



veg oil motoring



what is it?

Rudolf Diesel's first engine ran on vegetable (peanut) oil. You can do the same thing today, but some modifications to your diesel vehicle will be necessary for veg oil motoring (it's not possible to convert petrol vehicles to run on vegetable oil).

Veg oil is too viscous to use directly in an unmodified vehicle, so there are two ways that viscosity can be reduced:

- Remove the glycerine from the oil to make biodiesel, in which case no vehicle conversion is necessary.
- Convert the vehicle to use straight oil (which reduces viscosity by pre-heating the fuel).

Biodiesel can be used in any diesel vehicle, and mixed with mineral diesel in any ratio. Straight vegetable oil should not be used in an unconverted diesel vehicle, due to its viscosity, and the fact that the glycerine content may cause 'coking' of fuel injector heads and possible engine failure.

It's perfectly legal despite the reports of arrests in Wales for driving on veg oil (they weren't paying road fuel duty).



Yes, you can run your (diesel) car on this stuff (after you've cooked with it first) – but you'll have to convert your vehicle to avoid damage due to its extra viscosity.



Once converted, you can fill up with veg oil, and away you go.

what are the benefits?

Vegetable oil is a biofuel, and as such is virtually carbon-neutral. This means that the carbon dioxide (CO₂) released when the fuel is burnt is absorbed by the plants that will provide the next crop of oil.

Having said that, we don't recommend virgin oil as it means using land to grow fuel for cars instead of food for humans. We only support the use of cleaned, waste cooking oil – see below.

As CO₂ is the main greenhouse gas, switching to biofuels can help to slow global warming. Emissions are cleaner too – sulphur is eliminated, and a range of other pollutants are reduced dramatically (including particulates, carbon monoxide, and unburnt hydrocarbons).

Further benefits include:

- Requires less energy to produce
- Doesn't have to be transported such long distances
- Renewable resource
- Non-toxic
- Biodegradable

These environmental benefits also apply to biodiesel, but if you're sure that your car is worth a conversion to be able to use straight vegetable oil, this is a more environmentally-friendly option, as there will be none of the problems associated with the waste from the biodiesel production process.



Land's End to John O' Groats: Daniel Blackburn, seen here beginning his journey to promote veg oil motoring. He filled up with cooking oil bought from shops on the way.

what can I do?

As the world moves towards electric vehicles, this topic becomes less relevant. However, we don't know what's around the corner, and diesel engines may be required for agriculture and distribution in case of breakdown of essential supply chains for whatever reason.

Petrol vehicles can't be converted to run on veg oil – it's for diesel vehicles only. For more on which vehicles are more easily converted, see the discussion at axleaddict.com/cars/Waste-Vegetable-Oil-Fueled-Vehicles.

See vegoilcar.co.uk for information about obtaining used cooking oil (cleaned or uncleaned); and for advice about buying from eBay.

The 2 main pump manufacturers in the UK are Bosch and Lucas. To run on veg oil a Bosch pump is preferable. Lucas pumps have a 'paddle' mechanism which can't cope with the heavier veg oil. A good mechanic can swap a Bosch pump for a Lucas.

Two-tank method

An extra tank is added for veg oil. You start with diesel, then switch to veg oil when the engine is hot, and it's continually heated via a heat exchange system. Before stopping, switch to the diesel tank again so that there will be mineral diesel in the fuel line when you come to start your car again. Cost installed c. £800. DIY kit c. £400

Simple one-tank method

You don't have to remember to switch to mineral diesel near the end of your journey, and veg oil and mineral diesel can be mixed in the same tank. A one-tank conversion involves pre-heating the oil before it gets to the cylinders, and is only possible with indirect injection vehicles (D, TD, not DI, TDI, HDI, SDI etc.), because they have a separate chamber for atomising the fuel before it reaches the pistons, so cold starting on veg oil is fine. Also, a new, wider fuel line is installed between the fuel tank and the heat exchanger, because of the extra viscosity of vegetable oil. Cost installed c. £600.

Elsbett one-tank method

German kit with a few installers in the UK. They've designed an engine where veg oil is the fuel and the coolant, so it gets continually heated. When starting from cold, there's an electrically-heated jacket on the fuel filter. However, they advise against using waste oil.

In a conventional diesel engine, fuel is initially sprayed onto a heater plug at the top of the chamber (which is why you have to wait a few moments for the plug to heat up when starting a diesel engine); in an Elsbett conversion, the heater plug stays on until the engine is up to temperature. Cost installed c. £850-1300, depending on vehicle. DIY kit c. £550-750. More difficult than the other two conversions – a job for experienced mechanics only.

Paying duty

Road fuel duty is payable for veg oil in the UK, but the rates change. Contact HM Revenue & Customs for advice.

resources

- see lowimpact.org/veg-oil-motoring for more info, advice, links and books, including:
- Forest Gregg, *SVO: Powering Your Vehicle with Straight Vegetable Oil*
- Jon Starbuck & Gavin Harper, *Run Your Diesel Vehicle on Biofuels*
- Joshua Tickell, *From the Fryer to the Fuel Tank*
- http://journeytoforever.org/biodiesel_svo.html – tons of info on SVO and biofuels
- wvodesigns.com/wiki – wiki on waste veg oil and all the things it can be used for
- afdc.energy.gov – alternative fuels data center

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