



Biodiesel Processors

Processors for your biodiesel production.

The Ageratec system
Fully automated 1,000 litre to 44,000 litre
per cycle, multi-feed processor



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environmentally friendly

The Ageratec processor



Founded in 1996 Ageratec AB, Sweden, is a private company specialising in the design and manufacture of biodiesel processing equipment. Ageratec has designed and built a range of biodiesel processors capable of using various feedstocks including rapeseed oil, sunflower oil, soy oil, used cooking oil and animal fats. Ageratec has built up a range of biodiesel processors with production capacities of 1,000 to 44,000 litres per cycle.




Ageratec biodiesel processors are the most reliable automated batch processors available on the market. The technology boasts numerous advantages over other technologies including: no emissions, high energy efficiency and no waste water. The production units are modular and scalable giving the greatest flexibility in developing a biodiesel business. The units are the lowest capital cost per litre for commercial biodiesel production available, and being completely automated, with ability of remote monitoring options, they have low ongoing operating costs and minimal labour requirements. The processors have multi-feed capabilities and offer commercial biodiesel producers greater operating flexibility. The production of biodiesel conforming with Australian and European Standards is ensured.

The Ageratec Biodiesel processors are constructed in modern facilities in Sweden using the latest production technology. All units are tested prior to delivery to ensure a flawless and durable processor is delivered. A unique heating pump technology has been incorporated into the processor to maximise energy efficiency.

Ageratec processors offer the following advantages:

- highly energy efficient;
- the most recent solutions are used;
- modular, space-saving construction;
- biodiesel produced conforms to European (EN14214) and Australian Biodiesel standards;
- waste-less production: glycerin phase can be used for many different purposes;
- construction of all Ageratec Biodiesel processors conform to ATEX regulations;
- the processor is CE labelled;
- the processors have no waste water and don't require water washing; and
- fully automated.



reliable and affordable
system for every day use

A clean solution for biodiesel production

Technology

The Ageratec Biodiesel processor is composed of two stainless steel tanks. The first tank heats the reaction pre-mixture and is regulated by an electrical heater. This tank also allows for heating via either steam or water heat exchange options. The second tank processes the reaction mixture under pressure.

Ageratec Biodiesel processors come in various sizes designed to manufacture from 1,000 to 44,000 litres of biodiesel per day (L/day). The processors are constructed of highest quality components and manufactured to highest professional design and regulatory standards. Two stainless steel tanks comprise processors with capacities of up to 16,000 L/day. Larger processors are comprised of three or more tanks, one preheating tank, and two or more processor tanks designed to compensate for over- and under-pressure situations in the system.

All Ageratec Biodiesel processors are skid-mounted allowing for easy transportation, installation and reconfiguration. The processors are modular allowing for increased production by processor addition. An automated module controls the mixing sequences and timing intervals for processing reaction. Excess methanol is recovered through a vacuum extraction cycle and excess salts are removed directly through the processor. Glycerol is automatically separated from the reaction mix to allow for further processing or sale. The reacted biodiesel is centrifuged and filtered in a two step process to produce high quality biodiesel fuel ready for immediate use.

Description of the transesterification process

- Titration is performed in order to determine the content of free fatty acids in the feedstock.
- The feedstock is then deposited or pumped into the pre-heating tank.
- The feedstock is heated with the heat pump to process temperature and then automatically filled into the reaction tank.
- Methanol and catalyst in correct amounts are pumped into the reaction tank where the trans-esterification takes place.
- Settling and drainage of glycerol phase.
- Evaporation of excess methanol from the Biodiesel.
- Cleaning and removal of impurities from the Biodiesel.
- Filtration and drainage of Biodiesel to storage tank.





the easier way to make biodiesel

We offer user benefits that pay

Raw oils

The Ageratec Biodiesel processor can process a wide variety of vegetable and animal fat mixtures. Generally those oils that are highly saturated have a higher melting point. Biodiesel produced from these types of fats will have a freezing point and are less resistant to the effects of cold temperature. To overcome this problem, fuels with higher freezing points may need the addition of a winterising agent to reduce their freezing point, however this will generally not be a problem in countries with a warm climate like Australia.

The Ageratec Biodiesel processor has been specifically designed to produce a fuel conforming to Australian and European Biodiesel Standards as long as the feedstock meets the following specifications listed below.

Seed oil parameters:

Water and organics	- max 1% (AOCS Ca 3a-46)
FFA	- max 5% (IUPAC 2.201)
Ureic acid	- max 1.75% (IUPAC 2.302)
Lecithin	- max 300 mg/kg (IUPAC 2.423)
Flashpoint (Pensky Martin close cup)	- min 121°C (ASTM D93-IP34)
Iodine value	- max 120

Used cooking oil parameters:

Water and organics	- max 4% (AOCS Ca 3a-46)
FFA	- max 5% (IUPAC 2.201)
Flashpoint (Pensky Martin close cup)	- min 121°C (ASTM D93-IP34)
Iodine value	- Approximately 80

For raw oil feeds that may not meet these specifications an optional FFA reduction module may be added to pre-process oils to acceptable levels.

Product range

Processor model (capacity in litres per cycle)	Capacity (litres/year)	Height (mm)	Length (mm)	Width (mm)
P1000	300,000	2,420	3,220	1,490
P1600	480,000	2,420	3,460	1,490
P3000	900,000	3,000	4,212	1,550
P5000	1,500,000	3,500	5,300	1,750
P8000	2,400,000	5,400	7,320	2,250
P16000	4,800,000	5,400	11,350	2,250
P32000	9,000,000	8,890	12,460	5,800

Optional extras:

- Remote monitoring package;
- Large panel control module; and
- FFA pretreatment module

Biodiesel advantages:

- Simple to make;
- Cheaper than petroleum diesel;
- Non-toxic;
- Biodegradable: not harmful to soil or groundwater in cases of accidental spillage;
- Is a renewable fuel;
- Carbon neutral, will not contribute to the Greenhouse Effect;
- Free from sulphur;
- Lower exhaust emissions than petroleum diesel;
- Can be used neat or blended in any ratio with petroleum diesel;
- Higher lubricity than petroleum diesel which can prolong engine life;
- Higher flashpoint than petroleum diesel – safer to handle, store and transport; and
- Not classified as a hazardous substance.

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