Biodiesel Production

E-PIC Srl

Rotocav

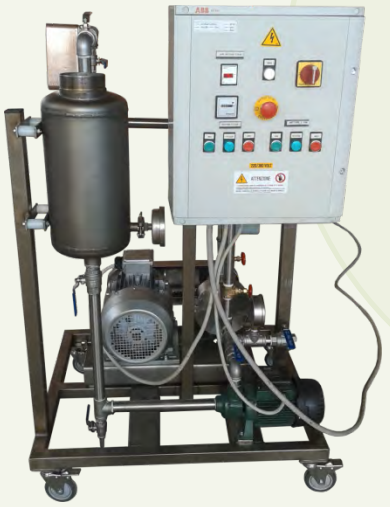
The innovative technology is composed by a cylindrical cavitation chamber: during high speed rotation, rotor channels are periodically aligned with stator channels. The processed liquid is accelerated in the radial direction and flowing through the free channels is subjected to a pressure wave resulting in cavitation.

ROTOCAV is a E-PIC S.r.l. proprietary technology that generates controlled hydrodynamic cavitation to maximize micro-mixing, mass transfer and reaction kinetics

Vegetable oil, methanol, sodium hydroxide (or potassium hydroxide) are fed centrally to the cavitation chamber, then they are accelerated in radial direction and subjected to strong shear stresses. All these effects result in high relative velocity between pahes promoting a perfect mixing.

Biodiesel is a fuel of vegetable origin, obtained from different types of seeds, as a result of chemical reactions of trans-esterification: triglycerides, alcohol and catalyst react and the products are mainly biodiesel and glycerin.

Biodiesel is very similar to petroleum diesel, but it is a renewable fuel, biodegradable, atoxic, and the high content of oxygen ensures a good combustion in diesel engine and in boilers.



Advantages

- ❑ Time, operative cost, capital cost saving
- ❑ Product quality and yield improvement
- ❑ Easy scale-up, installation, replacement and maintenance
- ❑ Space requirements and footprinting minimization
- ❑ Process efficiency improvement
- ❑ Process overall carbon footprintinf minimization
- ❑ Easy, compact, durable technology
- ❑ More effective and efficient mixing
- ❑ Mass transfer maximization
- ❑ Safe and efficient technology

Supply chain of exhausted vegetable oil

- Cooking oil recovery for energetic purpose -

Producers or holders of waste ⇨ Collecting chain ⇨ Biodiesel production

From 1 Liter of OIL ⇨ 1 Liter of BIODIESEL

- Bio-sustainability -

- ❑ By 2020, biodiesel should reach 10% at least of the consumption of energy in the transport sector *(Directive 2009/28/CE)*
- ❑ Biofuels must ensure a reduction of greenhouse gas emissions of 35% at least, with respect to fossil fuels *(Directive 2009/28/CE)*
- ❑ Preservation of agricultural fields for food applications and valorization of a waste
- ❑ Reduction of environmental impact and lower costs for waste disposal

Biofuel sources	Emission saving
Rapeseed oil	45%
Soybean oil	40%
Palm oil	36%
Waste vegetable oil	88%

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E-PIC S.r.l. is a privately owned process engineering consulting company, based in Turin, Italy. All the members are qualified chemical engineers with expertise in process development, innovation and cavitation for many applications. The Company has consolidated relationship with several academic R&D Centers around the world, in the domain of process intensification.