



# BIO RIG 400

LP BR 400

Maximum output per batch: 420 litres of biodiesel  
Maximum output in 24 hours: approximately 10,000 litres

## PRODUCTION UNIT FOR CHEAP AND SUSTAINABLE BIODIESEL

### ABOUT THE BIO RIG 400

*This innovative easy-to-use unit produces biodiesel from vegetable oil and methanol, using a catalyst of caustic soda.*

### MAIN BENEFITS

- cheap and sustainable fuel production
- programmed operation if needed
- versatile manual operation if desired

### ABOUT BIODIESEL

Biodiesel made with the Bio Rig 400 is:

- cheap to produce, using pure vegetable oil (eg. palm oil, rapeseed oil, peanut oil)<sup>1</sup>
- carbon neutral<sup>2</sup>
- renewable
- cleaner than fossil fuels (see table)
- suitable for use in specially adapted engines<sup>3</sup>
- suitable for blending with conventional diesel in concentrations of 5%, 10%, 20% etc (B5, B10, B20) which can be used in most diesel engines without modification<sup>3</sup>
- much better for engine lubrication
- less flammable than conventional diesel

### DESIGN FEATURES

- twin vessel stainless-steel unit
- circulation pump for each vessel
- 5 cm insulation cavity (main vessel)
- immersion heater (main vessel)
- valve levers painted red for visibility
- electronic control unit (ECU) with umbilical cable for remote mounting

### ECU FEATURES

- liquid crystal display (LCD)
- monitoring lamps
- alarm and shutdown safety protection
- emergency stop button

### WARRANTY

- Standard: two years from manufacture



THE BIO RIG 400 (ABOVE)

LEFT:  
THE ELECTRONIC  
CONTROL UNIT



<b>TECHNICAL DATA</b>			
Power required	14.4 kW at 415 V, three-phase, 50Hz (60 Hz version available on request)		
Empty weight	N/D		
Vessel capacity	550 litres (TBC)		
Dimensions (approximate)	width	length	height
	850 mm	1420 mm	2060 mm
Raw materials per batch	Substance		Quantity
	palm oil/rapeseed oil/peanut oil/soy oil/other vegetable oil (including cooking oil, new or used)/tallow		420 litres
	methanol (methyl alcohol, CH <sub>3</sub> OH)		80 litres
	caustic soda (sodium hydroxide, NaOH)		2.2 kilograms
Output per batch	biodiesel		420 litres
	glycerol		80 litres
Ester conversion	The unit will regularly achieve in excess of 98.5 % ester conversion ratios.		
Temperature inside vessel	Setting/Position		Temperature not exceeding
	1: When preheating mixture of methanol and caustic soda		60° C
	2: During reaction process		80° C

\*Amount of biodiesel per batch (in addition, 80 litres of glycerol are produced).

<b>BIODIESEL ENVIRONMENTAL DATA <sup>4</sup></b>		
	B100 (pure biodiesel)	B20 (20% biodiesel)
Carbon dioxide (CO <sub>2</sub> )	CO <sub>2</sub> neutral <sup>2</sup> or better	
Sulphur dioxide (SO <sub>2</sub> )	100% less	estimated 20% less
Unburned hydrocarbons (HCs)	67% less	20% less
Carbon monoxide (CO)	48% less	12% less
Oxides of nitrogen (NOx)	no data	2% less
Polycyclic aromatic hydrocarbons (PAHs)	80% less	13% less
Particulates	47% less	12% less

1. Glycerol is also produced as a saleable by-product.
2. Depending on the process of plant-oil production and on the method of producing energy to power the reactor (an overall "greenhouse gas" rating would also have to take account of methane as a by-product of the oil production process).
3. Always follow manufacturers' recommendations.
4. Data from Environmental Protection Agency (EPA). Comparisons are with mineral oil diesel.

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