Exhaust Emission Data Study

New York City
Department of Environmental Protection
Rentar Fuel Catalyst Testing

Data Accumulated By

NYC Department of Environmental Protection
Maspeth, New York

Purpose of Testing

To provide exhaust emission data from five heavy and mid-duty vehicles. The data was obtained by measuring emissions while operating these trucks over standard operational travel sequence

Type of Testing

The opacity was measured using NYCDEP's CAlTest 1000 Smokemeter with NYCDEP mechanics and Rentar Environmental Solutions technician using the ENERAC 500 portable 5 - gas emissions analyzer designed for testing diesel engine gas emissions. Each test involved pre-emission monitoring, installation of the Rentar Fuel Catalyst and post emission monitoring.

Date of Testing

June 2003

Summary of Findings

NYCDEP and Rentar Environmental Solutions conducted the exhaust emission studies. They solely managed and collected the data.

At NYCDEP's central repair shop, they created a protocol, installed the Rentar Fuel Catalyst and collected the "post" data. The results as documented in the attached report due to the Rentar Fuel Catalyst is shown in the report below.

Test Protocol

NYCDEP Central Repair Shop
New York City, NY

Protocol on installation of Rentar Fuel Catalyst:

1. Allow trucks to warm up to appropriate oil temperatures above 140 degrees
2. Conduct opacity readings with NYCDEP's CalTest 1000 Smokemeter
3. Perform 5 - gas test using third party testing machine
4. Install Rentar Fuel Catalyst on trucks
5. Conduct post installation emission test on all vehicles using third part testing machine

RESULTS

As an average, CO was reduced by 30.9%, CO2 reduced by 47.7%, NO reduced by 26.8%, NO2 reduced by 38.9%, NOx reduced by 28.6% and Opacity reduced by 57.1%

The final test results for the five vehicles are summarized on the following page.

Truck number 965040 – Cummins ISM 330 - Model 112 - Year 2000 – Freightliner - Basin Dump

GAS ANALYSIS	CO	CO2	NO	NO2	NOX	EXHAUST TEST OPACITY
Averages prior to installation:	100 PPM	0 %	236.3 PPM	49.3 PPM	285.8 PPM	10.4% Opacity
Averages after installation of RFC:	78.1 PPM	0 %	157.4 PPM	34.8 PPM	192.6 PPM	5.3% Opacity
Percentage decrease after install:	**21.9**	**-**	**33.4%**	**29.4%**	**31%**	**49.1%**

Truck number 965015 – Cummins ISM 330 - Model 112 - Year 1999 – Freightliner –Basin Dump

GAS ANALYSIS	CO	CO2	NO	NO2	NOX	EXHAUST TEST OPACITY
Averages prior to installation:	65.5 PPM	1%	220.3 PPM	56.7 PPM	277.5 PPM	12.7% Opacity
Averages after installation of RFC:	37.2 PPM	1%	194.5 PPM	28.9 PPM	223.5 PPM	6.4% Opacity
Percentage decrease after install:	**43.2%**	**-**	**11.7%**	**49%**	**19.5%**	**49.7%**

Truck number 965030 – Cummins ISM 330 - Model 112 - Year 2000 – Freightliner –Basin Dump

GAS ANALYSIS	CO	CO2	NO	NO2	NOX	EXHAUST TEST OPACITY
Averages prior to installation:	106.6 PPM	1.4 %	347.7 PPM	47.3 PPM	395.4 PPM	2.6% Opacity
Averages after installation of RFC:	80 PPM	1%	246.9 PPM	29.4 PPM	276.2 PPM	0.9% Opacity
Percentage decrease after install:	**25%**	**28.6%**	**29%**	**37.8%**	**30.1%**	**65.4%**

Truck number 965010 – Cummins ISM 330 - Model 112 - Year 1999 – Freightliner –Basin Dump

GAS ANALYSIS	CO	CO2	NO	NO2	NOX	EXHAUST TEST OPACITY
Averages prior to installation:	102.9 PPM	12.8 %	403.2 PPM	60.8 PPM	464.5 PPM	2.8% Opacity
Averages after installation of RFC:	64.8 PPM	3.75 %	299.9 PPM	39.25 PPM	339 PPM	0.6% Opacity
Percentage decrease after install:	**37.8%**	**70.7%**	**25.6%**	**35.4%**	**27%**	**78.6%**