

TEST

Evaluation

Of

Fitch Fuel Catalyst

Prepared by
Vehicle and Engine Testing Services
15-17 Trade Zone Drive
Ronkonkoma NY 11779

Project Description:

The FCD is designed to improve energy efficiency while minimizing the impact to the environment.

APSI has selected to perform the Environmental Protection Agency (EPA) Federal Test Procedure (FTP) CVS-75 to evaluate what benefits may be achieved by installing the FCD System on a Diesel fuel vehicle.

Tailpipe emission gases to be measured:

Hydrocarbons.....(HC)
Carbon Monoxide.....(CO)
Nitric Oxide.....(NOx)
Particulate Matter(PM)
Carbon Dioxide.....(CO₂) Miles per gallon

The vehicle selected:

GMC-2500
Model year 2002
6.6 Diesel engine
Vin # F235320

Test Performed:

1. Initial CVS-75 is conducted to establish a baseline.
2. Thereafter the vehicle is fitted with the FCD system and driven for a minimum of 100 miles.
3. Subsequently a Retrofit CVS-75 is performed.
4. The baseline and retrofit data are then compared.

Baseline Test CVS-75

Date: 3/31/04

Manufacturer: GMC

Model: Duramax 2500 Diesel HD

Model Year: 2002

Vin: F235320

Odometer: 38078

ALW: 6500 (Adjusted loaded vehicle Wt.)

Dyno Settings:

Fuel: Diesel (Supplied by Fitch)

Single Roll: TRLHP-Fo-35.87

F1-2.3804

F2-0.0243

Twin Roll: Inertia Wt.: 6500lbs.

IRLHP: 18.6

Test Results

Hydrocarbons (HC) grams/mile	Oxides of Nitrogen (NOx) grams/mile	Carbon Monoxide (CO) grams/mile	Particulates (PM) grams/mile
0.464	2.977	3.868	0.32

Miles per Gallon 10.25

Retrofit Test-CVS-75
Fitch Device Installed 200 mile Accumulation

Manufacturer: GMC	Model: Duramax 2500 Diesel HD
Model Year: 2002	Vin: F235320
Odometer: 38288	ALW: 6500 (Adjusted loaded vehicle Wt.)
Dyno Settings:	Fuel: Diesel (Supplied by Fitch)
Single Roll: TRLHP-Fo-35.87	
F1-2.3804	
F2-0.0243	

Twin Roll: Inertia Wt.: 6500lbs.
 IRLHP: 18.6

Test Results

Hydrocarbons (HC) grams/mile	Oxides of Nitrogen (NOx) grams/mile	Carbon Monoxide (CO) grams/mile	Particulates (PM) grams/mile
0.376	3.275	2.972	0.29

Miles per Gallon 12.0

Summary of Test Results

Hydrocarbons (HC) grams/mile	Oxides of Nitrogen (NOx) grams/mile	Carbon Monoxide (CO) grams/mile	Particulates (PM) grams/mile
Baseline test 0.464	Baseline test 2.977	Baseline test 3.868	Baseline test 0.32
Retrofit Test 0.376	Retrofit Test 3.275	Retrofit Test 2.977	Retrofit Test 0.29
Difference -0.083	Difference +0.298	Difference -0.871	Difference - 0.03

Baseline: Miles per Gallon 10.2

Retrofit: Miles per Gallon 12.0

Difference +1.8 Mile per Gallon

Vehicle & Engine Emission Testing Services

15-17 Trade Zone Drive Ronkonkoma, New York 11779

Phone: 1-631-588-9777

Fax: 1-631-588-8369

Test Data Work Sheet

Test Designation: CVS-75 Baseline **Test Date:** 3/31/04
Vehicle: GMC **Model:** Duramax 2500 Diesel HD
Model Year: 2002 **Vin:** F235320
Odometer: 38,078 **Fuel:** Supplied by Fitch
ALVW: 6,500LBS **RLHP:** 18.6

Cold Stabilize Phase

Barometer: 29.94 **Dry Bulb:** 70.3 F
Wet Bulb: 58.2 **CVS Inlet:** 14.0
CVS Dif: 7.0 **CVS Temp:** 125 F
Mass Pump Rev: 9469 **Miles Traveled:** 3.771

Transient Phase

Barometer: 29.94 **Dry Bulb:** 71.1 F
Wet Bulb: 58.6 **CVS Inlet:** 14.0
CVS Dif: 7.0 **CVS Temp:** 120 F
Mass Pump Rev: 16294 **Miles Traveled:** 3.962

Hot Phase

Barometer: 29.94 **Dry Bulb:** 72.4 F
Wet Bulb: 59.1 **CVS Inlet:** 14.0
CVS Dif: 7.0 **CVS Temp:** 123 F
Mass Pump Rev: 9469 **Miles Traveled:** 3.713

Weighted Mass Emission Summary

Hydrocarbons (HC) grams/mile	Oxides of Nitrogen (NOx) grams/mile	Carbon Monoxide (CO) grams/mile	Particulates (PM) grams/mile
0.464	2.977	3.868	0.32

Miles per Gallon 10.25

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Test Data Work Sheet

Test Designation: CVS-75 Retrofit **Test Date:** 4/05/04
Vehicle: GMC **Model:** Duramax 2500 Diesel HD
Model Year: 2002 **Vin:** F235320
Odometer: 38288 **Fuel:** Supplied by Fitch
ALVW: 6,500LBS **RLHP:** 18.6

Cold Stabilize Phase

Barometer: 29.81 **Dry Bulb:** 69.83 F
Wet Bulb: 57.2 **CVS Inlet:** 14.6
CVS Dif: 7.2 **CVS Temp:** 120 F
Mass Pump Rev: 9415 **Miles Traveled:** 3.691

Transient Phase

Barometer: 29.81 **Dry Bulb:** 70.4 F
Wet Bulb: 57.6 F **CVS Inlet:** 14.6
CVS Dif: 7.2 **CVS Temp:** 125 F
Mass Pump Rev: 17720 **Miles Traveled:** 3.948

Hot Phase

Barometer: 29.81 **Dry Bulb:** 71.2 F
Wet Bulb: 59.1 **CVS Inlet:** 14.6
CVS Dif: 7.2 **CVS Temp:** 120 F
Mass Pump Rev: 9391 **Miles Traveled:** 3.721

Weighted Mass Emission Summary

Hydrocarbons (HC) grams/mile	Oxides of Nitrogen (NOx) grams/mile	Carbon Monoxide (CO) grams/mile	Particulates (PM) grams/mile
0.376	3.275	2.972	0.29

Miles per Gallon 12.0