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## ATG Vegetable Oil-Kit



### Converting Diesel Vehicles to Straight Vegetable Oil (SVO/PPO/WVO) with the ATG 2-tank system!

#### Advantages

- Operation of diesel vehicles with straight vegetable oil (SVO/PPO/WVO)
- Smoother motor start with two-tank system
- Operational safety due to auto switching and diesel quick purge with reminder signal
- TUV (German Technical Inspection Authority) approved
- Suitable for almost all diesel vehicles and engines (see [References](#)):  
Automobiles, SUVs, Vans, Trucks, Buses, Tractors, Tows, Agricultural Machinery, Construction Machinery, Generators, etc.
- Possible to reuse when changing vehicles
- Diesel operation still possible
- Already **over 8000 vehicles** converted!
- Proven technology - Made in Germany

#### Why Vegetable Oil?

In light of rising fuel prices and the climate change alternative fuels such as vegetable oil offer an inexpensive and ecologically friendly alternative to conventional diesel fuel.

Straight vegetable oils (e.g. rape oil, canola oil, colza oil, soya oil, sun flower oil, hemp oil, palm oil) are CO<sub>2</sub>-neutral, sulfur free and nontoxic. They should not be compared with biodiesel (RME). Biodiesel is chemically produced and substantially more expensive.

As a rule fuel consumption and engine power with vegetable oil remains the same. Smaller quantities of vegetable oil can be purchased in any supermarket or wholesale store. In the long term, it is more preferable to purchase vegetable oil from suppliers (e.g. oil mills) in the region. As vegetable oil is a natural product (foodstuff) it is usually not subject to a mineral oil tax.



#### Why Converting?

Straight vegetable oils have a higher viscosity and ignition temperature than diesel fuel or biodiesel and therefore must be heated when operating a diesel engine.

Vegetable oils, which have not been heated, lead to difficulties starting the engine and have negative effects on the engine's performance and life cycle. Cold, viscous vegetable oil strains the injection system and burns incompletely. In the long term the unburnt fuel leads to deposit in the combustion chamber of the motor.

At last for a long-term and smooth operation with vegetable oil a conversion is mandatory.

#### ATG Vegetable Oil-Kit

We offer with our SVO/WVO conversion kit (two-tank system with fuel preheating) a well proven solution for operating diesel engines with untreated vegetable oils. In different versions available the conversion system fits for almost all diesel vehicles and engines.

The main components are

- Controller
- additional fuel tank (optional)
- electric switching unit
- electric fuel preheater
- heat exchanger



ATG Controller (approx. 7 x 5 cm)

- control electronics
- pre-assembled cable loom

The additional fuel tank is available in different forms and sizes (see [fuel tanks](#)) and can be mounted at any suitable place.



The electric switching unit is used to switch between the tanks and for flushing the fuel system.

In order to protect the cold engine and the injection system, the engine starts off using diesel fuel.

As soon as the engine reaches its operating temperature, it will be switched automatically from diesel to vegetable oil. This results in a smooth transition from diesel fuel to vegetable oil.

The heat exchanger (fitted in water circuit) heats in combination with the electric fuel preheater the vegetable oil to an optimum temperature. The heated fuel relieves the injection pump and is finer vaporized by the injectors. It ignites and burns more efficiently, resulting in fuel savings and less wear and tear on the engine.



As long as the motor has its operating temperature, it can be stopped and started in vegetable mode. Only if the vehicle is going to sit for longer than 1 hour, it should be switched back over to diesel shortly before the end of the journey. In this case an automatic activated quick purge flushes the fuel system and the injection pump shortly with diesel fuel and ensures a cold start without any problems.



To prevent an unintended stop in vegetable mode, a short buzzer signal reminds to switch back to diesel.

### Installation

The ATG conversion kit is available in 12 and 24 volt models and is supplied with detailed installation instructions.

Following components are included in delivery: controller (mode auto or manual switching), electric switching unit (tank switching, flush/vent) with integrated electric fuel preheater (Diesel-Therm), temperature switch (regulates the temperature), control electronics (diesel quick purge, acoustic warning), heat exchanger (fitted in water circuit), fuel lines, fuel filter, relays, pre-assembled cable loom with connectors, fuses and protective caps, miscellaneous materials, detailed installation instructions



### References

Since years we are one of the leading companies in the sector of vegetable oil conversions. Meanwhile more than **8000 vehicles** were converted with the ATG 2-tank system to straight vegetable oil, thereof approx.

- 4000 Cars / SUVs / Vans
- 3000 Trucks / Buses
- 900 Tractors / Agricultural machinery
- many Boats and Generators

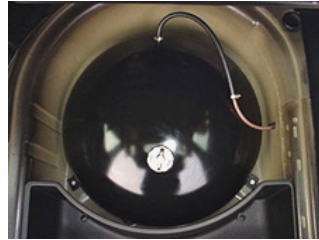
#### Example for car conversion



Volkswagen Golf IV 1.9 TDI Variant equipped with ATG 2-tank system



A view in the engine compartment



Additional fuel tank in spare-wheel

Examples for truck conversions

Since the year 2000 more than 3000 trucks have been converted with the ATG 2-Tanksystem.



Example for tractor conversions



With ATG technology converted tractors from Deutz-Fahr and Fendt.

Example for bus conversion

One of over 100 buses which have been converted with the ATG conversion kit to straight vegetable oil.



Example for boat conversions



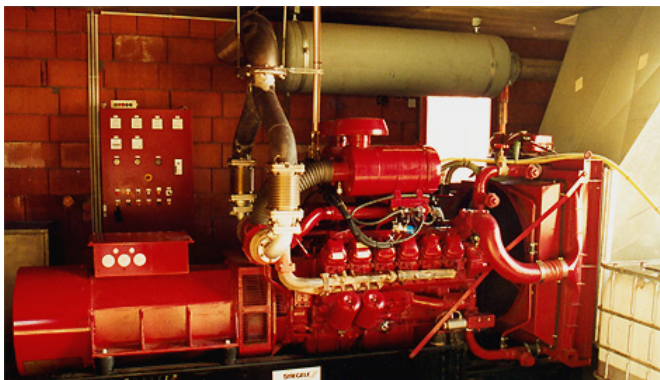


Motorboat Trident with straight vegetable oil



Sportina 760 driven with veg oil.

#### Example for converted stationary motor



MAN 12-cylinder, 700 horsepower, operated in a saw mill with straight vegetable oil

#### Extract of converted vehicle types

##### Cars / Suvs/ Vans

- **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 1.9 D
- **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** Galloper 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
- **Mazda** 323F 2.0 D, Mazda E 2.2 D
- **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

## FAQ - Frequently Asked Questions

### Can my vehicle be converted with the kit?

The ATG Vegetable Oil-Kit is suitable for diesel engines with in-line or distributor pumps from Bosch (except for type VP44), Diesel-Kiki, Nippon-Denso or Zexel. The conversion of diesel engines with Bosch VP44-injection pump, high-pressure fuel injection like unit-injectors pumps or common-rail-technology is only possible through skilled ATG Conversion Partners.

The size of the additional fuel tank (see [fuel tanks](#)) depends on the vehicle type and the available space.

If you have any further questions, please do not hesitate to [contact us](#).

### Where can I order the conversion kit?

The conversion kit can be ordered directly from ATG.

### Where can I have my vehicle converted?

The conversion can be performed by any reputable garage/mechanic. The installation requires an understanding of diesel engines and should be installed by a skilled specialist (e.g. auto mechanic)! Nevertheless a DIY (do-it-yourself) conversion is also possible. For your own protection, please check with the appropriate authorities in your country if there are specific provisions concerning changes on the vehicle.

### Is the conversion permanent?

No, it can be returned to its original state, e.g. when selling the vehicle. The components can simply be removed within short time. All of the components can be reused.

### Are there any long-term studies related to operating diesel vehicles with vegetable oil?

Tests and studies have shown that heated vegetable oil has nearly the same properties as diesel fuel and burns just as effectively in most engines. On the strength of past experience almost every diesel engine can be driven with straight vegetable oil after a conversion, provided that the motor is maintained and in good repair (compression, fuel injectors, glow plugs, ...).

### Can I operate my vehicle on vegetable oil during the winter months or at freezing temperatures?

Pure, untreated vegetable oil is getting viscous and sticky at freezing temperatures. Depending on the type and the properties of the vegetable oil, this condition will happen sooner or later. In order to prevent the vegetable oil from gelling in the tank or fuel lines, a mixture of vegetable oil and normal diesel fuel is recommended during the winter months.

### How does vegetable oil effect the engine's properties?

Usually, the engine's properties (operation, performance, consumption, ...) remain unchanged.

### Can parking heaters operate with vegetable oil?

Parking heaters are not suitable for operating with vegetable oil. If your vehicle has a parking heater, you should consult with the manufacturer beforehand to see whether an additional conversion is possible. With the two-tank system, parking heaters can still operate on diesel fuel.

### How expensive is vegetable oil and where can I purchase it?

Vegetable oil is a foodstuff and usually not subject to a mineral oil tax. Vegetable oil is a natural product and an inexpensive alternative to conventional diesel fuel. Smaller quantities of vegetable oil can be purchased in any supermarket or wholesale store. In the long term, it is more preferable to purchase vegetable oil from suppliers (e.g. oil mills) in the region. Recycled or used vegetable oil (WVO waste vegetable oil) can also be used provided that it has been cleaned and filtered (min. 1 µm).

### Is it generally permitted to drive using vegetable oil?

For your own protection, please check with the appropriate authorities in your country if there are specific provisions prohibiting the use of vegetable oil. This is also to be done for any changes on the vehicle to be converted.

### What is the difference between vegetable oil and biodiesel?

#### Vegetable Oil

All biofuels (e.g. vegetable oils) are CO<sub>2</sub>-neutral and free of sulfur and pollutants in their pure, untreated state.

Additional advantages of vegetable oil

- inexpensive
- nontoxic
- biodegradable
- water reactivity 0
- flash point aprox. 300°C (reduces the risk of fire or accident)
- requires less energy to produce
- locally produced
- protection of limited fossil fuels

**Biodiesel = Rapsmethylester = RME**

Biodiesel is chemically produced and substantially more expensive than plain vegetable oil. A problem is the durability of plastic and rubber components (sealings), which come into contact with biodiesel. If biodiesel is used in a system that has not been adapted, leakages on the fuel system and defects on injection pumps are the most frequently troubles. When using pure, untreated vegetable oil, these problems will not occur.

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