

CHEAP CARBON NEUTRAL DRIVING

FRYING OIL CAR CONVERSIONS

<http://www.windways.com.au/>

A 1986 Mercedes 300D converted to run carbon neutral on filtered used frying oil

- allows the use of waste oil
- saves 7 tons a year of CO₂

To get to 100% carbon neutral driving

- I looked online to find a car I could afford which would be a good car to convert to run carbon free on filtered waste oil
- I was looking for a car with a reputation for rugged simplicity and long life to realise the benefits. But many more modern cars have been converted with this kit – see later
- I chose a 29 year old Mercedes 300D with 175,000 miles on the clock, which I bought for \$5,000.
- Then the conversion cost \$2,757

Use of Vegetable Oils as Diesel Engine Fuel

In *Diesel Engines for Land and Marine Work*,^[8] **Rudolf Diesel** stated, "In 1900 a small diesel engine was exhibited by the Otto company which, on the suggestion of the French government, was run on peanut oil.

The motor was built for ordinary oils, and without any modification was run on vegetable oil."

Diesel said "I have recently repeated these experiments on a large scale with full success and entire confirmation of the results formerly obtained."^[9]

Advantages of the change

- Carbon neutral
- Cars seem to get slightly better mileage, to run a little more quietly and have just as much zip as cars that run on diesel.
- According to test results vegetable oil burns somewhat cleaner in most categories than diesel fuel, and emit absolutely no sulphur
- Running on free or reduced cost fuel

Carbon neutral

CO₂ is generated when the oil is burnt but the CO₂ was absorbed by the plant as it was producing the oil

Disadvantage of vegetable oil

- more viscous than diesel fuel while being a better lubricant
- The viscosity can be a problem in cold conditions, causing blockage in the injectors, which is easily overcome by heating up the engine on diesel fuel and then using engine heat to warm up the veg oil before it reaches the fuel injection pump.
- This can be achieved with a preheater and dual fuel tanks – adding one for vegetable oil
- Diesel must again be used before shutting down to prevent the engine cooling down with the more viscous oil in the injectors.

The dual tank convertor from ATG Advanced Technology Group GmbH

- Includes a fuel oil preheater, heated by engine heat, and temperature sensors to show when the engine is warm enough to run on vegetable oil
- All electrics, wiring, tubing and instructions included in the kit
- cost \$1,709.
- www.defendertuning.com.au

Electrics



Costing

- ATG kit cost \$1,709
- The plastic water tank for the fuel from a caravan shop cost \$248
- Fitting it & the ATG kit to the Mercedes was done by Joe Mercorella, an excellent general mechanic, 32 Swamp Rd, Uraidla, South Australia – ph 61 8 8390 1398 for \$800.
- Cost of conversion \$2757
- My extra costs:
 - A missing left indicator & lamp assembly cost \$320.
 - A full service and an oil leak fixed cost \$316.

Veg oil tank



Cost savings

- The change will save \$2,368 pa using bought waste oil, \$3,065 pa if the oil is free. With a payback period of 1.16 years.
- It will also prevent the generation of 7 tonnes of CO₂ pa, assuming I drive 36,000 km pa.

Miles now	175,000 -	281,635 km			
	Target:	1,000,000 km			
		718,365 km to go	35,918	Km pa for 20	years
veg oil price		0.30\$/l			
diesel price		1.191\$/l			
Saving all	bought oil	0.8911\$/l			
fuel consumption		7.4l/100		0.074l/km	
	fuel used	53,159l	265,079 l pa		
	Cost	\$15948	\$797pa		
	\$ saved	47,365 Bought oil	\$2,368pa	Bought oil	
			\$3,165 pa	Oil given	
	2640 gm Co2/l diesel				
total CO2		140,339.8 kg	7,017 kg pa		
		1.842 kg/m3 at NTP			
Volume		76,188.81 m3	3,809 m3 pa		

Vehicle types Cars / SUVs/ Vans converted using the ATG converter:

Audi 80 1.6 TD, Audi 100 2.5 TDI, Audi A2 1.2 TDI 3L, Audi A3 1.9 TDI, Audi A4 1.9 TDI, Audi A4 2.5 TDI, Audi A6 2.5 TDI

BMW 320 D, BMW 320 TD, BMW 324 TD, BMW 325 TD, BMW 325 TDS, BMW 524 TD, BMW 525 TDS

Chevrolet Blazer K5 V8

Citroen AX 1.4 D, Citroen BX 17 TD, Citroen BX 19 D, Citroen C 15 1.8 D, Citroen CX 25 TD, Citroen Evasion 1.9 TD, Citroen Jumper 1.9 TD, Citroen Saxo 1.5 D, Citroen Xantia 1.9 TD

Daihatsu Rocky 2.8 TD

Fiat Doblo 1.9 D, Fiat Ducato 1.9 D, Fiat Ducato 2.5 D, Fiat Ducato 2.8 TD, Fiat Fiorino, Fiat Scudo 1.9D

Ford F350 7.3 TD, Ford Escort 1.8 D, Ford Fiesta 1.8 D, Ford Focus 1.8 TD, Ford Focus 1.8 TDDi
Turnier, Ford Mondeo 1.8 TD, Ford Ranger, Ford Scorpio 2.5 TD, Ford Transit 2.4 TDE, Ford Transit 2.5 D, Ford Transit 2.5 TD

Hyundai Gallopper 2.5 TCI

Isuzu Trooper 2.8 TD

Iveco Daily 2.8 D

Jeep Grand Cherokee 3.1 TD

Kia Carnival 2.9 TD, Kia Carnival 2.9 TDI, Kia Pregio, Kia Retona 2.0 TD,

Land Rover Defender 90 2.5 D, Land Rover Defender 110 2.5 TD, Land Rover Defender 110 2.5 Td5,
Land Rover Freelander 2.0 D, Land Rover Range Rover

Mercedes 190 D, Mercedes 200 D, Mercedes 208 D, Mercedes 210 D, Mercedes 220 D, Mercedes 220 CDI, Mercedes 240 D, Mercedes 250 D, Mercedes 300 GD, Mercedes E 300 TD, Mercedes 308 D, Mercedes 310 D, Mercedes 407 D, Mercedes 410 D, Mercedes 709 D, Mercedes 814 D, Mercedes 817 D, Mercedes A-Klasse 140 CDI, Mercedes A-Klasse 170 CDI, Mercedes Sprinter 208 D, Mercedes Sprinter 210 D, Mercedes Sprinter 211 CDI, Mercedes Sprinter 212 D, Mercedes Sprinter 312 D, Mercedes Sprinter 313 CDI, Mercedes Sprinter 316 CDI, Mercedes Vario 815 D, Mercedes Vito 108 D, Mercedes Vito 110 D

Mitsubishi Carisma 1.9 TD, Mitsubishi L200 2.5 TD, Mitsubishi Pajero 2.5 TD

Nissan Almera 2.0 D, Nissan Almera 2.2 TD, Nissan King Cap MD22, Nissan Patrol 2.8 TD, Nissan Sunny 2.0 D, Nissan Terrano II 2.7 TD

Opel Astra 1.7 TD, Opel Astra 1.7 DTI, Opel Combo 1.7 DI, Opel Corsa 1.5 D, Opel Corsa 1.7 DI, Opel Frontera 2.5 TDS, Opel Frontera 2.8 TDI, Opel Kadett 1.6 D, Opel Omega 2.5 TD, Opel Omega 2.2 DTI, Opel Vectra 1.7 TD, Opel Vectra 2.0 DTI

Peugeot 106 1.5 D, Peugeot 205 1.9 D, Peugeot 306 1.9 D, Peugeot 309 1.9 D, Peugeot 405 1.9 TD, Peugeot 605 2.1 TD, Peugeot Boxer, Peugeot Expert 1.9 TD

Renault Espace, Renault Kangoo 1.9 DTI, Renault Laguna, Renault Master, Renault Megane 1.9 DTI, Renault R 5 1.6 D, Renault R 21 D, Renault Rapid 1.9 D, Renault Safrane 2.5 TD, Renault Scenic 1.9 DCI

Seat Alhambra 1.9 TDI, Seat Arosa 1.4 TDI, Seat Ibiza 1.9 TDI, Seat Inca

Skoda Fabia 1.9 SDI, Skoda Felicia 1.9 D, Skoda Octavia 1.9 TDI

Smart CDI

Ssangyong Musso 2.9 D

Toyota Avensis 2.0 TD, Toyota Corolla 1.8 D, Toyota Land Cruiser 3.0 TD, Toyota Hilux

Vauxhall Combo 1.7

Volkswagen VW Caddy 1.9 TDI, VW Golf II 1.6 TD, VW Golf III 1.9 TD, VW Golf III 1.9 TDI, VW Golf IV 1.9 TDI, VW Jetta 1.9 TD, VW Lupo 1.4 TDI, VW Lupo 1.7 SDI, VW LT 28, VW LT 35 2.8 TDI, VW Passat 1.6 TD, VW Passat 1.9 TDI, VW Polo 1.9 SDI, VW Sharan 1.9 TDI, VW T2 1.7 D, VW T3 1.6 TD, VW T4 1.9 TD, VW T4 2.4 D, VW T4 2.5 TDI

Volvo 240 D, Volvo 740 2.4 TD, Volvo 850 2.5 TDI, Volvo S80 2.5 TDI, Volvo V70 2.5 TDI

- **Trucks / Buses** DAF, MAN, Mercedes, Neoplan, Iveco, Renault, Scania, Setra, Volvo
- **Tractors / Agricultural Machinery** Case, Deutz-Fahr, Fendt, Fiat, IHC, JCB Fastrac, John Deere, Lamborghini, Massey Ferguson, MB-Trac, New Holland, Pasquali, Renault, Same, Steyr

Frying oil settling tank – fuel drawn off the top,
'fertiliser' collects at the bottom.



Filter to remove water & dirt



There have been many high level Climate Change meetings with the next due in Paris at Christmas 2015 – while CO2 levels in the atmosphere continue to climb and climb.

It has been suggested this battle will be won by ordinary folk doing common-sense things – like running their cars on veg oil...

I wish you all well

Regards

Charlie

Sir Charlie Madden Bt BSc MTech MBA

DISCLAIMER:

All information given in this web site are for educational purposes only. No claims are made on or for the validity or correctness of the material provided. I accept no responsibility for any mishaps or accidents incurred by any persons utilising this information