



A Minnesota Environmental Initiative Project

Diesel Engine Technologies Terms and Definitions

Project Green Fleet implements a range of diesel emission reduction strategies on school buses, heavy-duty trucks and other diesel vehicles and equipment. These technologies reduce pollutants found in diesel exhaust improving air quality and reducing exposures.

Diesel Retrofit A diesel retrofit is any technology, device, fuel or system that when applied to an existing diesel engine achieves emissions reductions beyond what is currently required by federal regulations at the time of the engine's certification.

Diesel Oxidation Catalyst (DOC) A DOC is a device with a porous ceramic honeycomb-like structure coated with a material that catalyzes a chemical reaction to reduce pollution from the tailpipe of a diesel vehicle. The DOC can be installed ahead of the existing muffler or as a unit combined with a muffler. Much like a catalytic converter on a car, once a DOC is installed, it rarely requires maintenance.

Closed Crankcase Filtration System (CFS) A crankcase filtration system (CFS) closes off the crankcase circuit by filtering engine blow-by gases and then returning the exhaust to the combustion cycle. It will reduce engine oil consumption (up to 6 gallons per year) and improves in-cabin air quality. A filter is replaced after 500 hours of operation or after each oil change, which is the only ongoing maintenance associated with this piece of equipment.

Diesel Multistage Filtration System (DMF) The DMF Muffler uses a two stage metallic filter to trap and reduce diesel particulate matter (PM), a pollutant found in diesel exhaust. Each filter stage consists of alternating layers of a corrugated metal and a porous sintered metal fleece. The unique catalyst coating reduces PM, as well as other pollutants like hydrocarbons and carbon monoxide. The DMF is designed to be maintenance free, but must operate with a minimum exhaust temperature in order to be effective. The temperature requirements are lower than for a Diesel Particulate Matter Filtration System.



Continued on back



Diesel Particulate Matter Filtration System (DPF) A diesel particulate matter filter (DPF) is a ceramic device that collects particulate matter in the exhaust stream and oxidizes it into less harmful components using the high temperature of the exhaust. DPFs reduce emissions of particulate matter, hydrocarbons, and carbon monoxide by up to 90 percent. While DPFs yield the highest emission reductions, they also have the highest level of maintenance and require periodic cleaning by a special machine. The frequency of cleanings depends on the ability of the exhaust temperature to be maintained over 200 degrees C. Lower exhaust temperatures result in more particulate matter accumulating on the filter instead of burning off.

Auxiliary Power Units and Generator Sets (APU/GS) APU/GS devices supply cooling, heating, and electrical power to vehicles that would otherwise require the operation of the main drive engine. This reduces unnecessary idling while the vehicle is temporarily parked or remains stationary.

Diesel Engine Repower A diesel engine repower is the replacement of an old or original engine with a new cleaner-running engine that is certified to a more stringent set of emissions standards.

All technologies implemented by Project Green Fleet are verified by the U.S. Environmental Protection Agency.

For more information visit: <http://www.epa.gov/otaq/retrofit/index.html>

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