SECTOR BIOMASA

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Probiomasa advierte que las nuevas tasas eléctricas comprometen la supervivencia de la biomasa

A continuación, se muestra un comunicado publicado a principios de Octubre en el que el sector español de las biomasas integrado en PROBIOMASA, en que se refleja su profunda preocupación ante el impuesto del 6% que va a gravar la generación eléctrica de este tipo de instalaciones, que siempre han mantenido unas rentabilidades tremendamente ajustadas, lo que ha impedido el desarrollo del sector, a pesar de tratarse de tecnologías completamente maduras y de existir en España un potencial enorme de biomasas:

"El impuesto que se va a imponer a la biomasa puede dar la puntilla a un sector que no ha tenido responsabilidad alguna en el déficit de tarifa, que tampoco ha sufrido "burbujas", ni es tendente a generarlas dadas las características del propio negocio y que ni siquiera ha podido nunca cumplir sus objetivos por lo ajustado de sus márgenes y por la escasez de la retribución establecida. Hecho reconocido de forma generalizada, e incluso en el PER 2011-2020, donde existe una medida (la denominada HEL-015) destinada a 'estudiar y analizar el actual marco retributivo para las instalaciones de producción de energía eléctrica abastecidas con biomasa y adaptación a las condiciones actuales y previstas dentro del marco de desarrollo del PER 2011-2020', reconociéndolo implícitamente.

Siendo la única renovable que precisa suministro de materia prima –que supone un coste del orden del 50% de sus ingresos–, la nueva tasa del 6% sobre la generación eléctrica supone que se multiplique por dos su impacto, lo cual va a ser difícilmente asumible por un sector en el que la mayoría de las instalaciones son de mediano y pequeño tamaño. Complicando seriamente la viabilidad económica de las mismas, pudiendo llegarse incluso al cierre.

La biomasa es una de las energías renovables que mayores beneficios sociales y ambientales induce. Reduce sustancialmente residuos orgánicos, las emisiones que generan los mismos y contribuye en gran medida a reducir los incendios forestales. Genera más empleo y retornos fiscales por unidad producida puesto que hay que tratar, preparar, almacenar y transportar los recursos que utiliza. Es plenamente gestionable ya que puede producir energía las veinticuatro horas del día 365 días del año, y utiliza recursos íntegramente nacionales colaborando así al equilibrio de nuestra balanza exterior y ahorrando importantes gastos de importación de recursos fósiles, además de evitar pagos por compra de derechos de CO_2 por emisiones evitadas.

A pesar de ello se vuelve a penalizar a la biomasa por segunda vez este año, primero con la moratoria y ahora con este impuesto que puede hacer inviable esta tecnología, sobre todo cuando en el contexto actual de crisis y de incremento de los incendios forestales, podría ser un revulsivo para fomentar el crecimiento económico y prevenir las dramáticas consecuencias que han ocasionado los mismos en la mitad de España.

SUMARIO

Una de las más graves consecuencias que va a tener este impuesto es la incertidumbre que genera al cambiar las reglas de juego a mitad del partido, induciendo una patente inseguridad jurídica. Muchos de los proyectos existentes a la fecha, incluso en avanzado estado de tramitación y diseño, se han aparcado a causa de la moratoria. Si se añade ahora el impuesto del 6%, difícilmente serán viables.

PROBIOMASA ruega al Gobierno que elabore urgentemente un decreto específico para las biomasas que contemple las particularidades de este tipo de industrias y los magníficos beneficios que inducen. Ahora más que nunca es imprescindible la existencia de un marco legal propio del sector que evite que, como hasta ahora, sea un añadido más dentro de un conjunto, sin que se reconozcan las singulares aportaciones socioeconómicas y medioambientales que genera. En el balance debe incluirse la consideración de las externalidades positivas que produce en los ámbitos agrícola, ganadero y forestal, en especial su singular capacidad de creación de empleo.

PROBIOMASA pide que se rectifique lo antes posible la dura moratoria impuesta y se compense sustancialmente la tasa del 6% a la biomasa. Porque junto a la drástica reducción de actividad que la moratoria representará en éste y próximos años para el sector, este impuesto implicará una importante minoración de ingresos públicos –tanto en impuesto directos a la actividad como en mayor coste de prestaciones de desempleo– mucho mayor que el coste inicial de lo suprimido.

La política energética de la UE desde hace décadas está dirigida de forma inequívoca a potenciar la sostenibilidad del sistema energético del conjunto comunitario, a la reducción de la producción basada en recursos fósiles y a potenciar las energías renovables. Las biomasas están entre las fuentes que mayores beneficios aportan a esta política comunitaria, porque a los directos añade singulares beneficios para los sectores agrícola, ganadero y forestal, tradicionalmente tan olvidados a pesar de su preeminencia indiscutible para el desarrollo económico de nuestro país. La biomasa debe ser por tanto un objetivo prioritario de las políticas públicas. Su promoción como fuente de energía verde demanda esencialmente apoyos y políticas energéticas públicas decididas que fomenten su desarrollo para que deje de estar relegada a una condición casi testimonial dentro del mix energético nacional".

FUENTE: *madri+d, PROBIOMASA.*

Análisis de patentes

En el tercer trimestre de 2012 se han identificado en la base de datos WPI (World Patent Index) 805 familias de patentes con nuevos documentos sobre tecnologías de conversión de la biomasa para la producción de energía. De la Tabla 1 se desprende que, aproximadamente, el 44% de las referencias encontradas están relacionadas con tecnologías bioquímicas y el 37% con termoquímicas. El 19% restante se refiere a tecnologías químicas. La tecnología de digestión anaeróbica cuenta con más de doscientos resultados.

TABLA 1. Número de familias de patentes clasificadas por tecnologías

TIPOS DE TECNOLOGÍAS DE CONVERSIÓN DE LA BIOMASA	3ER TRIM. 2012
Tecnologías termoquímicas	297
Combustión directa	182
Gasificación	72
Pirólisis	43
Tecnologías bioquímicas	355
Digestión anaeróbica	212
Fermentación de azúcares	143
Tecnologías químicas (transesterificación, Fischer-Tropsch síntesis de metanol)	153
Nº TOTAL FAMILIAS DE PATENTES	905

En la Tabla 2 se muestran los países líderes. Cabe destacar que el 45% de los documentos identificados se solicitaron en China, le siguen, con gran diferencia, las solicitudes internacionales de patente (PCT) con el 17%. A continuación destacan EE.UU. (10%), Japón (7%) y Corea (5%). España dispone de dos referencias.

TABLA 2. Ranking por países

	PAÍS	Nº REFERENCIAS
1	China (CN)	249
2	Patentes PCT (WO)	95
3	EE.UU. (US)	57
4	Japón (JP)	37
5	Corea (KR)	30
6	Patentes Europeas (EP)	14
7	Polonia (PL)	14
8	Alemania (DE)	13
9	Rusia (RU)	9
10	Taiwan (TW)	7

En los apartados posteriores se recoge una selección de los documentos de patentes identificados en el trimestre analizado, así como un resumen de las noticias más significativas, clasificados por tecnologías.

Solicitudes de Patentes Publicadas

Los datos que aparecen en la tabla corresponden a una selección de las solicitudes de patentes publicadas por primera vez durante el trimestre analizado.

Si desea ampliar información sobre alguna de las patentes aquí listadas, pulse sobre el número de patente correspondiente para acceder a la información online relativa a la misma.

COMBUSTIÓN DIRECTA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
EP2500652	RIENER KARL STEFAN	Austria	HEATING DEVICE FOR BURNING BIOMASS. The invention relates to a heating device having a combustion chamber for the combustion of fuel from biomass, comprising the at least one discharge opening for discharging flue gases from the combustion chamber, at least one flue gas outlet opening for transfer of the flue gases into a chimney, at least one between outflow opening and the flue gas outlet fluidically connected heat exchanger with at least one flue gas channel for extracting heat energy from the gas through the flue stack gases, and at least a flue gas fan for setting-up or acceleration of a flue gas flow in the flue gas duct of the heat exchanger. At least one automatically or automatically adjustable actuato is formed, which is the flue gas duct of the heat exchanger or the combustion chamber so assigned and configured such that the actuator in case of failure or interruption of the electrical equipment or supply power of the heating device converted or of the flue gas fan automatically in such a way that a flow path of the flue gas, starting from the combustion chamber reduces until the flue gas outlet port, or that the flow path through the flue gas duct of the heat exchanger via one of the actuator shared bypass opening is bypassed at least abkürzbar or entirely.
WO2012113987	TEKNOLOGIAN TUTKIMUSKESKUS VTT et al.	Finlandia	METHOD AND APPARATUS FOR BURNING RAW MATERIAL. The invention relates to a method and apparatus for burning raw material including biomass-based and/or waste-based raw material in a combustion reactor in such a way that the raw material is fed to the firebox of the combustion reactor, wherein the raw material is burnt. According to the invention, a calcium compound is provided to the firebox partially or entirely in the form of calcium carbonate, the temperature and partial pressure of carbon dioxide in the gas atmosphere of the firebox are adjusted during the combustion in such a way that calcination of the calcium carbonate is hindered and the maintenance of the calcium compound in the carbonate form in connection with the combustion is furthered, in which case the calcium carbonate forms a reactive bonding surface with alkali metal based substances, and the unwanted alkali metal based substances are conveyed; out from the firebox by means of the calcium carbonate.
EP2489933	PALAZZETTI LELIO SPA	Italia	DEVICE AND METHOD TO CONTROL COMBUSTION IN A HEATING APPARATUS. Device to control combustion in a solid fuel heating apparatus, having an entrance aperture suitable for the entrance of comburent air, a combustion chamber for the solid fuel and an exit aperture for the fumes produced in the combustion chamber. The device comprises measuring means suitable to measure directly the flow rate of the comburent air.

COMBUSTIÓN DIRECTA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
DE102011011936	HET HEIZ & ENERGIETECHNIK ENTWICKLUNGS GMBH et al.	Alemania	HEATING ASSEMBLY WITH BIOMASS FURNACE AND HEAT PUMP. The method involves determining the air temperature and the switchover point. The biomass combustion and the heat pump are controlled in response to the determined air temperature and the determined switchover point, where either the biomass combustion or the heat pump is operated. An independent claim is also included for a heat-generating system with a measuring unit for heating and cooling of a building.
TW201116709	QIN CAI-DONG	China	A FUEL MIXTURE CONTAINING COMBUSTIBLE SOLID POWDERS AND THE CORRESPONDING ENGINE TO BE POWERED BY THE FUEL MIXTURE. This invention is intended for a kind of fuel mixture containing combustible solid powders. The fuel mixture is produced by mixing some combustible solid powders with liquid fuel, which enables a simple and feasible way of using renewable biomass resources to substitute the fossil fuels to provide the power to drive internal combustion engines and other kind of power generators, and therefore helps reduce use of fossil fuels. This invention also presents a type of engine that can make use of the fuel mixture.
DE102011010422	CHERKASKY ALEXANDER	Alemania	NOVEL CHERKASKY'S SYNTHETIC DIAMONDS AND DIAMOND-LIKE MATERIALS AND METHODS AND DEVICES FOR PRODUCTION THEREOF. The object of the invention is to increase the yield of the HPHT-(High-Pressure High-Temperature)-Technology for production of synthetic diamonds and diamond-like materials as well as to achieve the continuous production of large amounts or quantities of synthetic diamonds with perfect or high quality. The object of the invention will be reached by methods and devices according to the present invention, wherein the method comprises the following steps: cultivation or collection of biomass, preparing and chemical modification of biomass preferably by (adding or enriching with) salt or salts containing at least one catalyst, incineration of biomass to ash, adding to ash modifiers including salt or salts containing at least one catalyst, HPHT-treatment of the resulting carbon-containing matrix and the isolation of the products after the HPHT-treatment.
CA2727638	KEIRAN LETWIN A	Canadá	OPTIMIZATION OF COMBUSTION PROCESS. A process for improving the drying of woody biomass fuel and increasing the efficiency of combustion for the production of energy is provided. The multi-step process comprises of a system that provides biomass to a fluidized bed dryer to dry the approximately 30% moisture wet fuel, a storage tank used to keep fuel dry until it is required for combustion in a fluidized bed boiler, a control element used to regulate amount of dried fuel fed into fluidized bed boiler and a circulating fluidized bed combustion boiler to circulate with the dried fuel for combustion of said fuel.

COMBUSTIÓN DIRECTA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
WO2012092652	ASSOCIACAO DE ENSINO DE RIBEIRAO PRETO	Brasil	METHOD FOR REDUCING THE VOLUME OF VINASSE BY MAKING USE OF THE ENERGY POTENTIAL OF COMBUSTION GASES GENERATED FROM BIOMASS COMBUSTION IN BOILERS. The present application discloses a method for reducing the volume of vinasse, said method making use of the energy potential of combustion gases generated from biomass combustion, wherein the volume of vinasse, which is produced during sugar-to-alcohol processes, is reduced by thermally evaporating water, partially or totally, whilst enabling water contained in the vinasse to be collected by means of successive steps of evaporation and condensation. The particulate material (ashes, soot and sand) that is entrained by the combustion gases leaving the biomass boiler can be collected as a result of direct contact between said particulate material and the vinasse droplets, allowing emissions to be controlled. The removal of all the water from the vinasse and concomitant incorporation of solid particulates collected from the spray emitted from the biomass boilers makes it possible to produce powdered fertilizers. The direct contact between the vinasse and the combustion gases occurs by means of spray tower or Venturi gas scrubbers and spray dryers.
WO2012074374	BIOLAKE B V et al.	Holanda	APPARATUS AND PROCESS FOR THE THERMAL TREATMENT OF BIOMASS. The invention provides an apparatus for the thermal treatment of biomass, comprising a low-temperature drying section comprising a low-temperature drying section channel with low-temperature drying section channel (screw) transporter, a high-temperature drying section comprising a high-temperature drying section channel with high-temperature drying section channel (screw) transporter, a torrefaction section comprising a torrefaction channel with torrefaction section channel (screw) transporter, a cooling section comprising a cooling section channel with cooling section channel (screw) transporter, a torrefaction section off-gas combustor, a thermal energy transfer system, in thermal contact with the torrefaction section off-gas combustor and one or more of the torrefaction section, the high-temperature drying section and the low-temperature drying section.
DE102010053566	RIENER KARL STEFAN	Austria	BIOMASS FIRING EQUIPMENT WITH AIR POSITIONING LOCKING DEVICE. The firewood oven has combustion chamber, and and air supply for the combustion chamber. An air control unit is provided in air supply to control the amount of air led by air supply. An air adjusting element fuse is secured to the air control unit, such that it conducts predetermined minimum amount of air through the air supply. An independent claim is included for method for controlling biomass furnace.
ES2370619	FUNDACION INVESTIGACION E INNOVACION PARA EL DESARROLLO SOCIAL	España	PROCEDIMIENTO PARA LA OBTENCION DE HIDROGENO, A PARTIR DE LA BIOMASA Y CARBON VEGETAL. Procedimiento para la obtención de hidrógeno, a partir de la biomasa y carbón vegetal, donde el calor por combustión en planta de biomasa lo utilizamos para producir energía eléctrica, mediante turbina y generador. Los gases de la combustión pasan por filtros, carbonato cálcico y bicarbonato sódico, para eliminar los NOx y los SOx. Por tubería conducimos los gases restantes a horno con lecho de carbón vegetal y biomasa y esta se transforma en carbón vegetal. Reacciona CO_2 con el carbón vegetal y produce monóxido de carbono que hacemos reaccionar con el agua. El CO_2 y el vapor de agua –H_2O– que no haya reaccionado pasa por un lecho fluidizado de oxido cálcico que produce carbonato cálcico eliminándose el CO_2 y el vapor de agua. Almacenando la energía calorífica de la combustión de la biomasa en Hidrógeno –H_2–, para su empleo como fuente de energía.

GASIFICACIÓN

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
CZ20110404	ASTAV CHEMICKYCH PROCESU AKADEMIE VED CESKU REPUBLIKY	República Checa	GASIFICATION PROCESS OF PROCESSED BIOMASS AND APPARATUS FOR MAKING THE SAME. The present invention relates to a gasification method of treated biomass within a vertical reactor consisting of two technological portions wherein the gasification method is characterized in that in the reactor first portion the biomass is exsiccated to a level of 2 to 3 percent by weight and is subjected to partial pyrolysis by heating to a temperature of 130 to 350 degC while in the reactor other portion the content is heated by means of a gasification medium containing oxygen to a temperature above 1000 degC to obtain a crude gas that is drawn off from the upper section of the reactor second portion for subsequent purification and removal of solid carbonaceous particles and ash.; Apparatus for making the above-described method uses a vertical reactor with a conveyor for supply of biomass into the reactor lower section and a draw-off a crude gas in the upper section of the reactor, wherein the reactor is provided in its lower section with a tube with a conveyor, which passes over to a conically enlarging upper section with the supply of a gasification medium.
US2012219409	CORRY JUDETH BRANNON et al.	EE.UU.	PUMP USED IN GASIFICATION SYSTEM. A pump used in a gasification system, the pump comprises a housing having an inlet and an outlet, a rotor supported within the housing for rotation relative to the housing, the rotor comprising a hub, a plurality of disks spaced apart by sections of the hub, and defining a plurality of transport channels for transporting solid carbonaceous feedstocks for the gasification system, and an interior feedstock facing surface adjacent to the solid carbonaceous feedstocks, wherein at least a portion of the interior feedstock facing surface is coated with a coating.
US8246700	KUTSIN LEONID	EE.UU.	METHOD AND SYSTEM FOR RECYCLING FLUE GAS. An improved process to reduce emissions converts carbon dioxide from the flue gas exhaust from heat or power generators, into synthetic gas which is in-turn reintroduced back into the generator as fuel, is herein disclosed. Hot flue and exhaust gases from power generators, which contain carbon dioxide, would be blown into a gasification reactor, which contains coal, wood chips or other carbon based fuels substances. The process utilizes gasification technology to create a thermochemical reaction between the carbon dioxide and the fuel via a high temperature and no-oxygen atmosphere to produce synthetic gas. The synthetic gas includes carbon monoxide and hydrogen which is then fed back into a heat or power generator as fuel. The process may include two (2) or more reactors, thereby allowing one (1) reactor to be loaded or unloaded while synthetic gas continues to be produced by the other reactor. The synthetic gas may also be further converted into vehicle fuels and other useful chemicals.
US2012207668	CONOCOPHILLIPS CO	EE.UU.	SOAK AND COKE. There is provided herein a method for producing hydrogen gas, comprising: sorbing a liquid hydrocarbon fuel to a gasification catalyst to form a sorbed hydrocarbon fuel; heating said sorbed hydrocarbon fuel to a first temperature for a first period of time sufficient to form coke; and gasifying said coke at a second temperature at a pressure for a second period of time in the presence of water and/or oxygen, so as to produce hydrogen gas and carbon monoxide and to regenerate said catalyst. In particular, the hydrocarbon fuel can be a liquid biomass, such pyrolysis oil, and the method can be CO_2 neutral.

GASIFICACIÓN

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
EP2484427	NESTE OIL OYJ	Finlandia	A TWO-STAGE GAS WASHING METHOD. The present description is related to the field of hydrocarbon production by gasification of carbonaceous material. It provides a two-stage gas washing method as a part of gas refining. More specifically it discloses a method for hydrogen sulfide and carbon dioxide removal from synthesis gas produced by gasification. It introduces a use of a novel combination of wash approaches for this application. As a specific application, this process is utilized as a part of biomass to liquid (BTL) process.
EP2481705	GRIESSER HANS	Austria	METHOD AND DEVICE FOR MATERIAL AND/OR ENERGY RECOVERY OF BIOGENIC RESIDUAL MATERIALS. Utilizing material and/or energy from biomass comprises converting biomass into a flue gas and a product gas by gasification, feeding the product gas into a pressure swing adsorption or a membrane reactor to separate hydrogen, feeding the flue gas into a gas treatment system, separating carbon dioxide and subjecting the end product to liquid nitrogen wash, feeding the end product of the liquid nitrogen wash to hydrogen obtained from the pressure swing adsorption or the membrane reactor and adjusting their ideal gas ratio, and performing ammonia synthesis to produce ammonia. An independent claim is also included for a plant for carrying out the above method, comprising a gasifier, connected to a pressure swing adsorption unit or a membrane reactor at its one end, a Rectisol wash (RTM: Acid gas removal process using methanol as a solvent), a membrane reactor, an amine scrubber, a carbonate wash or a pressure swing reactor, a liquid-nitrogen wash and an ammonia synthesis reactor for producing ammonia, where a pipeline for hydrogen is arranged between the liquid nitrogen wash and the pressure swing adsorption or the membrane reactor with subsequent ideal gas ratio adjustment.
US2012181483	SUNDROP FUELS INC	EE.UU.	VARIOUS METHODS AND APPARATUSES FOR MULTI-STAGE SYNTHESIS GAS GENERATION. A multiple stage synthesis gas generation system is disclosed including a high radiant heat flux reactor, a gasifier reactor control system, and a Steam Methane Reformer (SMR) reactor. The SMR reactor is in parallel and cooperates with the high radiant heat flux reactor to produce a high quality syngas mixture for MeOH synthesis. The resultant products from the two reactors may be used for the MeOH synthesis. The SMR provides hydrogen rich syngas to be mixed with the potentially carbon monoxide rich syngas from the high radiant heat flux reactor. The combination of syngas component streams from the two reactors can provide the required hydrogen to carbon monoxide ratio for methanol synthesis. The SMR reactor control system and a gasifier reactor control system interact to produce a high quality syngas mixture for the MeOH synthesis.
US2012165416	CORTRIGHT RANDY D et al.	EE.UU.	METHOD FOR PRODUCING BIO-FUEL THAT INTEGRATES HEAT FROM CARBON-CARBON BOND-FORMING REACTIONS TO DRIVE BIOMASS GASIFICATION REACTIONS. A low-temperature catalytic process for converting biomass (preferably glycerol recovered from the fabrication of bio-diesel) to synthesis gas (i.e., H2/CO gas mixture) in an endothermic gasification reaction is described. The synthesis gas is used in exothermic carbon-carbon bond-forming reactions, such as Fischer-Tropsch, methanol, or dimethylether syntheses. The heat from the exothermic carbon-carbon bond-forming reaction is integrated with the endothermic gasification reaction, thus providing an energy-efficient route for producing fuels and chemicals from renewable biomass resources.

GASIFICACIÓN

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
US2012137582	GRAHAM ROBERT G et al.	EE.UU.	BIOMASS GASIFICATION IN ATMOSPHERES MODIFIED BY FLUE GAS. Systems and methods are provided for generating energy from biomass. A gasifier is provided for generating syngas from the biomass. The gasifier comprises a housing for providing a first, oxygen starved environment in which the biomass is sub-stoichiometrically combusted to generate syngas-an effluent comprising gaseous combustibles. An oxidizer is connected to receive the syngas from the gasifier and configured to oxidize the syngas in a second environment distinct from the first, oxygen starved environment and to thereby generate heat energy. An oxidative agent supply mechanism introduces an oxidative agent to the first, oxygen starved environment in the gasifier housing, the oxidative agent comprising a mixture of flue gas and air.
WO2012084953	SHELL INT RESEARCH	Holanda	PROCESS FOR PRODUCING SYNTHESIS GAS. process for controlling the carbon conversion of a gasifier fuelled with a carbonaceous feedstock by mixing in biomass, the process comprising the steps of (a) pressurizing the biomass and carbonaceous feedstock; (b) introducing the biomass and carbonaceous feedstock into the gasification reactor vessel; (c) partially oxidizing the carbonaceous feedstock/biomass with a molecular oxygen-comprising gas to obtain a synthesis gas comprising carbon monoxide and hydrogen; (d) measuring the CO_2 content of the syngas and comparing with a pre-determined value range; (e) adjusting the biomass/carbonaceous feedstock ratio by changing the biomass feed rate; wherein said biomass and carbonaceous feedstock comprises from 10 wt% to 50 wt% of biomass and wherein the level of biomass is adjusted within this range to control the carbon conversion.

PIRÓLISIS

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
WO2012110012	ZBB GMBH et al.	Alemania	DEVICE AND METHOD FOR THE THERMOCHEMICAL HARMONISING AND GASIFICATION OF WET BIOMASS. The invention relates to a device for producing an energy carrier and/or raw material carrier from moisture-containing and/or dry biomass with the aid of a heatable carbonisation reactor having a closable inlet opening. The biomass is converted in the carbonisation reactor into a solid, pourable or gaseous energy carrier and/or raw material carrier and for interim storage of the energy carrier and/or raw material carrier is then delivered via a closable outlet opening to a coolable tank connected to the carbonisation reactor. The tank is connected to an adjoining heatable gasification reactor, in which gas and waste substances, such as ash, are separated from the energy carrier. The device is characterised by the following features: a) the carbonisation reactor is surrounded by a heating jacket to which external thermal energy is fed and to which further thermal energy at least from the gasification reactor is fed; b) cooling energy is fed to the gasification reactor from a second tank or cooling tank; c) water is fed to the second tank or cooling tank in order to ensure an approximately constant humidity, at least for the charcoal production; d) reaction gas is fed from the carbonisation reactor and/or the second tank or cooling tank to a gas storage facility.
WO2012071005	WEIHONG YANG et al.	Suecia	A METHOD OF PRODUCING BIO OIL USING ULTRA HIGH TEMPERATURE STEAM PYROLYSIS OF CARBONACEOUS SOLIDS. An advanced process concept for upgraded bio-oil production from carbonaceous, solid waste materials and biomass materials, especially a lignocellulosic raw material, in a one step method is proposed. Introduction of high-temperature steam in biomass pyrolysis process results in a low oxygen content upgraded bio-oil with an O/C ratio less than 0.2. The introduction of high-temperature steam allows the reforming and cracking of heavy bio-oil molecules to lower molecular weight sub- stances while the hydrogen radicals that are present due to steam dissociation re- actions are taking part in the hydrodeoxygenation (HDO) of the primary oxygenated species resulting from the pyrolysis.
WO2012090369	TOYOTA MOTOR CO LTD et al.	Japón	PYROLYSIS METHOD FOR PLANT BIOMASS. An object of the present invention is to provide a convenient method for extracting a useful organic compound from plant biomass. According to the present invention, a method for pyrolyzing plant biomass comprising a 1st heating step in which biomass is heated at a 1st heating temperature and a 2nd heating step in which either a gasified product or a biomass residue obtained in the 1st heating step is heated at a 2nd heating temperature higher than the 1st heating temperature is provided. The method of the present invention makes it possible to extract useful organic compounds such as phenols from plant biomass with heat treatment alone.
US2012228112	UNIV MISSISSIPPI STATE	EE.UU.	THERMAL TRANSFER MECHANISMS FOR AN AUGER PYROLYSIS REACTOR. An improved method of providing heat to a pyrolysis reactor is disclosed. A solid heat carrier produces fast pyrolysis vapors during transport of the solid heat carrier/feedstock mixture down the shell of the main reactor tube by the reactor tube auger. These vapors are drawn from the main reactor tube by a slight vacuum pressure and are condensed in a multiple condenser train comprised of shell and tube condensers cooled by water or other means.
WO2012097448	SERVICES KENGTEK INC et al.	Canadá	CATALYST FOR DISTRIBUTED BATCH MICROWAVE PYROLYSIS, SYSTEM AND PROCESS THEREOF. The present document describes a catalyst to initiate microwave pyrolysis of waste, a process for the microwave pyrolysis of waste using the catalyst, as well as a microwave pyrolysis system.

AUMENTO DE LA EFICIENCIA ENERGÉTICA DE LA BIOMASA HERBÁCEA

Innotec lidera un proyecto de I+D+i para la mejora de las condiciones de combustión de la biomasa herbácea. Este proyecto se enmarca dentro de la convocatoria Innpacto del ministerio de Economía y Competitividad. El objetivo final de este proyecto es el desarrollo de agropellets de origen herbáceo que sean compatibles con las tecnologías actuales de combustión, para su posterior comercialización. Desde un punto de vista energético, los problemas asociados a las biomasas agrícolas herbáceas, como los altos contenidos en cloro, mayores contenidos en cenizas y bajas temperaturas de fusibilidad de cenizas, reducen sus posibilidades de aprovechamiento energético.

Estas características, pueden ocasionar efectos muy perjudiciales sobre los sistemas de combustión, como es la corrosión y el deterioro de elementos de intercambio de calor, lo que impide ofrecer las garantías pertinentes de rendimientos, fiabilidad y durabilidad de los mismos.

A través de este proyecto, se pretenden mejorar el comportamiento de estas biomasas, de forma que se obtenga un producto compatible con las tecnologías de combustión actuales, y con un precio muy competitivo, que permita a los consumidores finales recuperar antes sus inversiones en instalaciones energéticas térmicas que funcionan con biomasa.

La posibilidad de introducir en el mercado de pellets de biomasa un producto de origen herbáceo mejorado contribuirá al desarrollo y crecimiento del mismo y a la diversificación de sus productos según sus diferentes calidades, lo que permitirá establecer aplicaciones específicas de los pellets en función de su calidad como combustible.

NUEVA TECNOLOGÍA PARA LA COMBUSTIÓN DE PELLETS

Domusa, fabricante de calderas de suelo que utilizan combustibles tradicionales, ha desarrollado una nueva tecnología para la combustión de granulados de madera (pellets), consiguiendo con ello una gama de calderas con los más altos rendimientos entre los fabricantes europeos y la más alta clasificación por sus bajas emisiones de gases contaminantes.

La innovadora gama BioClass, fruto de varios años de investigación, está pensada para compaginar las más altas prestaciones en el uso y mantenimiento de los aparatos, con un coste de compra e instalación mucho más accesibles al usuario final que cualquiera de las opciones existentes hasta ahora en el mercado.

CAMPOFRÍO INCORPORA EL USO DE BIOMASA EN SU FACTORIA DE ÓLVEGA (SORIA)

Campofrío ha decidido incorporar en su factoría de Ólvega (Soria) un sistema de generación de energía que procederá de una central térmica de combustión de biomasa y que reducirá en 660 toneladas anuales las emisiones de CO_2 a la atmósfera.

La multinacional ha firmado un acuerdo con Rebi, empresa de referencia en el sector de servicios energéticos, que será la encargada de instalar, a lo largo del cuarto trimestre del año 2012, este nuevo sistema de energía renovable que sustituirá al actual de gasoil.

Además de la instalación de este nuevo sistema en los procesos productivos y de climatización de la planta de Ólvega, el acuerdo firmado con Rebi establece el aprovechamiento de los residuos procedentes de limpiezas forestales de Castilla y León para fabricar la biomasa que necesitará esta fábrica, lo que contribuirá a disminuir los riesgos de incendio existentes en la región.

La instalación de este sistema de energía renovable se enmarca en el Plan Director para un Desarrollo Sostenible de Campofrío España para los años 2012-2016, entre cuyos objetivos destaca la optimización del impacto medioambiental de la empresa mediante una adecuada gestión de las emisiones y residuos de sus operaciones.

DESECHOS COMO POTENCIAL FUENTE DE ENERGÍA LÍQUIDA

A finales de Junio, el Centro de Investigación Alemán de Biomasa (Deutsches Biomasseforschungszentrum - DBFZ) y el Instituto de Tecnología de Karlsruhe presentaron los resultados del proyecto "De los residuos orgánicos al líquido".

En el proyecto los residuos de cosecha y otros productos de desecho biogénicos se pirolizaban con el fin de convertirlos en una

fuente de energía para uso en producción de electricidad y calor o para productos químicos y combustibles.

Los investigadores probaron los aceites de pirólisis resultantes de la transformación termoquímica de diversos materiales para determinar su utilidad técnica y económica.

El uso de productos de desecho biogénicos tiene un potencial muy alto de reducción de gases de efecto invernadero. El estudio también concluyó que el uso de residuos no resulta rentable sin la existencia de subsidios.

Pruebas del motor determinaron que el uso de productos líquidos de pirolisis en los sistemas existentes requiere un procesamiento de productos y modificaciones en el motor. También se probó el uso de una pequeña turbina de gas descentralizada, lo que podría ofrecer una alternativa interesante.

Sobre la base de los resultados de los potenciales del estudio del DBFZ, se establecieron perfiles detallados para un número de productos de desecho biogénicos muy adecuados que no han sido utilizados hasta ahora, incluyendo corteza, diferentes tipos de paja, residuos de la industria de la madera e incluso trozos de madera del Rin y restos desde el Mar Báltico.

ELECTRICIDAD DE CARGA BASE A PARTIR DE BIOMASA PARA REDUCIR EL CARBONO

ZeroPoint Clean Tech acaba de anunciar que su segundo despliegue de gasificación de biomasa está produciendo calor y energía de carbono negativo. El segundo sitio en lograr esta conexión a la red con éxito está en Newry, Irlanda. El primer sitio está operativo en Alemania.

El proceso de carbono negativo de ZeroPoint utiliza biomasa para crear gas renovable y produce biocarbón como producto derivado. El biocarbón es una forma altamente estable de carbono reducido con múltiples usos en la agricultura y la industria. El gas renovable de la solución ZeroPoint tiene un coste competitivo con el gas natural de quemador en gran parte del mundo. El gas en Irlanda se combustiona en un motor de gas para producir energía para red local. El gas y el motor también producen calor utilizable. La solución de ZeroPoint puede utilizarse para producir gas de síntesis renovable en motores de gas, calderas de vapor, aplicaciones térmicas o la combustión combinada con carbón, petróleo, biogás o biomasa.

La empresa está también trabajando en comercializar un proceso pendiente de patente para modernizar los sedimentos de aguas residuales y otros materiales de bajo grado para una mejor gasificación y combustión, así como convertir el gas sintético en hidrocarburo líquido.

DIGESTIÓN ANAERÓBICA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
WO2012116394	CESCO AUSTRALIA LTD et al.	Australia	AN ANAEROBIC DIGESTER FOR DIGESTING ORGANIC MATTER AND PRODUCING BIOGAS. A digester for anaerobically digesting organic matter and producing biogas is disclosed. The digester includes a support, and a drum rotatably mounted on the support about a longitudinal axis thereof. The drum has an internal drum surface and defines a closed interior space. The drum has two fixed mixing blades on the internal surface which project into the interior space, and which mix organic matter within the interior space when the drum rotates. The digester also includes a feed/discharge arrangement on an end of the drum through which organic matter can be fed into and discharged from the drum. The digester also includes a biogas off-take arrangement including a gas collection head and an off-take conduit for drawing off biogas generated within the drum. An apparatus including an outer container within which the digester is contained is also disclosed. The outer container can be heated by means of a heat exchanger to increase the temperature within the digester to promote digestion. The outer container can be a rectangular intermodal shipping container which enables the apparatus to be transported from one location to another.
WO2012115587	DELAVAL HOLDING AB et al.	Suiza	METHOD AND SYSTEM FOR THE SANITIZATION OF A DIGESTATE IN THE PRODUCTION OF BIOGAS. A method for sanitization of a liquid waste product comprising a first step of subjecting said waste to biological treatment under anaerobic conditions resulting in a temperature increase producing biogas and a digested and heated product, and a second step wherein the pH of said digested and heated product is adjusted to an alkaline pH to produce uncharged ammonia in said product for a time sufficient to eliminate or significantly reduce the concentration of pathogens in said waste. A system for performing said method.
WO2012103922	RED PATENT B V et al.	Holanda	INSTALLATION AND METHOD FOR BIOMASS CONVERSION INTO METHANE. The present invention relates to apparatuses, such as small and medium scale processing plants, for conversion of biomass into methane and other high-grade products such as fertiliser. The present invention further relates to methods and uses of the present apparatuses for conversion of biomass into methane and other high-grade products such as fertiliser. Specifically, the present invention relates to an apparatus for conversion of biomass, the apparatus comprises: a) an acidification reactor of a mixed fluid type reactor for microbial hydrolysis and acidification of biomass b) a methane synthesis reactor of a solid bed reactor type for the anaerobic microbial conversion of acidified biomass into c) a methane synthesis reactor of a mixed fluid type reactor for anaerobic microbial conversion of acidified liquid biomass d) a nitrification reactor for aerobic microbial conversion of NH4 + into NO3 -.
EP2487233	KRUEGER AS	Dinamarca	AN APPARATUS FOR PRODUCTION OF BIOGAS BY DIGESTION OF ORGANIC MATERIAL. An apparatus for production of a biogas by anaerobic digestion of organic material, the apparatus comprising: a digester chamber defining: a gas generating zone and a gas collecting zone. A biogas outlet is defined in the gas collecting zone, and one or more nozzles is/are arranged to spray a gas cooling liquid into the gas accommodated in the gas collecting zone so as to cool the gas. A collecting member is arranged in the gas collecting zone to collect the gas cooling liquid when sprayed from the one or more nozzles towards the collecting member so as to prevent the gas cooling liquid from entering the organic material. The collecting member is arranged to cause the collected gas cooling liquid to flow into a liquid based safety valve.

DIGESTIÓN ANAERÓBICA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
RU2456247	ROSSIJSKAJA AKADEMIJA SEL SKOKHOZJAJSTVENNYKH NAUK G NAUCHNOE UCHREZHDENIE VRNII EHLEKTRIFIKATSII SE	Rusia	METHANE TANK. FIELD: process engineering. SUBSTANCE: invention relates to environmental protection and serves to process organic substrates with relative moisture content of 90-98%, i.e. unpadded manure, excrements of agricultural animals, sediments and silt, and industrial and household effluents. Methane tank for anaerobic treatment of organic substrates consists of tight case with initial substrate feed branch pipes and treated substrate discharge branch pipes, biogas discharge branch pipe, and central tube. Tube top and bottom are exposed with respect to methane tank inside. Biogas feed branch pipe is arranged coaxially inside central tube bottom and communicated compressor with biogas discharge branch pipe.; Methane tank incorporates vertical immobilisers of anaerobic micro flora arranged between central tube and methane tank case and made up of set of vertical rods with porous structure and combined by stiff frame-type suspension coupled via shaft with the drive. EFFECT: optimised homogenisation and heating, developed interphase mass exchange. 3 cl, 2 dwg
KR101153467	REPUBLIC OF KOREA(MANAGEMENT : RURAL DEVELOPMENT ADMINISTRATION	Corea	SYSTEM FOR PROVIDING A BIOGAS. system for providing a biogas is provided to extinct the pathogen while producing the energy from the organic waste wince the high temperature bath and middle temperature tub are composed of 2 shift. CONSTITUTION: The system for providing biogas includes: a first anaerobic digestion vessel; and a second anaerobic digestion vessel; a solar battery; and an hydrogen sulfide removing unit. The first anaerobic digestion vessel is heated by the first temperature. The first anaerobic digestion vessel eliminates the pathogenic microorganism existing within the organic waste. The first anaerobic digestion vessel hydrolyze the organic waste and produces the biogas. The second anaerobic digestion vessel keeps the organic waste which has been transferred to from the first anaerobic digestion vessel with the second temperature lower than the first temperature.; The second anaerobic digestion vessel collects the biogas from the organic waste which has been transferred to. The solar battery is installed in the outside upper end of the second anaerobic digestion vessel and the first anaerobic digestion vessel. The solar battery changes the solar energy to the electrical energy and heats the first anaerobic digestion vessel. The hydrogen sulfide removing unit removes hydrogen sulfide which is included in the unpurified biogas generated in the first anaerobic digestion vessel or the second anaerobic digestion vessel.
KR20110080870	AQUACELL CO LTD	Corea	METHOD OF METHANE PURIFICATION USING GAS HYDRATE TECHNIQUE IN BIOGAS. method for refining methane from bio gas based on a gas hydrate forming principle is provided to stably eliminate hydrogen sulfide and carbon dioxide from the bio gas and increase the content of methane gas. CONSTITUTION: A method for refining methane from bio gas includes the following: The bio gas is generated from organic waste. Hydrogen sulfide and carbon dioxide in the bio gas are dissolved in water. The gas hydrate of the carbon dioxide and the hydrogen sulfide is formed at temperature between 2 and 10 degrees Celsius under the pressure of 10 to 30 bar. The gas hydrate is separated from water.

DIGESTIÓN ANAERÓBICA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
DE102011008186	DGE DR ING GUENTHER ENGINEERING GMBH	Alemania	METHOD FOR PRODUCING BIOGAS FROM PRIMARILY STARCH-CONTAINING RAW MATERIALS AS BIOMASS. The invention relates to a method for producing biogas from primarily starch-containing raw materials as biomass by means of a multi-stage anaerobic conversion using wet fermentation as the primary fermentation (hydrolysis and acidogenesis) and secondary fermentation (acetogenesis and methanogenesis), in at least two separate fermentation stages. In order to achieve a higher yield of raw gas or biogas and a higher content of methane in the raw gas, according to the invention in the first fermentation stage, solely biomass is fermented at temperatures in the range of 40 to 65 DEG C while feeding a portion of liquid fermentation substrate, wherein biogas which is rich in carbon dioxide and hydrogen sulphide and has a predominant CO_2 content of at least 60% by volume and a low methane content in the non-combustible range is created within a residence time of up to two days. Fermentation substrate developing upon completion of the first fermentation stage is separated into a solid phase and a liquid phase, and the solid phase is subjected to at least one other fermentation stage of a secondary fermentation over a period of at least 7 days, wherein an oxygen-free biogas which is low in sulphur and ammonia and has a methane content of over 60 to 85% by volume is created.
US2012164723	ROY KEVIN D et al.	EE.UU.	REACTION SYSTEM FOR ANAEROBIC DIGESTION. The present invention provides an anaerobic digestion reaction system. This system includes a continuously stirred reaction tank having an agitator contained therein and one or more outlet pipes. A blend tank for receiving organic waste feedstock is in communication with the continuously stirred reaction tank. Organic waste feedstock is transferred from the blend tank into the continuously stirred reaction tank. A plug flow reactor is in communication with the continuously stirred reaction tank. The organic waste feedstock is transferred from the continuously stirred reaction tank into the plug flow reactor to conduct stages of biomass reaction of the organic waste feedstock into biogas and creating organic waste material. The organic waste material and biogas is discharged from an outlet pipe and into an outlet gas separation vessel tank. In this tank, the biogas is separated from liquids and solid slurried waste.
ES2385167 (A1)	UNIV CADIZ	España	METHOD FOR ANAEROBIC DIGESTION OF SOLID URBAN WASTE IN TEMPERATURE PHASES. The invention relates to a method for anaerobic digestion of municipal solid waste in temperature phases. The invention consists of a method for anaerobic degradation in temperature phases (thermophilic-mesophilic sequential) of OF-MSW (organic fraction of municipal solid waste), by means of which it is possible to increase the stability of the process and the per-day capacity for treating organic waste, achieving greater efficiency in the production of biogas related to the amount of organic matter supplied to the system or consumed by same. The process consists in subjecting the waste to thermophilic pre-treatment for a certain length of time in order to efficiently achieve high hydrolysis and solubilization of organic waste. The second stage of the process consists in subjecting the waste pre-hydrolyzed during the thermophilic phase to mesophilic degradation, such that the solubilized matter is consumed during this second phase.

DIGESTIÓN ANAERÓBICA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
WO2012086416	MITSUBISHI KAKOKI KK et al.	Japón	ANAEROBIC DIGESTION TREATMENT METHOD AND ANAEROBIC DIGESTION TREATMENT APPARATUS. The present invention provides an anaerobic digestion treatment method and an anaerobic digestion treatment apparatus in which blockage of a pressure control valve by thermal solubilized sludge is prevented or minimized, and in which continuous-type thermal solubilization treatment can be performed. This anaerobic digestion treatment method comprises: a dehydration step for performing a dehydration treatment and recovering dehydrated solid matter; a crushing step for crushing the dehydrated solid matter using a crushing device; a thermal solubilization step for feeding steam and the crushed solid matter into a thermal solubilization reactor provided with a pressure control valve for adjusting the pressure, and turning the crushed solid matter into thermal solubilized organic waste; and an anaerobic digestion step for subjecting the thermal solubilized organic waste to anaerobic digestion. The crushing device crushes the dehydrated solid matter to a size smaller than the maximum spacing between a valve body and a valve seat when the pressure control valve is fully open. In the thermal solubilization step, the crushed solid matter is fed and the thermal solubilized organic waste is discharged in a state in which the steam fed into the thermal solubilization reactor is retained.
WO2012077250	NODA JUICHIRO et al.	Japón	METHOD AND SYSTEM FOR PRODUCING AND SUPPLYING BIOGAS USING MIXED MICROALGAE. The objective of the present invention is to provide a method and a system for supplying a biogas, each of which is equipped with microalgae culturing facilities and methane fermentation facilities and appropriately supplies a gas in response to the demand of a biogas user by efficiently producing the biogas under controlled conditions. The objective is achieved by providing: a biogas supply system which is equipped with first and second mixed microalgae culture tanks that are provided with a nutrient source supply means or a carbon dioxide supply means, a concentrated liquid tank for concentrating and storing a microalgae culture solution from the microalgae culture tanks by means of a concentration device, a methane fermentation tank to which the concentrated microalgae culture solution is supplied from the concentrated liquid tank for carrying out methane fermentation, and a biogas holder for storing a methane gas that is generated in the methane fermentation tank; and a method for producing and supplying a biogas using the biogas supply system. According to these method and system for producing and supplying a biogas, a uniform kind of bio starting material for methane fermentation is efficiently prepared by culture of microalgae, and methane fermentation can be carried out under uniform and efficient conditions by using the bio starting material for methane fermentation under homogeneous concentration conditions. Consequently, the biogas can be supplied under controlled conditions through the system.

FERMENTACIÓN DE AZÚCARES

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
WO2012115994	SYNGENTA PARTICIPATIONS AG et al.	Suiza	POTENTIATION OF ENZYMATIC SACCHARIFICATION. The present disclosure provides methods of potentiating the activity of an enzyme cocktail by the addition of one or more enzymes. In some embodiments, a sub-maximum or sub-optimal dose of the cocktail may be used in combination with the enzymes. In some embodiments, the enzyme or enzymes are expressed in planta.
WO2012114609	TSUKISHIMA KIKAI CO et al.	Japón	METHOD FOR PRODUCING ETHANOL. method for producing ethanol in which ethanol is obtained by adding a cellulose-containing starting material treated solution to a sugar-containing solution, and ethanol-fermenting the resulting product, wherein: the sugar-containing solution is at least one type selected from a group consisting of an agricultural product liquid extract containing water-soluble sugars, molasses, and the enzyme-treated product of a grain; and the cellulose-containing starting material treated solution is a cellulose-containing starting material-derived sugar solution obtained by saccharifying a cellulose-containing starting material, or a cellulose-containing starting material-derived fermented liquor obtained by ethanol-fermenting the cellulose-containing starting material-derived sugar solution.
WO2012113042	KEMIRA OYJ et al.	Finlandia	METHOD FOR PREVENTING BACTERIAL INFECTION IN A FERMENTATION PROCESS. The present invention relates to an improved process for fermenting a sugar-containing material and an improved method for preventing bacterial infection in a fermentation process by using performic acid. The fermentation process is primarily the fermentation of sugar-containing material, for instance sugarcane, into ethanol. The present invention further relates to the manufacture of ethanol and the ethanol so obtained.
US2012209034	CELANESE INT CORP	EE.UU.	PROCESS FOR PRODUCING ETHANOL OVER CATALYSTS CONTAINING PLATINUM AND PALLADIUM. The present invention relates to a process for producing product comprising ethanol which comprises contacting a feedstock comprising acetic acid and hydrogen in a reaction zone at hydrogenation conditions with a catalyst composition comprising platinum, palladium and tin on a support, wherein the catalyst has an excess amount of platinum relative to the amount of palladium based on weight.
US2012208252	QUAD COUNTY CORN PROCESSORS	EE.UU.	PROCESS AND SYSTEM FOR PRODUCING ETHANOL FROM A BYPRODUCT OF AN ETHANOL PRODUCTION FACILITY. A process of producing ethanol from whole stillage, includes obtaining a supply of whole stillage from an ethanol production facility after ethanol has been extracted therefrom; pre-treating the whole stillage to convert hemicellulose portions of the whole stillage into sugars; adding enzymes to the whole stillage to convert cellulose portions of the whole stillage to sugars; fermenting the whole stillage to create a beer mixture; and distilling the beer mixture to separate ethanol therefrom. The pre-treating step may include adding acid to the whole stillage to decrease its pH level; heating and pressurizing the whole stillage; holding the whole stillage under pressure and heat for a dwell time; removing pressure from the whole stillage to cause flashing; and cooling the whole stillage before the enzymes are added.

FERMENTACIÓN DE AZÚCARES

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
RU2458106	ROSSIJSKAJA AKADEMIJA SEL SKOKHOZJAJSTVENNYKH NAUK G NAUCHNOE UCHREZHDENIE VRNII EHLEKTRIFIKATSII SE	Rusia	BIOETHANOL OBTAINED FROM WILD AND DOMESTIC HOGWEED. FIELD: power industry. SUBSTANCE: bioethanol obtaining method involves preliminary raw material treatment. Green raw material is collected and crushed, and fluid is obtained. Yeast or special alcohol bacteria are added to the obtained fluid. Fermentation process is performed during 3-5 days. Distillation is performed so that crude alcohol is obtained, and after that, rectification of crude alcohol is performed so that final product - bioethanol is obtained. In addition, as raw material for obtaining bioethanol there used is wild or domestic hogweed containing 17-31% of saccharose of budding phase to flowering phase. EFFECT: reduction of use of cultures of food purpose as initial components for obtaining bioethanol; restricting the spread and harmfulness of hogweed as aggressive invasive type of plants. 1 cl, 1 dwg, 1 ex.
WO2012099934	UNIV CALIFORNIA	EE.UU.	BUTANOL PRODUCTION BY MICROORGANISMS HAVING NADH COUPLING. Provided are microorganisms that catalyze the synthesis of biofuels from a suitable substrate such as glucose. Also provided are methods of generating such organisms and methods of synthesizing biofuels using such organisms. Provided are microorganisms comprising non-naturally occurring metabolic pathway for the production of higher alcohols.
WO2012096236	JX NIPPON OIL & ENERGY CORP et al.	Japón	METHOD FOR PRODUCING STARTING MATERIAL FOR ENZYMATIC SACCHARIFICATION, METHOD FOR PRODUCING SUGAR, AND METHOD FOR PRODUCING ETHANOL. A method for producing a starting material for enzymatic saccharification according to the present invention comprises: a modified biomass production step for treating a lignocellulose-containing plant biomass material with a treating agent containing ammonia to give a modified biomass; and a water treatment step for immersing the modified biomass in water at 40-100 DEG C and thus eluting polysaccharides in the modified biomass in water to give a starting material to be subjected to an enzymatic saccharification step. Thus, the present invention can provide a method for producing a useful starting material for enzymatic saccharification, said starting material being usable in a method for producing a sugar, enabling efficient performance of the enzymatic saccharification and ensuring an increase in the productivity of the sugar.
EP2471940	SUED CHEMIE AG	Alemania	EFFICIENT LIGNOCELLULOSE HYDROLYSIS WITH INTEGRATED ENZYME PRODUCTION. The present invention provides a process for degradation of lignocellulosic biomass, which has optionally been pretreated. It is based on the finding that hydrolysis efficiency of the biomass is enhanced in the presence of a mechanically or chemically treated microorganism capable of producing the respective hydrolytic enzymes. The invention therefore provides a process for degradation of lignocellulosic biomass with integrated produced enzyme cocktails. The invention also provides a process wherein the part of the optionally pre-treated lignocellulosic biomass is incorporated into the final growth medium of the fungus.
KR20120048062	LEE IL HYUNG	Corea	PROCESS FOR PRODUCING ETHANOL BY DOUBLE FERMENTED. PURPOSE: A method for producing ethanol by re-fermentation is provided to enhance remaining sugar ratio and to enhance ethanol productivity. CONSTITUTION: A method for producing ethanol by re-fermentation comprises: a step of pretreating materials and saccharifying to prepare hydrolysate; a step of primarily fermenting the hydrolysate to prepare distillate; a step of secondarily fermenting the distillate to prepare distillate; and a step of thirdly fermenting the distillate. The primary is performed by inoculating Saccahromyces cerevisiae.

FERMENTACIÓN DE AZÚCARES

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
WO2012088185	DU PONT et al.	EE.UU.	USE OF A NITROGEN- FREE PEROXYGEN- RELEASING COMPOUND TO REDUCE GROWTH OF CONTAMINANT MICROORGANISMS IN ETHANOL FERMENTATION. A method for controlling growth of contaminant microorganisms in a fermentation process using a nitrogen-free peroxygen-releasing compound. The method comprises adding the nitrogen-free peroxygen-releasing compound to one or more steps of a fermentation process. In this method, the a nitrogen-free peroxygen-releasing compound may be added to one or more components of a fermentation broth comprising inoculant, fermentable sugar and process water.
US2012164696	CODEXIS INC	EE.UU.	RECOMBINANT BETA-GLUCOSIDASE VARIANTS FOR PRODUCTION OF SOLUBLE SUGARS FROM CELLULOSIC BIOMASS. The invention relates to recombinant expression of a variant form of a fungal C1 strain [beta]-glucosidase. The invention also relates to the generation of fermentable sugars from biomass and the production of biofuels by fermentation of the sugars using genetically modified organisms expressing the [beta]-glucosidase variant. The invention provides methods for producing a fermentable sugar, such as glucose, from cellobiose by contacting cellobiose with a recombinant [beta]-glucosidase variant protein, such as a variant protein secreted by a recombinant host cell into culture medium. Methods of the invention may be used for conversion of a biomass substrate to a fermentable sugar, and ultimately to ethanol or other biofuel.
WO2012083244	QTEROS INC et al.	EE.UU.	BIOFUEL PRODUCTION USING BIOFILM IN FERMENTATION. Compositions and methods for improving the efficiency of biofuels and chemicals, e.g., ethanol, production is described. Increased yield was obtained by facilitating biofilm formation in a bioreactor coupled with a particular microbial species. Compositions and methods for increased processing of solid biomass in a bioreactor are also described.
US2012156741	SHELL OIL CO	EE.UU.	PROCESS FOR THE PRODUCTION OF ALCOHOLS FROM BIOMASS. Alcohols useful as fuel compositions are produced from biomass by pretreating the biomass prior to hydrolysis and fermentation. In the pretreatment, the biomass is contacted with an aqueous solution containing a dilute acid with concentration of up to 10 wt % producing a predigested stream containing an aqueous liquor that contains at least a portion of hemicelluloses and a residual biomass that contains celluloses and lignin; separating at least a portion of the aqueous liquor from the residual biomass providing an aqueous liquor stream and a pre-digested biomass stream; then contacting the pre-digested biomass stream with a cooking liquor containing at least one alkali selected from the group consisting of sodium hydroxide, sodium carbonate, sodium sulfide, potassium hydroxide, potassium carbonate, ammonium hydroxide, and mixtures thereof and water. A process that allows for higher recovery of carbohydrates and thereby increased yields is provided.

COCA-COLA EMPLEA BIOMETANO PARA REDUCIR LA HUELLA DE CARBONO

Coca-Cola ha realizado unas pruebas recientes empleando biometano como combustible para el transporte confirmando potenciales efectos positivos.

En comparación con el vehículo Stralis diesel, el camión que funciona con biometano logra un ahorro total de emisiones de gases de efecto invernadero del 50%.

El aumento del precio del diesel, junto con la noticia de que el Gobierno del Reino Unido proporcionará algún tipo de financiación para la inyección de biometano en la red de gas natural, está creando un creciente interés en el uso de combustibles renovables para el transporte en todo el Reino Unido. Coca-Cola Enterprises (CCE) ha comenzado a incorporar el gas biometano en su operación de distribución del Reino Unido. En un programa piloto, se está utilizando

una flota de 14 camiones Iveco Stralis de 26 toneladas, que operan exclusivamente con combustible renovable.

CCE encargó a Cenex examinar y evaluar los vehículos de prueba, comparando los resultados con los de su flota de camiones Stralis diesel. Se compararon las emisiones, consumo de combustible, economía, fiabilidad y operatividad del biometano y los vehículos diesel, y los resultados son positivos. Así, las emisiones de gases de efecto invernadero se redujeron notablemente durante la prueba. El informe de CCE concluye que el vehículo de gas suministraba rendimientos similares de conducción y confiabilidad. También muestra que las emisiones totales de CO_2, NOx, PM y ruido se reducen significativamente mediante el uso de biometano como combustible.

EL HONGO DE PUTREFACCIÓN BLANCA POTENCIA LA PRODUCCIÓN DE ETANOL A PARTIR DE DESPERDICIOS DE MAÍZ

Científicos de la Universidad del Estado de Ohio y del Laboratorio Nacional de Energías Renovables han obtenido nuevas pruebas que demuestran que la presencia del hongo de la putrefacción blanca en los desperdicios de maíz (tallos, mazorcas y hojas) puede incrementar la producción de etanol. El suministro de etanol de maíz tiende a la baja debido a la necesidad de utilizar el maíz como alimento y forraje. La necesidad de nuevas fuentes de etanol ha promovido el uso de cañote, un residuo agrícola muy abundante en EE.UU., con una producción estimada de 170 a 256 millones de toneladas anuales. El reto es encontrar una forma de disgregar el duro material celulósico de mazorcas, tallos y hojas con el fin de fermentar los azúcares que contienen para producir etanol. Estudios anteriores demuestran que el microbio *Ceriporiopsis subvermispora* (hongo de la putrefacción blanca) podría utilizarse para disgregar estos duros materiales vegetales antes de aplicar el tratamiento enzimático para liberar los azúcares. Con el fin de avanzar en este conocimiento, se estudió la capacidad de este hongo para disgregar las diferentes partes del cañote de maíz y mejorar la producción de azúcar. Después de tratar el cañote de maíz con el hongo de la putrefacción blanca durante un mes, el equipo descubrió que podía extraer hasta un 30 % más de azúcar de las hojas y un 50 % más de tallos y mazorcas.

MODIFICAN UN TIPO DE BACTERIA PARA PRODUCIR COMBUSTIBLE

El Instituto Tecnológico de Massachusetts (MIT) ha manipulado los genes de la bacteria *Ralstonia Eutropha* para lograr que fabrique combustible, isobutanol, que puede sustituir a la gasolina o mezclarse con ella. Según ha informado el autor principal de esta investigación, Christopher Brigham, la Ralstonia Eutropha, cuando deja de crecer utiliza toda su energía en la fabricación de compuestos complejos de carbono.

Según Brigham, en el estado natural del microbio, cuando su fuente de nutrientes esenciales –nitrato o fosfato– está restringida y detecta que los recursos son limitados, entra en el "modo de almacenamiento de carbono" para su uso posterior. "Lo que hace es tomar cualquier fuente de carbono disponible y almacenarlo en forma de un polímero, que es similar en sus propiedades a una gran cantidad de plásticos derivados del petróleo" ha señalado. Con la anulación de unos pocos genes y la inserción de un gen de otro organismo, Brigham y sus colegas han sido capaces de redirigir la capacidad natural del microbio para producir combustible en lugar de plástico.

La intención, tras la manipulación genética, es conseguir "que el organismo de la bacteria utilice una corriente de dióxido de carbono como fuente de carbono, de manera que pueda fabricar combustible", ha apuntado en investigador en el estudio publicado en "Applied Microbiology and Biotechnology".

Así, el equipo ha centrado su trabajo en conseguir que la bacteria utilice el CO_2 como fuente de carbono. Además, la investigación destaca que, con modificaciones ligeramente diferentes del mismo microbio, se podría también convertir casi cualquier fuente de carbono, incluidos los desperdicios agrícolas o desechos municipales, en combustible útil.

"El equipo ha demostrado que, en cultivo continuo, se puede obtener cantidades importantes de isobutanol", ha apuntado Brigham, quien ha apuntado que, ahora, los investigadores tienen como objetivo la optimización del sistema para aumentar la velocidad de producción y el diseño de biorreactores para escalar el proceso a niveles industriales. Además, ha destacado que, "a diferencia de algunos sistemas de bioingeniería en que los microbios producen un producto químico deseado em su interior, pero que deben morir para recuperar el producto, la *Ralstonia Eutropha* expulsa naturalmente el isobutanol en el fluido circundante sin parar el proceso de producción".

TECNOLOGÍAS QUÍMICAS

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
TW201125969	METAL IND RES & DEV CT	Taiwan	CONTINUOUS SYSTEM AND METHOD FOR PRODUCING BIODIESEL. The present invention relates to a continuous system and method for producing biodiesel, wherein the continuous method for producing biodiesel includes the following steps: (a) performing continuous pressing-extraction using a continuous pressing-extraction module, wherein the continuous pressing-extraction module has multiple pressing-extraction devices, and at least one of the pressing-extraction devices is used for receiving liquid alcohol, and the pressing-extraction is performed with the lipid source within the pressing-extraction device to obtain a pressing-extracted liquid; (b) performing transesterification for the pressing-extracted liquid to obtain a transesterification product; and (c) separating the transesterification product to obtain biodiesel. The continuous system and method for producing biodiesel according to the present invention utilizes the continuous pressing-extraction module and method to perform pressing-extraction and then perform alcohol transesterification. The pressing-extraction and transesterification are continuous processes to simplify the process, save labor forces and cost, and reduce energy consumption.
ES2374937	BIOENERGETICA EXTREMENA 2020 S L	España	PROCEDIMIENTO PARA EL REFINADO DE BIODIESEL, INDEPENDIENTEMENTE DEL ORIGEN DE LA MATERIA PRIMA UTILIZADA EN SU FABRICACION. Procedimiento para el refinado de biodiesel, independientemente del origen de la materia prima utilizada en su fabricación
US2012219993	KOREA ADVANCED INST SCI & TECH	Corea	METHOD OF PRODUCING MICROBIAL INTRACELLULAR PRODUCTS FROM VOLATILE FATTY ACIDS. A method for producing microbial intracellular products, and more particularly a method of producing microbial intracellular products from volatile fatty acids derived from organic waste is provided. The method of producing microbial intracellular products from volatile fatty acids in a multi-stage continuous high-cell-density culture bioreactor system includes the steps of: (a) culturing microorganisms in a bioreactor for microbial growth, thereby growing the microorganisms; (b) culturing the grown microorganisms of step (a) in a bioreactor for production of microbial intracellular products, which includes a medium containing volatile fatty acids, thereby producing microbial intracellular products; and (c) recovering the intracellular microbial products from the culture medium of the bioreactor for production of microbial intracellular products.
US2012214212	HUANG CHIFU et al.	EE.UU.	EXPRESSION AND APPLICATION OF RECOMBINANT FAEES IN ALGAE AS A NOVEL METHOD TO PRODUCE BIODIESEL IN VIVO. This discovery is related to the production of bioenergy fuels in vivo, specifically related to the production of biodiesel fuels using algae. We express FAEES (fatty acid ethyl ester synthase) in algae, and use the recombinant FAEES (fatty acid ethyl ester synthase) in the algae to synthesize biodiesel, fatty acid ethyl ester or fatty acid methyl ester, in vivo from fatty acids in the presence of ethanol/or methanol.
TW201118164	UNIV NAT TAIWAN	Taiwan	METHOD AND EQUIPMENT FOR PRODUCING ESTER. The present invention relates to a trans-esterification method and equipment for producing bio-diesel, comprising: a tank in which a blended liquid including an ester material and an alcohol material is filled; and a shaft having one end where a catalyst reactor is disposed and the catalyst reactor has a solid catalyst immersing in the blended liquid.

TECNOLOGÍAS QUÍMICAS

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
US2012208247	OPENALGAE LLC et al.	EE.UU.	NON-DISPERSIVE PROCESS FOR INSOLUBLE OIL RECOVERY FROM AQUEOUS SLURRIES. The development and application of a novel non-polar oil recovery process utilizing a non-dispersive solvent extraction method to coalesce and recover oil from a bio-cellular aqueous slurry is described herein. The process could apply to recovery of algal oil from a lysed or non-lysed algae slurry, recovery of Omega fatty acids from a bio-cellular aqueous feed, recovery of Beta-carotene from a bio-cellular aqueous feed and for the removal from produced water in oil production and similar type applications. The technique of the present invention utilizes a microporous hollow fiber (MHF) membrane contactor. The non-polar oil recovery process described herein can be coupled to a collecting fluid (a non-polar solvent such as heptane, a biodiesel mixture or the previously extracted oil) that is circulated through the hollow fiber membrane. In cases where the biodiesel mixture or the previously extracted oil is used the solvent recovery step (e.g. distillation) can be eliminated.
WO2012111023	COUNCIL OF SCIENT & IND RES AN INDIAN REGISTERED BODY INC UNDER THE REGISTRATION OF SOCIETIES ACT AC et al.	India	IMPROVED PROCESS FOR THE PREPARATION OF FATTY ACID ALKYL ESTERS (BIODIESEL) FROM TRIGLYCERIDE OILS USING ECO-FRIENDLY SOLID BASE CATALYSTS. This invention relates to an improved process for the preparation of green fatty acid methyl esters (FAME; commonly called as biodiesel) from different triglyceride oils using mixed metal oxides derived from layered double hydroxides (referred here as LDHs) as reusable solid heterogeneous base catalysts. This process uses very low alcohohoil molar ratio and catalyst and/or products are easily separable after the reaction through simple physical processes. The properties of thus obtained biodiesel meet the standard biodiesel values and can directly be used as transport fuel.
US2012203018	SOLAZYME INC	EE.UU.	TAILORED OILS PRODUCED FROM RECOMBINANT OLEAGINOUS MICROORGANISMS. Methods and compositions for the production of oil, fuels, oleochemicals, and other compounds in recombinant microorganisms are provided, including oil-bearing microorganisms and methods of low cost cultivation of such microorganisms. Microalgal cells containing exogenous genes encoding, for example, a lipase, a sucrose transporter, a sucrose invertase, a fructokinase, a polysaccharide-degrading enzyme, a keto acyl-ACP synthase enzyme, a fatty acyl-ACP thioesterase, a fatty acyl-CoA/aldehyde reductase, a fatty acyl-CoA reductase, a fatty aldehyde reductase, a fatty acid hydroxylase, a desaturase enzyme, a fatty aldehyde decarbonylase, and/or an acyl carrier protein are useful in manufacturing transportation fuels such as renewable diesel, biodiesel, and renewable jet fuel, as well as oleochemicals such as functional fluids, surfactants, soaps and lubricants.
WO2012106701	NOVOZYMES AS et al.	Dinamarca	FATTY ACID ESTERIFICATION PROCESS. The invention relates to the utilisation of fatty acid feedstocks with substantial free fatty acid content in the production of biodiesel by the use of microbial enzymes.
WO2012099523	PERSTORP AB et al.	Suecia	METHOD FOR PURIFICATION OF BIODIESEL USING A SELF-CLEANING FILTER. The present invention refers to a process for purification of biodiesel by filtration through a self-cleaning filter, the purification process lasting for at least 24 hours. The purification process can typically comprise a secondary filtration process and/or biodiesel additive. The present invention further refers to a process for removing impurities, typically steryl glucosides, from the biodiesel.

TECNOLOGÍAS QUÍMICAS

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
US2012174473	GREEN FUELS LTD	Gran Bretaña	METHODOLOGY OF POST-TRANSESTERIFICATION PROCESSING OF BIODIESEL RESULTING IN HIGH PURITY FAME FRACTIONS AND NEW FUELS. A methodology for separation and subsequent handling of FAME fractions of biodiesel, comprising of the steps, providing a biodiesel containing several different FAME fractions mixed together, the biodiesel being at a first temperature wherein at the first temperature none of the FAME fractions of the biodiesel have crystallized; bringing the biodiesel to a first crystallizing temperature, wherein when the biodiesel reaches the first crystallizing temperature, a first FAME fraction remains in a non-crystallized, liquid phase while the remaining FAME fractions crystallize; and separating the liquid first FAME fraction from the remaining crystallized FAME fractions.
DE102010055399	SUED CHEMIE AG	Alemania	USE OF A CATALYST COMPRISING A MIXED OXIDE IN A BASIC HETEROGENEOUS CATALYZED CHEMICAL REACTION E.G. TRIGLYCERIDE TRANSESTERIFICATION TO PREPARE BIODIESEL, WHERE THE CATALYST IS OBTAINED BY CALCINING A BILAYER METAL HYDROXIDE. Use of a catalyst (I) comprising a mixed oxide in a basic heterogeneous catalyzed chemical reaction is claimed, where (I) is obtained by calcining a bilayer metal hydroxide (II). Use of a catalyst (I) comprising a mixed oxide in a basic heterogeneous catalyzed chemical reaction is claimed, where (I) is obtained by calcining a bilayer metal hydroxide of formula ([(M 1> +>) y(M 2> +>) 1 - y - x(M 3> +>) x(OH) 2](x-y) +>(A) (x - y) / n(n ->).mH 2O) (II). M 2> +>at least a divalent inorganic cation comprising Mg 2> +>, Ca 2> +>, Sr 2> +>, Ba 2> +>, Zn 2> +>, Cd 2> +>, Cu 2> +>, Ni 2> +>, CO 2> +>, Fe 2> +>, Pb 2> +>or Sn 2> +>; M 1> +>at least one monovalent inorganic cation comprising alkali metals +>, Cu +>or Ag +>; M 3> +>at least one trivalent rare earth metal cation or a mixture of at least one trivalent rare earth metal cation and at least one another trivalent inorganic cation comprising Al 3> +>, B 3> +>, Ga 3> +>, Cr 3> +>, Mo 3> +>, In 3> +>or Fe 3> +>; A : an inorganic or organic anion; either x : 0.05-0.95; and y : 0-0.95; or x+y : = 1; n : 1-4; and m : 0.1-2. Independent claims are included for: (1) the preparation of (II) comprising coprecipitation of M 3> +>-metal salts, M 2> +>-metal salts and/or M 1> +>metal salts from a aqueous solution using a precipitating agent, which is potassium carbonate or a mixture of potassium carbonate and potassium hydroxide; (2) the bilayer metal hydroxide (II) with a Brunauer-Emmett-Teller surface of 110-300 m 2>/g; and (3) the mixed oxide catalyst (I).
KR20120055240	UNIV CHOSUN IACF	Corea	LIPASE FROM RALSTONIA SP. CS274 FOR PRODUCING BIODIESEL. lipase which is useful for boidiesel production which is secreted by Ralstonia Calcoaceticus is provided to catalyze transesterification. CONSTITUTION: A lipase which is useful for boidiesel production which is secreted by Ralstonia Calcoaceticus is produced by strains(the CS274 strain: accession number KCTC 18201p, and 2010.11.15) in Ralstonia which has16S rRNA gene sequences displayed by sequencing table 1(SEQ ID NO:1). A molecular weight by gel electrophoresis of enzyme is 31 kDa. The most optimum pH is pH 8.0-9.0, and most stable at pH 8.0-11.0. An optimum activity temperature is at 45-55 deg. Celsius and the lipase activity is increased under presence of Mg and Ca.

TECNOLOGÍAS QUÍMICAS

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
US2012167454	UOP LLC	EE.UU.	PRETREATMENT OF FATS AND OILS IN THE PRODUCTION OF BIOFUELS. Methods are disclosed for the treatment of feedstocks comprising a fatty acid- or triglyceride-containing component to remove contaminants that are detrimental to the conversion of such feedstocks to hydrocarbons, and especially biofuel fractions such as diesel or aviation biofuels. Contaminants contributing to the presence of trace elements in animal fats and/or plant oils, as components of feedstocks, hinder the ability to catalytically convert these feedstocks, for example by hydroprocessing, to biofuels.
KR20120002022	KOREA ENERGY RESEARCH INST	Corea	BIODIESEL FEEDSTOCK OIL PRODUCTION METHOD AND BIODIESEL PRODUCTION METHOD USING THE BIODIESEL FEEDSTOCK OIL. A producing method of raw biodiesel oil and a producing method of biodiesel using the raw biodiesel oil are provided to remove phospholipids from the raw biodiesel oil by performing a pre-treatment process without a degumming process. CONSTITUTION: A producing method of raw biodiesel oil comprises the following steps: removing solids from oil obtained by oil-pressing biomasses containing fat(S300); esterifying the oil without the solids in the presence of an acid catalyst and alcohol without performing a degumming process(S302); removing phospholipids and free fatty acids from the oil(S304); dissolving the alcohol contained in the oil with cleaning water; separating the oil into an upper alcohol layer and a lower oil layer; and removing the alcohol and the moisture from the oil layer using a decompress-evaporating process.
US2012157699	ARISDYNE SYSTEMS INC	EE.UU.	PROCESS FOR PRODUCTION OF BIODIESEL. A multi-stage reactor system for preparing biodiesel is used to increase efficiency and yield and reduce impurities. A three-stage transesterification reaction for preparing biodiesel can include one high-shear cavitation reactor and two low-shear cavitation reactors, preferably in series, and optionally one or more separation vessels for removing waste and recycling triglyceride feedstock, catalyst and alcohol to the high-shear cavitation reactor.

BIODIESEL CON RESIDUOS DE PLATANERAS EN CANARIAS

El Instituto Tecnológico de Canarias (ITC) y la Fundación Disa firmaron un acuerdo de colaboración por el que se concederán tres becas de investigación para proyectos relacionados con nuevas tecnologías en bioenergía. El más destacado es el que evaluará la posibilidad de generar biodiésel de segunda generación (Bio-DME, biodimetiléter) a partir de residuos de plataneras. Esta tecnología está en plena fase de investigación, aunque hay países, como Suecia, que ya han puesto varios camiones en ruta en período de pruebas con Bio-DME a partir de residuos de la industria papelera.

Se trata de tres proyectos de I+D+i propuestos por ambas instituciones cuyo objetivo es estudiar nuevas posibilidades dentro del ámbito de las energías renovables. Se da la particularidad de que las tres becas están vinculadas a bionergía: biogás, cultivo de microalgas de alto rendimiento para producir biocombustibles y biodiésel de segunda generación Bio-DME (biodimetiléter).

El autoabastecimiento energético de Canarias ha pesado especialmente a la hora de escoger los proyectos, de ahí que el relacionado con el Bio-DME tenga en cuenta los residuos de plataneras, tan abundantes en el archipiélago canario, como materia prima para producir el biocarburante. Desde el ITC, explican que "la importancia de este proyecto radica en que la Unión Europea está estudiando en la actualidad la posibilidad de incluir al Bio-DME dentro del mix energético europeo para 2030. De ser así, y si la investigación concluye que es posible generar este biocombustible a partir de residuos de plataneras, Canarias podría convertirse en una importante industria productora de Bio-DME".

ANÁLISIS DE CICLO DE VIDA APLICADO AL USO DE BIODIÉSEL EN AUTOBUSES URBANOS

Un grupo de investigación del INSIA, uno de los centros de I+D+i de la Universidad Politécnica de Madrid, ha realizado un Análisis de Ciclo de Vida aplicado al uso de biodiésel en autobuses urbanos para analizar y cuantificar la energía consumida primaria y fósil, así como las emisiones de gases de efecto invernadero. Los resultados podrán utilizarse para orientar la implementación de políticas gubernamentales en materia medioambiental relacionada con el transporte por carretera.

La investigación se ha centrado principalmente en dos tecnologías de post-tratamiento de gases de escape: la reducción catalítica selectiva con urea (SCR+Urea) y la recirculación de gases de escape con filtro de partículas (EGR+DPF).

En este marco de la introducción de biocombustibles y tecnologías de post-tratamiento de gases de escape en el sector del transporte por carretera, se realizó un Análisis de Ciclo de Vida sobre dos autobuses pertenecientes a la Empresa Municipal de Transportes de Madrid, cada uno con su respectiva tecnología de post-tratamiento de gases de escape, en combinación con el uso de los tres tipos de combustibles, como son gasóleo, B20 (20% de biodiésel y 80% de gasóleo) y B100 (100% biodiésel).

Entre los principales resultados, se encontró que el uso de este tipo de combustible reduce las emisiones de gases de efecto invernadero, pero el consumo de energía primaria se ve incrementado. Sin embargo, sólo un bajo porcentaje de esta energía corresponde a energía fósil, ya que el biodiésel se obtiene a partir de recursos no fósiles como las plantas oleaginosas y/o grasas animales. Asimismo, se observó un incremento en las emisiones de óxidos de nitrógeno y una reducción de las partículas, tendencia que se acrecienta con el aumento de la mezcla.

La totalidad de energía fósil consumida por el uso de biodiésel se da en los procesos de cultivo y transesterificación, por lo que en el primero se deberían buscar alternativas para reducir el consumo de fertilizantes, que requieren de una importante cantidad de energía fósil en su producción y, en el segundo, se podrían implantar sistemas de cogeneración que utilicen fuentes de energía renovable en las plantas de transesterificación para aumentar su eficiencia energética.

LA UNIVERSIDAD DE MURCIA OBTIENE BIODIÉSEL MEDIANTE LA QUÍMICA VERDE

La Universidad de Murcia ha desarrollado una investigación que permite la obtención de biodiésel en una sola etapa y de modo continuo mediante la combinación de biocatalizadores y disolventes verdes no acuosos, como son los líquidos iónicos (ILs) y el dióxido de carbono supercrítico ($scCO_2$).

Esta aplicación de la tecnología enzimática en disolventes verdes no acuosos transforma los aceites vegetales o grasas animales de bajo coste en biodiésel.

Las enzimas recubiertas con ILs se localizan dentro de una columna

de acero y el aceite, el metanol y el dióxido de carbono son suministrados por bombas de alta presión, alimentando la columna de modo continuo.

Las características del $scCO_2$ solubiliza ambos sustratos en una sola fase dentro del reactor y la acción biocatalítica permite la total transformación del aceite vegetal en biodiésel. Finalmente, el producto se obtiene de forma pura a la salida del reactor tras la correspondiente despresurización.

La Universidad de Murcia viene trabajando desde hace diez años en la aplicación de los biocatalizadores en procesos de Química Verde –filosofía química para reducir el uso y generación de sustancias peligrosas y contaminantes– con ILs y $scCO_2$ para desarrollar procedimientos de interés industrial.

En este sentido, los resultados de la investigación han permitido ser pioneros en la aplicación de las enzimas a los sistemas bifásicos ILs/$scCO_2$, obteniéndose resultados espectaculares en cuanto a la estabilidad y actividad catalítica de dichas enzimas, y en la obtención directa y continua de productos quirales puros.

DESARROLLO DE NUEVOS CATALIZADORES HÍBRIDOS PARA LA PRODUCCIÓN DE BIODIÉSEL

Científicos del Instituto de Tecnología Química, centro mixto de la Universitat Politécnica de Valencia y el CSIC, junto con con investigadores de la Universidad de Calabria (Italia), han desarrollado un nuevo tipo de catalizadores híbridos-orgánicos a través de la encapsulación de enzimas en el seno de nanoesferas huecas.

La parte orgánica de la nanoesfera cuenta con una lipasa aislada del hongo *Rizhomucor miehei* como enzima. La nanoesfera está cubierta por una cáscara porosa de sílice inorgánica que aísla, protege y estabiliza las moléculas bioactivas del interior. Además, la cantidad de lipasa y sílice utilizadas durante el procedimiento de inmovilización se han optimizado con el fin de obtener un biocatalizador heterogéneo, activo y estable. Estas nuevas nanoesferas híbridas han sido probadas para catalizar reacciones químicas típicas de la producción de biodiésel, y han sido capaces de conservar su actividad después de cinco ciclos de reacción, lo que demuestra que su eficacia catalizadora es superior a la de la enzima libre.

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