Technology Commercialization Opportunity

(DPRS) A Novel Diesel Particulate Removal System

Inventors
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Technology Description

A non-thermal plasma (NTP) based system for the removal of particulate matter from the exhaust stream of diesel engines has been invented. The Diesel Particulate Removal System (DPRS) has several cost and feature advantages when compared to the best diesel particulate filter technologies today. The DPRS is a flow-through system that vaporizes particulate matter and does not increase backpressure or fuel consumption as experienced with current diesel particulate filters. In comparison, the DPRS is smaller, less costly to manufacture/install, requires no periodic regeneration and does not need removal from the vehicle to clean accumulated ash. There are no application restraints of the DPRS across all diesel engines from Light Duty Vehicles to Heavy-Duty Vehicles and on or off road equipment.

DPRS works by creating highly reactive oxidizing agents (such as O-, singlet oxygen; OH-, NO, and NO2) via corona generation that react with and reduce the presence of soot particles in diesel exhaust. A DPRS combined with a Diesel Oxidation Catalyst (DOC) can also reduce volatile/semi volatile hydrocarbon, and carbon monoxide in diesel exhaust. This is all done inside the exhaust without the need for additional piping or rerouting

A promising synergy of the NTP technology with a low pressure exhaust gas recirculation (EGR) system for NOx control has been demonstrated giving on average up to 74% reduction of particulate matter in the EGR line while EGR was set to 50% NOx reduction. A cleaner EGR line allows the EGR valve and the exhaust cooler to work efficiently and have a longer life. A third party, Southwest Research Institute, was used to perform and verify these tests.

Keywords: Diesel engines exhaust gas, NTP oxidation, diesel emissions, particulate removal, air pollution, air quality, clean diesel, soot removal, non-thermal plasma.

Technology Readiness

DPRS is presently at this level of readiness:

Idea	Concept	**Prototype**	Alpha Version	Beta Version	Released

Environmental Energy Technologies in conjunction with Rochester Institute of Technology has developed pre-production (CARB/EPA certification-ready) units demonstrating low back pressure and self-regenerating operation. A DPRS unit is currently under durability tests on a local school district bus with approval by NY State DOT.

Developers will work with licensees to finalize the product development and move DPRS towards a "released version."

Intellectual Property

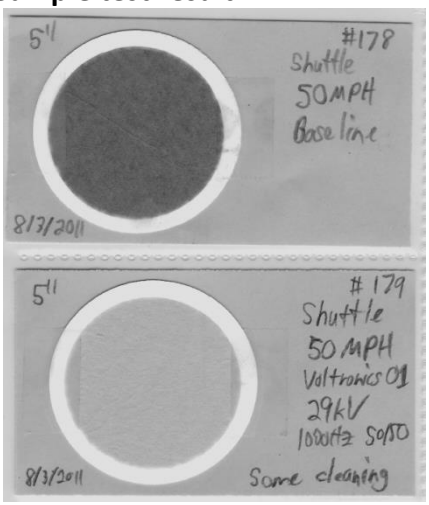
The technology is the subject of US Patents 8,115,373; 8,157,902; 8,580,087 and 8,581,480. Additional patent coverage in Canada is anticipated.

Applications

Light duty vehicles, Heavy-duty Vehicles and on or off road diesel engines

Product

Sample test result



Shuttle Bus (*83% (gravimetric)*)

Target Customers: Freight and transportation industry, Public transit, Off-road construction and mining, Automotive and truck manufacturers, Diesel engine manufacturers, Users of diesel engines

Opportunity

RIT's Intellectual Property Management Office (IPMO) and EET are interested in working with those parties who are qualified and interested in the commercialization of this Clean Diesel intellectual property. Arrangement types include licensing the application to existing organizations or new organizations that have expertise in the field or related fields.

Contact

Those interested in learning more about this opportunity should contact:
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