VT BIOMASA PATENTES
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18
Vigilancia Tecnológica
4º trimestre 2015

DIGESTIÓN ANAERÓBICA: PRODUCCIÓN CIENTÍFICA

Este trimestre se va a presentar un análisis conciso de la producción científica en el área de la digestión anaeróbica, medida a través del número de publicaciones identificadas en la base de datos Web of Science de ISI WoK mediante las estrategias de búsqueda diseñadas con tal fin.

La producción científica a nivel mundial en el ámbito de digestión anaeróbica supera las 7000 publicaciones. El 85% son artículos en revistas especializadas y el 15% comunicaciones a congresos. El 5% son revisiones del estado del arte de la tecnología.

La evolución temporal de la producción científica tanto a nivel mundial como a nivel nacional (Figura 1) refleja que las primeras publicaciones datan de finales de los años 70, no obstante, es a partir del año 2005 cuando se experimenta un extraordinario crecimiento, de modo que el 80% de los artículos se publicaron a partir de ese año (nivel mundial y nacional).

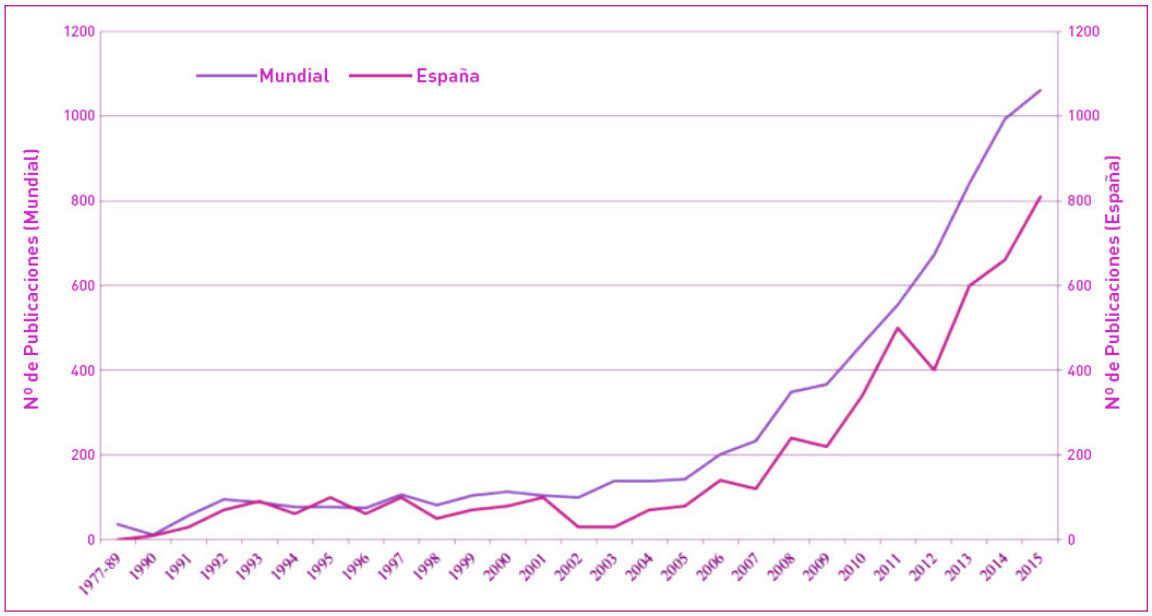

Figura 1: Evolución de la producción científica mundial y española

Los resultados obtenidos muestran que los países que más publican en este sector son China y EE.UU. con un 12.7% y un 12.2%, respectivamente; seguidos de Alemania (8.3%) y España (6.9%). Se han identificado más de 500 organizaciones trabajando en este campo. En China los centros con mayor número de publicaciones son la *Chinese Academy of Sciences* y la Tsinghua University, que se encuentran en la cuarta y novena posición, respectivamente, a nivel mundial. En el caso de EE.UU., la *University of California System* es la que más artículos científicos ha publicado, aunque, globalmente, ocupa el séptimo lugar. Sin embargo, las tres instituciones líderes (Tabla 1) no pertenecen a ninguno de estos países. En primer lugar se encuentra la Universidad danesa *Technical University of Denmark* con el 2.2% de las publicaciones, seguida del *Institut National de la Recherche Agronomique-INRA* (Francia) (1.8%) y del *Council of Scientific Research-CSIR* (India) (1.4%).

Tabla1:

INSTITUCIONES LÍDERES EN PUBLICACIONES A NIVEL MUNDIAL	
Instituciones	**Nº Publicaciones**
Technical University of Denmark (DK)	157
Institut National de la Recherche Agronomique-INRA (FR)	133
Council of Scientific Industrial Research-CSIR (IN)	99
Chinese Academy of Sciences (CN)	96
Wageningen University Research Center (NL)	95
Lund University (SE)	92
University of California System (US)	90
Ghent University (BE)	89
Tsinghua University (CN)	77
Indian Institute of Technology-IIT (IN)	71

En España, en cuarta posición a nivel mundial con 507 publicaciones, se han identificado más de 80 organismos con actividad científica en este campo. Como se puede observar en la Tabla 2, la institución puntera es el Centro Superior de Investigaciones Científicas-CSIC, con el 14.0% de las publicaciones nacionales y, dentro del CSIC, el 77.5% de ellas pertenece al Instituto de la Grasa, ubicado en Sevilla. A continuación, se encuentran la Universidad de Valladolid, con el 12.6%, y la Universidad de Santiago de Compostela (10.0%).

Tabla2:

INSTITUCIONES LÍDERES EN PUBLICACIONES A NIVEL NACIONAL	
Instituciones	**Nº Publicaciones**
Centro Superior de Investigaciones Científicas-CSIC	71
Univ Valladolid	64
Univ Santiago de Compostela	51
Univ Cádiz	39
Univ Barcelona	37
Univ Politécnica Cataluña	34
Univ Autónoma Barcelona	29
Univ Cordoba	21
Univ Oviedo	21

La temática que se aborda en estas publicaciones es muy variada. La mayoría está centrada en el estudio de las condiciones ambientales (pH y alcalinidad, potencial rédox, concentración y tipo de nutrientes, etc.) y operacionales de los digestores (temperatura, tipo de agitación, tiempo de retención, etc). El 18.4% de la literatura científica va dirigida a estudiar el efecto que tienen los procesos de pre-tratamiento (físicos, químicos, físico-químicos, biológicos) de los sustratos en la producción final de biogás. Otro tema de sumo interés es la degradación conjunta de diferentes tipos de residuos (co-digestión), así, el 16.2% de las publicaciones se refiere al desarrollo de técnicas de co-digestión anaeróbica. Cabe resaltar que en los últimos años está suscitando gran interés la utilización de biomasa algal como sustrato, de modo que el 49.2% de los artículos de esta temática se publicaron entre 2014 y 2015, representando el 5% del total.

ANÁLISIS DE PATENTES

Durante el cuarto trimestre de 2015 se han identificado en la base de datos WPI (World Patent Index) 1849 familias de patentes sobre tecnologías de conversión de la biomasa para la producción de energía (Tabla 3). El 52.7% de las referencias encontradas están relacionadas con las tecnologías bioquímicas. La tecnología de digestión anaeróbica es la que cuenta con mayor número de resultados, 46.8% de los totales, seguida de la combustión directa (23.0%).

Tipos de tecnologías de conversión de la biomasa	4º trimestre. 2015
Tecnologías termoquímicas	755
Combustión directa	426
Gasificación/pirólisis	329
Tecnologías bioquímicas	974
Digestión anaeróbica	866
Fermentación de azúcares	108
Tecnologías químicas (transesterificación, Fischer-Tropsch síntesis de metanol)	120
Nº TOTAL FAMILIAS DE PATENTES	**1849**

Tabla 3. Número de familias de patentes clasificados por tecnologías

En la Tabla 4 se muestran los países que han publicado más de 10 documentos de patente en el cuarto trimestre de 2015. El país líder es China con 1474 documentos de patente, en segundo lugar, y con gran diferencia, le siguen las solicitudes internacionales (PCT). En tercero y cuarto lugar se encuentran EE.UU. y Corea con 76 y 59 documentos, respectivamente. Durante este trimestre en España se han publicado 3 documentos.

	País	Nº referencias
1	China	1474
2	PCT	107
3	EE.UU.	76
4	Corea	59
5	Japón	52
6	Alemania	30
7	Rusia	19
8	EP	15
9	India	11
10	Polonia	11

Tabla 4. Ranking por países.

En los apartados posteriores se recoge una selección de los documentos de patentes identificados en el trimestre analizado.

TECNOLOGÍAS TERMOQUÍMICAS
Patentes

COMBUSTIÓN DIRECTA		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2015181543	Statham Matthew (GB)	**Fuel burner ignition system.** A wood burner with a hot air ignition system having a flow direction (FD) towards the rear of a combustion chamber (34), an enclosed heater and a fan with a rotating impeller.
EP2950000	Thermorossi Spa (IT)	**Articulated duct for extractable fireplace and extractable fireplace provided with such articulated duct.** An articulated duct for discharging flue gases exiting from an extractable fireplace, which comprises a first rigid portion and a second rigid portion in fluid communication, which are mutually connected so that they can rotate at respective ends by way of a first rotating joint, in which the first rotating joint ensures a fluid-tight connection between the first portion and the second portion.
EP2940383	Warmflow Engineering Company Ltd (GB)	**Wood pellet boiler.** The present application relates to improvements to granular fuel burning boilers such as wood pellet boilers and burners therefor. In particular, there is disclosed a wood pellet boiler having a combustion chamber, wherein an access door for said combustion chamber comprises a wood pellet burner assembly mounted on the interior side thereof. In this way, the wood pellet burner assembly is movable from and into the combustion chamber of the wood pellet boiler when the access door is opened and closed, respectively.
WO2015173548	Doosan Babcock Ltd (GB); et al	**Flameless oxidation device, apparatus and method.** A device for the flameless oxidation of fuel, for example comprising a flameless oxidation burner, is described. The device comprises a first conduit to convey a fluid fuel phase to a first outlet and direct a primary jet comprising the fluid fuel phase outwardly therefrom; and a second conduit to convey a jacketing gas to a second outlet; wherein the second conduit is disposed surroundingly about the first conduit so as direct a jacketing jet of the jacketing gas outwardly therefrom surroundingly about the primary jet. The invention further relates to an apparatus for the flameless oxidation of fuel comprising one or more such devices, for example disposed to direct such fuel into a reaction chamber for flameless oxidation. The invention further relates to a method of flameless oxidation of fuel and to a method of operation of such a device or apparatus. The invention may be applied to fuel such as biomass, oil shales, petroleum, coke etc, and to other fuels including non-solid fuels.
EP2944874	Age Stufe SRL (IT)	**Brazier for heating apparatus and heating apparatus comprising said brazier.** A brazier (for a solid fuel heating apparatus, for example a stove or a boiler, suitable to contain the solid fuel during the combustion and make the combustion products go out.
WO2015151631	Sumitomo Heavy Industries (JP)	**Fluidized-bed type combustion equipment and method for supplying fluidized medium to fluidized-bed combustion furnace.** Fluidized-bed type combustion equipment is provided with: a fluidized-bed combustion furnace in which fuel is burned while a fluidized medium is made to flow; and a supply section for supplying the fluidized medium to the fluidized-bed combustion furnace. The supply section is provided with: a blower unit for blowing gas used to transport the fluidized medium; and a flow velocity-adjusting part for adjusting the flow velocity of the gas. The flow velocity-adjusting part adjusts the flow velocity of the gas used to transport the fluidized medium, such that damage to a pipe through which the fluidized medium flows is suppressed. Because the flow velocity of the gas is decreased, the damage progression of the pipe can be suppressed.
WO2015137800	Walker Holdings BV (NL)	**Portable stove for solid fuels.** The invention relates to a portable stove for solid fuels, comprising: a combustion chamber for holding solid fuel defined by a housing, wherein a lower side of the housing is configured to carry solid fuel and an upper side of the housing takes a substantially open form and wherein a side wall of the housing is provided with a plurality of air inlet openings, at least one fan for generating an airflow, and at least one guide structure for guiding the airflow generated by the fan via the air inlet openings into the combustion chamber, wherein the housing of the combustion chamber comprises a support frame and a plurality of refractory tiles coupled to the support frame, wherein the tiles form at least a part of the side wall of the housing.

COMBUSTIÓN DIRECTA

Nº Publicación	Solicitante (País)	Contenido técnico
ES1142733	Hermanos Garcia Joima SL (ES)	**Estufa con horno de cocina incorporado.** Estufa con horno de cocina incorporado que se caracteriza porque comprende unos medios de combustión de biomasa, unos medios de combustión de leña y un horno de cocina; y donde el horno de cocina está situado en la parte superior de los medios de combustión de leña y adyacente a un lateral de los medios de combustión de biomasa.

PIRÓLISIS/GASIFICACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
EP2952713	Yanmar Co Ltd (JP)	**Biomass gas-fired engine.** There is provided a biomass gas-fired engine 1 which can prevent start stall, reduce the frequency of maintenance work, and enhance the operational efficiency. Biomass gas is generated in a gasification furnace 2 and supplied to an engine 4 through a zero governor unit 3. The zero governor unit 3 is connected with an air supply path 32 for purging residual gas out of a zero governor 30 with air. After supply of the biomass gas from the gasification furnace 2 has ended, residual gas is purged out of the zero governor 30 with air. A control section 10 provides control for extending a normal operation time S1 of a starter motor 49 by a time S3 to recharge biomass gas in an amount corresponding to an amount of residual gas expelled by the air purge, only when the engine 4 is started for a first time FS after the gasification furnace 2 starts to supply the biomass gas.
WO2015179794	Battelle Memorial Institute (US)	**Dual bed pyrolysis system and method.** A dual bed pyrolysis system may include a falling bed reactor employing a heat carrier particulate to pyrolyze biomass to create a pyrolysis product and a pyrolysis waste product. The dual bed pyrolysis system may also include a fluidized bed reactor. The fluidized bed reactor may accept the pyrolysis waste product including char and heat carrier particulate from the falling bed reactor. The fluidized bed reactor may combust the char in the presence of the heat carrier particulate. The fluidized bed reactor may combust the char to reheat the heat carrier particulate. The reheated heat carrier particulate may be provided to the falling bed reactor to pyrolyze biomass to create a pyrolysis product and a pyrolysis waste product.
WO2015171350	Exxonmobil Res & Eng Co (US)	**Stabilization of pyrolysis bio-oil using in-situ hydrogenation.** Methods are provided for producing an alcohol-containing pyrolysis product. Initially, a hydrocarbon feedstock is pyrolyzed in the presence of a catalyst system, the catalyst system comprising a basic metal oxide catalyst and a hydrogenation metal catalyst. A pyrolysis product is produced that contains at least one alcohol. The basic metal oxide catalyst is comprised of at least one metal from Group 2, Group 3 including Lanthanides and Actinides, or Group 4 of the Periodic Table of Elements, and the supported hydrogenation metal catalyst is comprised of at least one metal from Group 6 or Groups 8-10 of the Periodic Table of Elements.
WO2015179806	LP Amina Llc (US)	**System and process for the manufacture of hydrocarbons and upgraded coal by catalytic mild temperature pyrolysis of coal.** A process for upgrading a solid carbonaceous material comprising heating the solid carbonaceous material in the presence of a catalyst under partial pyrolysis conditions and obtaining an upgraded solid carbonaceous product, a gaseous product, and a spent catalyst.
WO2015171865	Academia Sinica (TW); et al	**Batch-process supertorrefaction system and method.** A compact, transportable batch-process supertorrefaction system includes at least one supertorrefying unit, a liquid tank containing molten salt, and a wash tank including a plurality of basins containing water having different temperatures and different salinity. The liquid tank and the wash tank sequentially supply the molten salt and the water to a receiving space of the at least one supertorrefying unit to supertorrefy the biomass into charcoal and to rinse and cool the charcoal, respectively. The plurality of basins of the wash unit sequentially supply water having different temperatures and salinity to the same receiving space to gradually rinse and cool the charcoal. The biomass is not moved in the at least one supertorrfeying unit during biomass supertorrefaction. The charcoal is not moved during charcoal cooling.

PIRÓLISIS/GASIFICACIÓN		
Nº Publicación	Solicitante (País)	Contenido técnico
EP2944680	Julio Berkes AS (UY)	**Gasification reactor.** The present invention relates to a gasification reactor comprising a gas injection grid and means for the continuous extraction of ashes that build up on the grid, comprising a scraping arm, assembled such that it rotates about an axis of rotation (X) normal to the grid and extending a certain distance over the grid; and an ash collection container with a bottom arranged at a level below the grid and sides laterally enveloping the grid, the scraping arm having a leading section configured in the shape of a spiral with the center in the axis of rotation (X) generating, as it moves with respect to the grid, radial movement of the ash built up on the grid beyond the contour thereof to be emptied into the bottom of the container by gravity.
WO2015168763	Bocaiuva Mecanica Ltda (BR)	**Industrial process using a forced-exhaust metal furnace and mechanisms developed for simultaneously producing coal, fuel gas, pyroligneous extract and tar.** The present invention patent relates to a process and a furnace developed for producing plant coal with recovery of the gases, tar and pyroligneous extract. The unitary system is comprised of a metal furnace, a loading platform, a carbonization platform, and an unloading platform. For continuous generation of gases, the process operates with multiple carbonization platforms and one or more furnaces per carbonization platform. The furnace has air inlets in strategic lateral positions and a mechanism for alleviating pressure. The carbonization system is comprised of an exhaust, special ducts for conducting the gases, and also devices for recovering condensable products. The gases generated in the process are directed to a burner, a gasifier or directly to a boiler to generate heat and/or electrical energy. Said technology exclusively provides a gravimetric yield of fuel gas of over 60% and plant coal productivity of over 800 kg/h, such that each operation cycle of the furnace lasts less than 5 hours. The coal is unloaded hot following carbonization, and loaded with wood billets, immediately after unloading. Said process combines technical, economical, operational and environmentally viable solutions.
WO2015162338	Torrec OY (FI)	**Torrefaction apparatus.** According to one embodiment, the application relates to a torrefaction apparatus, comprising a conveying channel adapted to pass a material to be torrefied, said conveying channel comprising openings for enabling torrefaction and being divided into at least one zone, and torrefaction means adapted to transfer thermal energy into a torrefying gas used for torrefaction essentially in a cross-flow by way of its openings. In addition, the torrefaction apparatus is provided with measuring means adapted to measure temperature of the flowing torrefying gas in the vicinity of the conveying channel, and with control means which, jointly with the torrefaction means, enable a zone-specific adjustment of the torrefying gas temperature and flowing direction on the basis of measurement data received from the measuring means.
WO2015164361	Univ New York State Res Found (US)	**Inclined rotary gasifier waste to energy system.** A gasifier system includes a reactor for receiving a wet feedstock which has a base and a container rotatably connected to the base such that a rotation of the container causes a mixing of the feedstock in an interior of the reactor. The interior is bounded by the base and the container. A space between the base and the container allows an entry of oxygen into the interior. The space has a dimension such that the feedstock is fully oxidized in a combustion area adjacent the base and such that the feedstock avoids combustion in a remainder of the interior. The reactor has a longitudinal axis inclined at an inclination angle relative to a horizontal line to promote the mixing of the feedstock in the interior.

PIRÓLISIS/GASIFICACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
WO2015149955	Jeney Peter (CH)	**Process and device for reacting organic materials to give hydrogen gas.** Device for reacting an organic starting material to give a gas which comprises hydrogen, with: - a feed device, - a tubular furnace with an entry zone (E), an interior space (I), an axis (R) of rotation and an exit side (A), - a water feed arranged in the region of the feed device or entry zone (E), in order to permit addition of water (W) to the starting material, where the arrangement and design of the feed device and the tubular furnace are such that via the feed device it is possible to feed the starting material in the region of the entry zone (E) into the interior space (I) of the tubular furnace, and a solid material and a gas mixture can be discharged at the exit side (A) of the tubular furnace, where - the tubular furnace comprises a first zone (Z1) and a second zone (Z2), the first zone (Z1); being in a region between the entry zone (E) and the second zone (Z2), and the second zone (Z2) being in a region between the first zone (Z1)and the exit side (A), - the tubular furnace comprises a compensator designed for compensation of different thermal expansions of the first zone (Z1) and the second zone (Z2), arranged at the exit side (A) of the tubular furnace there is a gas-conducting system designed to conduct the gas mixture onward, - arranged in the region of the gas-conducting system there is a gas monitor, the gas monitor being designed to monitor the content of hydrogen in the gas mixture, the water feed being amenable to regulation as a function of the content of hydrogen in the gas mixture.The device makes use of waste materials, residual materials and biomass and so is environmentally friendly, and has improved stability at high temperatures.
ES2543366	Technokontrol Cat Global SL (ES)	**Procedimiento para transformar materiales inorgánicos, NFU, petróleo crudo en hidrocarburos y/o energías renovables limpias mediante un sistema de termólisis.** La presente invención se refiere a un procedimiento para transformar materiales inorgánicos, plásticos, gomas, NFU, aceites usados, crudo y/o derivados de los productos petroquímicos en hidrocarburos ligeros como gasolina, diésel, keroseno, nafta, etc. y/o energías renovables limpias mediante un sistema de termólisis. En definitiva un procedimiento para reciclar de forma tecnológicamente, medioambientalmente y totalmente ecológica, para hacer viable la revalorización tanto energética, medioambiental, económica y materialmente de una materia prima que comprende carbono, productos y/o derivados altamente contaminantes en su composición elemental y/o fundamental.; Este procedimiento comprende: (a) una etapa de reacción de termólisis en el interior de un reactor de termólisis que comprende un transportador de tornillo sinfín macizo y/o hueco, donde dicho transportador de tornillo sinfín desplaza la materia prima alimentada al reactor de termólisis a lo largo del mismo, a la vez que la materia prima se desvolatiliza y/o reacciona químicamente, dando lugar a una fracción sólida carbonosa correspondiente a la materia prima convertida y a una fracción gaseosa. (b) la adición al reactor de termólisis de una corriente de gas que reduce la presión parcial de O2 en el interior del reactor de termólisis, evitando la oxidación y/o combustión parcial de los componentes de la fracción gaseosa.; (c) la extracción de la fracción gaseosa a medida que se va generando, a través de una cámara de expansión situada en el reactor de termólisis. (d) la condensación y/o el reformado o la combustión de dicha fracción gaseosa. (e) el enfriamiento y recogida de la materia prima convertida a través de un tornillo sinfín enfriador de sólidos. Es asimismo objeto de la invención una instalación para llevar a cabo dicho procedimiento.
WO2015147755	Agency Science Tech & Res (SG)	**Catalysts for hydrodeoxygenation reactions.** The invention relates generally to catalysts for hydrodeoxygenation reactions, and a method for preparing the catalysts. Further, the method for preparing a catalyst comprising: mixing a suspension of a solid support and a solution of a transition metal precursor to form a surface modified solid support; drying the surface modified solid support; and adding a solution of a noble metal salt to the dry surface modified solid support to thereby form the catalyst. Use of the catalyst thus formed by the first aspect in hydrodeoxygenation reactions of oxygen containing chemicals, particularly biomass-derived pyrolysis oils, is also disclosed herein.

PIRÓLISIS/GASIFICACIÓN		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2015145328	Mini Green Power Sas (FR)	**Electrical power generation system.** An electrical power generation system comprising: at least one fuel supply device, at least one gasifier, the gasifier being connected to at least one supply fluid generation unit of an electrical power generation device, a waste product disposal circuit being further provided. A control unit is provided for controlling the operation of at least one of the components of the system, the control unit including a detection system for detecting parameters indicative of the operation of one or more components of the system as well as processor means for processing data obtained by said detection system. Particularly, the invention relates to biomass energy generation systems.
EP2942383	Ava CO2 Schweiz AG (CH)	**Device for location-independent treatment of biomass.** Within the scope of hydrothermal carbonization, biomass is converted to bio-coal and other products. Because biomass occurs at irregular intervals at different locations and also, in part, only individual method steps are required at different locations, however, an apparatus for treatment of biomass is integrated into a variable, mobile container, and mobile containers adapted to the individual steps of the method are provided, which can be transported in compact manner and can be adapted, in terms of size, in the setup situation. This arrangement allows effective equipping of the individual containers, which can be expanded into a setup situation on location.
WO2015135080	Univ Guelph (CA)	**Renewable replacements for carbon black in composites and methods of making and using thereof.** Biocarbon is presented as an alternative to synthetic carbon black. Master batches having biocarbon for usage in raw plastics and/or the production of composites. Biocarbon is mainly derived from plant biomass, but other sources can be used. A method of producing the master batch: (a) pyrolyzing processed biomass in an oxygen-starved environment to produced biocarbon; (b) comminuting the biocarbon in a reduced oxygen atmosphere; (c) cooling the comminuted biocarbon; (d) mixing the cooled comminuted biocarbon with a carrier resin, thereby producing the master batch.
WO2015132919	Chugoku Electric Power (JP)	**Gasification system.** The purpose of the present invention is to enhance the heat exchange efficiency of a heat exchanger and thus efficiently gasify a raw material for gasification. This gasification system is configured so as to include: a counter flow heat exchanger that is provided with both a low-temperature side flow channel through which a raw material for gasification flows and a high-temperature side flow channel into which a supercritical gasification product stream is introduced and by which the temperature of the raw material is raised; a gasification reactor for heating and pressurizing the raw material heated in the counter flow heat exchanger, gasifying the raw material in a supercritical state, and discharging a supercritical product stream which is to be introduced into the high-temperature side flow channel; and a product stream flow channel for leading the product stream discharged from the gasification reactor to the counter flow heat exchanger. The gasification system is further provided with an external heating means for introducing the raw material into the low-temperature side flow channel, taking out the introduced raw material at a position along the low-temperature flow channel, heating the raw material taken out, and returning the heated raw material to the low-temperature flow channel at a position on the raw-material-wise-downstream side of the position at which the raw material has been taken out.

TECNOLOGÍAS BIOQUÍMICAS
Patentes

DIGESTIÓN ANAERÓBICA		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2015183204	Wong Fong Engineering Works 1988 Pte Ltd (SG)	**Waste matter management system and method.** A waste matter management system for a residential area, comprising: a waste management facility located at the residential area, the waste management facility for processing waste matter comprising biodegradable waste matter; an anaerobic digester for processing the biodegradable waste matter to produce biogas; and a combustion system for combusting the produced biogas to generate electricity. The anaerobic digester and the combustion system are disposed at the waste management facility.
WO2015176697	Kahle Hans Joachim (DE)	**Method and device for the treatment and use of bio-waste, residual waste and landfill material from domestic refuse landfills for biogas plants.** The invention relates to the combination and washing of bio-waste, such as domestic refuse, with preferably municipal waste water in order to produce a fermentable substrate suspension which serves as a substitute for renewable raw materials in biogas plants and which is delivered in tank vehicles, as well as to a device for carrying out the method.
WO2015174518	Ihi Enviro Corp (JP)	**Liquid fuel production method using biomass.** This liquid fuel production method has: a saccharification step in which a biomass is saccharified; a methane fermentation step in which a saccharified liquid obtained in the saccharification step undergoes methane fermentation; and a BTL (Biogas to Liquid) step in which a liquid fuel is generated from the biogas obtained in the methane fermentation step.
WO2015174520		**Plant processing system.** This plant processing system comprises: a plant cultivation facility that cultivates plants that include a sugar solution; a crushing facility that crushes the plants that have been cleared by the plant cultivation facility; a juicing facility that harvests sap from plant chips obtained by the crushing facility; a methane fermentation facility that facilitates methane fermentation of the sap; and a power generation facility that generates power using the biogas obtained by the methane fermentation facility as fuel.
ES1143308	Kepler Ingenieria Ecogestion SL (ES); et al	**Estación de tratamiento de sustrato orgánico.** 1. Estación de tratamiento de sustrato orgánico configurada para la producción de biogás a través de la hidrólisis y digestión anaerobia de sustrato orgánico en una cámara de metanogénesis que comprende un volumen comprendido entre 20 y 200 m3, caracterizada porque comprende: - un depósito de pre-tratamiento y primera hidrólisis, unido mediante un circuito hidráulico, al menos una bomba de impulsión y válvulas, a; - un depósito de segunda hidrólisis y metanogénesis, unido: - mediante un circuito hidráulico, provisto de válvulas y rebosadero, a un almacén de digerido y; - mediante un circuito de gas a un almacén de biogás; donde el depósito de pre-tratamiento y primera hidrólisis; - está provisto de medios de cribado y medios de trituración y remoción, para homogeneizar y desbastar el sustrato orgánico introducido en el depósito de pretratamiento y primera hidrólisis, y donde el depósito de pre-tratamiento y primera hidrólisis está configurado para producir una primera fase de hidrólisis del sustrato orgánico introducido en el depósito de pre-tratamiento y primera hidrólisis, y; donde el depósito de segunda hidrólisis y metanogénesis comprende: - una cámara de segunda hidrólisis, situada en la parte interior del depósito de segunda hidrólisis y metanogénesis, configurada para producir una segunda fase de hidrólisis y acidogénesis del sustrato orgánico y; - la cámara de metanogénesis, situada en la parte superior del depósito de segunda hidrólisis y metanogénesis, configurada para que se produzca la digestión, mediante bacterias anaerobias, del sustrato orgánico hidrolizado, generándose biogás; donde tanto el depósito de pre-tratamiento y primera hidrólisis como el depósito de segunda hidrólisis y metanogénesis están fabricados en poliéster reforzado con fibra de vidrio, y donde la estación de tratamiento de sustrato orgánico comprende adicionalmente un sistema de control, configurado para accionar y/o activar un control remoto de las válvulas, los medios de cribado, los medios de trituración y remoción y la bomba de impulsión.

DIGESTIÓN ANAERÓBICA		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2015170843	Hyundai Eng & Construct Co Ltd (KR)	**Highly-concentrated organic waste water system and waste water treating method using heating membrane filtration concentrating device.** The present invention relates to a highly-concentrated organic waste water system and waste water treating method using a heating membrane filtration concentrating device. More particularly, the present invention relates to a method which: applies a heating membrane filtration concentrating device to a membrane-coupled anaerobic digestion process; simultaneously increases the water treated by the membrane filtration concentrating device and reduces the amount of energy used to heat an anaerobic digestion tank by producing a concentrated liquid heated in a membrane filtration concentrating process and returning same to the anaerobic digestion tank; ensures stability in a downstream waste water treating process by raising the water temperature of water treated in the membrane filtration concentrating device; and increases the cleaning efficiency of the membrane filtration concentrating device and the service life of the membrane by raising the temperature of washing chemicals during washing of the membrane.
WO2015167618	Kohler Co (US)	**Biofuel power generation systems.** An integrated modular biomass to electric power generation system is disclosed. The system comprises various subsystem modules including components which may be prefabricated and mounted on separate and portable self-supporting liftable platforms in a factory controlled environment. The modules may include biomass to biofuel conversion and refinement process related modules and power generation modules. The modules may be transported from the factory to a power generation site, which in some non-limiting examples may comprise part of an agricultural or farming site that produces animal and/or agricultural wastes which may be converted to biofuel. The modules are positioned on site and fluidly coupled together to form a complete biofuel powered electric generation system. A plurality of standardized size subsystem modules of several different process or electrical capacities may be provided for selection to form the complete system. The system may include a biogas production process, biodiesel production process, or both.
WO2015158950	Hakalehto Eino Elias (FI)	**The production of hydrogen and other gaseous or liquid products in an accelerated bioprocess.** Method and apparatus for the production of hydrogen and other gaseous or liquid substances (such as 2,3-butanediol) formed with the help of microbes in conditions where the normal microbial metabolism (catabolism and anabolism) has been restricted by pH or temperature, for example. Then carbon is not liberated into gaseous phase as fast as in more common microbial reactions. Carrier gas directed into organic waste or other biomass is helping in liberating molecular hydrogen into gaseous phase with the aid of microbial enzymes or electric phenomena at the same time when new hydrogen is binding into the biomass from water. Removed gases or combustion gases from the incineration plants can be directed back into bioprocess in some process alternatives, together with lowering total carbon emission by these means. The production plant is planned in such a way that it can be situated in the midst of inhabitation.
EP2937324	Resourcification Res Ct for Crop Animal Farming (KR)	**Dry anaerobic composting facility.** Disclosed is a dry anaerobic composting facility. More specifically, disclosed is a dry anaerobic composting facility which mixes organic waste with a water controller by a pre-treatment unit, followed by pressing, grinding and substitution to convert the organic waste into an anaerobic substance, continuously subjects the anaerobic compound to fermentation, mixing/grinding, transport and discharge using an agitator by an anaerobic fermentation unit to improve production of compost, ages the produced compost by a post-aging unit to provide high-quality compost, and collects biogas produced by the anaerobic fermentation unit and uses the biogas as an energy source of a self-generator or a combined heat and power generator, to realize energy self-generation.

DIGESTIÓN ANAERÓBICA		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2015164744	Nutrient Recovery & Upcycling Llc (US)	**Electrodialysis stacks, systems, and methods for recovering ammonia and monovalent salts from anaerobic digestate.** Electrodialysis stacks comprising a series of electrodialysis cells and anaerobic digestion systems incorporating the electrodialysis stacks are provided. Also provided are methods of using the electrodialysis stacks and systems to recover nitrogen, in the form of ammonia, from separated anaerobic digestate. The electrodialysis stacks use monovalent-selective cation exchange membranes to concentrate ammonium ions and other monovalent ions in a concentrate stream, while discriminating against multivalent cations, which, as a result, are retained in a diluate stream. The electrodialysis stacks may use monovalent-selective anion exchange membranes to discriminate against multivalent anions, which, as a result, are selectively retained in a diluate stream.
WO2015160075	SK Chemicals Co Ltd (KR)	**Anaerobic digesting equipment having internal circulating apparatus for removing scum and increasing produced amount of digestion gas.** The present invention relates to anaerobic digesting equipment having an internal circulating apparatus for removing scum and increasing the produced amount of digestion gas and, more particularly, to anaerobic digesting equipment having an internal circulating apparatus for removing scum and increasing the produced amount of digestion gas, which efficiently removes scum produced at a gas-liquid boundary layer at the upper portion of an anaerobic digesting facility at an early stage, and activates the stirring of organic waste inside a digestion tank so as to increase the produced amount of digestion gas. In particular, the present invention seeks to provide anaerobic digesting equipment having an internal circulating apparatus for removing scum and increasing the produced amount of digestion gas, which, in a process of producing digestion gas by introducing organic waste from the outside into an anaerobic digesting device and digesting same, uses a pump to transfer organic waste at the lower portion of the anaerobic digesting device to the upper portion of the anaerobic digesting device to reintroduce and circulate same, and suctions scum produced at the gas-liquid boundary layer inside the anaerobic digesting device into a liquid portion of the anaerobic digesting device so as to remove the produced scum, so that digestion gas produced in the liquid portion due to the removal of scum can be easily transferred to a gas portion and discharged.
WO2015155427	Air Liquide (FR)	**Method for producing biomethane, wherein the permeate from the membrane separation is recycled as an inerting gas.** The invention relates to a method for producing biomethane wherein at least the harmful components H2S and VOC of the biogas produced are removed therefrom by adsorption. At the end of the purification method, the methane and the carbon dioxide are separated by membrane permeation with production of biomethane and a gaseous permeate rich in carbon dioxide and containing less than 7% methane, and said permeate is used as an inerting/sweep gas during operations for inerting adsorbent tanks. In the methods involving discontinuous dry methanisation, the permeate is also used to inert the digesters during input loading/unloading operations.
WO2015143906	Univ Zhejiang (CN)	**A method for improving the methane production rate through acidification pretreatment of hydrogen production of kitchen waste and sludge.** Provided is a method for improving the methane production rate through acidification pretreatment of hydrogen production of kitchen waste and sludge. The method comprises: mixing the kitchen waste after crushing pretreatment with sludge, hydrolyzing the mixed solution formulated with sulfuric acid at 135[deg.C] to obtain the fermentation materials, adding yeast powder to the fermentation materials, inoculating the dark fermentation hydrogen producing bacteria, creating the anaerobic fermenting environment by introducing the high purity nitrogen, processing dark deep acidification pretreatment of hydrogen production fermentation at the constant temperature 37[deg.C], adding methanogenic bacteria and maintaining anaerobic environment at 37[deg.C] to ferment and to produce methane.

DIGESTIÓN ANAERÓBICA

Nº Publicación	Solicitante (País)	Contenido técnico
WO2015151036	Ductor OY (FI)	**Biogas process with nutrient recovery.** The invention is a method of two-phase anaerobic digestion where monitoring and adjusting the nitrogen status (carbon to nitrogen molar ratio, i.e. C/N molar ratio or total or ammoniacal nitrogen content) enables maintaining optimum conditions during the process. The method improves the use of a variety of feedstock materials or facilitates monodigestion of one feedstock. Especially the introduction of nitrogen rich feedstock materials in the process is amended. A community of hydroiyzing and acidogenic microorganisms in the first phase digester performs ammonification i.e. release of organic nitrogen as ammonia. Nitrogen and phosphorus are removed and recovered from the digestate which then undergoes biogasification in the second phase of the process. Reject water from biogasification can be recycled within the process.
WO2015143160	Univ South Florida (US)	**Portable wastewater treatment systems.** In one embodiment, a portable wastewater treatment system includes an anaerobic reactor in which organic material within the wastewater can be broken down, a membrane filter that receives wastewater from the anaerobic reactor and filters the water to produce permeate, and a small shipping container in which the reactor and the membrane filter are contained.
WO2015135616	Kobit GmbH (DE)	**Apparatus for fermenting biomass for production of gas.** The invention relates to an apparatus for fermenting biomass for production of gas, comprising a film vessel which is surrounded on the outside by soil and/or a support construction, and having a top side sealed gas-tight by a film roof, the latter having a feed tube, an overflow tube and a gas withdrawal tube opening into it, wherein the vessel film wall and/or the film roof are penetrated in a sealed manner by a tube which projects upward and within which there is a movable rod as plunger which projects upward out of the tube as a handle or with a handle and at its lower end projecting out of the tube bears a mixing head.

FERMENTACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
WO2015166645	Univ Yamaguchi (JP)	**Yeast having xylose assimilation ability and ethanol production ability.** The present invention addresses the problem of providing a heat-resistant yeast that can assimilate xylose and produce ethanol, or of providing a mutant strain of said yeast, and of providing a method for assimilating xylose and producing ethanol. The present invention uses Kluyveromyces marxianus yeast strain No. 21 (deposit number NITE BP-01739) or uses a mutant strain thereof that has xylose assimilating ability and ethanol producing ability when cultured at 30[deg.C] under aerobic conditions from a culture medium that contains xylose as a sugar source. An ethanol production method that is characterized by culturing the yeast or the mutant strain thereof under aerobic conditions from a culture medium that includes xylose as a sugar source.
WO2015165954	DSM IP Assets BV (NL)	**Process for enzymatic hydrolysis of lignocellulosic material and fermentation of sugars.** The invention relates to a process for the preparation of a fermentation product from lignocellulosic material, comprising the following steps: a) optionally, pretreatment of the lignocellulosic material, b) optionally, washing of the optionally pretreated lignocellulosic material, c) enzymatic hydrolysis of the optionally washed and/or optionally pretreated lignocellulosic material using an enzyme composition comprising at least two cellulases and whereby the enzyme composition at least comprises LPMO, and optionally purifying the hydrolysed lignocellulosic material, d) fermentation of the hydrolysed lignocellulosic material to produce a fermentation product, and e) optionally, recovery of a fermentation product, wherein after the pretreatment and before and/or during the enzymatic hydrolysis an electron donor and oxygen are added to the lignocellulosic material.

FERMENTACIÓN		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2015164270	Enchi Corp (US)	**Integrated cellulosic ethanol production process.** Integrated cellulosic ethanol and com ethanol production processes reduce the capital and operating costs of cellulosic ethanol production through high levels of integration with pre-existing corn ethanol processing equipment. The processes comprise separating com starch from other, non-fermentable corn components (e.g. germ, protein, fiber, etc.) and cofermenting sugars derived from the corn starch in the presence of a pretreated cellulose feed. The cofermentation can be carried out using one or more hemicellulose sugar utilizing yeast strains, for example, such as one or more yeast strains.
WO2015163738	Univ Korea Res & Bus Found (KR)	**Method for pretreating lignocellulose by using acid-base mixture catalyst.** The present invention relates to a method for pretreating lignocellulose by using an acid-base mixture catalyst. The method pretreats lignocellulose, by using a mixture catalyst of an acid and a base, so as not to pass through additional neutralization steps, and carries out pretreatment and simultaneous saccharification and fermentation through an identical single reactor process, thereby having an effect of producing ethanol in an excellent production yield from lignocellulosic biomass while simplifying the total process and reducing equipment costs and total processing costs.
EP2927324	Sekab e Technology AB (SE)	**Methods for improvement of enzymatic hydrolysis of lignocellullosic material.** The present invention relates to a method of enzymatic hydrolysis of a lignocellulosic material, comprising the steps of: a) pretreating the lignocellulosic material to obtain a slurry having a pH of less than 6; b) adding NaOH, Ca(OH) 2 and/or CaO to the slurry to increase its pH to at least 8, said addition being carried out at a slurry temperature of at least 60 DEG C; c) reducing the pH of the slurry to below 7; and optionally cooling the slurry from step b) to a temperature below 60 DEG C; and d) adding hydrolytic enzymes to the slurry from c) and allowing the slurry to hydrolyze.
WO2015148272	Danisco Us Inc (US)	**Altered host cell pathway for improved ethanol production.** A recombinant yeast cell, fermentation compositions, and methods of use thereof are provided. The recombinant yeast cell includes at least one heterologous nucleic acid encoding one or more polypeptide having phosphoketolase activity; phosphotransacetylase activity; and/or acetylating acetaldehyde dehydrogenase activity, wherein the cell does not include a heterologous modified xylose reductase gene, and wherein the cell is capable of increased biochemical end product production in a fermentation process when compared to a parent yeast cell.
WO2015148288	Api Ip Holdings Llc (US)	**Processes for co-producing xylitol with ethanol or other fermentation products.** What is disclosed is a biorefining process to co-produce xylitol with ethanol or other products. In some variations, a process for producing ethanol and xylitol from lignocellulosic biomass, comprises: extracting hemicelluloses from lignocellulosic biomass, wherein the hemicelluloses include xylose oligomers and other sugar oligomers; hydrolyzing the xylose oligomers and the other sugar oligomers, using an acid catalyst or enzymes, to generate xylose and other sugar monomers, respectively; fermenting the other sugar monomers to ethanol using a suitable ethanol-producing microorganism; removing at least some of the ethanol (to increase concentration of xylose); fermenting the xylose to xylitol using a suitable xylitol-producing microorganism; and recovering the xylitol at high concentration.
WO2015138260		**Processes for producing fluff pulp and ethanol from sugarcane.** The disclosure provides a process for producing fluff pulp and ethanol from sugarcane bagasse or straw, comprising: fractionating the feedstock in the presence of an acid catalyst, a solvent for lignin, and water, to generate a solid/liquid slurry comprising cellulose-rich solids, hemicelluloses, and lignin; separating the solid/liquid slurry into a solid stream and a liquid stream; further treating the cellulose-rich solids to produce fluff pulp; hydrolyzing the hemicelluloses to generate hemicellulose monomers; and fermenting at least a portion of the hemicellulose monomers to cellulosic ethanol. Lignin is removed from the process during one or more steps and combusted to provide energy for process requirements. The process is integrated with, and provides energy to, a first-generation process that ferments sugarcane-derived sucrose to first-generation ethanol. Similar processes are possible with energy cane, corn, and other crops.

FERMENTACIÓN		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2015143317	Novozymes AS (DK); et al	**Processes of producing ethanol using a fermenting organism.** The invention relates to improved processes of producing ethanol from starch-containing material wherein saccharification and/or fermentation is done at a temperature below the initial gelatinization temperature in the presence of glucoamylase and alpha-amylase, and optionally a protease and/or a cellulolytic enzyme composition; wherein the fermenting organism is Saccharomyces cerevisiae MBG4851 (deposited under Accession No. V14/004037 at National Measurement Institute, Victoria, Australia) or a fermenting organism strain having properties that are about the same as that of Saccharomyces cerevisiae MBG4851, or a derivative of Saccharomyces strain V14/004037 having defining characteristics of strain V14/004037, and compositions comprising a Saccharomyces yeast strain of the invention and naturally occurring and/or non-naturally occurring components.
WO2015141705	Nat Inst of Advanced Ind Scien (JP)	**Method for imparting acid resistance and salt resistance, and useful substance production using acid-resistant, salt-resistant yeast.** Provided are: a method for preparing yeast presenting various types of growth inhibition resistance and fermentation inhibition resistance in strong-acid (low-pH) and high-salt-concentration environments by introducing genes and proteins presenting resistance to acid and salt derived from acid-resistant, salt-resistant yeast into yeast having exceptional fermentation production or by improving the expression level of such attributes, whereby acid resistance and salt resistance are imparted; and a method for producing useful substances such as ethanol by using this method. Genetically modified yeast constantly expressing an LGS1 gene derived from Issatchenkia orientalis or an LGS1 homologous gene (GAS1, PHR1, or PHR2 gene, or the like) belonging to the GH72 family and derived from another yeast, a method for achieving resistance in low-pH and high-salt-concentration environments using the same, and a method for highly efficiently producing useful substances such as ethanol and the like from glucose or a saccharified solution containing glucose.
WO2015139141	Iogen Energy Corp (CA)	**Method for processing a cellulosic feedstock at high consistency.** Provided herein is a process for producing an alcohol from a sugar cane derived cellulosic feedstock comprising: subjecting the sugar cane derived cellulosic feedstock comprising bagasse, leaves, tops, or any combination thereof, to silica removal selected from processes comprising sieving, screening, washing, cyclone separation or any combination thereof. The bagasse, leaves or tops, or any combination thereof, from which at least a portion of the silica has been removed is treated in one or more processing stages to produce sugar, wherein the undissolved solids content of a slurry during said processing stages reaches a weight percent of at least 15%. Thereafter the sugar is fermented with yeast or bacteria to produce the alcohol and the alcohol is concentrated and recovered.
WO2015127553	Ulibarri Gerardo (CA)	**Method for producing biofuels from fruit kernels.** The method described herein is for producing biofuels, such as bioethanol and bioalcohols, from fruit kernels. In this case, the term bioalcohol refers to any alcohol, such as ethanol or butanol, that is produced from a biological source. The method uses fruit kernels, also known as pits or seeds, which are high in starch content to produce biofuels. Preferred fruit kernels for the purpose of the present method, include, but are not limited to, avocados and mangos. These fruit kernels are of particular interest since they are a waste- product of the fruit. As such, the fruits can be grown for their normal purpose and the part of the fruit normally discarded as waste, namely the kernel, used to produce a biofuel.

TECNOLOGÍAS QUÍMICAS
Patentes

Nº Publicación	Solicitante (País)	Contenido técnico
WO2015183744	Blue Sun Energy Inc (US)	**Fatty acid reduction of feedstock and neutral and acidic alkyl ester.** Processes and compositions reduce free fatty acid (FFA) in oils and fats and in neutral or acidic alkyl ester. The oils and fats or alkyl ester is heated to temperatures from 90 DEG F to 150 DEG F, and lower numbered alcohol and dilute caustic are added. The mixture is stirred moderately, and allowed to settle into two phases - a FFA phase and a second low FFA phase, containing either oils and fats or alkyl ester. The two phases are separated. The recovery of both glycerin and lower numbered alcohols is increased. Some compositions for reducing FFA comprise lower numbered alcohol and dilute caustic. The processes and compositions reduce FFA levels to meet fuel standards.
WO2015174870	Inst Superior Técnico (PT); et al	**Production of fuels from microbial glycolipids with lipid chains comprising 6 to 14 carbons.** The present invention relates to the process of production of liquid fuel for air, marine or land transportation from microbial glycolipids with lipid chains composed only of 6 to 14 carbons. This process is characterized by the. conversion of microbial glycolipids into a mixture, of organic compounds through glycolipid chemical transes.terification with an alcohol into esters having 7 to 16 carbons and mixtures thereof, or conversion of the glycolipid in hydrocarbons having 4 to 14 carbons. The organic compounds obtained by these processes are to be used as fuel, as such, or in blends with other substances, for air, marine or land transportation, including but not limited to transportation at temperatures below zero degrees Celsius.
WO2015173807	Infimer Technologies Ltd (IL)	**Method of separating waste material.** A method of separating waste material to a plurality of separated materials is disclosed herein. The method is effected by subjecting the waste material to a separation according to specific gravity, to thereby obtain two or more fractions, and optionally subjecting one or more of said fractions to additional separation procedures, to thereby obtain two or more of a low-density polymeric material, a high-density polymeric material, a metal, a glass, an oil, and lignocelluloses. The disclosed method can further be effected by processing one or more of the separated materials to thereby obtain one or more processed materials of a beneficial use. Further disclose herein are separated and/or processed materials obtainable by the method, articles-of-manufacturing comprising same, and systems for separating and/or processing the waste material. The method further comprises separating oil from a fraction which comprises a low-density material, to thereby obtain a separated oil. According to some embodiments of the invention, the method further comprises processing the oil to thereby obtain a biodiesel fuel.
WO2015175876	Seachange Group Llc (US)	**Biodiesel glycerol emulsion fuel mixtures.** The invention provides fuel mixtures containing biodiesel oil, glycerol, glycerol soluble compounds, surfactants and additives. The fuel mixtures are uniform, remain suspended in solution, and are resistant to phase separation. Upon combustion, the mixtures generate reduced CO, CO2, SOx, NOx and particulate matter emissions compared to petroleum fuels and offer improved engine performance over petroleum and water mixtures.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2015171000	Innowacyjne Techniki en Odnawialnych Spolka z Ograniczona Odpowiedzialnoscia (PL)	**System of combined technologies for producing and using renewable energy.** The invention relates to a system of combined technologies for generating and using renewable energy. Renewable energy is produced in a closed system, said system comprising: the algae cultivation plant (D) where biomass is obtained from algae; the oil press plant (I) where oil and proteins are obtained from biomass; the bio fuel processing station (J) where bio diesel is obtained from oil; a feed mill (K) in which animal feed is obtained from proteins; the tank for biomass from agricultural commodities (L), in which the residue from the feed-, oil production and the agricultural materials are stored; the biogas plant (A) in which biogas and fermentations are obtained from biomass; and the separator (E), where the fluid fraction and the solid matter fraction are obtained from fermentations, said fluid fraction being directed as a medium to the algae cultivation station (D). The system also includes: the pellet/fertiliser mill (F), where pellets or fertiliser are obtained from the solid matter fraction; and the co-generation station (B) where electrical energy, heat and waste gases are obtained from biogas. The heat energy is distributed for use by the pellet/fertiliser mill (F) and the algae cultivation plant (D). The waste gases are directed into the algae cultivation plant (D) and the transformer-distribution station (C), where the electrical energy is designated for use by the pellet/fertiliser mill (F), the external network (M) and the algae cultivation plant.
WO2015162307	Rodriguez Garcia Juan (ES)	**Improved method for producing biodiesel from natural and recycled vegetable oils.** The invention relates to a method for producing biodiesel from natural and recycled vegetable oils, applicable to oils with different degrees of acidity, which are alternately subjected to esterification in an acid medium if required, followed, in any case, by transesterification in an alkaline means, on the basis of the following steps: a) conditioning of the oil used by means of passing same through a filter press and subsequent heating; b) conditioning of the reagents in a tank provided with a bladed stirring system where the methanol and sulfuric acid are mixed; c) esterification in two reactors designed so as to maximise the degree of mixing of the reagents inside the reactor; d) transesterification by means of alkaline catalysis such that the triglycerides present in the oil transesterify with methanol; e) decanting; f) distillation; g) washing and centrifuging.
WO2015142688	Elevance Renewable Sciences (US)	**Systems and methods of refining natural oil feedstocks and derivatives thereof.** Systems and methods are disclosed for refining natural oil feedstocks. In some embodiments, the methods comprise transesterifying glycerides in a natural oil feedstock to provide a transesterified product comprising monounsaturated fatty acid esters and polyunsaturated fatty acid esters. In some embodiments, the methods comprise separating the polyunsaturated fatty acid esters from the monounsaturated fatty acid esters (or vice versa), to provide a separated monounsaturated fatty acid ester composition having a ratio of at least 10 parts by weight of monounsaturated fatty acid esters for every 1 part by weight of polyunsaturated fatty acid esters.
WO2015140714	Saudi Basic Ind Corp (SA)	**Processes and systems for generating glycerol ethers through transetherification.** A process of generating a glycerol ether is provided. The process includes reacting isobutylene with an alcohol to obtain a tertiary alkyl ether through an etherification reaction and generating a glycerol ether from the tertiary alkyl ether and glycerol through a transetherification reaction, A system for generating a glycerol ether is also provided.

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