



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Washington, DC 20460

OCT 29 2013

OFFICE OF
AIR AND RADIATION

Mr. Kevin Brown
Clean Diesel Technologies Inc.
83 Commerce Valley Drive. E.
Thornhill, Ontario L3T 7T3

Dear Mr. Brown:

The U.S. Environmental Protection Agency (EPA) has reviewed your request for verification of Clean Diesel Technologies, Inc. (CDTi) formerly Engine Control Systems Limited reformulated AZC Purimuffler or Purifier Diesel Oxidation Catalysts (AZC) in combination with a Closed Crankcase Ventilation (CCV) system. Based on our evaluation of your data and additional information provided, EPA hereby grants verification.

The technology is approved for use on the following engines and/or vehicles provided all of the operating criteria are met as described below:

Technology	Engine Model/Application	Fuel, Max Sulfur (ppm)	Reductions (%)			
			PM	NO _x	HC	CO
AZC Purimuffler or AZC Purifier DOC plus CDTi CCV System	Highway, heavy-duty, mechanically or electronically injected, turbocharged or naturally aspirated, originally manufactured from 1991 through 2006 model years which meet a 5 or 4 g/bhp-hr NO _x standard	15	25	N/A	50	50

This technology is approved for use with an open crankcase ventilation and no after treatment engines. The following criteria must be met in order for appropriately retrofitted engines to achieve the aforementioned emission reductions:

1. Pre-installation and post installation inspections are to be performed to insure correct functioning of the installed CCV. The CCV filter indicator must be used to determine if blow-by rates are satisfactory. The pre and post installation inspections must be documented for each vehicle.
2. The filtered oil from the CCV must be returned back to the engine oil sump. There is no catch bottle to be used with the CCV system.
3. The engine must be operated on ultra-low sulfur diesel fuel (ULSD) of 15 ppm or less.

4. The engine exhaust temperature must achieve at least 150 °C during its duty cycle.
5. This verification includes catalyst substrates with different cell densities. AZC DOC's converter part numbers beginning with A16D and converter mufflers beginning with A17D prefixes employ 300 or 350 cells per square inch (cpsi) substrates which may be used on 1991 to 2006 model year engines. AZC DOC's converter part numbers beginning with A16C and converter muffler part numbers beginning with A17C employ 400 cpsi substrates which may be used only on 1994 to 2006 model year engines.
6. The engine must be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
7. The vehicle may not be equipped with an oil burning system and lube oil or other oils may not be mixed with the fuel.
8. The engine must not have been originally certified or equipped with a DOC or diesel particulate filter.
9. The 4500 and 6000 model filter cartridges must be replaced every 750 engine hours or every other oil change or when indicated by red filter service indicator, whichever occurs first. The 3500 and 3550 model filter cartridges must be replaced every oil change or when indicated by the red service indicator, whichever occurs first.

EPA estimates that this device will incur no discernable fuel economy penalty when used in a compatible application. If the CDTi AZC DOC plus CCV system is modified from the application description provided to EPA and representative of products tested, you must notify EPA immediately. This verification does not automatically confer to modified devices or devices that are similar to this conditional verification.

Information on the CDTi AZC DOC plus CCV system, percent reduction, and applicable engines will be posted on the EPA's Verified Technology List website at: <http://www.epa.gov/cleandiesel/verification/verif-list.htm>. As you know, CDTi will be responsible for completing approved in-use testing and for submitting all testing data to EPA in order to achieve full verification of their reformulated AZC Purimuffler or Purifier DOCs plus CCV System.

Thank you for participating in EPA's Technology Verification Program. If you have any questions or comments, please contact Britney J. McCoy, of my staff, at (202) 343-9218.

Sincerely,



Jim Blubaugh, Deputy Director
Transportation and Climate Division
Office of Transportation and Air Quality