DRAFT REPORT

Performance and Emission Analysis of FEROX (Fuel catalyst)

Testing location: SRM Institute of Science and Technology.
Kattankulathur – Chennai TN - 603203.

Performance and Emission Analysis of FEROX blended Fuel

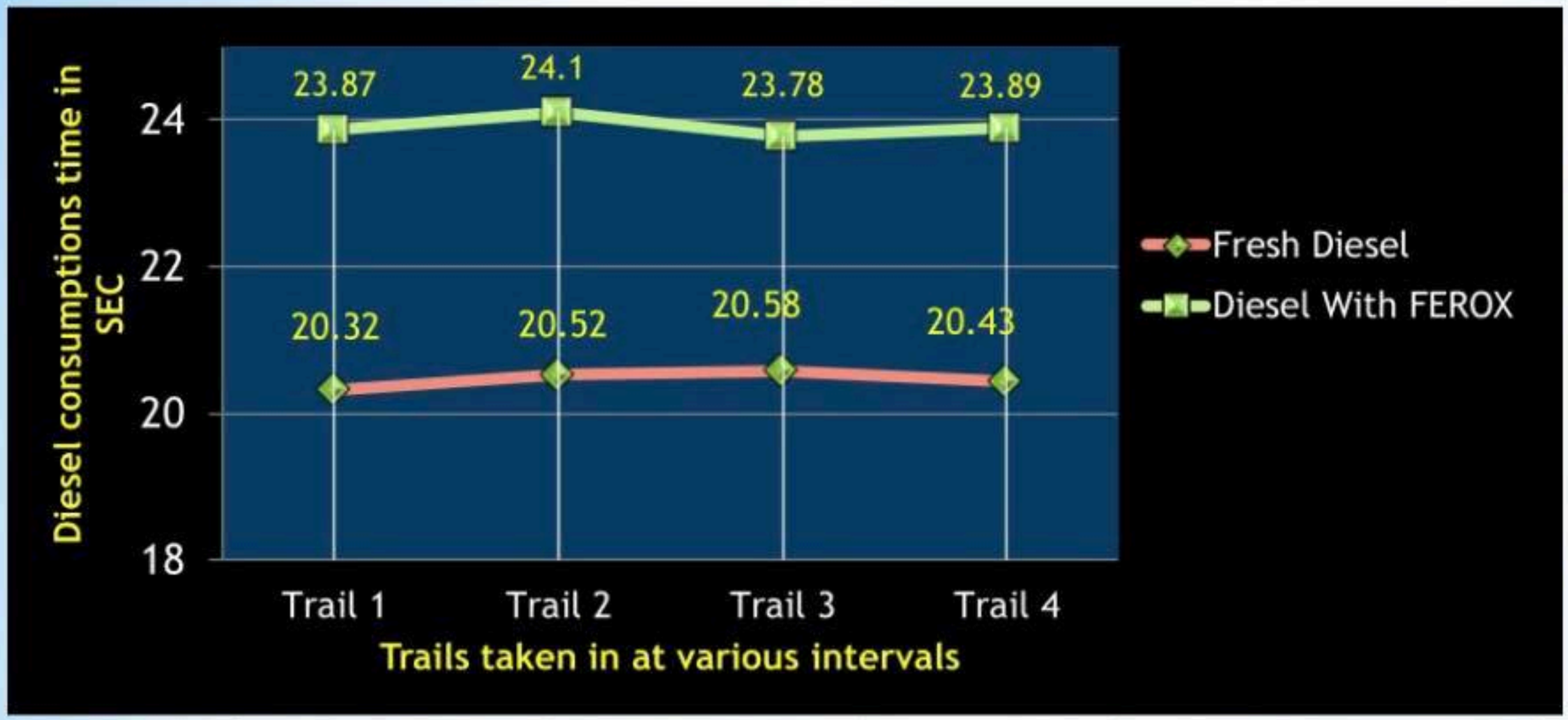
TEST ENGINE SPECIFICATIONS	
Fuel	Diesel
Make	Kirloskar TV1
Number of Cylinders	1
Number of Strokes	4
Fuel	Diesel
Rated Power	6.97 HP (5.2 kW) @ 1500 rpm
Cooling System	Water
Type of Dynamometer	Eddy Current Dynamometer
Displacement	661 cc
Cylinder Diameter	87.5 mm
Stroke Length	110 mm
Compression Ratio	17.5:1

FEROX fuel Catalyst performance test has been conducted to Evaluate the Emission factors reduction while using FEROX in Fresh diesel

Performance Analysis

FEROX Multi functional combustion catalyst

➢ Performance analysis – Fresh Diesel vs FEROX Blended Diesel performance



The engine consumed 10 ml of fuel in the time taken (in seconds) at full load.

The time difference between **fresh diesel** and **diesel blended with FEROX** is shown below.

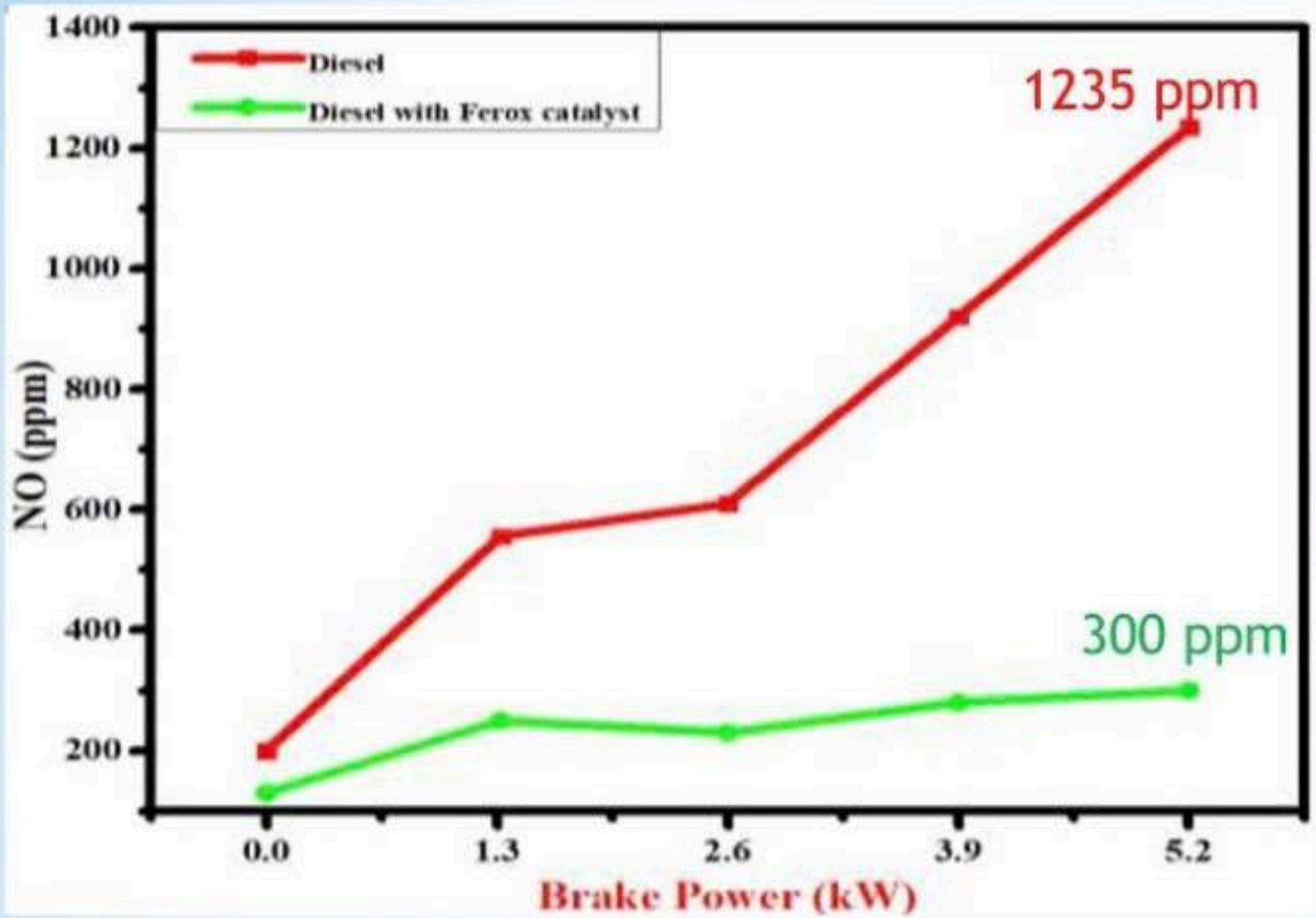
Load	10ML of Fresh Diesel Consumption Time in Sec	10ml Diesel with FEROX catalyst Consumption Time in Sec	Time difference	Percentage of performance increase (%)	Remarks
18.5	20.32	23.87	3.55	**17.470**	**Trails taken in at various intervals** (Different times)
18.5	20.52	24.1	3.58	**17.446**	
18.5	20.58	23.78	3.20	**15.549**	
18.5	20.43	23.89	3.46	**16.935**	

- Under constant load conditions at 3000 rpm, brake-specific fuel consumption for fresh diesel and diesel dosed with the FEROX catalyst ratio of 500 ml diesel + 0.01% FEROX was measured.
- Resulted in a **15 to 17% improvement in performance** (maximum load condition with time variation versus fresh fuel).

Emission Analysis

FEROX Multi functional combustion catalyst

➢ Emission analysis on Nitrogen Oxide (NO) ppm

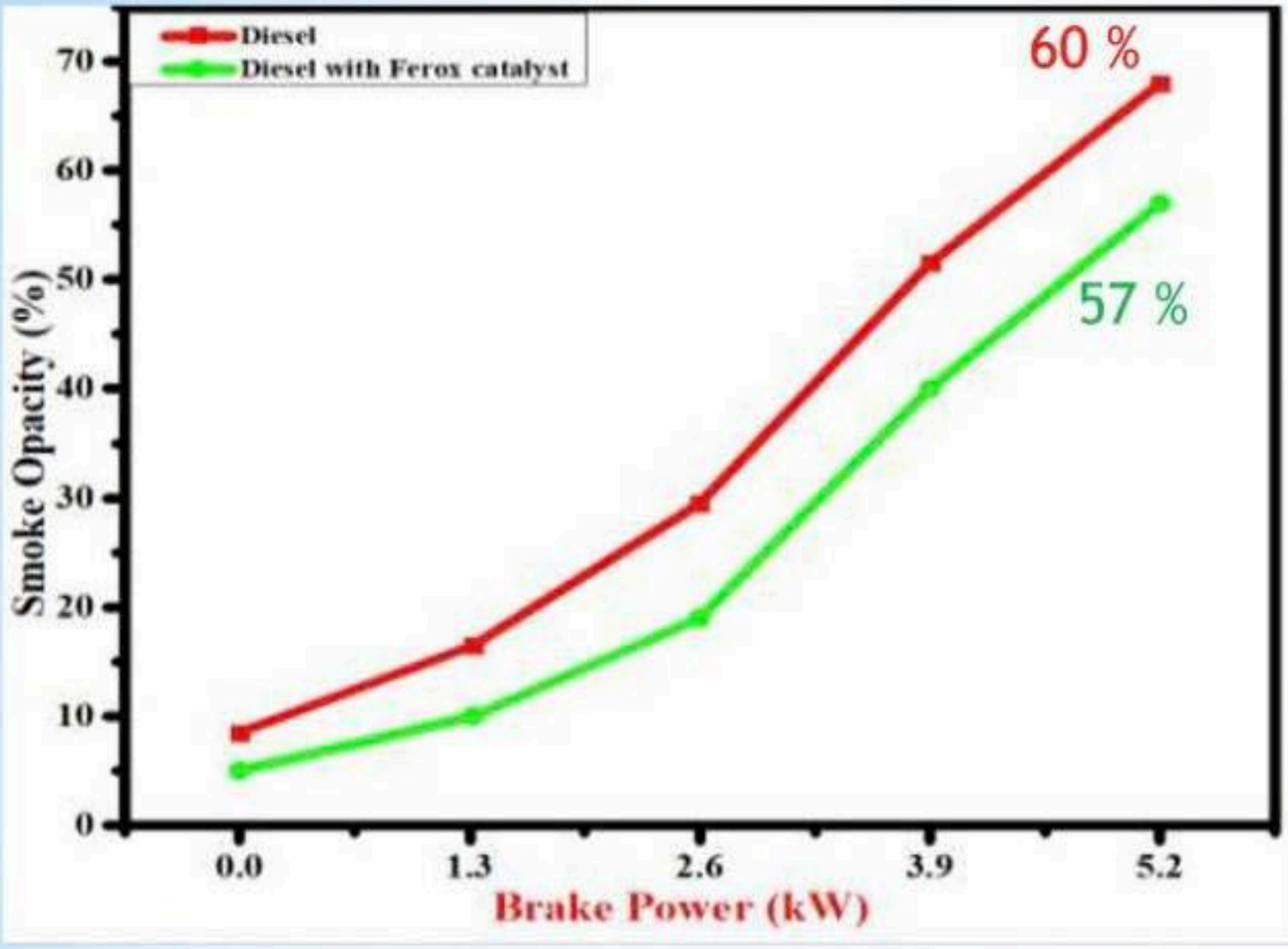


During usage of **FEROX** fuel catalyst Nitrogen Oxide (NO) getting reduced by 35 to **76**%*

(To compare with Fresh diesel emission)

Load (kW)	Emission in Fresh Diesel - PPM	Diesel with Ferox catalyst -PPM	Percentage of Reduction (%)
0	200	130	35 %
1.32	556	250	55 %
2.6	610	230	62 %
3.9	920	280	70 %
5.2	1235	300	76 %

➢ Emission analysis on Smoke Opacity (%)

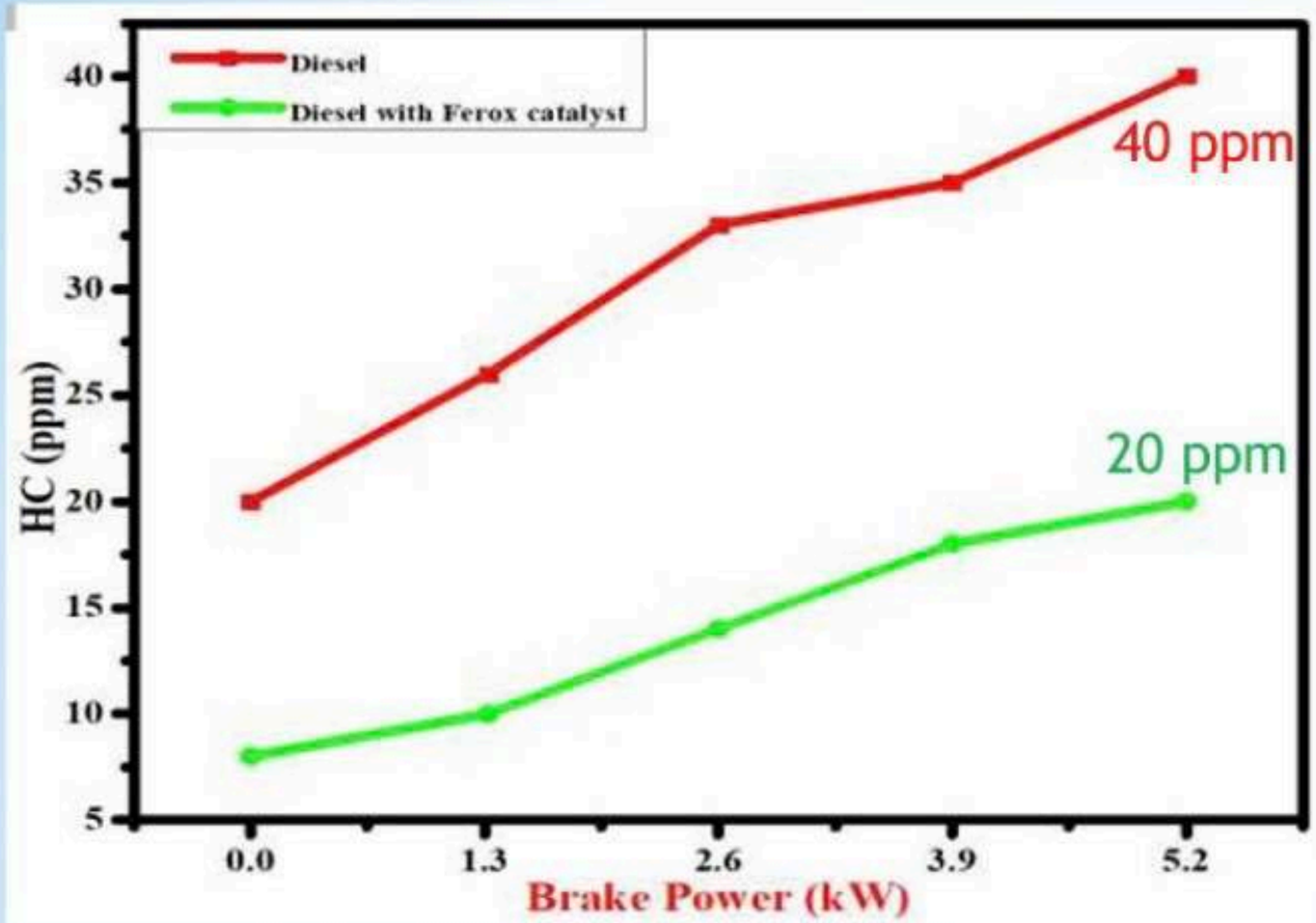


During usage of **FEROX** fuel catalyst Smoke Opacity (%) getting reduced by **16% to 41%***

(To compare with Fresh diesel emission)

Load (kW)	Emission in Fresh Diesel (%)	Diesel with Ferox catalyst (%)	Percentage of Reduction (%)
0	8.5	5	41 %
1.32	16.5	10	39 %
2.6	29.5	19	36 %
3.9	51.5	40	22 %
5.2	68	57	16 %

Emission analysis on Hydro Carbon (HC) ppm

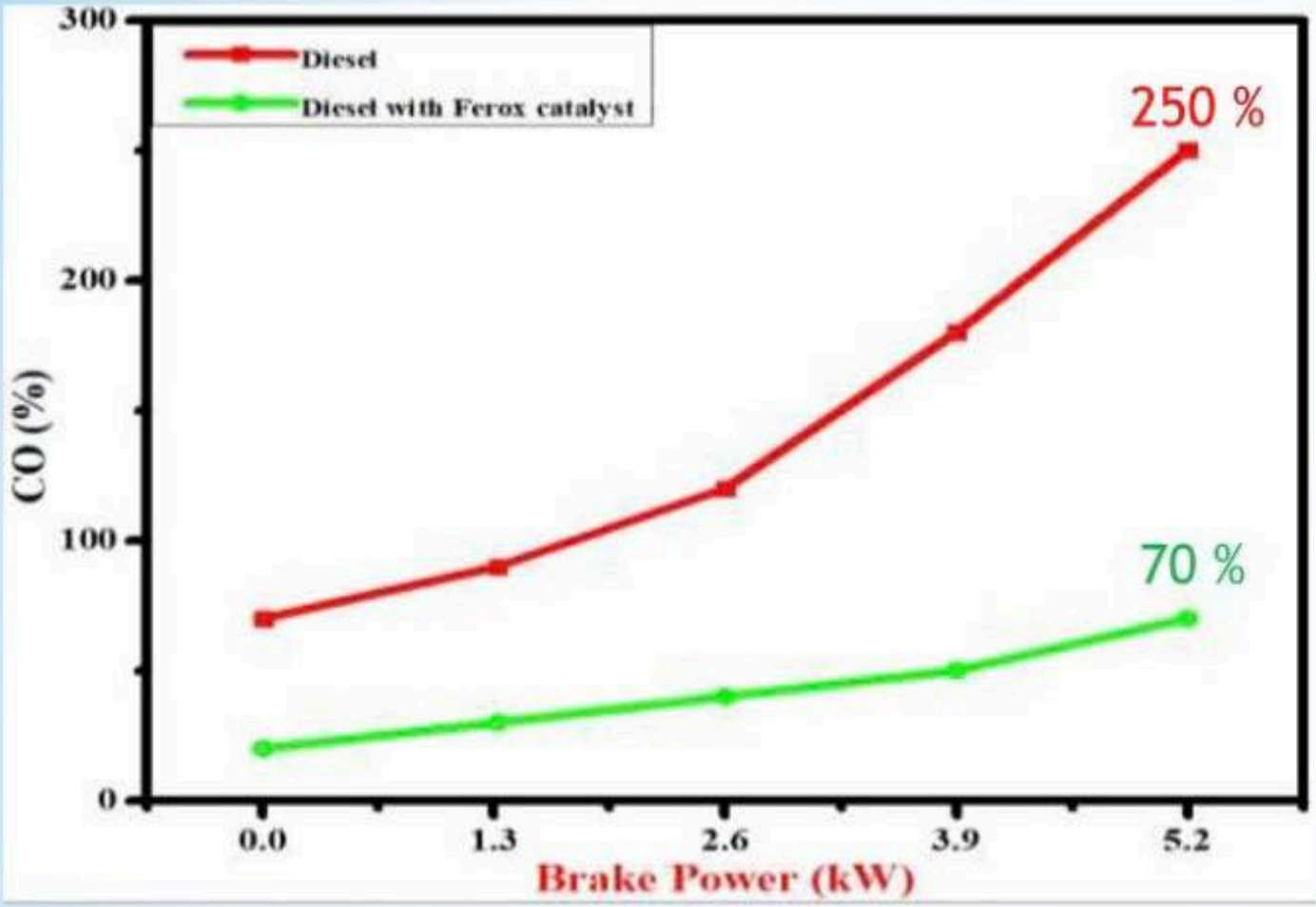


During usage of **FEROX** fuel catalyst Hydro Carbon (HC) % getting reduced by **50 to 60%***

(To compare with Fresh diesel emission)

Load (kW)	Emission in Fresh Diesel - PPM	Diesel with Ferox catalyst - PPM
0	20	8
1.32	26	10
2.6	33	14
3.9	35	18
5.2	40	20

➢ Emission analysis on Carbon monoxide (CO) %



During usage of **FEROX** fuel catalyst Carbon monoxide(CO) % getting reduced by **67** to **72**%*

(To compare with Fresh diesel emission)

Load (kW)	Emission in Fresh Diesel (%)	Diesel with Ferox catalyst (%)	Percentage of Reduction (%)
0	70	20	71 %
1.32	90	30	67 %
2.6	120	40	67 %
3.9	180	50	72 %
5.2	250	70	72 %

Conclusion

- The effect of the FEROX Multi functional combustion catalyst on the brake specific fuel consumption and smoke emission of a diesel engine was studied experimentally as a function of engine load, speed and Recommended catalyst dosing ratio.

- The brake specific fuel consumption and the smoke emission were reduced with the use of the FEROX Multi functional combustion catalyst with respect to that of the pure diesel fuel.

- The level of fuel saving was 15 % to 17 % and the Smoke Nitrogen Oxide (NO) ppm level **reduced by** 35 % to 76% (Various engine load condition) and Carbon monoxide (CO) % level **reduced by** 67 % to 72% (Various engine load condition)

- After 3 hrs of Engine running with FEROX Fuel Multi functional combustion catalyst , The Amount of Black smoke got reduced from the Engine and Engine noise level found reduced (Not measured) During usage of FEROX fuel catalyst Smoke Opacity (%) getting reduced by 16% to 41%*(To compare with Fresh diesel emission

Thank you

FuelTabs

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