

# ELSBETT Technologie GmbH

- PIONEERING VEGETABLE OIL TECHNOLOGY -

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## New ELSBETT medium truck- and tractor/construction machinery conversion kits (2-Tank)

Thank you very much for your interest in ELSBETT SVO /WVO Engine Technology !

After a lot of requests especially from UK market we decided in Spring 2006 to downsize our well proofed Semi truck kit (300-550BHP) and offer the same technology for the most popular medium trucks (i.e. Mercedes Atego/Vario), tractors and construction machinery(-300BHP). The advantage of this kind of kit is, that the supply of the different fuels to the engine is mainly **not** controlled anymore by magnetic valves. This fact make the kit available even for the newest versions of Bosch Common Rail technology you can find in the newest MAN-TGL-trucks.



The conversion kit is designed for SVO and WVO which meets the ELSBETT vegetable oil standard. Please find on the following pages more information like:

1. kit components
2. instruction
3. SVO-standard

## 1. Kit components

The kit contains 6 main components:

### 1.1. controller and operator unit

The controller manages the switch over between diesel and SVO/WVO. It is not a huge programming adventure, just a switch for the driver to choose SVO/WVO or diesel and to purge the system. All other things will work out automatically. The controller transfers even the signals from our load module, which is a standard for all our tractor and construction machinery kits. Furthermore the controller includes all relays, fuses and a fuel gauge which is compatible to our sensor and fuel tank. A wire harness is available.



### 1.2. ELSBETT hybrid converter

This part is the heart of the system what let your truck become a FFV (flexible fuel vehicle). This unit contains all well known ELSBETT 2-tank-parts, like fuel controller, fuel filters, valves, bleeding pump and a high performance fuel preheater. This unit was developed especially for the newest generation of diesel injection systems like Bosch Common Rail. For very extreme climate conditions the unit can be equipped with an optional electrical filter heater.



### 1.3. Additional fuel transfer pumps

All ELSBETT 2-tank kits contain additional electrical fuel transfer pumps. They were developed especially for the use of SVO/WVO. These pumps are available for 12V and 24V systems.



#### 1.4. Second fuel tank level sensor

All ELSBETT medium truck and tractor kits contain a second fuel tank level sensor for diesel with a fuel port.



#### 1.5. Load control module for tractor kits

All ELSBETT tractor and construction machinery kits contain our well known feature load control. This feature was developed especially for tractors and in construction machinery to prevent the engine from deposits on pistons, cylinder walls, valves and injectors. Today this module is a standard in all ELSBETT kits for higher displacement DI-engines.



#### 1.6. Fittings, fuel hoses, wiring material

Furthermore the medium truck kit contains a lot of necessary installation material like wires, fittings, fuel hoses and pipes, coolant hoses.

Wires for the electric system are supplied, as the length dimensions are not predictable. Wire capacities are to be seen from the wiring scheme which is part of the delivery package. As an option there is a wire harness available.



The installation of the kit takes app. 2 days.

It includes the installation of the main components and the fabrication of the brackets for the hybrid converter.

### 2. Instructions, SVO-standard




Beside the necessary parts, the kit contains detailed and illustrated instructions for the installation and the operator's manual. Further included the "Vegetable Oil Quality Standard".



### 3. „Vegetable Oil Quality Standard“ for SVO / WVO

ELSBETT conversions and ELSBETT conversion kits are optimised for the use of straight / pure (new or recycled) vegetable oils (SVO or WVO), which are equal to the quality standard and are not otherwise chemically or mechanically contaminated. You should make sure, that your plant oil source complies with the following specifications. At freezing temperatures, we advise to blend the vegetable oil with diesel fuel.



		<b>LTV-Work-Session on Decentral Vegetable Oil Production, Weihenstephan</b> <b>Quality Standard for Rapeseed Oil as a Fuel (RK-Qualitätsstandard)</b> 05/2000		in Cooperation with:  	
Properties / Contents	Unit	Limiting Value		Testing Method	
		min.	max.		
<i>characteristic properties for Rapeseed Oil</i>					
Density (15 °C)	kg/m³	900	930	DIN EN ISO 3675 DIN EN ISO 12185	
Flash Point by P.-M.	°C	220		DIN EN 22719	
Calorific Value	kJ/kg	35000		DIN 51900-3	
Kinematic Viscosity (40 °C)	mm²/s		38	DIN EN ISO 3104	
Low Temperature Behaviour				Rotational Viscometer (testing conditions will be developed) (werden erarbeitet)	
Cetane Number				Testing method will be reviewed	
Carbon Residue	Mass-%		0.40	DIN EN ISO 10370	
Iodine Number	g/100 g	100	120	DIN 53241-1	
Sulphur Content	mg/kg		20	ASTM D5453-93	
<i>variable properties</i>					
Contamination	mg/kg		25	DIN EN 12662	
Acid Value	mg KOH/g		2.0	DIN EN ISO 660	
Oxidation Stability (110 °C)	h	5.0		ISO 6886	
Phosphorus Content	mg/kg		15	ASTM D3231-99	
Ash Content	Mass-%		0.01	DIN EN ISO 6245	
Water Content	Mass-%		0.075	pr EN ISO 12937	

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