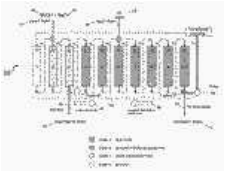
90 results for (("biodiesel" OR "biodiesel" "production" OR "biodiesel" "preparation" OR "biodiesel" "fuel" OR "producing" "biodiesel" OR "crude" "biodiesel" OR "biodiesel" "oil")/KEYW/TI/AB/IW AND ("glycerol" OR "glycerin")/KEYW/TI/AB/IW AND (purification)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND ("wash" "water" OR "washing" OR "water" "wash")/KEYW/TI/AB/IW AND ("decantation" OR "decanting")/KEYW/TI/AB/IW) AND PD <= 2014-12-17 - Collection: FAMPAT

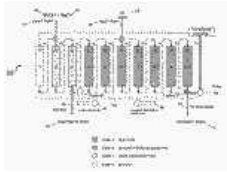
#	Title	Publication number	1st app. date	Applicant/Assignee	1st publ. date	Publ. date
1.	Continuous method for **producing biodiesel fuel**	AR074573	2009-12-09	BIOCOMBUSTIBLES & EN ALTERNATIVAS ALS BIOCOMBUSTIBLES & ENERGIAS ALTERNATIVAS ALS*	2011-01-26	2011-01-26

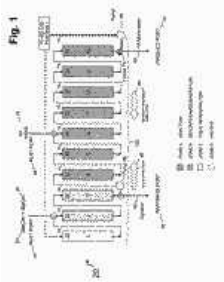
The invention relates to a continuous method for **producing biodiesel fuel**, with conversion of more than 99.90 wt% of the triglycerides into **biodiesel** during the transesterification step, which includes: a) providing a source of triglycerides with a triglyceride concentration of more than 99.0 wt%; b) subjecting the triglycerides to a transesterification reaction with methanol, ethanol and the mixes thereof, in a mole reaction of triglycerides and alcohol of 1:3-3.5, in the presence of 0.7 to 1.0 wt% of sodium or potassium hydroxide as a catalyst, under conditions of ultrasonic cavitation in an ultrasonic cavitation reactor with 2 to 8 cavitation cells in series, at a temperature of 45 ºC to 60 °C, at a pressure of 1.5 to 2 MPa (15 - 20 atm) and for a time of 15 to 30 seconds; c) recovering the product from step b) and subjecting same to a mechanical agitation operation, at a temperature of 45 ºC to 60 °C, for a maximum time of 10 minutes until the transesterification reaction is completely finished, obtaining a conversion of more than 99.90 wt% of the triglycerides into **biodiesel**; d) **decanting** and/or centrifuging the product obtained from step c) to eliminate the glycerine; e) purifying the **biodiesel** obtained in step d) using exchange resins; and f) eliminating the methanol and the water from the product obtained in step e) by distillation and recovering the **biodiesel fuel** thus obtained.

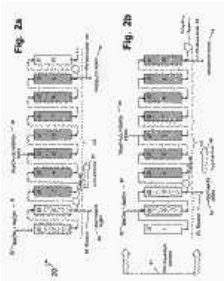
2.	Simultaneous synthesis and **purification** of a fatty acid monoester **biodiesel fuel**	US20070158270	2006-06-08	ARCHER DANIELS MIDLAND*	2007-07-12	2007-07-12

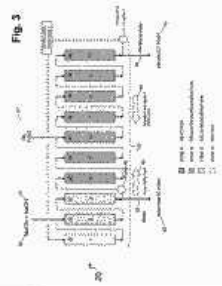
Simultaneous synthesis and **purification** of a fatty acid monoester **biodiesel fuel** from a triacylglycerol feedstock is described. In an exemplary method, the triacylglycerol feedstock is continuously contacted with a catalytic chromatographic bed comprising a first (solid phase) basic catalyst through a first port of a simulated moving bed chromatographic apparatus. A monohydric alcohol and optional second (mobile phase) basic catalyst is continuously contacted with the catalytic chromatographic bed through a second port and pumped in a first direction toward the triacylglycerol feedstock to contact the triacylglycerol in a reaction zone of the catalytic chromatographic bed where the fatty acid monoester and **glycerol** coproduct are formed. The fatty acid monoester is removed from the reaction zone through a product port of the simulated moving bed apparatus. Segments of the catalytic chromatographic bed are incrementally moved in a second direction, opposite the first direction, and the **glycerol** is removed from a raffinate port located opposite the product port of the apparatus.

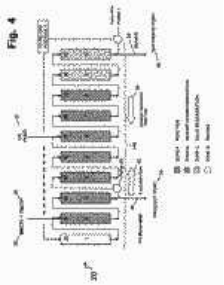


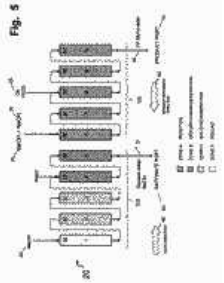


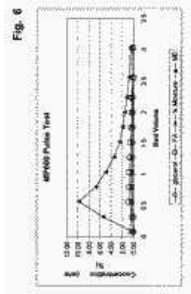


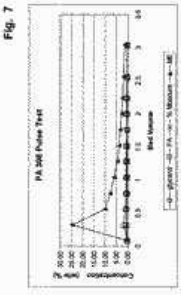


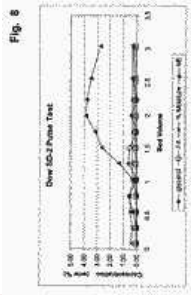


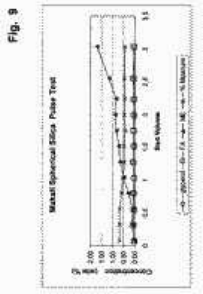






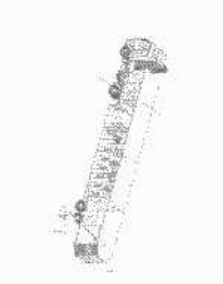


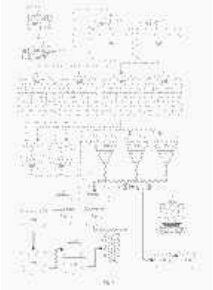




3.	Self-sustainable mobile **biodiesel production** plant and method	WO2010085864	2009-01-27	BIOMINAS INDUSTRIA DE DERIVADOS OLEAGINOSOS* BIOMINAS INDUSTRY DE DERIVADOS OLEA BIOMINAS INDUSTRY DE DERIVADOS OLEAGINOSOS	2010-08-05	2010-08-05

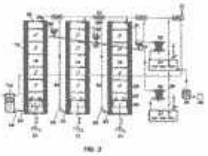
A self-sustainable, mobile **biodiesel production** plant and method are characterised by a compact arrangement of **biodiesel production** equipment that reduces waste and, in addition, makes it possible to re-use or recycle some of the waste. The equipment is arranged on a chassis with an axle and wheels, and the plant can be coupled thereto and transported to different locations, and has a self-sustainable design, since it uses the fuel it produces to generate the electric energy supplied to the entire plant, whenever necessary.

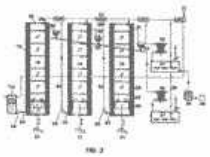


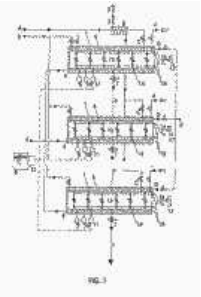


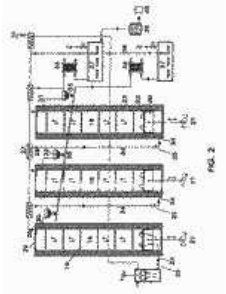
4.	Method for obtaining a **biodiesel** from vegetable oils of variable acidity degree in a continuous system and **biodiesel fuel** obtained	WO2007082971	2006-01-20	**BIODIESEL** DE ANDALUCIA 2004* **BIODIESEL** DE ANDALUCIA 2004 S **BIODIESEL** DE ANDALUCIA 2004 SOCIETY ANONIMA DAD	2007-07-26	2007-07-26

Method for obtaining a **biodiesel** in a continuous system from vegetable oils of variable degree of acidity, whereby, in a first step, a specific blend of vegetable oils of variable degree of acidity and methanol or ethanol are subjected to pressure and to heat in a multiple and continuous horizontal modular tube reactor, in the presence of a strong acid as catalyst, until a vegetable oil with an acidity of less than 1% is obtained. In a second step, this oil is transesterified by being blended with sodium or potassium methoxide, the **glycerol** being separated out, leaving **glycerol** on the one hand and, on the other, **biodiesel**, which, once purified and scrubbed, will be suitable for use in engines. The number of modules, both in the first and in the second step, is a function of the system's capacity.



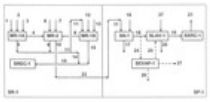


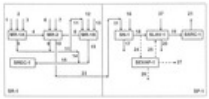




5.	Process for **producing biodiesel**	BRPI0503631	2005-08-19	BENSON JOHN EVERETT PETROBRAS*	2005-10-11	2005-10-11

A process for **producing biodiesel** from natural oils and/or fats, a low molecular weight C₁-C₆ alcohol and catalyst is described. The process preferably uses vegetable oils and is specifically configured for **producing biodiesel** from castor oil.





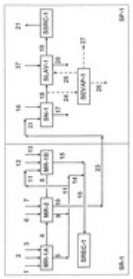


FIG. 1

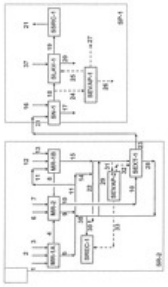


FIG. 2

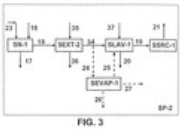


FIG. 3

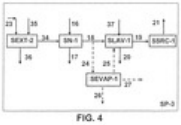


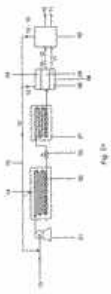
FIG. 4

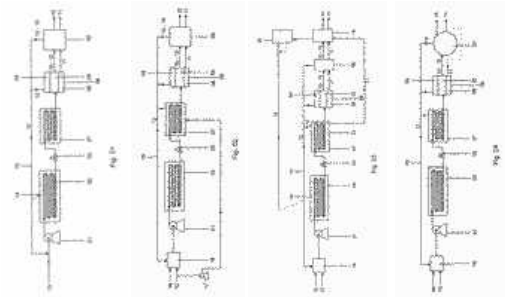
6.	Method for **producing biodiesel** using porcine pancreatic lipase as an enzymatic biocatalyst	WO2008009772	2006-07-21	UNIVERSIDAD DE CORDOBA*	2008-01-24	2008-01-24

The present invention makes reference to a procedure for the production of **biodiesel** that involves carrying out a transesterification reaction on an initial product selected from between one or more oils, one or more fats, and mixtures of these, in the presence of pig pancreatic lipase as enzymatic biocatalyst, at a pH of at least 8, preferably at least 10, and to the use of the said procedure for obtaining **biodiesel** as well as glycerine.

7.	**Biodiesel production** process without catalyst in continuous conditions	BRPI0502891	2005-07-06	FUNDACAO REGIONAL INTEGRADA* INTECNIAL*	2005-08-30	2005-08-30

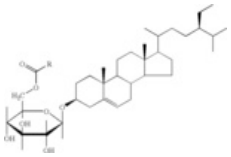
This is a non-catalytic continuous process to produce **biodiesel** from vegetable oil, and ethanol or methanol.It consists of pumping a mixture of vegetable alcohol (13) through a pump (01) to a tubular reactor (02) where it will be submitted to high temperature and pressure, obtaining non-reactive alcohol (12) (ethanol or methanol) at the exit, **glycerin** (11), and a mixture of esters (**biodiesel** (10)) which is conducted to the exit reservoir of the reactor (08) where there is an upper alcohol (12) phase (04) that is redirected to the pump's entry (01) via a alcohol (15) return tubing, and the intermediate **biodiesel** (10) phase (05) and the lower phase (06) (greatest part of **glycerin**) (11) are directed to the separation reservoir or **decantation** tank (09) where the final separation is done, wherein the alcohol (12) is separated and then withdrawn through the alcohol (15) return tubing, and having the **biodiesel** (10) and the **glycerin** (11) as final products, which are then collected for their final purpose.

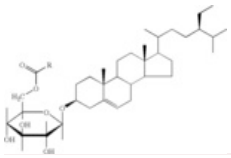




8.	Process for **producing biodiesel** with improved filtration characteristics and **biodiesel** thus produced	GB0725194	2007-12-24	DESMET BALLESTRA ENGINEERING* DESMET BALLESTRA ENGINEERING S	2008-01-30	2008-01-30

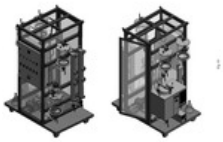
A process for the production and **purification** of fatty acid esters of lower alkyl alcohols with improved filtration characteristics comprising the steps of: a) transesterifying a mixture of fatty acid esters of **glycerol** with a lower alkyl alcohol while using an alkaline catalyst; b) separating the reaction mixture resulting from step (a) into a **glycerol** phase and a fatty acid lower alkyl ester phase; c) inactivating the catalytic intermediates present in said fatty acid lower alkyl ester phase; d) removing the lower alkyl alcohol from the mixture resulting from step (c) by evaporation at reduced pressure to a value of less than 2% by weight; e) treating the evaporation residue resulting from step (d) with water; and f) isolating the fatty acid esters of lower alcohols by drying the product resulting from step (e); and **biodiesel** containing FAME produced according to this process.

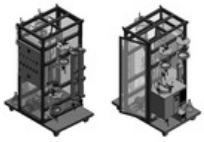


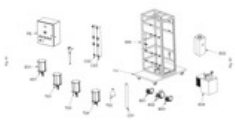


9.	**Biodiesel** plant for didactic and industrial simulation purposes	WO2013010232	2011-07-15	BIOMINAL ENGENHARIA & INDUSTRY DE EN* BIOMINAL ENGENHARIA & INDUSTRY STRIA DE EN* BIOMINAS ENGENHARIA & INDUSTRY DE EN BIOMINASU ENGENHARIA & INDUSTRIA DE ENERGIA	2013-01-24	2013-01-24

The invention, a **biodiesel** plant for didactic and industrial simulation purposes, relates to a system and method for **producing biodiesel** in a didactic manner and with a reduced volume, providing a reaction and processing system that simulates the prevailing conditions and characteristics of industrial **biodiesel production** processes, making it possible to study, research and control important process variables. In that the plant has transparent tanks made of borosilicate glass, all the steps of the process can be followed, in a didactically advantageous manner, and due to the small volume processed, it allows reagents and feedstocks to be used and consumed sparingly; moreover, it can be easily transported and placed in small spaces.





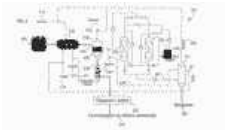


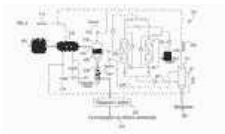
10.	Process for the **purification** of crude **glycerin**	BR102014001003	2014-01-15	GLYCEROSOLUTION QUIMICA*	2014-03-25	2014-03-25

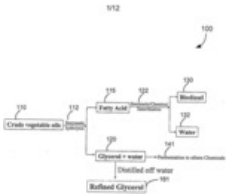
Process of crude **glycerin purification** originated from transesterifications with alkaline catalysis without using acidification and distillation producing purified **glycerin** 96% and 99% purity. The mechanism is the interaction of liquid/liquid extraction in batch system or continuous form and the relative mass balance between the components existent in **glycerin** in the crude form (without mineral acidification). The technique use the molecular interactions between the components of crude **glycerin** generated in the process of transesterification, compounds of free **glycerin**, alkaline soaps of fatty acids, fatty esters, monoglycerides, diglycerides, water-free methanol, where this mixture usually is in a single homogeneous phase. This composition is unbalanced creating a light phase and a heavy phase. The separated **glycerin** is free of salts and the light part is treated with organic or inorganic acids to transform the fatty soaps into free fatty acids, which are used to make the unbalance of homogeneous crude **glycerin**.

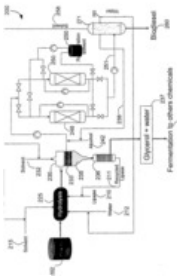
11.	**Biodiesel production** via enzymatic hydrolysis followed by chemical/enzymatic esterification	WO2010005391	2008-07-08	AGENCY FOR SCIENCE TECHNOLOGY & RESEARCH ASTAR*	2010-01-14	2010-01-14

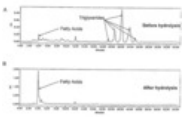
A method for **biodiesel production** via enzymatic hydrolysis of oils or fats followed by chemical/enzymatic esterification of free fatty acids produced in a hydrolysis step. The process comprises enzymatically hydrolyzing a triglyceride to form a fatty acid and **glycerol**; and esterifying a lower alcohol with the fatty acid to form **biodiesel**.

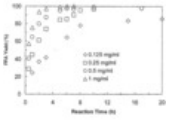


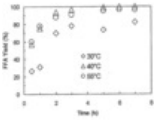


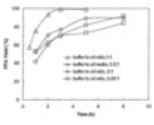


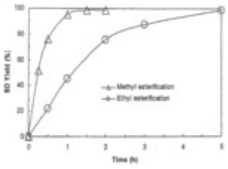


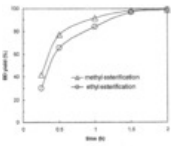






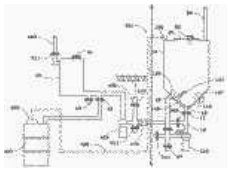


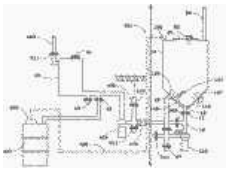


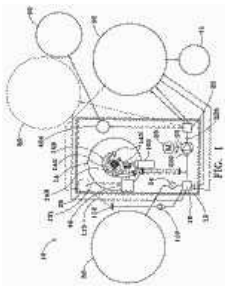


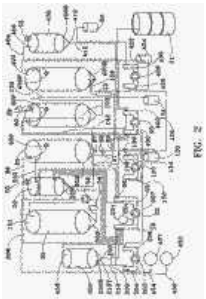
12.	Method and apparatus for refining **biodiesel**	WO2004085579	2004-03-17	MICHAEL F PELLY;MICHAEL PELLY;Michael F. Pellet	2004-10-07	2004-10-07

Method and apparatus for **producing biodiesel fuel**, i.e., alkyl ester, from vegetable and/or animal oil. A transesterification catalyst is prepared in a base catalyst tank by spraying alkyl alcohol under pressure through jets at metal hydroxide pellets until the pellets have fully reacted with the alcohol. The oil is heated and transesterified in the presence of alkyl alcohol and the transesterification catalyst in a closed, recirculating transesterification flow system under slight cavitation to yield product alkyl ester and product **glycerol**. Cavitation is achieved by permitting air to enter the transesterification flow system through an adjustable air inlet valve. When permitted to stand, product alkyl ester forms an upper layer that is decanted and subjected to **purification** steps, to remove particulates and alkyl alcohol from the product alkyl ester, and a lower layer of product **glycerol** is drained away. **Purification** of the product alkyl ester preferably includes subjecting the product alkyl ester to an overhead water mist in a wash tank with simultaneous infusion of a stream of air bubbles. Alcohol vapor is reclaimed as liquid alcohol within an alcohol condenser and stored for reuse. If the oil contains free fatty acids, prior to transesterification, the oil is heated and the free fatty acids are esterified in the presence of an esterification catalyst and alkyl alcohol. For safety, baffles and explosion damper/flame arrestors are provided in locations where flammable vapors pose a risk.









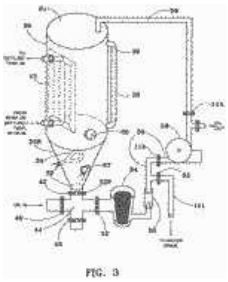


FIG. 3

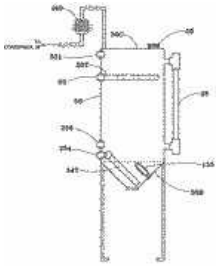
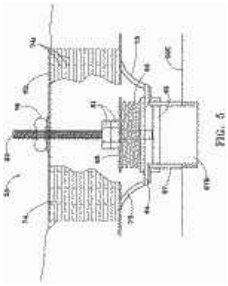
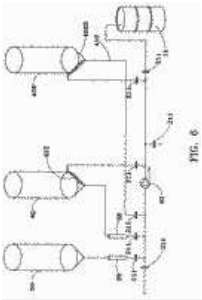
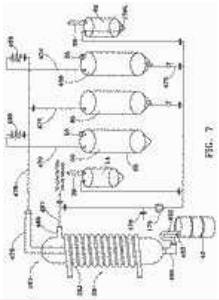
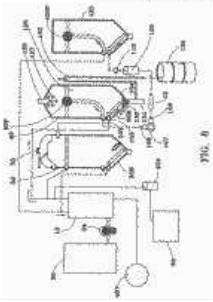


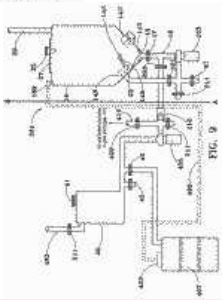
FIG. 4





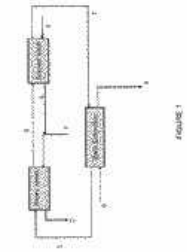


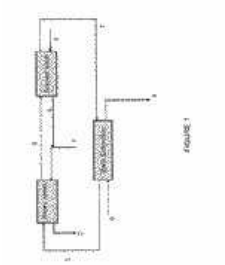




13.	Process for **purification** of **glycerol**	WO2009114434	2009-02-23	TATE & LYLE*	2009-09-17	2009-09-17

A process for the recovery of **glycerol** comprises contacting an aqueous feed composition that comprises water, **glycerol**, and at least one contaminant with a solvent extractant comprising at least one C5-C8 alkanol, optionally in admixture with at least one alkane, to form a first mixture, and separating the first mixture into a first solvent phase and a first aqueous phase. The first solvent phase comprises a majority (more than 50 wt %) of the solvent extractant and a majority of the **glycerol** that was present in the aqueous feed composition. The weight ratio in the first solvent phase of **glycerol** to a contaminant present is greater than the weight ratio of **glycerol** to the contaminant in the aqueous feed composition. The first aqueous phase comprises a majority of the water from the aqueous feed composition and at least some of the contaminant from the aqueous feed composition.



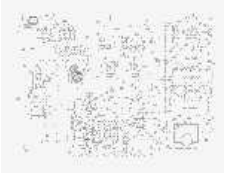


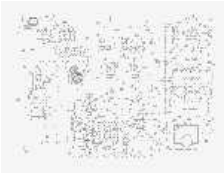
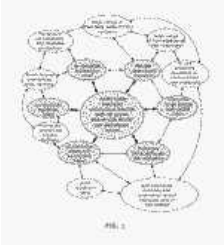
14.	Improved process for preparing fatty acid alkylesters for use as a **biodiesel**	WO2005063954	2003-12-30	COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH*	2005-07-14	2005-07-14

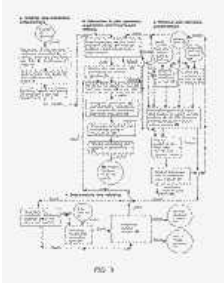
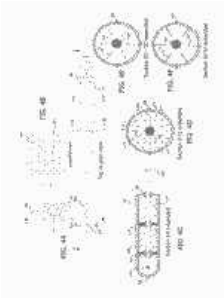
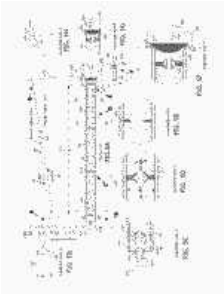
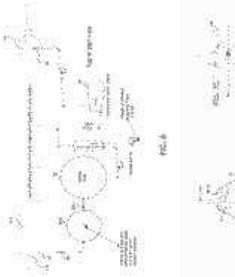
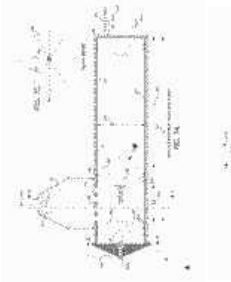
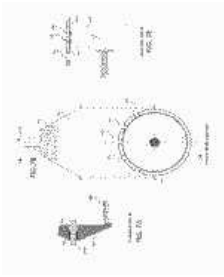
Fatty acid alkyl esters suitable for use as **biodiesel** are produced by a single step esterification of free fatty acids and transesterification of triglycerides from vegetable oils or animal fats or combinations thereof with a lower alcohol (e.g. methanol) in presence of alkyl Tin oxide as catalyst. The ester thus produced is purified by distillation, treatment with an adsorbent, **washing** with water or combination thereof to give esters suitable for use as **biodiesel**.

15.	Process and apparatus for in situ production of **biodiesel** on a small scale	US20120167648	2012-03-09	ALEXANDER DE LIMA CANTIZANI ALEXANDRE DE LIMA*	2012-07-05	2012-07-05

Process and apparatus for in situ production of **biodiesel** on a small scale, producing economically viable **biodiesel** without subsidies. To that end, small integrated plants process materials containing lipids with anhydrous bioethanol as solvent and reagent and sulphuric acid and potassium hydroxide principally as catalysts, producing up to 3 million US gallons (11.36 million litres) of **biodiesel** per plant per annum. The product is composed principally of fatty-acid ethyl esters and a chemically enhanced organic fertilizer as by-product. The raw material may include a wide variety of non-edible solid matter containing the lipids, which normally contain between 0.5% and 80% by mass of free fatty acids out of the total oils and fats. In addition to not competing with food production, since fertilizers are supplied for smallholders, the process and the apparatus allow the production of a sustainable liquid fuel.



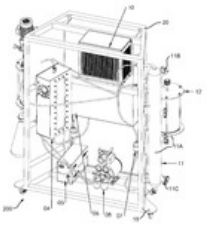







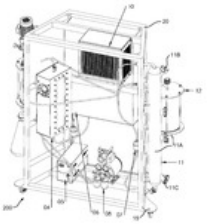
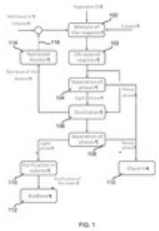
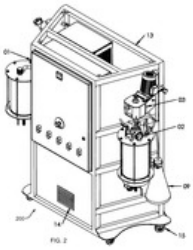
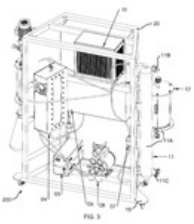
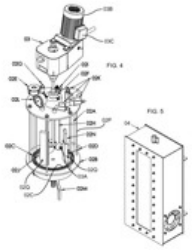
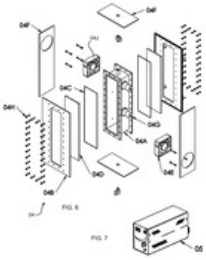
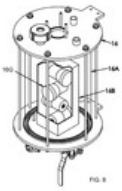
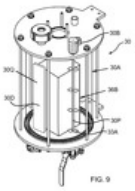
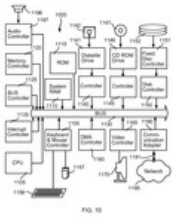
16.	Process for the production of **biodiesel**	BRPI0705895	2007-12-13	PETROBRAS*	2008-04-08	2008-04-08

The present invention relates to a process for the production of alkyl esters of carboxylic acids for use as **biodiesel** starting from the reaction of transesterification of triglycerides originating from oils and fats of vegetable or animal origin, which can be used individually or in mixtures with one another in any proportions, employing heterogeneous catalysis by means of protonated lamellar titanate catalysts in nanostructured form, and said forms can comprise, among other forms, nanotubes, nanofibres or nanosheets.

17.	Mobile production of **biodiesel** with ultrasound	BRPI1105959	2011-12-26	BIOMINAS ENGENHARIA & INDUSTRY DE EN BIOMINAS ENGENHARIA & INDUTRIA DE ENERGIA*	2012-06-19	2012-06-19

A portable production system for **biodiesel production** is contained within a rolling chassis. A reactor connected to the rolling chassis includes a transparent reaction vessel which houses ultrasonic transducers arranged to disperse ultrasonic energy to a **biodiesel** precursor, to promote a transesterification reaction of vegetable oil and or animal fat. A mechanical stirrer, also disposed within the reaction vessel, stirs the reactants. A heater, likewise disposed within the reaction vessel, has at least one cover shaped to change a flow of reactants within the reactor vessel as they are stirred by the stirrer.



18.	Method for **producing biodiesel fuel**	JP2008024841	2006-07-21	KAGOSHIMA UNIVERSITY*	2008-02-07	2008-02-07

PROBLEM TO BE SOLVED: To provide a method for producing a high purity **biodiesel fuel** even without **washing** with water as a post-treatment.
SOLUTION: This method for producing the **biodiesel fuel** comprises (i) a pre-treating process of mixing waste **glycerol** produced as a byproduct in producing the **biodiesel fuel** by reacting waste edible oil with a linear lower alcohol in the presence of an alkali catalyst, with waste edible oil used as a raw material and then removing a **glycerol** phase, and (ii) an ester interchange reaction process of performing the ester interchange reaction by adding the alkali catalyst and linear lower alcohol to the waste edible oil and separating the **glycerol** produced as the byproduct. In the above method, the method for performing the (ii) ester interchange reaction by 2-stage reactions is provided. In the above process, the process of obtaining the **biodiesel fuel** is also provided by mixing **glycerol** with **crude biodiesel fuel** obtained by separating the **glycerol** phase in the (ii) ester interchange reaction and then separating the **glycerol** phase.
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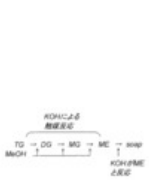
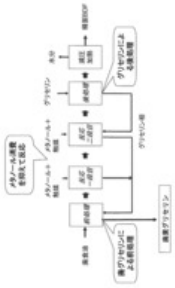
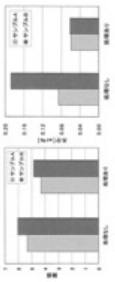
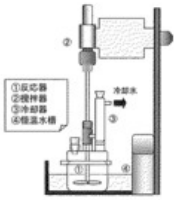
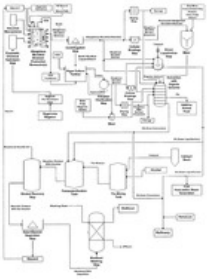




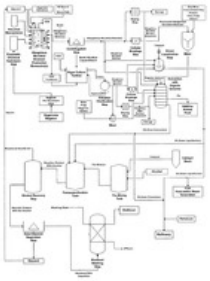




19.	Process to produce **biodiesel** and/or fuel oil	BRPI0706170	2007-05-02	OURO FINO OURO FINO PARTICIPACOES & EMPR OURO FINO PARTICIPACOES & EMPREENDIMENTOS* OURO FINO PARTICIPAÇÕES E EMPREENDIMENTOS	2008-06-17	2008-06-17



The present invention refers to a process to produce **biodiesel** and/or fuel oil from microbial oilseed and/or algal biomass and/or from sugar cane residues and derivatives. The products according to the present invention are appropriate for direct use in motors and to generate energy or steam. The integrated process of the present invention comprises the use, as raw materials, of microbial oil-producing biomass obtained from sugar cane residues and derivatives, which is integrated with algal biomass and/or **glycerol** and are processed by steps of production of oil-producing microbial biomass from filamentous fungi and/or yeasts, steps of simultaneous production of algal biomass by fully using residues, CO2 and residual broth of said production of microbial biomass, as well as steps of extraction and transesterification of lipids contained in the biomass, with reuse of the residual **glycerol** thus produced. The process as disclosed deals with innovative and ecologically sustainable technology, not generating any kind of residue, also providing for the advantage of releasing considerable volumes of oxygen into the atmosphere.



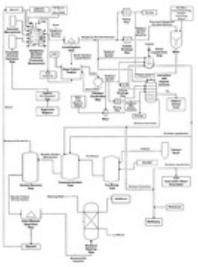


Figure 1

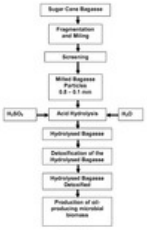


Figure 2

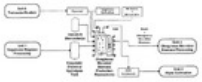


Figure 3

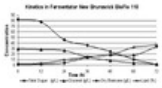


Figure 4

Figure 5

Figure 6

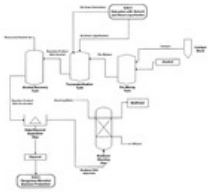
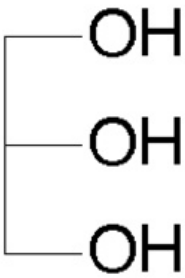


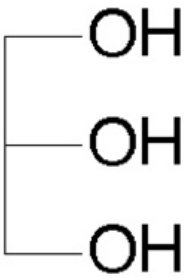
Figure 7

Figure 8

20.	Use of sulphonic acid for recovering **glycerol** from a triglyceride transesterification reaction	WO2014135769	2014-02-28	ARKEMA* R FRANZ SCHEMA	2014-09-12	2014-09-12

The present invention concerns the use of at least one sulphonic acid for recovering **glycerol** from a reaction crude for the transesterification of glycerides, in particular triglycerides of plant and/or animal origin. The invention also concerns a method for purifying the **glycerol** obtained as a by-product of triglyceride transesterification during the preparation of fatty acids, fatty esters and/or fatty acid salts, and a combined method for preparing fatty acids, fatty esters and/or fatty acid salts, and **glycerol**, from triglycerides, implementing at least one sulphonic acid.

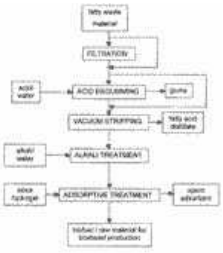


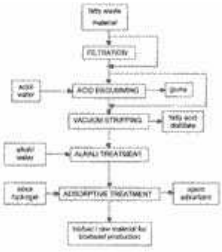


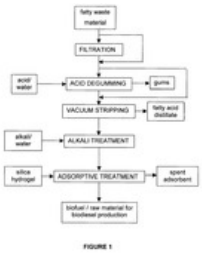
(CH_3SO_3H).

21.	Fatty waste material **purification** process	GB0813910	2007-08-01	DESMET BALLESTRA ENGINEERING S* SMET BALLESTRA ENGINEERING	2008-09-03	2008-09-03

A **purification** process for fatty oils, particularly fatty waste material, is described to enable the oils that have been purified according to the process of the invention to be used as a biofuel and/or a raw material for **biodiesel production**. A fatty waste material containing fatty acid moieties, e.g. a combination of one or more of the following components: acylglycerides, free fatty acids, soaps, phosphatides, water, and particulate impurities, polymerised and oxidised acylglycerides, and other substances like phosphorus-containing components and sulfur-containing components, is treated by a **purification** process comprising a vacuum stripping step followed by a treatment step with an aqueous alkali.





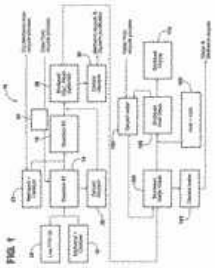


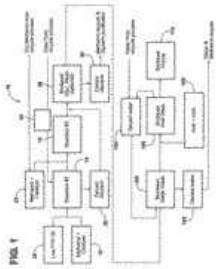
22.	Process for **producing biodiesel** and fatty acid esters	WO2009075762	2008-12-04	CARGILL*	2009-06-18	2009-06-18

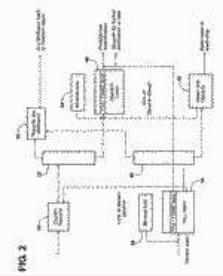
Fatty acid esters are manufactured in a reaction between a fatty acid source and at least one reagent. The source and the reagent are of limited mutual solubility. The reaction is conducted in a reactor involving at least two tubes. At least one of the tubes spins relatively to the other. The reaction may include spinning at least one of the tubes for a reaction time to generate a product medium, removing product medium from the reactor, and separating the removed product medium into at least one lipophilic phase and at least one hydrophilic phase.

23.	**Purification** of **glycerin** obtained as a bioproduct from the transesterification of triglycerides in the synthesis of biofuel	US20090137851	2008-11-03	MONUMENT CHEMICAL HOUSTON* MONUMENT CHEMICAL KENTUCKY*	2009-05-28	2009-05-28

Methods for purifying **glycerin** contaminated with one or more lower boiling alcohols such as methanol, ethanol, straight, branched or cyclic C3-C6 alcohols, and the like. The methods are particularly useful for purifying crude **glycerin** phases recovered from the synthesis of biofuels. The present invention uses distillation techniques to strip alcohol contaminants from **glycerin**. In contrast to conventional methods that carry out distillation either under substantially anhydrous or very wet conditions, the present invention carries out distillation in the presence of a limited amount of water, e.g., from about 0.8 to about 5 parts by weight of water per 100 parts by weight of contaminated **glycerin** to be purified.

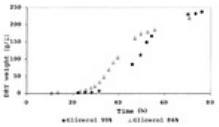
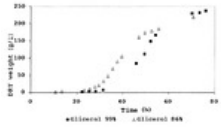
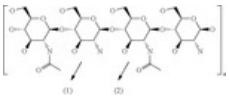






24.	Method for transesterification of vegetable oils and animal fats, catalyzed by modified strong base for the production of alkyl esters	BRPI0603857	2006-06-14	SILVA MACIEL ANTONIO JOSE* UNIVERSIDADE ESTADUAL DE CAMPINAS - UNICAMP*	2006-10-31	2006-10-31

The present invention comprises the production of alkyl esters, such as **biodiesel**, from any vegetable oils or animal fat, on the methyl or ethyl routes, catalyzed by a modified strong base, both in the homogeneous phase, where a high yield is obtained, as well as in the transesterification reaction, causing spontaneous **decantation** of **glycerol**. After withdrawing the excess alcohol by reaction means, the catalyst neutralization and **purification**, (**biodiesel**) esters are obtained having a purity over 99%. The catalysts of this present invention allow both the batch and continuous processes, where it is possible to use the entire industrial plant engineering that already operates with methanol to operate on the ethyl route. Heterogeneous phase catalysts simplify the process because they do not contaminate the products, do not require the alkyl ester neutralization and **purification** stages, and are not consumed during the transesterification process.

25.	Process for the co-production of chitin, its derivatives and polymers containing glucose, mannose and/or galactose, by the fermentation of the yeast pichia pastoris dsmz 70877	PT104149	2008-07-30	73100 SETENTA & TRES MIL & CEM* 73100 SETENTA EH TREHS MIL EH SEN BRAGA CRUZ ANA LUISA PIO BARBOSA PEREIRA CUNHA ANTONIO EDUARDO	2010-02-01	2010-02-01

This invention concerns a process for the co-production of glucosamine polymers (chitin, chitosan or any of its derivatives) and polymers containing glucose, mannose and/or galactose, by the high cell density fermentation of the yeast Pichia pastoris in a bioreactor under aerobic conditions, preferably using **glycerol** byproduct from the **biodiesel** industry as carbon source. Pure **glycerol**, pure methanol, **glycerol**-rich or methanol rich mixtures may also be used as carbon sources. The present invention also concerns P. pastoris fermentation process duly optimized for attaining high cell densities and high cell wall chitin content, as well as polymers containing glucose, mannose and/or galactose.