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TÜV REPORT

Bericht Nr. 351-084-90

Examination of the effectiveness of the
Parker Automotive Corporation's engine
cleaning system "Carbon Clean" and
"Industrial Diesel Fuel Tank Detergent" on used
commercial vehicles and cars.

Client : Parker Automotive Corporation
3505 Cadillac Avenue, Bldg. Q-110
Costa Mesa, CA 92626

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1. Setting of Task

Messrs. Parker Automotive Corporation has designed the engine cleaning system “Carbon Clean” and “Industrial Diesel Tune” for Diesel and Otto engines. The units were developed in order to clean injection nozzles, valves and combustion chambers from residues without having to dismount them.

The system is intended to reduce smoke and gas emission as well as fuel consumption and to restore the engine output.

The effectiveness of the units is to be proved by extensive tests of passenger cars and trucks arbitrarily selected from the traffic by the TÜV Bayern (Technical Control Board of Bavaria).

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2. Summary of the Results Obtained

The motor cleaning concept “Carbon Clean” and “Industrial Diesel Tune” developed by Messrs. Parker Automotive Corporation was tested by the TÜV Bayern in Otto and Diesel engines, which had been made available to it by forwarding agents, dealers and municipal enterprises. Cleaning of the engines was carried out by the technical staff of the Messrs. Parker, whereas the tests and evaluation of the measuring results were performed by staff members of TÜV Bayern.

Three of five tested passenger cars with Otto engines were equipped with catalyst. Within the scope of the tests performed, no disadvantageous effects on the catalysts have been observed due to cleaning of the engine.

Measurements of the pollutant components in the exhaust gas showed with respect to all Otto engines, on an average, a reduction of the emission of unburned hydrocarbons (HC) and carbon monoxide (CO) after cleaning. Regarding three of five vehicles carbon monoxide emission could be reduced, on an average, by 33%, and in one vehicle even by 72%. After optimal CO adjustment in no-load operation, two vehicles, whose reduction, on an average, amounted to 22%, were remeasured; they showed a total reduction of the carbon monoxide emission by 61%, on an average.

NOx emission was reduced by cleaning engine in three of five vehicles within the scope of the measuring tolerance. A reduction of fuel consumption by 3%, on an average, could be reached in four or five vehicles and was thus within the measuring accuracy range.

Smoke turbidity with Diesel vehicles was determined by using the Hartridge smoke meter and measuring instrument Wager 650. Reduction of smoke turbidity was reached in all vehicles.

Diesel smoke turbidity and motor output were the criteria used in the truck tests. The measurements showed the best cleaning effect under full load condition – particularly at 45% of the nominal speed. This is the range in which trucks are frequently operated.

The Hartridge measurements showed a reduction of turbidity by 30%, on an average, with seven vehicles, whereas a turbidity reduction of even 32% was determined according to the Wager method.

Improvements of up to 60% (Hartridge) and 70% (Wager), respectively, were reached under different loads.

Restoration of the maximum truck engine output by 3%, on an average, and in one case even by approx. 20%, could be reached by the cleaning process. Thus it was within the measuring accuracy range.

It has not been tested whether or not any importer adjustment of or mechanical damage to the engine avoided an even further improvement.