VT SECTOR BIOMASA

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Biomasa, la renovable con mayor número de empleos por MW en 2011 en España

Una de las evidencias que corrobora el Estudio del impacto macroeconómico de las energías renovables en España en 2011, elaborado por la Asociación de Productores de Energías Renovables (APPA), es que la biomasa y el biogás son las tecnologías que más empleo generan por megavatio (MW) instalado, siendo una de las pocas renovables que creció en este aspecto y sumó 22.3 trabajadores por MW. La que más se acerca, la termosolar, alcanzó 21 con 400 MW más. La cruz de la moneda bioenergética la ofrecen los biocarburantes, con 1375 empleos perdidos en 2011.

Entre los datos que aporta el estudio de APPA resaltan los 10244 millones de contribución al PIB y 2101 millones ahorrados en importación de combustibles, pero hay otro de cariz socio-laboral que tiene aún más notoriedad, ya que demuestra que el sector ha generado nuevos puestos de trabajo (5983 exactamente) por primera vez desde el año 2008, repunte que se produjo, según APPA, por los empleos inducidos debidos a la construcción de nuevas centrales. No todas las tecnologías crecieron en este apartado, tan sólo la biomasa (sumada al biogás), la termosolar y la fotovoltaica ganaron empleo en 2011.

En relación a los biocarburantes, en las conclusiones se afirma que el mayor consumo de bioetanol y biodiésel no se ha traducido en una mayor actividad sino en el desarrollo de importaciones masivas, de modo que i estos productos no se generan en España no se creará empleo nacional, se acabará con la industria y simplemente se sustituirá una dependencia de las importaciones de petróleo por la dependencia de las importaciones de biocarburantes.

APPA, sin embargo, recuerda que la utilización de biocarburantes en el transporte supone importantes ahorros de emisiones de CO_2 y si se produjesen en mayor medida en las plantas españolas se equilibraría aún más la balanza comercial. El estudio cuantifica en 4.5 millones de toneladas el CO_2 que no llegó a la atmósfera por el uso de biocarburantes. Añaden, además, que se cumplieron los objetivos marcados de consumo, algo que no se puede decir de la biomasa y el biogás, ya que junto a la minihidráulica quedaron por debajo de sus objetivos de potencia, con un déficit de 1278 MW.

A pesar de todo, la bioenergía sigue sin consolidar su potencial de creación de empleo al no cumplirse sus expectativas de crecimiento. Hace algo más de un año, antes de que aparecieran la moratoria y las tasas a las renovables, también APPA presentó un informe de Analistas Financieros Internacionales (AFI) en el que se concluía que una actualización del marco retributivo de la biomasa y el biogás eléctricos permitiría crear casi 47300 puestos de trabajo en España y atraer 3854 millones de euros en inversiones privadas, con un beneficio económico adicional de 46 millones de euros para el Estado.

SUMARIO

A nivel mundial, otros informes multiplican estas posibilidades de creación de empleo. Es el caso de Empleos verdes: Hacia el trabajo decente en un mundo sostenible y con bajas emisiones de carbono, elaborado por el Programa de las Naciones Unidas para el Medio Ambiente (PNUMA). En él se constataba que de los 20 millones de empleos que pueden alcanzar las renovables en 2030, 12 millones, más de la mitad, corresponderían a los biocombustibles. En este caso hacía también un llamamiento a mejorar sustancialmente las condiciones laborales en las que se producen esos biocombustibles en algunas partes del mundo, especialmente en los países en desarrollo.

FUENTE: *Energías Renovables*, Diciembre 2012

Análisis de patentes

En el cuarto trimestre de 2012 se han identificado en la base de datos WPI (World Patent Index) 735 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 45% de las referencias encontradas están relacionadas con tecnologías termoquímicas y el 40% con bioquímicas. El 15% restante se refiere a tecnologías químicas. La tecnología de digestión anaeróbica es la que cuenta con mayor número de resultados.

TABLA 1. Número de familias de patentes clasificadas por tecnologías

TIPOS DE TECNOLOGÍAS DE CONVERSIÓN DE LA BIOMASA	4º TRIM. 2012
Tecnologías termoquímicas	328
Combustión directa	172
Gasificación	122
Pirólisis	34
Tecnologías bioquímicas	297
Digestión anaeróbica	182
Fermentación de azúcares	115
Tecnologías químicas (transesterificación, Fischer-Tropsch síntesis de metanol)	110
Nº TOTAL FAMILIAS DE PATENTES	735

En la Tabla 2 se muestran los países líderes. Cabe destacar que el 32% de los documentos identificados se solicitaron en China, le siguen, las solicitudes internacionales de patente (PCT) con el 24% y EE.UU. (20%). A continuación destacan Japón (7%) y Corea (4%).

TABLA 2. Ranking por países

	PAÍS	Nº REFERENCIAS
1	China (CN)	189
2	Patentes PCT (WO)	142
3	EE.UU. (US)	115
4	Japón (JP)	40
5	Corea (KR)	25
6	Francia (FR)	13
7	Alemania (DE)	11
8	Patentes Europeas (EP)	11
9	India (IN)	7
10	Canadá (CA)	6

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, en la medida de lo posible, 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
US2012312206	DORNER ROBERT W et al.	EE.UU.	METHOD FOR REDUCING SLAG IN BIOMASS COMBUSTION. Biomass is quickly becoming an important feedstock for energy generation in power plants. Due to their composition and nature, certain biomass fuels contribute to slagging, fouling, and corrosion. This invention provides a novel method of reducing or suppressing slag deposition and/or cleaning deposited slag in energy production processes in which potassium-containing solid fuels are combusted. Besides acting as a slag suppressant, further advantages of this invention are that the additive has no detrimental side-effects on capital equipment, increases slag friability, decreases slag fouling rate, reduces heat transfer corrosion as well as increasing the lifetime of the selective catalytic reduction catalyst.
FR2975463	WEISS FRANCE	Francia	DISPOSITIF ET PROCEDE DE REGULATION DE LA COMBUSTION D'UNE CHAUDIERE A BIOMASSE. L'invention concerne un dispositif de régulation de la combustion d'un système de chauffage à combustible biomasse, ledit dispositif de régulation étant remarquable en ce que qu'il comprend au moins un régulateur d'humidité, une sonde d'humidité mesurant l'humidité du combustible biomasse et un compteur de calories mesurant la puissance réelle de ladite chaudière, ledit régulateur d'humidité étant un automate programmable apte à intégrer les valeurs mesurées par ladite sonde d'humidité et ledit compteur de calories pour réguler de manière auto adaptative au moins les valeurs de paramètres de combustion afin de garantir une combustion optimale pour une puissance de consigne donnée et quelque soit l'humidité du combustible biomasse.; L'invention concerne également procédé de régulation de la combustion mettant en oeuvre ledit dispositif.
EP2524957	STIRLING DK APS	Dinamarca	BIOMASS GASIFICATION SYSTEM WITH AN UPDRAFT GASIFIER. The invention relates to a biomass gasification system to generate gasifier product gas to be burned in a combustion unit, which system comprises a gasifier with a first inlet for biomass, and a second inlet for gasification agent and an outlet for the generated gasifier product gas, and a combustion unit with an inlet for the gasifier product gas from the gasifier, and at least one pipe to transport the gasifier product gas from the outlet of the gasifier to the inlet of the combustion unit, wherein the gasifier is an updraft gasifier with its outlet for the gasifier product gas at the top end of the gasifier, and that the at least one pipe is declined from the gasifier to the combustion unit to transport fractions of tar in the gasifier product gas towards the combustion unit; and preferred into the combustion unit, and that the combustion unit is constructed to heat a transfer medium.

COMBUSTIÓN DIRECTA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
WO2012158115	BIOENDEV AB et al.	Suecia	MOISTURE CONTROL OF A PREDRYING STEP IN A TORREFACTION PROCESS. There is provided a method of torrefaction of biomass and combustion of generated gases, comprising the steps of: a) drying biomass having an average moisture content of at least 20 %, such as at least 25 % (w/w) to obtain a dried biomass having an average moisture content of 3-15 % (w/w) and a first gas product; b) further drying the biomass from step a) to obtain a dry biomass and a second gas product; c) heating and torrefying the biomass from step b) to obtain torrefied material and a third gas product; and d) collectively combusting of the second and the third gas product without the first gas product.
WO2012156588	FORTUM OYJ et al.	Finlandia	A METHOD AND AN APPARATUS FOR PRODUCING ENERGY BY RECYCLING MATERIALS DURING A FUEL COMBUSTION PROCESS. The present invention relates to a method for producing energy by recycling materials during a fuel combustion process, wherein the fuel combustion process comprises combusting fuel introduced into the fuel combustion process. Further,the invention relates to an apparatus for producing energy by recycling materials during a fuel combustion process.
WO2012150868	STEWART JASON JOREN JENS	Nueva Zelanda	A COMBUSTION SYSTEM. This invention relates to a combustion system. The combustion system includes a fireplace which has a fire base, a primary combustion zone for pyrolysising and/or combusting a biomass fuel, and a secondary combustion zone for combusting gases and/or particulate matter produced from the pyrolysis and/or combustion of the biomass fuel. The combustion system also includes an exhaust flue, the exhaust flue extending to a position near to, or adjacent, the secondary combustion zone and/or the fire base. The invention may be particularly suitable for use in relation to wood burners, either by retrofitting to existing wood burners or by incorporating into new wood burners.
DE102011017125	MEIER HEINZ	Alemania	METHOD FOR COMBUSTING BIOMASS IN INCINERATOR FOR GENERATING ENERGY, INVOLVES CRUSHING AND DRYING RENEWABLE RAW MATERIALS USING SPECIFIED DRYING HEAT IN DRYING PLANT BEFORE FEEDING RAW MATERIALS TO COMBUSTION CHAMBER. The method involves feeding renewable raw materials of an incineration plant into a heating circuit or a power converter. The renewable raw materials are crushed and dried using specified drying heat in a drying plant before feeding the raw materials to a combustion chamber, where the raw materials are corn, grass, cereals and wood. The drying heat is obtained from combustion hot flue gases. The raw materials are harvested with about 75-80 percent water content, where the harvested raw materials are utilized as animal feed, and in biogas plants.
CA2738432	EQUIP D ERABLIERE CDL INC	Canadá	MAPLE SYRUP EVAPORATOR WITH BIOMASS BURNER. A burner using biomass combustibles, namely pellet fuel, for a maple syrup evaporator. Compared to wood or oil burning heat sources, pellet fuel is less costly, burns more efficiently and generates the heat necessary to properly evaporate maple sap. The burner includes a burn pit defining a plurality of holes for allowing air to communicate between a combustion chamber and a primary air plenum formed between a base and an underside of the burn pit. An air supply conduit supplies air supply to the primary air plenum. A fuel conduit in communication with the combustion chamber supplies the pellet fuel for combustion within said burn pit. A secondary plenum in pneumatic communication with the primary air plenum receives and cools a portion of the primary air supply. A plurality of injectors in communication with the secondary plenum inject the cooled air into the combustion chamber.

COMBUSTIÓN DIRECTA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
DE102011018867	BOSCH GMBH ROBERT	Alemania	COMBUSTION CHAMBER SYSTEM AND METHOD FOR COMBUSTING BIOMASS SOLID FUEL. The system a primary combustion chamber for gasifying solid biomass fuel to fuel gas, where the primary combustion chamber is arranged downstream to a secondary combustion chamber for combustion of the fuel gas. The primary combustion chamber and the secondary combustion chamber are interconnected with each other via an orifice such that the fuel gas in the primary combustion chamber is introduced through the orifice eccentrically into the secondary combustion chamber. The secondary combustion chamber comprises an inlet opening for supply of combustion air. An independent claim is also included for a method for combusting solid biomass fuels in a combustion chamber system.
WO2012137895	HITACHI LTD et al.	Japón	APPARATUS AND METHOD FOR PRODUCING SEMI-CARBONIZED FUEL OF BIOMASS, AND POWER GENERATION SYSTEM USING SEMI-CARBONIZED FUEL. Provided are an apparatus and a method for producing a semi-carbonized fuel of a biomass, which do not require an external heat source and are capable of suppressing adhesion of tar, condensed water or the like to a pipe. This apparatus for producing a semi-carbonized fuel of a biomass is provided with: a drying device which heats and dries a biomass; a thermal decomposition device which thermally decomposes the biomass dried by the drying device; and a combustion device which supplies heat to the drying device and the thermal decomposition device for heating. The thermal decomposition device is configured so that some of a combustion exhaust gas generated in the combustion device is supplied thereto, the biomass is heated and thermally decomposed by being directly mixed with the supplied combustion exhaust gas, and a mixed gas of the thus-generated thermal decomposition gas and the combustion exhaust gas used for heating is supplied to the combustion device. The combustion device is configured so that an air for combustion is supplied thereto and the mixed gas supplied thereto is combusted, thereby generating the combustion exhaust gas.
US2012240831	MARTINS FERREIRA GUILHERME et al.	Brasil	SYSTEM AND PROCESS FOR THE COMBUSTION OF SOLID FUELS. A system that provides for the efficient combustion of solid fuels is disclosed. The system includes a combustion chamber, a solid fuel dosing system for determining an amount of solid fuel to supply to the combustion chamber, a solid fuel conveying air blower for conveying solid fuel from the solid fuel dosing system to the combustion chamber, and an air combustion fan for supplying air to the combustion chamber via air conveying piping. The system may optionally further include a measurement and auxiliary fuel control system for determining an amount of auxiliary fuel to supply to the combustion chamber. Combustion of the auxiliary fuel raises a temperature of the combustion chamber to a level suitable for combustion of the solid fuel. The combustion chamber may be mounted on a displacement trolley.

GASIFICACIÓN

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
WO2012162842	NEXTERRA SYSTEMS CORP et al.	Canadá	SYNGAS GENERATOR INCORPORATING REGENERATIVE THERMAL CRACKER. An apparatus for generating syngas comprises a gasifier, which h may be a bottom-fed updraft-type gasifier and a thermal cracker in fluid communication with the gasifier. The thermal cracker comprises a housing which encloses a media bed and a reaction chamber. The media bed comprises several portions and is reconfigurable to transfer heat from treated syngas exiting the reaction chamber to raw syngas entering the reaction chamber. The thermal cracker includes a reconfigurable gas supply system comprising a valveless distributor and is arranged to provide a path for carrying syngas from an inlet port through one of the plurality of portions of the media bed to the reaction chamber and from the reaction chamber through a different one of the plurality of portions of the media bed to an exit port. A first one of the portions of the media bed can be positioned to cool treated syngas while carrying the treated syngas to the exit port. The first one of the portions can be reconfigured to carry raw syngas into the reaction chamber while heating the raw syngas.
US2012311991	GEN ELECTRIC	EE.UU.	BIOFILTER ASSEMBLIES FOR BIOMASS GASIFICATION SYSTEMS. Biomass gasification systems including a biofilter assembly adapted to be disposed within a filter unit of a biomass gasification system are provided. The biofilter assemblies may be adapted to filter particulate matter from a producer gas flowing through the filter unit while allowing a remainder of the producer gas to pass through the biofilter assembly. The biofilter assembly may include a support structure and a biofilter disposed on the support structure and including a biomaterial adapted to be gasified in a biomass gasification reactor of the biomass gasification system.
US2012311931	GOOD EARTH POWER CORP	EE.UU.	TUNABLE CATALYTIC GASIFIERS AND RELATED METHODS. The present disclosure provides tunable catalytic gasifier systems suitable for gasifying coal, biomass, and other fuel sources. The gasifier reactors of the disclosed systems may be heated by, e.g., a catalytic tube or other jacket that generates heat by catalytically combusting syngas, which syngas may be syngas produced by the gasifier system.
CN101251265	GUANGZHOU YULIAN MACHINERY & ELECTRONIC CO LTD	China	BIOMASS GASIFICATION STOVES WITH MULTIPLE FEED INLET. The present invention discloses a biomass gasifying stove with multiple material feeding inlets, comprising a gasifying stove body, material feeding mechanisms, an air inlet device, an ignition device, a residue discharging mechanism, a combustible gas dust removing mechanism and a combustible gas outlet, wherein the material feeding mechanism is arranged over the ignition device; the residue discharging mechanism is arranged below the ignition device; two or more material feeding mechanisms are arranged on the upper side of the gasifying stove and are communicated with a furnace chamber, and are arranged on corresponding positions of the stove wall vertical height according to the characteristics of different biomass materials. A plurality of biomass material feeding holes are arranged according to the characteristics of the different biomass materials so as to use materials with one or a plurality of different types or different water content on agasifying stove separately or synchronously, thereby enlarging the application arrange of the biomass materials.

GASIFICACIÓN

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
US2012286211	COOL PLANET BIOFUELS INC	EE.UU.	PROCESS FOR BIOMASS CONVERSION TO SYNTHESIS GAS. Biomass is processed through a biomass fractioning system that creates, through the application of selective temperature ramps and pressure shocks, a series of useful volatile components and BMF char, wherein the BMF char is reacted sacrificially with any one stream of methane, carbon dioxide, steam or oxygen to create highly pure synthesis gas with a controllable range of compositions. The resulting synthesis gas may be used in any desired manner, including conversion to oxygenates such as methanol and dimethyl ether, and to hydrocarbons.
WO2012152638	BILFINGER BERGER IND SERVICES GMBH et al.	Alemania	METHOD AND DEVICE FOR PRODUCING SYNGAS FROM REACTANTS WHICH CONTAIN CARBON, BY MEANS OF GASIFICATION IN A FLUIDISED BED REACTOR. To produce syngas from reactants that contain carbon, by means of gasification in a fluidised bed reactor, firstly a first, low-lying fluidised bed region of the fluidised bed reactor is heated to a first gasification temperature by an external supply of energy. This low-lying fluidised bed region is received in a first, low-lying fluidised bed housing section of a housing of said fluidised bed reactor. The first gasification temperature is below a softening temperature of the reactants or their ash, and heating to this first gasification temperature is carried out using a first heating device. A second reactor housing section, which is higher than the first fluidised bed region, is heated to a second gasification temperature by an external supply of energy, and heating to this second gasification temperature is carried out using a second heating device. The reactants are supplied to the first fluidised bed region by means of a supply device, and a discharge device is used to discharge the syngas which has been produced. The invention relates to a resulting method and device for producing syngas from reactants that contain carbon, wherein undesired adhesion is reduced or, as far as possible, completely eliminated at standard gasification efficiency, even when using reactants that have critical softening points.
RU2464295	ROSSIJSKAJA FEDERATSIJA OT IM KOTOROJ VYSTUPAET MIN PROMY I TORGOVLI	Rusia	METHOD FOR THERMOCHEMICAL PROCESSING OF BIOMASS TO PRODUCE SYNTHESIS GAS. FIELD: power engineering. ^ SUBSTANCE: method consists in loading of ground raw materials - biomass - to a thermochemical reactor, biomass pyrolysis without air access to temperature of thermal decomposition to produce appropriate products and synthesis gases discharged from a reactor to a circulating flow and to a load. The pyrolysis process in the reactor is carried out with simultaneous introduction of coolant in it based on gaseous products heated to pyrolysis temperature, such as synthesis gases drained from a circulating flow, at the same time coolant used in process of pyrolysis additionally contains water vapours and/or carbonic acid, the latter of which or water is introduced into a flow of gaseous products prior to their heating to pyrolysis temperature. Amount of specified products introduced into a gaseous flow corresponds to (0.2-1.5)G, where G is the amount of loaded biomass into a thermochemical reactor. The process of biomass processing in the reactor is carried out at the pyrolysis temperature of 600C-1100C and pressure of gaseous products equal to 0.1-10 MPa. Ground raw materials - biomass - may be wood chips or kindlings with fraction size from 2-15 mm, or wood flour with particle size of not more than 0.15 mm. Carbonic gas and water used in a coolant have ratio of 1:1. ^ EFFECT: method improvement. ^ 3 cl, 1 dwg

GASIFICACIÓN

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
EP2514806	UNIV T PRZYRODNICZY IM JANA I JEDRZEJA SNIADECKICH W BYDGOSZCZ	Polonia	THE WAY OF THERMAL UTILIZATION OF MIXTURE OF DRIED SEWAGE SEDIMENT WITH BIOMASS THROUGH GASIFICATION. The way of thermal utilization of dried sewage sediment originated from dried sewage sediment and biomass through gassing the mixture of renewable fuel and dried sewage sediment and wood wastes, willow straw, and mallow characteristic of that dried sewage sediment constitutes from 1to 50 % and wastes 1 to 50% of mass.
US2012258021	RENEWABLE OIL INTERNATIONAL LLC	EE.UU.	METHOD AND APPARATUS FOR A COMBINATION MOVING BED THERMAL TREATMENT REACTOR AND MOVING BED FILTER. A moving bed gasification/thermal treatment reactor includes a geometry in which moving bed reactor particles serve as both a moving bed filter and a heat carrier to provide thermal energy for thermal treatment reactions, such that the moving bed filter and the heat carrier are one and the same to remove solid particulates or droplets generated by thermal treatment processes or injected into the moving bed filter from other sources.
EP2505632	E ON RUHRGAS AG	Alemania	METHOD AND ASSEMBLY FOR CREATING FUEL GAS AND ELECTRICAL ENERGY. The method involves producing product gas in a biomass gasification device (1) from woody biomass. The product gas in a methanation reactor (3) is converted into methane-containing fuel gas in an exothermic methanation process. Bio-synthetic natural gas is produced by removing carbon dioxide from the methane-containing fuel gas. Waste heat produced during the exothermic process in the methanation reactor is utilized in a gas- and steam turbine power plant (2) for reheating water vapor that drives a steam turbine (9) of the power plant. An independent claim is also included for a device for producing fuel gas and electrical energy.

PIRÓLISIS

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
WO2012166771	UNIV WASHINGTON STATE RES FDN et al.	EE.UU.	PROCESSING BIOMASS USING THERMOCHEMICAL PROCESSING AND ANAEROBIC DIGESTION IN COMBINATION. Systems and methods for integrating thermo chemical processing of biomass and anaerobic digestion are provided. Light oxygenated organic compounds are produced as byproducts of thermochemical biomass processing e.g. by torrefaction and/or pyrolysis, and are converted to methane by anaerobic digestion. Thermochemical processing units may or may not be co-located with the anaerobic digestion units, with co-location providing benefits for e.g. rural agricultural enterprises.
RO127634	VOLCOVINSCHI GHEORGHE	Rumania	PROCESS AND INSTALLATION FOR PROCESSING WOOD WASTES AND BIOMASS. The invention relates to a process for processing wood wastes and biomass and to an installation for applying the process. The claimed process consists in heating the starting material at a temperature of 400...500 DEG C thereby resulting a calcined material which is granulometrically classified, the coarse charcoal fraction being used as fuel and the fine fraction is treated and conditioned in order to be used as natural and neutralizing fertilizer for acidic soils. The claimed installation comprises inclined or vertical calcining columns, provided with fire-boxes, fixed on a shaft, the fuel necessary to heat and calcine is burned in a heating chamber, the resulting charcoal is removed by means of a conveyor, the exhaust gases, with a temperature of about 300 DEG C, being treated for recovering the heat energy.

PIRÓLISIS

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
US2012289440	AVELLO BIOENERGY INC	EE.UU.	METHODS, APPARATUS, AND SYSTEMS FOR INCORPORATING BIO-DERIVED MATERIALS INTO OIL SANDS PROCESSING. Methods, processes, apparatus, systems, and compositions are disclosed for improving the sustainability of oil sands processing. In some embodiments, bitumen is combined with biodiluent comprising one or more liquid pyrolysis fractions obtained from pyrolyzing biomass and collecting multiple liquid fractions. The bitumen may be any source of bitumen, such as bitumen obtained from oil sands. In some embodiments, a water-rich pyrolysis liquid displaces water use in an oil sands process. The water-rich pyrolysis liquid may be used for primary separation of bitumen from oil sands or for hydrotransport, for example. Also, biochar produced from biomass pyrolysis may be introduced to an oil sands tailing pond with various benefits. Water may be recycled from a tailing pond. Integration of a pyrolysis and separation process into an oil sands refining process reduces the overall greenhouse-gas emissions on a well-to-refined product basis by 10-70% or more. Various compositions and products are also disclosed.
US2012272565	KIOR INC	EE.UU.	BIOMASS PRETREATMENT FOR FAST PYROLYSIS TO LIQUIDS. Aspects of the present invention relate to methods, systems, and compositions for preparing a solid biomass for fast pyrolysis. The method includes contacting the solid biomass with an inorganic material present in an effective amount for increasing fast pyrolysis yield of an organic liquid product (e.g., bio-oil). In various embodiments, the inorganic material is selected from the group consisting of aluminum sulfate, aluminum nitrate, aluminum chloride, aluminum hydroxide, ammonium hydroxide, magnesium hydroxide, potassium hydroxide, and combinations thereof.

CALEFACCIÓN MUNICIPAL A PARTIR DE LA VALORIZACIÓN ENERGÉTICA DE LA BIOMASA

Móstoles, mediante un convenio de colaboración con Móstoles District Heating S.L. (MDH), implantará una red de agua caliente a partir de la valorización energética de biomasa y distribuirá calefacción y agua caliente sanitaria a casi 6000 viviendas del municipio con el objetivo de reafirmar su compromiso hacia una mayor eficiencia energética. La biomasa a utilizar será procedente de los residuos de poda de parques y jardines municipales.

La iniciativa se desarrollará en diversas fases temporales. En una primera, la actuación comprenderá hasta 2160 viviendas y, en sucesivas etapas, se pretende completar hasta un total de 5698. El convenio tendrá una validez de 20 años.

Actualmente, el consumo de gasóleo en la calefacción de dichas comunidades supone la emisión a la atmósfera de más de 7000 toneladas anuales de CO_2. Con este proyecto se podría ahorrar la emisión de hasta 18000 toneladas anuales. Además, las previsiones de alza de los precios del gasóleo por parte de las agencias internacionales hacen económicamente muy recomendable su sustitución. Se estima que se podría alcanzar un ahorro de más del 25% de los gastos de calefacción y agua caliente sobre los importes actuales.

La distribución de la energía a los edificios está previsto que se realice a través de una red de tuberías de distribución de agua caliente que discurrirá por la vía pública. La transferencia térmica entre la red de distribución y los consumidores se realizará a través de subestaciones.

SISTEMA EFICIENTE PARA HORNOS DE PANADERÍAS CON QUEMADOR DE BIOMASA

La empresa H_2O Renovables, con sede en Bailén (Jaén), ha presentado un innovador sistema para panaderías que sustituye el tradicional quemador de gasoil por uno de biomasa en los hornos de carro rotativo, lo que permite un ahorro de hasta el 80 por ciento en la factura energética.

Se trata de un sistema pionero en España y en Europa, que conlleva numerosas ventajas frente a los hornos de carro rotativo tradicionales. Aparte del importante ahorro energético, ya que el coste de los pellets que se utilizan como combustible es muy inferior al de los combustibles fósiles, este horno de pan precocido fabrica un producto de mayor calidad, ya que se consigue una cocción más homogénea.

Esta iniciativa innovadora se ha implantado con éxito en cuatro hornos de la panadería Hornipan Rangel de Bailén, donde se ha demostrado un ahorro energético de entre el 60 y el 80%. Esta panadería fabrica cerca de 40000 piezas de pan precocido a diario.

El sistema permite unos ahorros tan importantes que las panaderías que lo instalan pueden amortizarlo en menos de un año. Otro de los beneficios del mismo es que se puede alargar la vida del horno, se mejora el rendimiento e incluso se pueden reaprovechar las cenizas generadas como fertilizante y en otros usos. A todo ello se une el gran valor medioambiental del proyecto, ya que se evita el uso de combustibles fósiles contaminantes y se apuesta por la biomasa.

EN FUNCIONAMIENTO LA PRIMERA PLANTA HÍBRIDA TERMOSOLAR-BIOMASA

Tras finalizar en Noviembre la fase de pruebas y sincronización de la turbina, Termosolar Borges ha iniciado ya el suministro de energía eléctrica a la red, convirtiéndose, según sus promotores, en la primera instalación en el mundo que combina energía termosolar y biomasa.

El sistema de hibridación con biomasa permite el funcionamiento de la planta durante las veinticuatro horas del día, consiguiendo así un mayor aprovechamiento de la instalación, señalan Abantia y Comsa Emte, las empresas que lideran el proyecto. La captación de rayos solares durante las horas de sol a través de 2688 colectores cilindro-parabólicos (de 5.5 metros de diámetro y 12 metros de longitud), se complementa durante la noche con la planta de biomasa que se suministra principalmente con biocombustibles forestales y se complementará con cultivos energéticos y los residuos agrícolas.

La instalación, de 22.5 MW, comienza ahora la curva de producción hasta llegar a alcanzar la máxima potencia, cuando tendrá la capacidad suficiente para abastecer de energía a 27000 viviendas, evitando así que se emitan 24500 toneladas de CO_2 a la atmósfera, explican los promotores. La inversión ha respondido a la cifra inicial prevista de 153 millones de euros.

PLANTA PILOTO DE COGENERACIÓN CON GASIFICACIÓN DE BIOMASA FORESTAL

El presidente del Centre Tecnològic Forestal de Catalunya (CTFC) y su director presentaron la pasada semana la nueva planta piloto de cogeneración con gasificación de biomasa forestal del centro, que cubrirá hasta un 40% de su energía eléctrica con astilla forestal (180 toneladas anuales). El calor se utilizará para la calefacción de los tres edificios del complejo, ya que está vinculado también a la caldera de biomasa del CTFC.

Desde el CTFC afirman que "el objetivo es monitorizar el funcionamiento de esta planta piloto y sus resultados, a fin de difundir esta tecnología e implantarla en otros espacios". La huella de carbono de la instalación será baja porque se usará astilla forestal de explotaciones cercanas al CTFC.

DIGESTIÓN ANAERÓBICA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
CN102586333	UNIV BEIJING CHEMICAL	China	METHOD FOR IMPROVING STRAW METHANE YIELD AND REDUCING METHANE LIQUID BY METHANE LIQUID CIRCULATION. The invention discloses a method for improving straw methane yield and reducing methane liquid by methane liquid circulation, which improves the methane yield of straw fermentation by 40-50%. A methane liquid recycle ratio is set to X according to methane liquid measurement index data, wherein X is more than or equal to 0% and is less than or equal to 100%; otherwise, the methane liquid is not recycled; the ammonia nitrogen concentration is Cmg/L; if C/15 is equal to N...n, the recycle ratio is that X is equal to (100-N)%; if the ammonia nitrogen concentration C is more than 1500mg/L, the methane liquid does not recycle; in addition, the auxiliary parameter range of the recycle ratio is that BOD (Biochemical Oxygen Demand) is more than or equal to 4000mg/L, COD (Chemical Oxygen Demand) is more than or equal to 10000mg/L, Zn2+ is more than or equal to 30mg/L, Cu2+ is more than or equal to 6mg/L and pH is more than or equal to 7.5; when the auxiliary parameter reaches a specified range, the methane liquid does not circulate; and the ammonia nitrogen concentration is regulated to be less than or equal to 200mg/L, the BOD is less than or equal to 500mg/L, the COD is less than or equal to 1000mg/L, Zn2+ is equal to 0, Cu2+ is equal to 0 and pH is equal to 6.8. The methane liquid is recycled by controlling the methane liquid circulation ratio, the methane emission is reduced, and meanwhile, cost is saved for stably operating the fermentation.
CN102557372	QINGDAO ZHONGREN PHARMACEUTICAL CO LTD	China	HARMLESS TREATMENT METHOD FOR LIVESTOCK EXCREMENT. The invention belongs to the technical field of bioengineering and environmental protection, and relates to a harmless treatment method for livestock excrement. The method comprises four steps of animal excrement fermentation, fly larvae cultivation, methane preparation and microbe breeding. Various animal excrements or livestock excrements are collected and placed in a livestock excrement pit for anerobic fermentation and precipitation, leavening is filtered to obtain excrement serous fluid and excrement residues, which respectively serve as fly larvae cultivation base materials to be placed in a pool-tank-type container for fly larvae cultivation in temperature-and-humidity-controlled environments, ingredients of both the solid excrement residues and the excrement serous fluid are merged and filled into a methane generator for methane preparation in a temperature-and-humidity-controlled manner, surplus biogas liquid and biogas mud is collected to serve as cultivation agent for photosynthetic bacteria and larvatrol, and the photosynthetic bacteria natural ecology process technology is adopted to perform microbe breeding and produce photosynthetic bacteria and larvatrol. The process principle is simple, the use and the operation are convenient, energy is saved, environmental protection is realized, polluting waste is comprehensively utilized, and remarkable economical and social values are achieved.

DIGESTIÓN ANAERÓBICA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
CN102583932	UNIV TONGJI	China	METHOD FOR GENERATING METHANE BY ENHANCING ANAEROBIC DIGESTION OF REFLUX SLUDGE AFTER HEAT AND ALKAOLINE COMBINED TREATMENT AND CIRCULATION. The invention belongs to the technical field of recycling of solid wastes and discloses a method for generating methane by enhancing anaerobic digestion of reflux sludge after heat and alkaoline combined treatment and circulation. The method comprises the following steps: preparing mixed sludge from concentrated sludge and dehydrated sludge; feeding the mixed sludge and performing anaerobic digestion; discharging the sludge with the same volume; performing heat and alkaoline combined pretreatment on the reflux sludge; circulating and performing anaerobic digestion; and collecting the methane. In the method, a heat and alkaoline combined pretreatment circulation reflux sludge system is provided, so the mixed effect of a fermentation system is enhanced, dissolution of solid organic matters is enhanced, and the reactor can operate efficiently and stably.
WO2012158013	RONSER BIO TECH SDN BHD et al.	Malasia	ANAEROBIC TREATMENT OF ORGANIC WASTEWATER. Anaerobic treatment of organic wastewater is the technology that related to wastewater treatment technologies field. This invention constitute of a tower vessel and a built-in water distributor, three-phase separator and a consistent gas hydraulic pressure balancer as well as fire barrier, and accumulation zone of acidogenic bacteria and methanogenic bacteria on the top of water distributor. Processing water flow rises in a uniform distribution when passing the cross section pf water distributor, organic matters are converted to methane and carbon dioxide gas while passing by acidogenic arid methanogenic bacteria accumulation zone, then treated water and gas are transferred out by three-phase separator and gas hydraulic pressure balancer as well as fire barrier. Anaerobic bacteria sludge is retained within the device effectively without any loss. Also, this invention doesn't require the set up of hydrolysis acidification pool and water backflow, which keep the process simple and easy, able to operate stably at 1-30kgCOD/m^3.d with organic matter removal rate of 90%.
CN102559771	UNIV BEIJING CHEMICAL	China	METHOD FOR IMPROVING ANAEROBIC DIGESTION PERFORMANCE OF BIOMASS WASTES BY BIOLOGICAL PHASE SEPARATION AND OPTIMIZATION TECHNOLOGY. The invention discloses a method for improving the anaerobic digestion performance of biomass wastes by a biological phase separation and optimization technology and belongs to the technical field of treatment and recycling of the solid wastes. The technology is characterized in that: solid residue and liquid of materials are subjected to anaerobic digestion under different conditions, a liquid phase enters a methane production reactor directly, solid matter enters an acidification reactor, acidification phase starting optimization of two-phase anaerobic digestion is performed, and then a product enters the methane production reactor, and mass distribution of acidification and methanation phases is optimized, so the coupled linkage of the acidification phase and the methanation production phase is realized, different material components can be fully degraded, and the pH buffering capacity of a microorganism system can be improved; and therefore, the material inlet load of the whole system can improved, the volume of the reactor is reduced, treatment cost is reduced, and the conversion rate of the system is improved.

DIGESTIÓN ANAERÓBICA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
CN102559773	UNIV BEIJING CHEMICAL	China	METHOD FOR IMPROVING METHANE-PRODUCING PERFORMANCE UNDER SYNERGISTIC ACTION OF MIXED QUASI-SYNCHRONOUS FERMENTATION OF MULTIPLE RAW MATERIALS. The invention belongs to the field of treatment of organic solid wastes, and discloses a method for improving anaerobic gas-producing performance under the synergistic action of the mixed quasi-synchronous fermentation of multiple raw materials. By the method, organic wastes (straw, domestic garbage, excrement and the like) are subjected to the quasi-synchronous fermentation of multiple raw materials, namely the organic wastes are pretreated, so that the fermentation period of materials (such as the straw and the like) with a long fermentation period is shortened and is close to an average fermentation period of the mixed materials; the fermentation period of materials (such as garbage in restaurants and kitchens, excrement and the like) which are easy to digest is prolonged appropriate; and the pretreated materials are mixed, inoculated and subjected to anaerobic digestion to produce methane, so that the methane-producing period of the materials with the anaerobic digestion period is synchronous with that of the materials with the short anaerobic digestion period to realize the quasi-synchronous fermentation of the materials. The method is simple and high in operability; and by the method, two and more than two organic solid wastes are treated simultaneously, and the accumulative methane yield of unit volatile solid (VS) substances is improved by 15 to 60 percent averagely.
WO2012146355	TECH UNI BRAUNSCHWEIG CAROLO WILHELMINA et al.	Alemania	PROCESS FOR BIOGAS PRODUCTION AND BIOGAS PLANT. A process for biogas production, comprising the steps of anaerobic fermentation of organic starting material (14), so as to form biogas (30) and a primary fermentation product (32), then supplying an oxidizing agent (24) to the primary fermentation product (32) so as to form a hydrolysate (34), and then anaerobic fermentation of the hydrolysate (34).
US2012264197	GUILD ASS INC	EE.UU.	H2S REMOVAL FROM CONTAMINATED GASES. A process for removing hydrogen sulfide from a raw natural gas stream such as biogas from landfills or controlled anaerobic digestion comprises passing the natural gas stream though a separation unit such as a PSA unit to form a product stream comprising a high concentration of methane and a low pressure tail gas containing hydrogen sulfide, passing the tail gas through a biofilter which includes bacteria that degrades the hydrogen sulfide to sulfur and sulfate compounds which are washed from the biofilter. The tail gas stream subsequent to treatment in the biofilter can be flared to the atmosphere without significant SOx emissions.
US2012258512	HARVEY JEFFREY T et al.	EE.UU.	STATIC SOLID STATE BIOREACTOR AND METHOD FOR USING SAME. A static solid state bioreactor and method of using same. The bioreactor comprises a vessel having an upper end and a lower end, the upper end having a sealable opening. A gas distribution system in communication with the upper end and the lower end of the vessel. A liquid distribution system in communication with the upper end of the vessel. A liquid recovery system in communication with the lower end of the vessel. A material removal system disposed at the lower end of the vessel for removing biomass from the vessel.

DIGESTIÓN ANAERÓBICA

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
DE102011016327	HEGO BIOTEC GMBH et al.	Alemania	PRODUCING BIOGAS FROM ORGANIC FERMENTATION SUBSTRATE IN ANAEROBIC PROCESS, COMPRISES CONVERTING HYDROGEN SULFIDE USING IRON HYDROXIDE, WHICH IS OBTAINED AS BY-PRODUCT DURING DRINKING- OR GROUNDWATER TREATMENT, INTO IRON SULFIDE. Producing biogas from an organic fermentation substrate in an anaerobic process, with low hydrogen sulfide content, comprises converting hydrogen sulfide using iron(III) hydroxide, which is obtained from aqueous sludge as a by-product during the treatment of drinking water or groundwater, into iron sulfide. The sludge is first subjected to mechanical drying and then to thermal drying to obtain a dry grain mixture, from which powdered iron(III) hydroxide is obtained, which is mixed with the fermentation substrate with homogeneous distribution, before carrying out anaerobic process. Producing biogas formed from an organic fermentation substrate in an anaerobic process, with low hydrogen sulfide content, comprises converting hydrogen sulfide using iron(III) hydroxide, which is obtained from aqueous sludge as a by-product during the treatment of drinking water or groundwater, into iron sulfide. The sludge is first subjected to mechanical drying until the dry matter content of the sludge is 18-35% and then to thermal drying to obtain a dry grain mixture with a grain size of up to 10 mm, from which powdered iron(III) hydroxide with a particle size of 0-0.5 mm is obtained by classifying and/or grinding, and the powdered iron(III) hydroxide is mixed with the fermentation substrate with homogeneous distribution, before the anaerobic process.

FERMENTACIÓN DE AZÚCARES

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
RO127526	INST DE CERCETARE DEZVOLTARE PENTRU PROTECTIA PLANTELOR	Rumanía	PROCESS FOR ENCAPSULATION OF ANTAGONISTIC YEASTS, PROCESS FOR DRYING AND CONDITIONING ENCAPSULATED YEASTS RECOVERED AFTER ALCOHOLIC FERMENTATION AND BIOPREPARATION RESULTING FROM THEIR USE. The invention relates to a process for encapsulating antagonistic yeasts meant to produce bioethanol by the fermentation of cereals hydrolysates, to a process for drying and conditioning encapsulated yeasts recovered after alcoholic fermentation and to the resulting biopreparation employed in plant protection against phytopatogenic agents, in particular against phytopatogenic and toxigenic fungi. The claimed encapsulation process consists in mixing a 1M sodium bicarbonate solution with a concentrated yeast suspension, admixing the resulting suspension to alginic acid, extruding the encapsulated yeast suspension in sodium alginate resulting in the formation of spherical microgranules to coagulate in a solution of 0.25 M of CaCl, washing the granules and maintaining them in Ringer solution up to their use, mixing them with wheat flour hydrolysate, fermenting the same to reduce the glucose content, separating the resulting product and subjecting it to drying and conditioning to finally obtain a product having a grain size of less than 1 mm and superior humectability, having a viable yeasts content of at least 10...8 CFU/g of composition.

FERMENTACIÓN DE AZÚCARES

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
WO2012161360	KOREA RES INST OF BIOSCIENCE et al.	Corea	NOVEL CELLULOPHAGA SP. STRAIN HAVING A DEGRADATIVE EFFECT ON POLYSACCHARIDES AND USE OF SAME. The present invention relates to a novel Cellulophaga sp. strain having a degradative effect on polysaccharides. More particularly, a sample is collected from the seawater, the tidal mudflat, and the seashore in the region of the southern coast of Korea, and microorganisms are separated. Microorganisms that are capable of degrading carboxymethyl cellulose (CMC) are selected. Said microorganisms are confirmed through 16S rRNA analysis as being a novel Cellulophaga sp. strain. Said strain and the supernatant liquid obtained after culturing same are confirmed to have a degradative effect on various polysaccharides.
WO2012164990	UNIV MIYAZAKI et al.	Japón	METHOD FOR PRODUCING ETHANOL USING BASIDIOMYCETE. The purpose of the present invention is to provide a means for producing ethanol from a carbon source derived from a plant biomass resource or the like in a simple manner and with high efficiency. The present invention relates to a method for producing ethanol, comprising a step of culturing a basidiomycete belonging to the genus Phlebia together with a carbon source to produce ethanol. Cellulose, hemicellulose, glucose, xylose or the like or a plant biomass resource containing any one of these component can be used as the carbon source.
WO2012159571	SHANGHAI INST BIOL SCIENCES et al.	China	METHOD FOR IMPROVING SUGAR UTILIZATION RATE OF CLOSTRIDIUM ACETOBUTYLICUM IN MIXED SUGAR FERMENTATION. Disclosed is a method for improving the sugar utilization rate of Clostridium acetobutylicum in mixed sugar fermentation, comprising the steps of: performing genetic engineering modification to the Clostridium acetobutylicum so that, relative to wild-type Clostridium acetobutylicum, the glcG gene expression is inhibited, the expression or activity of xylose transporter protein is improved, the expression or activity of xylose isomerase is improved and/or the expression or activity of xylulose kinase is improved; and using the obtained genetically engineered Clostridium acetobutylicum in sugar fermentation. The present method enables the Clostridium acetobutylicum to utilize more xylose and arabinose in mixed sugar fermentation and produce higher concentration of solvent product, thus greatly improving product yield and having an excellent industrial application prospect.
US2012301938	DAVIS TOMMY MACK	EE.UU.	METHOD AND APPARATUS FOR CONTINUOUS FLOW BIO-FUEL PRODUCTION. A continuous flow system for production of bio-fuels using microbial cultures is provided. The present invention does not utilize batch type production, but follows a continuous flow protocol that eliminates much downtime inherent in conventional bio-fuel production systems while greatly reducing space and equipment requirements. Production is enhanced via controlled program of aeration for microbial growth and anaerobic conditions to ensure fermentation efficiency. As the system becomes more tolerant of alcohol content, efficiency increases. Feedstocks include, but are not limited to, material normally discarded from food production facilities including drink syrups, juices or waste water from corn or sugar processing plants.

FERMENTACIÓN DE AZÚCARES

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
US2012294981	NORTH AMERICAN PROTEIN INC	EE.UU.	PROCESS FOR FORMING TREATED BACKSET AND PRODUCING ETHANOL. A process for obtaining a treated backset for use in ethanol production, the process involving treating waste material from an ethanol fermentation process with microorganisms to remove or decrease microbial cell growth inhibitors present in the waste material; and removing microbial biomass from the treated waste material to form a treated backset. The treated backset can be used in a process for producing ethanol from a fermentable biomass. Recovered microbial biomass can be used in as an animal feed or as a dietary supplement.
WO2012162443	GEOSYNFUELS LLC et al.	EE.UU.	METHODS OF TREATING BIOMASS. A process for producing biofuel from biomass that includes free monosaccharides is provided. The process comprises the steps of mixing the biomass with a recycled hydrolysate for a sufficient time to elute a portion of the free monosaccharides from the biomass thereby forming a sugar enriched hydrolysate. Sugar enriched hydrolysate is then separated from the biomass and monosaccharides contained in the separated sugar enriched hydrolysate are fermented.
US2012295324	UNIV CALIFORNIA	EE.UU.	OVERPRODUCTION OF LIGNINOLYTIC ENZYMES. Methods, compositions, and systems for overproducing ligninolytic enzymes from the basidiomycetous fungus are described herein. As described, the method can include incubating a fungal strain of Cerrena unicolor IB303 in a fermentation system having growth medium which includes lignocellulosic material and then cultivating the fungal strain in the fermentation system under conditions wherein the fungus expresses the ligninolytic enzymes. In some cases, the lignocellulosic material is mandarin peel, ethanol production residue, walnut pericarp, wheat bran, wheat straw, or banana peel.
WO2012155241	MASCOMA CANADA INC et al.	Canadá	ENZYME RECOVERY AFTER ENZYMATIC TREATMENT OF LIGNOCELLULOSIC MATERIALS. A method for treating plant materials to release fermentable sugars using enzymes, wherein the enzymes are subsequently recovered and recycled is disclosed. More specifically, the method relates to a two-stage enzymatic hydrolysis process for treating lignocellulosic materials and producing a sugar rich process stream, wherein the enzymes are recovered and recycled, optionally from each stage, of the enzymatic hydrolysis.
WO2012149275	DANISCO US INC et al.	EE.UU.	USE OF CELLULASE AND GLUCOAMYLASE TO IMPROVE ETHANOL YIELDS FROM FERMENTATION. An improved saccharification process comprises the use of a glucoamylase and at least one cellulase. The improved saccharification process results in improved yields of fermentations products, such as ethanol. In one embodiment, the improved saccharification process results in an increased yield of up to 0.5% to 1% ethanol using commercially available cellulases. Also provided are improved simultaneous saccharification and fermentation (SSF) processes, and compositions comprising a liquefied starch slurry, a glucoamylase, and a cellulase.
US2012264173	DU PONT	Alemania	ORGANIC SOLVENT PRETREATMENT OF BIOMASS TO ENHANCE ENZYMATIC SACCHARIFICATION. Biomass is pretreated using an organic solvent solution under alkaline conditions in the presence of one or more alkylamine and optionally one or more additional nucleophile to fragment and extract lignin. Pretreated biomass is further hydrolyzed with a saccharification enzyme consortium. Fermentable sugars released by saccharification may be utilized for the production of target chemicals by fermentation.

PRODUCCIÓN DE BIOMETANO Y FERTILIZANTES A PARTIR DE RESIDUOS DE LA INDUSTRIA CERVECERA

La empresa cervecera Estrella Levante y el Centro de Edafología y Biología Aplicada del Segura (CEBAS-CSIC) colaboran en una iniciativa cuyo objetivo es producir biogás a partir de subproductos de la industria cervecera, principalmente bagazo, y obtener biometano para inyectarlo en la red de gas y, además, fertilizantes para la agricultura. El proyecto, "Desarrollo de un proceso de reutilización de subproductos industriales orgánicos para la producción de energía y enmienda agrícola", se desarrolla en el marco del subprograma Impacto del Ministerio de Economía y Competitividad.

Una de las principales observaciones de los científicos que dirigen el presente proyecto fue la dificultad de producir biogás exclusivamente a partir de la digestión anaerobia del bagazo, el principal subproducto derivado de la elaboración de cerveza. La solución parece encontrarse en introducir otros sustratos procedentes de industrias agroalimentarias. Este es uno de los procesos de una iniciativa que se ha visto reforzada con la creación de un clúster de Medioambiente y Energías Renovables de Murcia en el que colabora, asimismo, Estrella Levante, la compañía Cespa Servicios Urbanos y el Ayuntamiento de Murcia.

El acuerdo firmado permitirá la construcción de una planta en el vertedero de Cañada Hermosa de la capital murciana para investigar el aprovechamiento de subproductos agroalimentarios y otros residuos orgánicos para la obtención de biogás y compost.

La relación directa entre el clúster y el proyecto que comandan Estrella Levante y el CEBAS-CSIC es que en las instalaciones del primero se construirá una nueva planta de biometanización donde se purificará el biogás procedente de la digestión anaerobia del bagazo y otros sustratos. Fuentes municipales adelantan que la inversión en esta planta ronda los 2.5 millones de euros.

Hasta el momento, la investigación se ha llevado a cabo en una planta piloto construida al efecto, donde los socios del proyecto comprobaron la viabilidad no solo de producir biogás y transformarlo en biometano, sino también la de valorizar el residuo resultante de la digestión anaerobia del bagazo, el digestato. Se estudiaron sus características agronómicas (contenido en nitrógeno, fósforo, potasio y otros micronutrientes) y se está tratando de acondicionarlo para que sirva como enmienda nutritiva del suelo.

PRODUCCIÓN DE HIDRÓGENO Y BIOMETANO A PARTIR DE RESIDUOS AGROALIMENTARIOS

Ainia Centro Tecnológico está desarrollando una investigación puntera que busca producir hidrógeno y biogás en dos fases diferentes dentro de un proceso en el que se utilizan residuos de la industria agroalimentaria. Los resultados obtenidos hasta la fecha muestran que puede ser una alternativa competitiva y aplicable a escala industrial en los próximos años de forma similar a como ya lo es la generación de biogás. El proyecto, apoyado por el Instituto de la Mediana y Pequeña Industria Valenciana (Impiva) y el Fondo Europeo de Desarrollo Regional (Feder), incluye, además de la investigación del nuevo proceso, un estudio específico sobre sus posibilidades de aplicación en la Comunidad Valenciana, con especial incidencia en el potencial disponible de sus residuos orgánicos agroalimentarios. Entre los seleccionados están los obtenidos en las industrias de procesado de vegetales, restos de la elaboración de pan, galletas y pastas y otros subproductos generados en las industrias cárnicas y de productos pesqueros.

El proyecto, denominado Diana, plantea separar la digestión anaerobia en dos fases: la hidrólisis o fermentación oscura, donde se genera hidrógeno, y la metanogénesis, donde se genera metano. Desde Ainia explican el objetivo de la investigación y puntualizan que estas dos fases se acoplan en serie de forma que a partir de unos mismos residuos y en una misma instalación es posible generar biohidrogeno y biogás de forma totalmente sostenible, viable y con menor coste. Supone un salto cualitativo en la obtención de energía a partir de residuos por parte de un centro de investigación de referencia en el estudio de la generación de biogás y el aprovechamiento de desechos orgánicos.

PRODUCCIÓN COMERCIAL DE ETANOL DE SEGUNDA GENERACIÓN EN BRASIL PARA 2014

Raizen Brasil, la joint-venture creada por la petrolera Royal Dutch Shell y la brasileña de azúcar y etanol Cosan en 2011, ha anunciado que comenzará la producción comercial de la llamada segunda generación de etanol, también conocido como etanol celulósico, a partir de 2014, proyecto en el que también participa la canadiense Iogen.

El etanol celulósico será producido en la planta piloto ubicada en Costa Pinto, Piracicaba, estado de San Pablo, con capacidad para producir 40 millones de litros de etanol al año, y para cuya construcción se anuncia una inversión de 90 millones de dólares.

En octubre pasado, se anunció un acuerdo entre Raizen, el mayor productor mundial de etanol de caña de azúcar, e Iogen Energy, empresa canadiense que dirige la mayor refinería de etanol celulósico comercial del mundo, para desarrollar conjuntamente el mencionado proyecto.

Raizen poseen 24 unidades de producción de la que salen 2.2 mil millones de litros de etanol al año y 4 millones de toneladas de azúcar, tiene, además, una capacidad instalada de 900 MW de energía eléctrica derivada de bagazo de caña y comercializa anualmente 1.5 millones de MWh de energía eléctrica.

OBTENCIÓN DE BIOCOMBUSTIBLES MEDIANTE MANIPULACIÓN GENÉTICA DE PLANTAS HERBÁCEAS

El elevado contenido de lignina y hemicelulosa es uno de los obstáculos principales para obtener biocarburantes de segunda generación a partir de plantas no comestibles o residuos vegetales. Una de las opciones, en las que trabaja, por ejemplo, Abengoa, es la producción de enzimas que degraden la celulosa y la conviertan en azúcares. Otra es la manipulación genética de las plantas.

A este respecto, Cordis informa que científicos del Instituto Nacional Lawrence Berkeley de Estados Unidos llevaron a cabo un estudio para sintetizar, mediante manipulación genética, plantas con déficit xilano (el polisacárido más abundante después de la celulosa) en las paredes celulares secundarias y mejorar así la capacidad de degradación del carbohidrato en azúcares sencillos (sacarificación). Durante la investigación se utilizaron tres variantes mutantes de Arabidopsis, un género de plantas herbáceas, observándose que los fenotipos resultantes presentaban en algunos casos los patrones de crecimiento naturales y concluyendo que se logró mantener bajo el contenido en xilanos y aumentar el rendimiento de la sacarificación, y con ello una mejora del proceso de degradación para generar biocarburantes.

Así, en algunas plantas la concentración de xilosa se redujo hasta un 23% y, en otras, la lignina en un 18%. Tras el pretratamiento, observaron una mejora del 42% en el rendimiento de la sacarificación de las plantas. En el futuro, este método basado en Arabidopsis parece que podría transferirse a otras especies de cultivos para la obtención de biocombustibles, en particular, a algunas especies de álamos.

TECNOLOGÍAS QUÍMICAS

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
US2012301932	DU PONT	EE.UU.	EXPRESSION OF CALEOSIN IN RECOMBINANT OLEAGINOUS MICROORGANISMS TO INCREASE OIL CONTENT THEREIN. Recombinant oleaginous microorganisms having increased oil content due to the expression of a caleosin polypeptide are described. A recombinant oleaginous microorganism of the disclosed invention produces at least 25% of its dry cell weight as oil, and comprises a functional polyunsaturated fatty acid (PUFA) biosynthetic pathway and at least one genetic construct encoding a caleosin polypeptide. A method for increasing the amount of oil in a recombinant oleaginous microorganism is also described.
WO2012162403	VIRENT INC et al.	EE.UU.	PRODUCTION OF CHEMICALS AND FUELS FROM BIOMASS. The present invention provides methods, reactor systems, and catalysts for converting in a continuous process biomass to fuels and chemicals. The invention includes methods of converting the water insoluble components of biomass, such as hemicellulose, cellulose and lignin, to volatile C2+01-2 oxygenates, such as alcohols, ketones, cyclic ethers, esters, carboxylic acids, aldehydes, and mixtures thereof. In certain applications, the volatile C2+01-2 oxygenates can be collected and used as a final chemical product, or used in downstream processes toproduce liquid fuels, chemicals and other products.
WO2012160577	COUNCIL SCIENT IND RES et al.	India	ENGINE WORTHY FATTY ACID METHYL ESTER (BIODIESEL) FROM NATURALLY OCCURRING MARINE MICROALGAL MATS AND MARINE MICROALGAE CULTURED IN OPEN SALT PANS TOGETHER WITH VALUE ADDITION OF CO-PRODUCTS. The invention teaches the obtained specifications and process of production of engine worthy marine microalgal fatty acid methyl ester (biodiesel) using naturally occurring marine microalgal mats and also marine microalgae cultivated in cost-effective manner in solar salt pans. Utility of co-product streams adds to the attractiveness of the invention.
WO2012160314	ARKEMA FRANCE et al.	Francia	PROCESS OF REACTIVE TRITURATION DIRECTLY ON AN OIL CAKE. The present invention relates to a process comprising at least one reactive trituration step which consists in putting an oil cake comprising from 3% to 30% oil in contact with an anhydrous light alcohol and an alkaline catalyst under temperature and time conditions that are sufficient to allow for the extraction and transesterification of the vegetable oil and lead to the production of a mixture comprising fatty acid esters and glycerol, and a de-oiled cake comprising less than 3% oil. The present invention also relates to a detoxified de-oiled cake as well as to a mixture of fatty acid esters with improved stability and resistance to oxidation.
CN102559789	UNIV TSINGHUA	China	METHOD FOR PREPARING BIODIESEL FROM GREASE CATALYZED BY PHOSPHATIDASE AND LIPASE. The invention provides a method for preparing biodiesel from grease catalyzed by both phosphatidase and lipase, that is, the biodiesel is prepared by catalyzing grease materials containing phosphatide to react with short chain alcohols by combining the phosphatidase and the lipase as catalysts. The method of the invention not only eliminates the negative effect of the phosphatide on lipase, but obviously increases quality of the biodiesel. The method of the invention has advantages of simple and environment-friendly process, complete reaction of the phosphatide, high yield of biodiesel, good separation effect; the method is especially suitable for grease materials with high-content phosphatide, provides possibility for cheap grease materials in development and utilization of biodiesel and has important generalization significance and good market prospects.

TECNOLOGÍAS QUÍMICAS

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
US8314045	ENTREPRISES SINONCELLI S.A.R.L	Suiza	SOLID ACID CATALYST. A porous solid acid catalyst having high concentration of acidic sites and a large surface area includes a porous silica support and a sulfonated carbon layer disposed within the pores of the silica support. The catalyst, in certain embodiments, has a concentration of -SO3H groups of at least about 0.5 mmol/g and a predominant pore size of at least about 300 not A. The catalyst is used to catalyze a variety of acid-catalyzed reactions, including but not limited to alkylation, acylation, etherification, olefin hydration and alcohol dehydration, dimerization of olefin and bicyclic compounds, esterification and transesterification. For example, the catalyst can be used to catalyze esterification of free fatty acids (FFAs) and, in certain embodiments, to catalyze transesterification of triglycerides in fats and oils. The catalyst is prepared by impregnating a silica support with a phenol-containing material, processing the material to form a polymer, carbonizing the polymer to form a carbon layer within the silica support, and sulfonating the resulting carbon layer to form sulfonated carbon.
CN102553643	SHANDONG JINJIANG BIOENERGY SCIENCE AND TECHNOLOGY CO LTD	China	COMPOSITE CATALYST FOR PRODUCING BIODIESEL AND PRODUCTION METHOD FOR COMPOSITE CATALYST. The invention discloses a composite catalyst for producing biodiesel and a production method for the composite catalyst. The composite catalyst consists of the following components in percentage by weight: 10 to 20 percent of acetic acid, 10 to 20 percent of methanesulfonic acid, 15 to 30 percent of benzenesulfonic acid, 15 to 30 percent of oxalic acid and 0 to 50 percent of sulfuric acid. The composite catalyst has the characteristics of high product index, wide raw material application range, high product conversion rate and low production cost; and the discharge amount of 'three wastes' is reduced.
US2012285077	GENIFUEL CORP	EE.UU.	PROCESS OF PRODUCING OIL FROM ALGAE USING BIOLOGICAL RUPTURING. A process for production of biofuels from algae can include cultivating an oil-producing algae, extracting the algal oil, and converting the algal oil to form biodiesel. Extracting the algal oil from the oil-producing algae can include biologically rupturing cell wall and oil vesicles of the oil-producing algae using at least one enzyme such as a cellulose or glycoproteinase, a structured enzyme system such as a cellulosome, a virus, or combination of these materials.
US2012285079	BATTELLE MEMORIAL INSTITUTE et al.	EE.UU.	PROCESS FOR STABILIZING FAST PYROLYSIS OIL, AND STABILIZED FAST PYROLYSIS OIL. A process for stabilizing pyrolysis oil includes hydrogenating fast pyrolysis oil with hydrogen reactant in the presence of ruthenium metal catalyst at a temperature of at least about 70 DEG C. and at a pressure of at least about 600 psig to form a hydrogenated fast pyrolysis oil exhibiting an increase in viscosity of less than 10% after accelerated stability testing at 80 DEG C. for 24 hours. The resulting hydrogenated fast pyrolysis oil can be characterized as stabilized to viscosity increase, and can be provided as a bio fuel oil.

TECNOLOGÍAS QUÍMICAS

Nº DE PUBLICACIÓN	SOLICITANTE	PAÍS ORIGEN	CONTENIDO TÉCNICO
US2012277452	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.
WO2012143550	SHELL INT RESEARCH et al.	Holanda	PROCESS FOR CONVERTING A SOLID BIOMASS MATERIAL. A process for converting a solid biomass material comprising a) contacting the solid biomass material and a fluid hydrocarbon feed with a catalytic cracking catalyst at a temperature of more than 400 DEG C in a catalytic cracking reactor to produce one or more cracked products; b) fractionating one or more cracked product(s) produced in step a) to produce one or more product fractions; c) hydrodeoxygenating one or more product fractions(s) produced in step b) to produce one or more hydrodeoxygenated products.

MCDONALD'S MANTIENE SU APUESTA POR EL BIODIÉSEL

La recuperación del aceite usado de los restaurantes de McDonald's para su posterior uso en la flota de camiones de esta multinacional de la cocina rápida se está convirtiendo en un sello de identidad. Primero fue en los Emiratos Árabes Unidos, luego durante los juegos olímpicos de Londres y ahora es en Australia. Según una información del portal Biofuels International, el ministro de la Pequeña Empresa de este país, Louise Asher, inauguró una instalación para el procesamiento del aceite usado en el estado de Victoria.

La empresa propietaria de la planta es la misma que con la que MacDonald's trabaja en los Emiratos Árabes Unidos, Neutral Fuels. Informan que con ella se han creado diez puestos de trabajo y que permitirá suministrar biodiésel a la flota de vehículos que circulan por el estado de Victoria, donde en la actualidad disponen de 106 restaurantes. Calculan que cada año se tratarán 700000 litros de aceite de cocina usado.

EL BIODIÉSEL "ENTRA" EN LAS ESCUELAS

La bioenergía ha encontrado su cuota de participación en la última convocatoria de los proyectos Life+ con Educo, cuyo nombre completo es "Recogida de aceites de cocina usados en centros educativos y prueba de producción de biodiésel con tecnología de cavitación". Su objetivo es conseguir, a través de la educación ambiental, que más de 40000 alumnos de nueve comarcas catalanas ayuden a recuperar el aceite usado generado en sus hogares para, posteriormente, destinarlo a la fabricación de biodiésel. Desde la Fundació CTM Centre Tecnològic, coordinadora del proyecto, confían en llegar a los 52000 alumnos de enseñanza infantil, primaria y secundaria.

Los escolares recibirán una serie de talleres en sus centros sobre todo el proceso de producción del biodiésel y se les entregará material y recipientes para que en sus casas colaboren en la recogida del aceite usado. Con posterioridad, ese aceite será trasladado por operarios y vehículos desde el domicilio a la planta piloto de tratamiento.

En el proyecto también colaboran la Associació de l'Oli al Biodiesel, Inèdit Innovació, Vidmar RM 2000 y CET Nou Verd. La planta piloto,

diseñada para producir biodiésel a partir de aceites vegetales vírgenes, se adaptará y optimizará a lo largo del proyecto para permitir el procesamiento de los usados.

El número de escuelas participantes está en torno a las cien y el de municipios entre veinticinco y treinta. Todos pertenecen a nueve comarcas de Cataluña: Alt Penedès, Anoia, Bages, El Berguedà, Garraf, Osona, Solsonès, Vallès Occidental y Vallès Oriental. Desde Educo confirman también que los vehículos que se utilizarán para la recogida y transporte hasta la planta piloto consumirán el biodiésel producido, con lo que se garantizará la sostenibilidad del proyecto y del sistema en general.

Educo tendrá una duración de dos años y medio y cuenta con un presupuesto total de 1.485.000 euros, de los cuales la UE pone 644.000. Es el único proyecto aprobado entre los Life+ de política y gobernanza ambiental que está vinculado a la bioenergía en particular y a las energías renovables en general.

PROYECTO EUROPEO ITAKA: BIOCARBURANTES A PARTIR DE ACEITES DE CAMELINA Y USADOS PARA AVIACIÓN CIVIL

En junio de 2011, la Comisión Europea, junto a Airbus, varias aerolíneas y productores de biocarburantes, presentaron en el Paris Air Show el European Advanced Biofuels Flightpath, cuyo objetivo es alcanzar los dos millones de toneladas de biocarburantes utilizados en la aviación civil de la Unión Europea en 2020. Itaka, un proyecto encuadrado en el Séptimo Programa Marco de la CE con amplia representación española, se presenta como una herramienta idónea para impulsar el objetivo marcado.

Para ello contarán con investigación y producción con aceites de camelina y vegetales usados, de cara a conseguir un mínimo de un 60% de ahorro en las emisiones de gases efecto invernadero en comparación con el jetA1 de origen fósil. La camelina es una de las materias primas que más se emplean en los vuelos de prueba y comerciales con biocarburantes. Aerolíneas como Lufthansa (Alemania), Porter Airlines (Canadá) y Tarom (Rumania), y fabricantes de aviones como Embraer (Brasil) y Airbus (UE) ya los han empleado. También compañías aéreas como KLM (Holanda) y Thomson Airways (Reino Unido) han mezclado biocarburante de aceites usados en sus motores.

El proyecto durará 36 meses y ha recibido financiación del Séptimo Programa Marco de la CE (FM7/2007-2013). En Itaka se ha formado un consorcio que incluye a empresas y centros de investigación relacionados con la producción de materias primas para biocombustibles, como Biotehgen y Camelina Company España.

La iniciativa engloba también a productores de biocarburantes (Neste Oil y RE-CORD), empresas de logística de hidrocarburos (la española CLH y SkyNRG), otras vinculadas al transporte y la navegación aérea (Airbus, European Aeronautic Defence and Space Company –EADS–, Embraer y Servicios y Estudios para la Navegación Aérea y la Seguridad Aeronáutica –Senasa–) y centros de investigación sobre sostenibilidad (EADS IW France, École Polytechnique Fédérale de Lausanne y Manchester Metropolitan University). La coordinación de Itaka corre a cargo de Senasa.

RESTOENE: PRODUCCIÓN DE COMBUSTIBLES LIMPIOS PARA TRANSPORTE A PARTIR DE RESIDUOS AGROFORESTALES Y OLEAGINOSOS

ResToEne se define como una red de grupos de Investigación de reconocido prestigio dentro del área de energía, biocombustibles, catálisis electroquímica y procesos químicos. Su objetivo principal es obtener combustibles limpios para el transporte a partir de precursores lignocelulósicos. Esta alternativa es especialmente atractiva para la Comunidad de Madrid debido a la importancia que tiene el sector del transporte y el volumen amplio de residuos sólidos urbanos que se generan.

Para alcanzar el objetivo, este Programa reúne las capacidades y el potencial científico de varias instituciones de investigación de la Comunidad de Madrid: Instituto de Catálisis y Petroleoquímica-CSIC, Universidad Rey Juan Carlos, CIEMAT, IMDEA-Energía y Universidad Autónoma de Madrid. Asimismo, cuenta con la participación de las empresas REPSOL-YPF, Tepro y Abengoa como miembros asociados al Programa, lo que implica añadir la colaboración de líderes industriales en el sector de los biocombustibles y la energía.

Las tecnologías contempladas para el desarrollo del proyecto incluyen: la hidrólisis química y enzimática del material lignocelulósico, fermentación de azúcares para producir bioetanol, pirólisis térmica y

catalítica de fracciones de biomasa para producir *bio-oils*, esterificación/transesterificación de aceites de baja calidad ricas en ácidos grasos libres, reformado de bioetanol-polioles y productos de pirólisis para obtener syngas e hidrógeno, conversión de syngas a fracciones de gasolina/diesel mediante procesos de Fischer-Tropsch y conversión de hidrógeno y bioetanol a electricidad mediante pilas de combustible.

NACE EN ESPAÑA EL PRIMER SIG PARA GESTIONAR EL ACEITE USADO

Con el fin de coordinar y encauzar las principales iniciativas que existen en España para conseguir que los aceites usados de cocina se recuperen como biodiésel, acaba de nacer Oil Free Ocean, el primer Sistema Integrado de Gestión (SIG) de este tipo de residuo en España, que utiliza la marca Sigoleo.

En Sigoleo unifican los esfuerzos de los sectores participantes en la cadena de valorización: fabricantes, distribuidores y recicladores. Para adherirse al SIG, las empresas abonan una cuota inicial y una cantidad trimestral según la cantidad producida y puesta en el mercado que tengan reseñada. Con este dinero, la fundación gestiona a nivel nacional la recogida selectiva de aceites y grasas comestibles mediante la instalación de contenedores naranjas de metal y/o plásticos y convenios con entidades públicas. También realiza campañas de sensibilización ciudadana y promueve, no solo el reciclado, sino también la prevención en la generación de residuos. La recogida y el transporte del aceite lo realizarán empresas subcontratadas por Oil Free Ocean.

Son varias las administraciones, asociaciones e incluso proyectos europeos que promueven la recogida selectiva de aceites vegetales usados. En Castilla y León, por ejemplo, una campaña del Ente Regional de la Energía (Eren) ha permitido que se destinaran 250.000 kilos de aceites entre Enero de 2011 y Julio de 2012 a las fábricas de biodiésel de la región, lo que ha aliviado la rentabilidad de las cinco plantas en funcionamiento.

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