

PRESS RELEASE

Joint Effort by North American Vegetable Oil Fuel Pioneers Obtains Positive EPA Emissions Test Results

PlantDrive™ vegetable oil fuel systems, in conjunction with Albuquerque Alternative Energies (AAE) and VO Control Systems, conducted emissions testing at the EPA certified lab at the National Center for Vehicle Emissions Control and Safety located at Colorado State University (NCVECS) on 19 January 2007. Tested was a 2002 Volkswagen Golf TDi modified by AAE with a state of the art vegetable oil fuel system supplied by PlantDrive™ and VO Control, consisting of a Hotfox™ stainless steel heated fuel pickup, Vormax™ dual stage vegetable oil processing filter, Vegtherm™ inline electric final fuel heater, and a VO Control Systems VO Controller. This system was able to produce emissions levels well below the acceptable EPA standards for this vehicle on both ultra low sulfur diesel (ULSD) and straight Canola oil. The tests were conducted on an I/M 240 in conjunction with a chassis dynamometer. Three tests were run on ULSD to establish the base line for the vehicle. Another three tests were run on Canola oil, which the lab labeled V100. As the graph below shows the PlantDrive/VO Control Systems kit showed decreases in emissions over the entire spectrum analyzed. For the raw data that this test was derived from please go to www.abqaltenergies.com/public_documents.

The results of these tests were outstanding and build on and reinforce some of the emissions results obtained in earlier studies by Edward Beggs, one of PlantDrive's co-founders (Renewable oil fuels and diesel engines as components of sustainable system design, 2001. Available at www.plantdrive.com as a pdf). The PlantDrive™ vegetable oil fuel system consists of commercial grade components, proven in the commercial trucking industry and SVO conversions for years. The VO Controller precisely controls the fuel temperature to maintain correct viscosities while keeping the fuel temperature within the vehicle ECU (onboard computer) range. This combination allowed a 100% successful test of a carbon- neutral (or carbon-positive) fuel that can be used year around in any climate.

The system's use of stainless steel as opposed to copper, in the in-tank fuel heater, is key to reducing harmful reactions that could cause damage to your vehicle's fuel system. The Hotfox™ stainless steel heated fuel pickup is paramount to ensuring that the vegetable oil fuel does not polymerize/oxidize. This is because it maintains the heat in the fuel tank locally, providing sufficient heat to maintain oil flow, rather than providing excessive amounts of heat to the tank such as a coil/radiator type tank heater does.

PlantDrive's large capacity, heated Vormax™ prefilter/water separator/ final filter, with industry-leading Racor™ Aquabloc™ technology, allowed use of a very fine element, while still minimizing the need for filter changes on the vehicle in regular use, and provided excellent protection against contaminants and water, both of which can cause fuel system damage.

PlantDrive's Vegtherm™ inline electric heater, in combination with their coolant-heated Vormax™ and Hotfox™, allowed for rapid heating of the

vegetable oil to the proper level and for that temperature to be maintained optimally, critical for the use of vegetable oil fuels.

The VO Controller monitors and coordinates the system. Fuel level is displayed, preventing running the tank so low that air could enter the fuel system, as well as acting as a general fuel gauge. It also monitors coolant and fuel temperatures, preventing the vehicle from switching to VO from diesel too soon, and regulating fuel temperatures to within a narrow range. This range corresponds to a temperature and viscosity that allows the vehicle's ECU to properly meter fuel and adjust timing.

The result of this work verifies that a properly converted modern automotive diesel can be fueled by vegetable oil and meet or exceed the requirements of the EPA emission standards, giving better results than ULSD diesel fuel from a renewable fuel.

Other vehicles of the same engine type that have been converted over the last number of years verify the real-world operability of PlantDrive™VO systems. Longer-term results further verify this, having yielded at least one vehicle with over 100,000 miles of service (and counting) after conversion.

In general, vegetable oil as a motor fuel represents one of the best “green” fuels available at this time. When coupled with the efficiency of a diesel engine, it represents one of the most affordable solutions to the carbon dioxide emissions that contribute to climate change. Vegetable oil fuel is also free of sulfur, is renewable and can be produced easily, locally, with minimal capital investment from a wide range of plants, and even from algae.

A number of European countries have accepted the use of vegetable oil as an alternative diesel engine fuel. It is listed as one of the alternative fuel options for the European Union Biofuels Directive that has recently been increased to require all EU countries to obtain 5.75% percent of fuel from renewable sources by 2010. Other nations, including Canada and the USA, are gradually realizing the role straight vegetable oil can play in reaching sustainability and carbon emission reduction objectives, alongside other renewable fuel options such as ethanol and biodiesel.

The results of this test are expected to generally reinforce acceptance of vegetable oil as a diesel engine fuel. Relevant companies:

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Canola Oil Emissions Testing Results

Testing by Albuquerque Alternative Energies, PlantDrive and VO Control Systems on a 2002 VW Golf TDi at the National Center for Vehicle Emissions Control and Safety (EPA certified) on 19 Jan 07.

