

PRESS RELEASE

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

A vehicle equipped with PlantDrive™ component has passed US EPA emission testing, using new Canola oil. Testing was conducted 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. The test vehicle was a 2002 Volkswagen Golf TDi modified by with a state of the art vegetable oil fuel system supplied by PlantDrive™ 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. Results can be seen in the graph, below. Note that CO2 emissions shown in the graph are, obviously, “tailpipe”, as opposed to “global” or “life cycle” CO2 emissions. For all renewable fuels, it is the “life cycle” emissions which are most important.

Estimates of life cycle CO2 emissions reductions for vegetable oil fuels vary, depending on how the analysis is done, and a number of variables, but in general it seems reasonable to say that straight vegetable oil fuels can be termed “carbon neutral”.

In addition to the carbon dioxide emissions reduction potential, straight vegetable oil is simply and locally processed. Unlike the more commonly promoted “ethyl ester” biodiesel, no chemicals are used, no methanol is required, and less electricity is used in production. As the Worldwatch Institute and the Sierra Club have stated, "...the purest form of biodiesel is straight vegetable oil..."

(www.worldwatch.org/files/pdf/biofuels.pdf).

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 and plantdrive.ca 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 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, coolant-heated VegMax 2™ (VM2) or Vormax™ prefilter/water separator/ final filters, with industry-leading filtration technology, allow use of a very fine element, while still minimizing the need for filter changes on the vehicle in regular use, and provide excellent protection against contaminants and water, both of which can cause fuel system damage.

PlantDrive's Vegtherm™ inline electric heater, in combination with the coolant-heated VM2 or Vormax™ and Hotfox™, allows 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. 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. Purge time is also controlled at the time the engine is shut down.

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 oil 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 500,000 kilometers of service (and counting) after conversion.

In general, vegetable oil (plant 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 used cooking oil, from a wide range of plants, and even from algae.

It is possible to have food AND fuel, and to create sustainable systems (also using conservation) for fuel supply that represent a much better option, in terms of energy balance ("well-to-wheel") and CO2 balance, than other "conventional" and "non-conventional" fossil fuels, such as fuels derived from the tar sands using large amounts of natural gas.

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. Other nations, including Canada and the USA, are gradually realizing the role straight vegetable oil can play in reaching sustainability and carbon dioxide 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.

