.23% with a test fleet average of 12.1%

Table 1

Summary

Chassis Dynamometer Test Results
Testing Conducted for Syntek Global
Conducted at Olson-Ecologic Labs April 2008
1995 Chevrolet Silverado 2500

Baseline Tests HWFET Test Cycle

	GRAMS/MI			
	HC	CO	NO_X	CO_2
3 Test Average (Baseline)	0.434	4.302	2.416	493.54

Additive Tests HWFET Test Cycle

	GRAMS/MI			
	HC	CO	NO_X	CO_2
3 Test Average (Additive)	0.411	4.418	2.417	493.33

% Change When Using the Additive

Baseline Avg. vs. Additive Avg.	5.4%	-2.7%	0.0%	0.0%

Baseline Tests EPA78 Test Cycle

	GRAMS/MI			
	HC	CO	NO_X	CO_2
3 Test Average (Baseline)	0.728	7.011	3.523	784.53

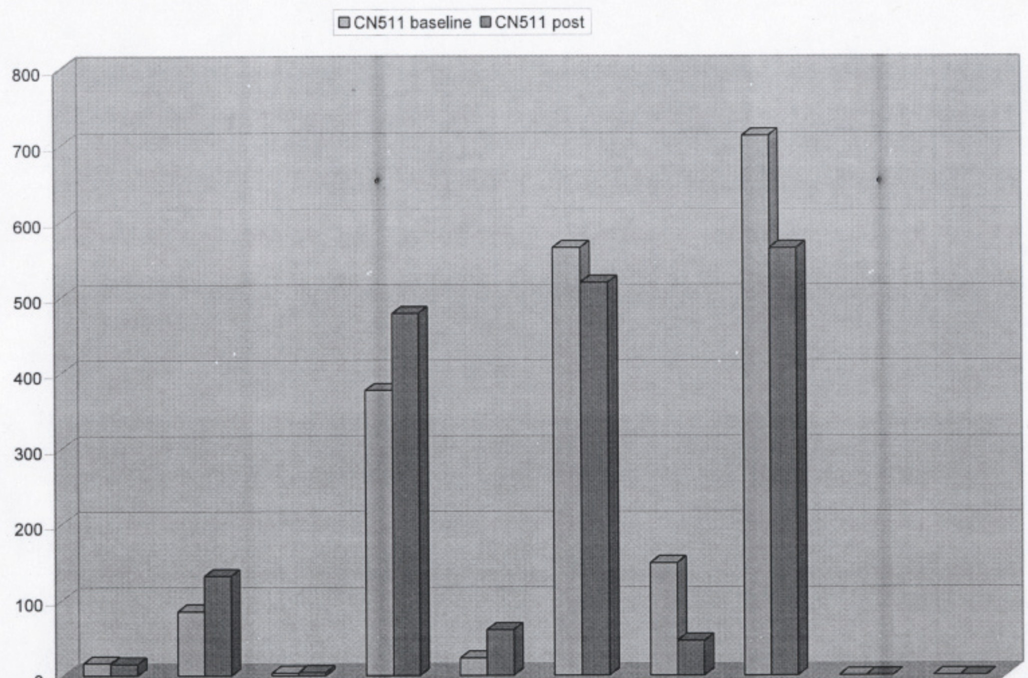
Additive Tests EPA78 Test Cycle

	GRAMS/MI			
	HC	CO	NO_X	CO_2
3 Test Average (Additive)	0.681	6.473	3.433	781.90

% Change When Using the Additive

Baseline Avg. vs. Additive Avg.	6.5%	7.7%	2.6%	0.3%

EXHIBIT N – BIT CRANE TEST RESULTS



	O2	CO	CO2	TSTACK	TAIR	NO	NO2	NOX	SO2	HC
CN511 baseline	16.2436809	84.2279574	3.47553008	376.066979	23.0278723	564.744085	147.578957	712.323426	0.00165957	0.03680851
CN511 post	14.8607484	130.64499	4.50776671	478.052308	59.9574844	518.706549	45.6651351	564.371809	0	0.02698545

There are many uncontrollable variables that can effect the efficiency of an engine. Basically, any variable relating to the "combustion process" can effect the performance of an engine, thereby effecting the outcome of a Carbon Mass Balance test. During a Carbon Mass Balance test, all factors that can be controlled and/are recorded and duplicated from baseline to treated test to insure an accurate test can be conducted.

Table 2

Reductions in Emissions

Unit # 3236	CO	HC	CO_2	O_2
Run #1	-38.89	-41.01	-2.6	-7.5
Run #2	-36.84	-42.86	-2.7	-7.2
Run #3	-35.29	-39.47	-2.7	-7.3
Run #4	-33.33	-42.11	-2.5	-6.9
Run #5	-29.41	-41.18	-2.8	-7.5
Run #6	-31.25	-44.0	-2.3	-7.4
Run #7	-37.5	-41.67	-2.2	-7.6

Table 2a

Overall Average Stack Reduction in Emissions

	CO	HC	CO_2	O_2
Unit #3236	-34.64	-41.76	-2.5	-7.3

As the above tables indicate, Harmful Emissions (CO, HC, CO_2) were reduced. Oxygen (O_2) levels were decreased.