

OBJETIVOS DE DESARROLLO SOSTENIBLE



BIO-JET FUELS: ANÁLISIS DE PATENTES

En la introducción de la última edición de este boletín, se puso de manifiesto la enorme proliferación actual de los proyectos europeos en el área de los combustibles de aviación de origen biológico (bio-jet fuels). En esta ocasión, se va a abordar cuál es la situación en el área de patentes, lo que permitirá dilucidar su proximidad al mercado. Para ello, se hará uso de la herramienta Global Patent Index con acceso a las bases de datos de la EPO (Oficina Europea de Patentes), previo diseño de las correspondientes ecuaciones de búsqueda basadas en palabras clave.

De acuerdo con lo anterior, se identificaron 966 solicitudes de patente pertenecientes a 336 familias (invenciones). El 98% se registraron por vez primera a partir del año 2005 (Figura 1), correspondiendo el máximo al año 2015. Esto da una idea de lo reciente que está el desarrollo tecnológico asociado a los bio-jet fuels.

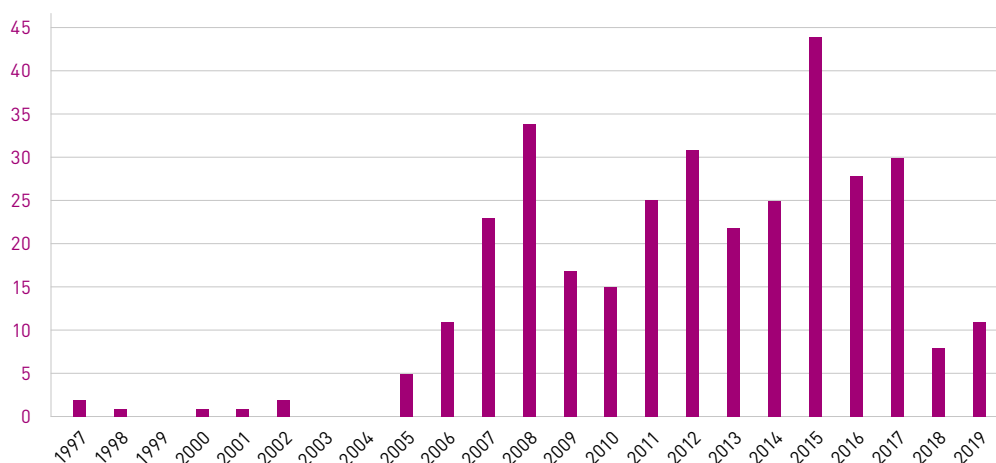


Figura 1. Distribución del número de familias de patente por año de prioridad

EE.UU. es el país donde se ha solicitado mayor número de patentes, aproximadamente, el 25% del total, seguido de China (19%) (Figura 2). Las vías de protección internacional y europea no son tan representativas como las anteriores, suponiendo el 12% y el 7% de las solicitudes totales. En España se han registrado hasta la fecha 10 solicitudes.

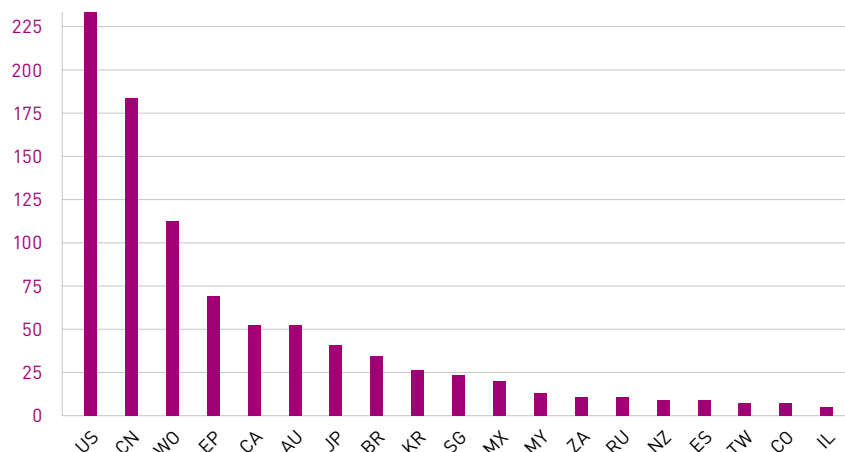


Figura 2. Distribución del número de solicitudes de patente por ámbito de protección

La institución que más solicitudes de patente ha presentado en todo el mundo es la americana Terravia Holdings (antigua Solazyme), disponiendo de 160 (Figura 3). A ésta le siguen distanciadamente la americana UOP LCC y la japonesa JX Nippon Oil Energy Corp., con 45 y 43 solicitudes de patente, respectivamente. Sin embargo, la institución que cuenta con mayor número de familias de patente es la Universidad de Dalian (China), con 25 invenciones que dieron lugar a 28 solicitudes. Esta misma tendencia se observa en la inmensa mayoría de las instituciones chinas, donde la protección se restringe fundamentalmente al ámbito local y el número de invenciones y de solicitudes tienden a coincidir. Las empresas europeas y americanas, por el contrario, siguen una política de extensión de la protección a otros muchos ámbitos.

Los códigos IPC (International Patent Classification) asociados a los distintos documentos de patente aportan información relevante sobre la temática a la que éstos se dirigen y permiten identificar las áreas de desarrollo más destacadas y en las se está buscando protección. En la Figura 4 se observa que el 30% de las familias de patente disponen del código C10G3 cuyo significado, tal como se recoge en la Tabla 1, es "Producción de mezclas de hidrocarburos líquidos a partir de materiales orgánicos que contienen oxígeno, p. ej. aceites grasos, ácidos grasos". El segundo código más representativo es C07C1, "Preparación de hidrocarburos a partir de uno o varios compuestos, cuando alguno de ellos no es un hidrocarburo", apareciendo en el 10.4% de las familias. Tras él se sitúan otros tales como C10G45 o C10L10 referidos a "Refino de aceites de hidrocarburos por medio de hidrógeno o de compuestos donores de hidrógeno" y "Uso de aditivos particulares para combustibles", respectivamente, apareciendo en el 6.5% y 6.3% de las familias de patente. Un análisis exhaustivo de la Figura 4 y la Tabla 1 permite conocer cuáles son los procesos de síntesis de bio-jet fuels más desarrollados, así como las materias primas más utilizadas a día de hoy.

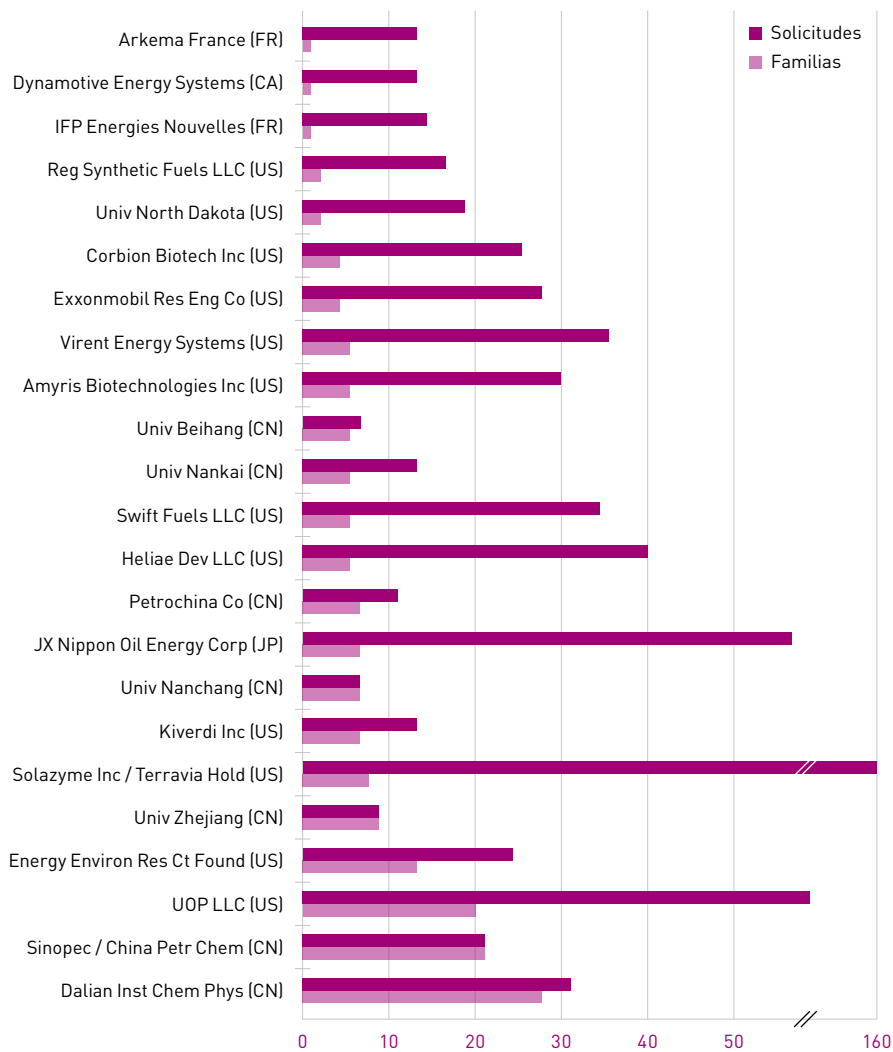


Figura 3. Número de familias y solicitudes de patentes de las instituciones líderes

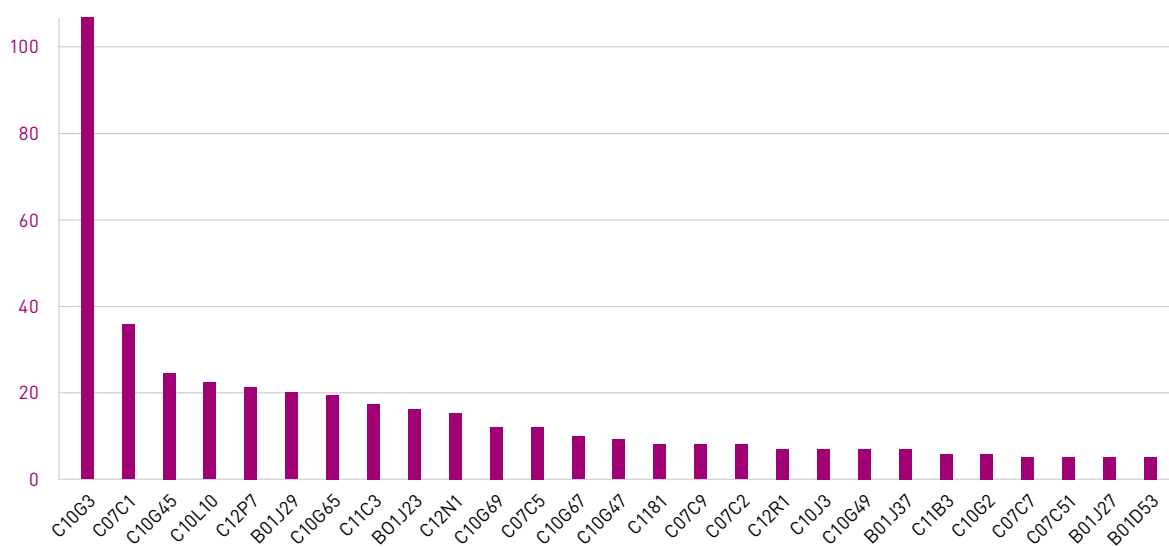


Figura 4. Número de familias de patente distribuidas por sus códigos IPC

Tabla 1. Códigos IPC más representativos

Código ICP (Grupos)	Significado
C10G3	Producción de mezclas de hidrocarburos líquidos a partir de materiales orgánicos que contienen oxígeno, p. ej. aceites grasos, ácidos grasos
C07C1	Preparación de hidrocarburos a partir de uno o varios compuestos, cuando alguno de ellos no es un hidrocarburo
C10G45	Refino de aceites de hidrocarburos por medio de hidrógeno o de compuestos donores de hidrógeno
C10L10	Uso de aditivos con fines particulares para combustibles
C12P7	Preparación de compuestos orgánicos que contienen oxígeno
B01J29	Catalizadores que contienen tamices moleculares
C10G65	Tratamiento de aceites de hidrocarburos, únicamente por varios procesos de hidrotratamiento
C11C3	Grasas, aceites o ácidos grasos obtenidos por modificación química de grasas, aceites o ácidos grasos
B01J23	Catalizadores que contienen metales, óxidos o hidróxidos metálicos no previstos en el grupo B01J 21/00
C12N1	Microorganismos; composiciones que los contienen; procesos de cultivo o conservación de microorganismos, o de composiciones que los contienen; procesos de preparación o aislamiento de una composición que contiene un microorganismo; sus medios de cultivo
C10G69	Tratamiento de aceites de hidrocarburos por al menos un proceso de hidrotratamiento y al menos otro proceso de conversión
C07C5	Preparación de hidrocarburos a partir de otros que tienen mayor número de átomos de carbono
C10G67	Tratamiento de aceites de hidrocarburos, únicamente por al menos un proceso de hidrotratamiento y al menos un proceso de refino en ausencia de hidrógeno
C10G47	Cracking de aceites de hidrocarburos, en presencia de hidrógeno o de compuestos donores de hidrógeno, para obtener fracciones de punto de ebullición inferior
C11B1	Producción de grasas o aceites grasos a partir de materias primas
C07C9	Hidrocarburos saturados acíclicos
C07C2	Preparación de hidrocarburos a partir de hidrocarburos que tienen menor número de átomos de carbono
C12R1	Microorganismos
C10J3	Producción de gases que contienen monóxido de carbono e hidrógeno, p.ej. gas de síntesis, a partir de materiales carbonosos sólidos por procesos de oxidación parcial utilizando oxígeno o vapor
C10G49	Tratamiento de los aceites de hidrocarburos, en presencia de hidrógeno o compuestos dadores de hidrógeno no previsto en alguno de los grupos C10G 45/02, C10G 45/32, C10G 45/44, C10G 45/58 o C10G 47/00
B01J37	Procedimientos para preparar catalizadores, en general; procedimientos para activación de catalizadores, en general
C11B3	Refino de grasas o aceites
C10G2	Producción de mezclas líquidas de hidrocarburos de composición no definida a partir de óxido de carbono
C07C7	Purificación, separación o estabilización de hidrocarburos; uso de aditivos
C07C51	Preparación de ácidos carboxílicos
B01J27	Catalizadores que contienen los elementos o compuestos de halógenos, azufre, selenio, telurio, fósforo, o nitrógeno; catalizadores que comprenden compuestos de carbono
B01D53	Separación de gases o de vapores, recuperación de vapores de disolventes volátiles en los gases, depuración química o biológica de gases residuales

PATENTES BIOENERGÍA

Biocombustibles sólidos (pellets, biochars, bio RDFs, bio SRFs, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2020070344	Bigas Alsina SA (ES)	Method and device for generating energy from pig hair. A method for generating energy from pig hair, that can be used in abattoirs and pig livestock processing plants, comprising: receipt and storage of the crude pig hair obtained from the pig; treatment of the crude pig hair for hydrolysis and drying by application of pressure and heat in successive steps; storage of the hydrolysed and dry pig hair at the abattoir; mixing of the hydrolysed and dry pig hair with biomass in varying proportions; and generating energy from the hydrolysed and dry pig hair and biomass in a steam boiler or other combustion device suitable for making use of the heat generated during combustion of said similar mixture. The invention also includes a device for said energy generation.
WO2020111414	Dangjin Nature World Coop (KR)	Eco-friendly, low-carbon decomposition, antibacterial material and method for producing same. The present invention pertains to an eco-friendly, low-carbon decomposition, antibacterial material and a method for producing same, wherein compost particles manufactured from livestock manure are mixed with a synthetic resin to prepare pellets serving as a raw material for a variety of molded products, the pellets being used as a material for the injection, extrusion, molding or the like of agricultural, fishery, and livestock products or industrial products, automotive components, or various containers and the like, i.e., as an eco-friendly, low-carbon decomposition, antibacterial material which can reduce air pollution, soil pollution, and water pollution by using livestock manure and enables low-carbon incineration through a combination of livestock manure and a synthetic resin, thus ensuring high resistance to moisture and impact and an adequate lifespan, as well as minimizing environmental pollution when incinerated or decomposed.
WO2020089187	Europeenne de Biomasse (FR)	Method for the continuous production of a combustible material for an industrial boiler, corresponding material and facility. The invention concerns a method for producing a combustible material having a net calorific value greater than or equal to 5.29 MWh/t. According to the invention, such a method comprises - continuously introducing a predetermined volume per minute of wood fragments into a pressurised reactor; - exposing the wood fragments to steam at a temperature of between 200 and 220°C for a period of between 5 and 9 minutes, the value of the period of exposure and the temperature value of the steam being selected such that the severity factor is between 4.05 and 4.15; - continuously extracting, from the reactor, a same predetermined volume of wood fragments per minute, through a plurality of apertures opening in a pipe substantially at atmospheric pressure; - separating the decompressed wood fragments and the residual steam extracted from the reactor, the wood fragments obtained after separation forming the combustible material.
US10640713	Gurin Michael H (US)	Biomass energy and value maximization. A system and method to a power production cycle optimized for combusting fractionated solid biomass such that the fractionated solid biomass is transported in a solvent that is utilized in a solvent-enhanced biomass liquefaction conversion process and the solvent is subsequently fractionated from the fractionated solid biomass for direct use as a liquid fuel for transport vehicles to maximize energy density and total system energy efficiency. Utilizing the solvent as a waste heat recovery method prior to combustion by the transport vehicle increases the total system energy efficiency and maximizes biomass value creation.
US2020124274	Logan Outdoor Products Llc (US)	Burner housing for a pellet grill. The invention relates to a burner housing for a pellet grill having two or more elongated apertures configured to have a first end with an adjacent first width and a second end with an adjacent second width, the adjacent second width relatively greater than the adjacent first width. The burner housing generates an air vortex when in burner operation in such a manner as to provide relatively more air movement in an area somewhat distal to the burner, thereby retaining an optimal amount of ash during lengthy cooking cycles while also providing optimal fuel-to-air characteristics.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2020110373	Nippon Steel Eng Co Ltd (JP)	Method for processing biomass solid fuel material and device for processing biomass solid fuel material. This method for processing a biomass solid fuel material (S11) includes a washing step (S12) of washing a biomass solid fuel material in a washing unit using additive water, and a squeezing step (S14) of adjusting the amount of compression of the biomass solid fuel material after the biomass solid fuel material is washed with the additive water on the basis of the electrical conductivity of immersion water after the immersion water has flowed out from the washing unit. In the squeezing step (S14), the amount of compression of the biomass solid fuel material after the biomass solid fuel material is washed with the additive water is increased as the electrical conductivity of the immersion water increases.
RU2718384	Obshchestvo S Ogranichennoi Otvetstvennostiu «ARMATEKH» (RU)	Heat generator furnace for burning wood wastes and heat generato. Heat generator furnace using wood waste includes cylindrical housing made of shells, rigidly attached to each other and forming internal volume of furnace. Each shell comprises cylindrical air chamber and inner lining with refractory material. Air chamber is connected to appropriate blower and communicated by means of blow nozzles with internal volume of furnace. Inside the lower shell there is a combustion chamber, in the wall of which there is a window, in which there is at least one device for loading wood wastes onto the bottom of the combustion chamber, wherein at least part of the inner wall of the combustion chamber adjacent to the bottom of the combustion chamber and located opposite the loading device is tapered, converging to the said combustion chamber bottom, a row of upper shells forms a space above the combustion chamber, and inside upper shell accommodating mixing chamber, between space above combustion chamber and mixing chamber there is flow diverting baffle, above mixing chamber there is pipe connecting mixing chamber through control valve with atmosphere, and at the outlet of the mixing chamber, which is the heat generator's outlet, an exhauster is installed, note here that heat generator is equipped with blower operation mode control device, loading device and controlled gate valve.EFFECT: raised efficiency of heat energy generation due to more complete burning of wood waste and increased time of non-stop operation of furnace and heat generator as a whole.
WO2020111974	Solonin Mark (RU)	Gasifying burner. The utility model relates to thermal power engineering. The technical result which the claimed utility model seeks to achieve is the stable combustion of agricultural pellets and/or plant waste such as to prevent the possibility of ash fusion, using a device with no movable parts in its high-temperature zone. This result is achieved by the complete gasification of the fuel, wherein volatiles are released during external heating using heat from an afterburn chamber, and residual coal is gasified at a temperature less than ash fusion temperature by the variable delivery of steam (water). The gases formed are combusted in a combustion chamber arranged concentrically around a central pipe (a pyrolysis and water-coal gasification chamber).
RU2721057	Yakovlev Yuriy Viktorovich (RU)	Heat generating plant for heating air for technological purposes using agricultural wastes, including bale and rolled straw, as fuel. Invention relates to heat supply, in particular to power equipment. Said technical result is achieved in a heat-generating plant for burning agricultural wastes, comprising a movable combustion chamber with a grate and secondary air nozzles, having a free setting in a gland assembly, and plate-type heat exchanger installed above combustion chamber and which is made with possibility of convective heating and subsequent washing of combustion chamber for additional air heating due to radiation, wherein plate heat exchanger is made dismountable with possibility of plates braking at possible temperature expansion directly during plant operation.EFFECT: invention is aimed at increase in the installation operating efficiency due to the possibility of linear and volumetric expansion at high temperature inside the chamber with preservation of heat release efficiency and, as a result, higher reliability, safety and durability of the plant design, as well as increase of heat power and possibility of fuel combustion with high humidity.5 cl, 2 dwg
US2020147832	Zeng Di (CN)	Mechanism bamboo charcoal processing apparatus. The invention discloses a mechanism bamboo charcoal processing apparatus, which includes a machine body. A rotating rod is rotatably connected to the top surface of the machine body. The rotating rod is provided with an oil groove, and a sliding plate is slidably connected to the oil groove. The fixed block is rotatably connected. The carbonized bamboo block and bamboo joint are first put into the feeding port through the feeding port, and then the power motor is turned on. This device can grind the initially carbonized bamboo block and bamboo joint into a uniform particle. Compared with ordinary machines, the bamboo charcoal powder milled by this device is screened layer by layer to ensure that the particle size of the milled bamboo charcoal powder can be uniform, thereby ensuring the quality of the later-processed charcoal. The bamboo charcoal powder and the combustion promoter are mixed uniformly, and then pressed into uniform-sized machine-made charcoal.

Syngas		
Nº Publicación	Solicitante (País)	Contenido técnico
US2020165127	Air Liquide (FR)	Process and plant for producing a converted synthesis gas. The invention relates to a process for producing a converted synthesis gas from a crude synthesis gas comprising the essential synthesis gas constituents of hydrogen (H ₂) and carbon monoxide (CO), wherein the crude synthesis gas is initially generated in a synthesis gas generation stage and subsequently converted in a multi-stage CO conversion and thus elevated in terms of its hydrogen content. The crude synthesis gas has steam added to it as a reaction partner for the CO conversion and cooling of the converted synthesis gas affords an aqueous condensate.
US2020190416	Aries Gasification LLC (US)	Universal feeder for gasification reactors. A universal feeder system that combines with a fluidized bed gasification reactor for the treatment of multiple diverse feedstocks including sewage sludge, municipal solid waste, wood waste, refuse derived fuels, automotive shredder residue and non-recyclable plastics. The invention thereby also illustrates a method of gasification for multiple and diverse feedstocks using a universal feeder system. The feeder system comprises one or more feed vessels and at least one live bottom dual screw feeder. The feed vessel is rectangular shaped having three vertical sides and an angled side of no less than 60 degrees from the horizontal to facilitate proper flow of feedstock material that have different and/or variable flow properties. The feedstocks are transferred through an open bottom chute to a live bottom dual screw feeder and through another open bottom chute to a transfer screw feeder that conveys feedstock to the fuel feed inlets of a gasifier.
WO2020065846	Eureka Eng Inc (JP)	Low-carbon type energy supply system. Provided is a low-carbon type, highly efficient energy supply system that produces small CO ₂ emissions. In the low-carbon type energy supply system, an indirect heating type gasification furnace that produces gasification gas using fuel containing at least biomass, a circulating fluidized bed boiler that produces superheated steam using fuel containing at least biomass, a condensing turbine power generation device, a gasification gas utilization device and the like are organically combined and integrated.
RU2723864	Federalnoe Gosudarstvennoe Byudzhethnoe Obrazovatelnoe Uchrezhdenie Vysshego Obrazovaniya Kubanskij G (RU)	Biomass processing method. The invention relates to processing of biomass to obtain synthesis gas and biochar ash. Method is implemented by grinding of initial biomass to particle size of 100-200 mcm, mixing with water emulsion of heavy hydrocarbon raw material with water content of 18.0-25.0 wt. %, having water particle size of 10-30 mcm. Then obtained mixture is subjected to dispersion, formed suspension of mixture of ground biomass and aqueous emulsion of heavy hydrocarbon raw material is subjected to gasification at temperature 800-1200 °C, oxygen deficit ratio of 0.2 to 0.5 with subsequent direction of gasification products to separation and purification to produce synthesis gas and ash. In order to obtain synthesis gas with ratio H:CO of not less than 1.5 gasification, a suspension with ratio of biomass to water emulsion of heavy hydrocarbon material equal to 1.5-2.5:1 is subjected, and to obtain ash with carbon content of 25-60 wt. % of gasification, suspension is subjected to ratio of biomass: aqueous emulsion of heavy hydrocarbon material, equal to 5.0-7.5:1. EFFECT: technical result consists in ensuring of target products with given characteristics by output and quality of gasification products control.
WO2020093110	Hermal Bio Energy Int Pty Ltd (AU)	Production of products from bio-energy. A process for producing a product from a source of bioenergy comprises (a) pyrolysing a feed material in the form of a wood waste biomass and/or other biomass and/or and other sources of bioenergy at a selected temperature under pyrolysis conditions in a closed system and decomposing the feed material and producing a solid bio-solid material, such as a bio-char, and a bio-gas, (b) producing bio-liquids and bio- syngas from the bio-gas from pyrolysis step (a); and (c) mixing bio-solid material and bio-liquids and water and forming a paste product.
US2020156973	Lanzatech Inc (US)	Integration of fermentation and gasification. The invention provides for the integration of a gas fermentation process with a gasification process whereby effluent downstream from the gas fermentation process is recycled to the gasification process. The invention is capable of recycling one or more effluents including biogas generated from a wastewater treatment process, tail-gas generated from the fermentation process, unused syngas generated by the gasification process, microbial biomass generated from the fermentation process, microbial biomass generated from a wastewater treatment process, crude ethanol from the product recovery process, fusel oil from the product recovery process, microbial biomass depleted water, wastewater generated from the fermentation process, and clarified water from a wastewater treatment process to a gasification process.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2020071908	Milena Olga Joint Innovation Assets BV (NL)	Reactor for producing a synthesis gas from a fuel. A reactor for producing a synthesis gas from a fuel, with a housing with a combustion part accommodating a first fluidized bed in operation, a riser extending along a longitudinal direction of the reactor and accommodating a second fluidized bed in operation, a down-comer positioned parallel to the riser and extending into the first fluidized bed, and one or more feed channels for providing the fuel to the reactor. The reactor further has a riser air chamber section connected to a lower part of the riser, the riser air chamber section comprising a cylindrical wall with a plurality of circumferentially located holes.
WO2020107090	Petroleo Brasileiro SA et al. (BR)	Process and plasma reactor for the production of synthesis gas. The present invention describes a plasma reactor for processing natural gas and/or light hydrocarbons, including biomethane and biogas, using a plasma torch that does not require the use of cathode-protection gas (shielding gas), and also a reforming process involving the use of a plasma reactor for the production of synthesis gas and carbonaceous materials from natural gas and/or light hydrocarbons.
WO2020095240	Univ of South Africa (ZA)	Process and system for converting waste plastic into power. The invention relates to a process and system for converting carbon material into power. Carbon material is gasified into synthesis gas in a gasifier, and steam is supplied to the gasifier. The synthesis gas is supplied to a gas turbine to produce power. Air is added to the synthesis gas prior to the gas turbine. Exhaust gas from the gas turbine is cooled in a first cooling device with water to produce steam. The steam is used in at least one steam turbine to produce power and the steam from at least one steam turbine is recycled to the gasifier.

Biogás		
Nº Publicación	Solicitante (País)	Contenido técnico
EP3628389	Air Liquide (FR)	Method for producing biomethane from a flow of biogas comprising solidification of impurities. Process for producing biomethane from a biogas stream including methane, carbon dioxide and at least one impurity chosen from ammonia, volatile organic compounds, water, sulfur-based impurities (H ₂ S) and siloxanes. A biogas stream is dried, the at least one impurity is at least partially removed by solidification and removal of the impurity. The methane and the carbon dioxide contained in the biogas obtained from the second step are separated so as to produce a biomethane stream and a CO ₂ stream.
US2020148988	DX Resources Llc (US)	System and process for producing biogas from an ethanol slurry mix. Biogas production from the anaerobic digestion of juice in an ethanol production plant is maximized by mixing a juice containing thin stillage and/or water with a concentrated syrup prior to the anaerobic digestion. The juice then can be mixed with a biomass such as corn meal and enzymes to form a slurry suitable for fermentation. Sufficient syrup is mixed into the juice to provide a BOD concentration in the juice between 100,000 and 150,000 ppm. Enough biogas can be produced to supply enough energy to meet all of the boiler steam production/distillation energy/electrical generation demands for the ethanol production plant with some excess biogas left over for other uses.
US2020131468	Energy Tech Innovations Llc (US)	Method and apparatus for treating biogas. Multiple risers are provided to perform different steps in a biogas water wash process. The risers may include absorption risers, flashing risers, and stripping risers. In each riser, the inlets to provide fluids to the riser and outlets to remove fluids from the risers are provided at one end of the riser. Each riser may then be located substantially below grade such that the end with the inlets and outlets is accessible at or just above the ground level. The risers within each step of the water wash process may be connected in series, parallel, or a combination thereof. The risers may also be constructed of a polyethylene material to reduce cost and weight of the water wash system.
EP3628390	Hysytech SRL (IT)	Biogas treatment assembly. The invention refers to a biogas treatment assembly comprising a biogas supplying line, by means of which the methane reaches a first treatment unit. The latter, in turn, comprises an absorption column, in which a stream of operating liquid (preferably water) dissolves part of the carbon dioxide contained in the biogas in order to obtain a flow of treated biogas depleted of carbon dioxide and enriched in methane. The first unit further comprises a stripping column for separating the carbon dioxide absorbed by the operating liquid in the first column, following a heating of the operating liquid itself. Said second column generating a flow of OFFGAS with a high concentration of carbon dioxide.

Nº Publicación	Solicitante (País)	Contenido técnico
EP3628951	Hysytech SRL (IT)	Flash separator for the treatment of a fluid mixture containing liquefied methane and carbon dioxide and plant for producing liquefied biomethane or natural gas comprising such a flash separator. A flash separator for the treatment of a fluid mixture containing liquefied methane and carbon dioxide, comprising a reservoir having an inner chamber, at least one mixture inlet for the introduction of a mixture to be treated into said inner chamber and at least one liquid phase outlet for the extraction of a separate liquid phase from the inner chamber. The reservoir comprises a first partition which at least partially divides the inner chamber into two regions which are laterally adjacent to each other when observing the reservoir in an operative position. The mixture inlet is located in a first region of said two regions and the liquid phase outlet is located in a second region of said two regions, and the two regions are in fluid communication with each other by means of a plurality of openings obtained in said first partition. A plant for the production of biomethane or liquefied natural gas comprising the flash separator is also described.
WO2020072457	Loci Controls Inc (US)	Landfill gas extraction systems and method. Described herein are embodiments of a control system that automatically determines whether a gas extraction system is in a state in which landfill gas is being released into the atmosphere, and automatically controls landfill gas flow to mitigate, prevent and/or stop the release of landfill gas. The control system may control a valve to control flow of landfill gas through well piping of the gas extraction system. The pressure of landfill gas in the well piping at a location upstream of the valve may indicate whether there is a risk of landfill gas being released into the atmosphere. The control system may adjust a position of the valve in response to determining that the pressure at the location upstream of the valve indicates that there is a risk of landfill gas being released into the atmosphere.
WO2020071687	Moon Sung Woo (KR)	Circulation-type biogas producing system through control of inorganic acids. The present invention relates to a circulation-type biogas producing system through the control of inorganic acids, wherein an organic material is introduced into a fermentation bath accommodating microbes, and subjected to microbial decomposition, thereby producing biogas containing methane, while by continuously controlling the amount of inorganic acids generated during the microbial decomposition, the concentration of inorganic acids in the fermentation bath can be maintained at the optimum conditions in which the microbes can be active.
WO2020075527	Nagai Tomio (JP)	Method for producing methane gas and compost by using biomass resources. The present invention pertains to a method for producing methane gas and fermentation-derived compost by performing methane fermentation more efficiently using a method having a small burden on the external environment. In this method for producing methane gas and compost, in a piece of equipment for methane fermentation in which a roughly pulverized product of biomass resources is loaded, and reaction water containing a methanogen is sprayed from above the loaded object so that the loaded object undergoes a methane fermentation reaction, the amount of water contained in resulting fermentation-derived compost is greater than or equal to an amount obtained by subtracting the amount of water consumed in the fermentation reaction from the amount of water contained in the biomass raw material, and the amount of water contained in the fermentation-derived compost is at most 75 wt%. The present invention is also a method which is for producing methane gas and compost and in which a pair of methane fermentation tanks are used, and at the time that spraying of reaction water is started and thereby a methane fermentation reaction is started in one of the methane fermentation tanks, a reaction stop operation of ending a methane fermentation reaction is performed in the other methane fermentation tank, and the amount of inert gas introduced into the other fermentation tank is substantially equal to the amount of biogas generated in the one fermentation tank.
WO2020074336	Niederbacher Michael (IT)	Biogas plant for fermenting organic materials and for generating biogas. The invention relates to a biogas plant for fermenting organic materials and for generating biogas, having a plurality of containers and/or tanks, which form at least one slurry store, at least one fermenter container downstream of the slurry store, at least one post-fermenter container downstream of the fermenter container and/or at least one final storage container downstream of the fermenter container. According to the invention, the entire functional biogas plant is, as a floating biogas plant, a component of a one-part or of a multi-part connected floating body.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2020075114	Nextchem SRL (IT)	Method and apparatus to produce bio-methane from wastes. A process for producing methane (bio-methane) from a carbon matrix waste through HT conversion (> 1000°C) with oxygen (gasification with oxygen) without any pollutant emission, and in particular emissions of nitrogen and sulphur oxides, comprising a plurality of high temperature (>1000°C) converters and corresponding first purification treatment unit/units, followed by a second purification treatment in a single line to further purify the syngas, followed by the CO shift, methanation and CO2 removal. In the apparatus to carry out the process the raw syngas is produced by a plurality of HT converters and purification treatment sections for each of said HT converters, on multiple trains, depending of the plant capacity, in order to reduce the fluctuations of syngas flow and composition to downstream processing and to increase the operability time of the entire plant having at least two HT converter always in operation.

Bioalcoholes (bioetanol, biometanol, etc.)		
Nº Publicación	Solicitante (País)	Contenido técnico
EP2279241	ArcherDaniels Midland Co	Development of strains of the thermotolerant yeast hansenula polymorpha capable of alcoholic fermentation of starch and xylan by expression of starch and xylan degrading enzymes. Genes SWA2 and GAML from the yeast, Schwanniomyces occidentalis, encoding α- amylase and glucoamylase, respectively, were cloned and expressed in H. polymorpha. The expression was achieved by integration of the SWA2 and GAML genes into the chromosome of H. polymorpha under operably linked to a strong constitutive promoter of the H. polymorpha - glyceraldehyde-3 -phosphate dehydrogenase gene (HpGAP). Resulting transformants acquired the ability to grow on a minimal medium containing soluble starch as a sole carbon source and can produce Ethanol at high-temperature fermentation from starch up to 10 g/L. A XYN2 gene encoding endoxylanase was obtained from the fungus Trichoderma resee, and a xlnD gene coding for β-xylosidase was obtained from the fungus Aspergillus niger. Co-expression of these genes was also achieved by integration into the H. polymorpha chromosome under control of the HpGAP promoter. The resulting transformants were capable of growth on a minimal medium supplemented with birchwood xylan as a sole carbon source. Successful expression of xylanolytic enzymes resulted in a recipient strain capable of fermentation of birchwood xylan to ethanol at 48° C. Further with co expression of the forgoing genes in a H. polymorpha strain that overexpresses a pyruvate decarboxylase gene further improved ethanol production.
US2020149074	Celtic Renewables Ltd (GB)	Process for the manufacture of butanol or acetone. A process for the manufacture of butanol, acetone and other renewable chemicals utilizes one or more of by-products of the manufacture of malt whisky, such as pot ale and spent lees, biomass substrates, such as paper, sludge from paper manufacture and spent grains from distillers and brewers, and diluents, such as water and spent liquid from other fermentations. The process includes treating a substrate to hydrolyze it and fermenting the treated. Also provided is a biofuel including butanol manufactured according to the process.
DK2627775	Compagnie Ind de la Matiere Vegetale, CIMV (FR)	Process for producing bioethanol by enzymatic hydrolysis of cellulose. The invention concerns a process for producing bioethanol comprising the steps of pretreatment (consisting in destructuring the lignocellulosic vegetable raw material by placing it in the presence of a mixture containing formic acid, acetic acid and water, then in separating cellulose), of enzymatic hydrolysis and of alcoholic fermentation, characterized in that it comprises, prior to the enzymatic hydrolysis, a step of partial elimination of the lignins so as to obtain a residual overall level of lignins (T), expressed as percentage by weight, which is non-zero and which is included in a range determined by a lower limit, and an upper limit Bsup, respectively equal to 0.30% and 4%. In order to obtain conditions of acidification before the enzymatic hydrolysis step, the process comprises a step for re- acidification of the mixture, which is carried out by means of an acid, or of a mixture of acids, of determined pKa, and in particular by means of weak organic acids such as acetic acid and/or formic acid.
US10619172	Darmouth College (US)	Increased ethanol production by thermophilic microorganisms with deletion of individual hfs hydrogenase subunits. Disclosed are methods for engineering bacteria, for example, Thermoanaerobacterium saccharolyticum, that convert biomass to ethanol at high yield by deleting a single gene. Deletion of subunit A or subunit B of the hfs hydrogenase, but not deletion of subunit C or subunit D, results in an increase in ethanol yield.

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EP3335809	Hitachi Shipbuilding Eng Co (JP)	Method for effectively utilizing energy in waste-incineration facility with ethanol production equipment. An object of the present invention is to provide a novel method for effectively utilizing energy in a waste-incineration facility annexed with an ethanol production equipment that is capable of achieving a further enhancement of the energy recovery rate. The present invention is a method for effectively utilizing energy in a waste-incineration facility annexed with an ethanol production equipment that forms bioethanol from carbohydrates contained in biomass of municipal solid wastes, comprising: an ethanol production step of mixing a part of heavy components containing garbage and wet papers with pulp separated from light components containing dry papers and plastics, all of which are obtained through a pretreatment of the municipal solid wastes, and fermenting the mixture; and a methane production step of fermenting a balance of the heavy components and/or a distillation residue generated in the ethanol production step.
WO2020093131	logen Corp (CA)	Pretreatment of softwood. A process for producing a fuel from a softwood. A feedstock containing softwood is pretreated, where the pretreating includes heating the feedstock in a pretreatment liquor containing sulfur dioxide and bisulfite salt. The heating is conducted between 1 10°C and 160°C. The pretreatment liquor has a sulfur dioxide concentration that is greater than 6.5 wt% on liquor and a pH at 25°C that is less than 1.3. The cellulose in the pretreated material is hydrolysed to glucose. The glucose may be fermented to a fermentation product such as ethanol.
US10619147	Lallemand Hungary Liquidity Man LLC (HU)	Chimeric polypeptides having xylose isomerase activity. There is provided chimeric polypeptides capable of converting xylose to xylulose, engineered host cells that express the chimeric polypeptides, methods of creating chimeric polypeptides, and methods of fermenting cellulosic biomass to produce biofuels, including ethanol.
EP3638800	Lanzatech Inc (US)	Methods and apparatus for recycling tail gas in syngas fermentation to ethanol. The invention present provides a method (and suitable apparatus) to convert biomass to ethanol, comprising gasifying the biomass to produce raw syngas; feeding the raw syngas to an acid-gas removal unit to remove at least some CO ₂ and produce a conditioned syngas stream; feeding the conditioned syngas stream to a fermentor to biologically convert the syngas to ethanol; capturing a tail gas from an exit of the fermentor, wherein the tail gas comprises at least CO ₂ and unconverted CO or H ₂ ; and recycling a first portion of the tail gas to the fermentor and/or a second portion of the tail gas to the acid-gas removal unit. This invention allows for increased syngas conversion to ethanol, improved process efficiency, and better overall biorefinery economics for conversion of biomass to ethanol.
EP3473710	Nissan Chemical Corp (JP)	Saccharification reaction solution, saccharifying enzyme composition, sugar production method, and ethanol production method. The invention provides a saccharification reaction mixture, a saccharification enzyme composition, and a saccharide production method, which are aimed to enhance saccharization rate by use of an enzyme in a simple step as well as a method for producing ethanol from a saccharide. The saccharification reaction mixture can saccharify at least one of cellulose and hemicellulose and contains at least one of cellulose and hemicellulose, a saccharification enzyme, silica or a silica-containing substance, and at least one compound (A) selected from the group consisting of thiourea, a thiourea derivative, an isothiurea derivative, and a salt of any of these.
US10612050	Xyleco (US)	Processing biomass. Carbon-containing materials, such as biomass (e.g., plant biomass, animal biomass, and municipal waste biomass) or coal are processed to produce useful products, such as fuels, carboxylic acids and equivalents thereof (e.g., esters and salts). For example, systems are described that can use feedstock materials, such as cellulosic and/or lignocellulosic materials and/or starchy materials, to produce ethanol, butanol or organic acids (e.g., acetic or lactic acid), salts of organic acids or mixtures thereof. If desired, organic acids can be converted into alcohols, such as by first converting the acid, salt or mixtures of the acid and its salt to an ester, and then hydrogenating the formed ester. Acetogens or homoacetogens which are capable of utilizing a syngas from a thermochemical conversion of coal or biomass can be utilized to produce the desired product.

Biodiésel		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2020089843	Ariel Scient Innovations Ltd (IL)	Production of biodiesel. A process of generating an alkyl ester of a fatty acid (e.g., a biodiesel) from a free fatty acid-containing substance (e.g., a feedstock), is provided. The process is effected by contacting a mixture of the free fatty acid-containing substance and a respective alcohol with Lewis Acid; and, while contacting, exposing the mixture and the Lewis acid to ultrasound energy. An alkyl ester of a fatty acid, or a mixture of two or more alkyl esters of fatty acids, (e.g., a biodiesel), obtainable by the process, are also provided.
EP2675879	Council of Scient & Industrial Research an Indian Registered Body Incorporated under the Registration (IN)	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 alcohol:oil 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.
EP3645731	Eni Spa et al. (IT)	A process for the production of lipids from biomass derived from guayule plants. A process for the production of lipids from biomass derived from guayule plants comprising: obtaining a hydrolysate comprising 5 carbon atom (C5) sugars from biomass derived from guayule plants, said 5 carbon atom (C5) sugars being present in said hydrolysate in a quantity greater than or equal to 80% by weight, preferably ranging from 85% by weight to 99% by weight, with respect to the total weight of said hydrolysate; feeding said hydrolysate to a fermentation device in the presence of at least one oleaginous yeast to obtain a fermentation broth; at the end of fermentation, subjecting said fermentation broth to separation obtaining an aqueous suspension of oleaginous cellular biomass comprising lipids and an aqueous phase. The lipids thus obtained can be advantageously used in the production of biofuel such as, for example, biodiesel or green diesel that can be used as such, or in mixtures with other fuels, for automotive transport.
US2020102506	Mexicano Inst Petrol (MX)	Hydrodeoxygenation process of vegetable oils for obtaining green diesel. The present disclosure relates to a process for the hydrodeoxygenation of vegetable oils or animal fats to produce green diesel, which comprises contacting the vegetable oil or animal fat with a Nickel-Molybdenum or Cobalt-Molybdenum catalyst supported on alumina-titania or titania, respectively; in a fixed bed reactor in the presence of hydrogen. The process involves hydrocracking, hydrogenation, decarboxylation, decarbonylation, carried out in a fixed bed reactor at temperature of about 270° C. to about 360° C., pressure of about 40 kgf/cm ² to about 60 kgf/cm ² , liquid hourly space velocity (LHSV) between about 0.8 h ⁻¹ to about 3.0 h ⁻¹ , and H ₂ /oil ratio of about 2,700 ft ³ /bbl to about 7,000 ft ³ /bbl, that allows to obtain a conversion up to 99% and up to 92.7% yield on green diesel.
EP3642179	Neste Oyj (FI)	Method for converting carboxylic acids and esters into base oil hydrocarbons. The present invention relates to the field of hydrotreatment of biological oil, in particular to methods for producing renewable base oil and a diesel oil from low-value biological oils. It was found that low-value biological oils containing free fatty acids and fatty acid esters can be processed into a renewable base oil and a renewable diesel oil in an efficient manner by first separating at least part of the free fatty acids from the feedstock and then processing separately this free acid feed separately in a ketonisation reaction followed by hydrodeoxygenation and hydroisomerisation reactions to yield a renewable base oil stream. The remaining free fatty acid depleted feed is processed in a separate hydrodeoxygenation and hydroisomerisation step to yield a renewable diesel stream. Splitting the feedstock into two separate streams provides surprising advantages compared to a combined treatment of the entire feedstock.

Nº Publicación	Solicitante (País)	Contenido técnico
EP2935527	Nauer Gerhard et al. (AT)	Method for producing a biodiesel fuel having a specially designed reactor and "autocatalytically" active nanoscale structured material surface of the reactor. The invention relates to a method for economical production of biodiesel specifically from free fatty acids, as are present in particular in used cooking oils, used cooking fats, different animal fats and biological fats or oils, wherein the raw material, in admixture with a monovalent alcohol, preferably methanol, is fed to a reactor that is specially constructed from "[auto]catalytically" active material having a nanoscale surface structure and is correspondingly designed, and is reacted at a defined temperature at relatively high pressures. The method is characterised in that the method is carried out without an external catalyst (liquid or solid) and the products diesel and glycerin occurring during the transesterification therefore accumulate substantially free from metallic impurities. The resulting products comply with the relevant quality standards.
US2020115636	Neste Oyj (FI)	Process for the manufacture of diesel range hydrocarbons. The invention relates to a process for the manufacture of diesel range hydrocarbons wherein a feed is hydrotreated in a hydrotreating step and isomerised in an isomerisation step, and a feed comprising fresh feed containing more than 5 wt % of free fatty acids and at least one diluting agent is hydrotreated at a reaction temperature of 200-400° C., in a hydrotreating reactor in the presence of catalyst, and the ratio of the diluting agent/fresh feed is 5-30:1.
WO2020091651	Sunpine AB (SE)	Continuous fractionation of crude tall oil to refined tall diesel. The present invention describes a process for continuous fractionation of CTO (crude tall oil) to RTD (refined tall diesel), said process comprising: - when removing a stream of TOP (tall oil pitch) the CTO is fed through at least two evaporation zones arranged in series so that one stream of CTO is fed from a first evaporation zone to a second evaporation zone, wherein a TOP stream is produced and fed from the second evaporation zone, wherein a first vapor stream is produced within the first evaporation zone and a second vapor stream is produced within the second evaporation zone and wherein there is a temperature difference of at least 10°C between the first vapor stream and the second vapor stream; and - feeding the first vapor stream and the second vapor stream into a subsequent fractionation column to produce a stream of RTD from the fractionation column, wherein the first vapor stream and the second vapor stream are being fed to different positions, relative to the column height, in the fractionation column, where different conditions are applied to ensure suitable fractionations of a more fatty acid rich material and a more rosin rich material, respectively, and which different positions in the fractionation column are separated by packing means.
WO2020072669	Reg Synthetic Fuels LLC (US)	Renewable diesel. The present technology relates to hydrocarbon fuels comprising renewable content. More particularly, the technology relates to manufacture of renewable diesel for potential use as aviation turbine fuel blendstock.
PT3008200	Renewable Energy Group Inc (US)	Methods and devices for economically producing a purified biodiesel product from feedstocks. Some embodiments of the methods comprise using at least one of a crude feedstock pretreatment process and a free fatty acid refining process prior to transesterification and the formation of crude biodiesel and glycerin. The crude biodiesel is then subjected to at least one biodiesel refining process which, in conjunction with feedstock pretreatment and free fatty acid refining produces a purified biodiesel product that meets multiple commercial specifications. A wide variety of feedstocks may be used to make biodiesel that otherwise would not meet the same commercial specifications, including corn oil, used cooking oil, poultry fats, fatty acid distillates, pennycress oil, and algal oils. The combination of feedstock refining and biodiesel refining processes is necessary to reduce problems associated with feedstocks having waxes, high free fatty acid levels, unacceptable color, high unsaponifiables levels, and high sulfur levels.

Nº Publicación	Solicitante (País)	Contenido técnico
US2020149076	Versalis Spa (IT)	Variant of oleaginous yeast and its use for the production of lipids. The present invention relates to a variant of oleaginous yeast of the species <i>Trichosporon oleaginosus</i> characterized by mutations affecting cell wall synthesis that change the morphology thereof with respect to the wild-type strain of the same species. In particular, thanks to said mutations, cell aggregates are formed which, with respect to the wild-type strain of the same species, lower the viscosity of the culture broth, are more easily separable therefrom and thus make their recovery easier. Said variant of oleaginous yeast of the species <i>Trichosporon oleaginosus</i> is also characterized by yields of oleaginous cellular biomass and intracellular accumulation of lipids that are similar or even higher than those of the wild-type strain. Further, the present invention relates to a process for the production of lipids through said variant of oleaginous yeast of the species <i>Trichosporon oleaginosus</i> . The lipids thus obtained can be advantageously used as synthesis intermediates, particularly in the so-called "green chemistry" sector, or in the production of biofuels such as, for example, "biodiesel" or "green diesel", which can be used as such, or mixed with other fuels for transportation.

Bio-jet fuels		
Nº Publicación	Solicitante (País)	Contenido técnico
ES2761686	Advonex Int Corp (US)	Production of hydrocarbons from plant oil and animal fat. Oils from plants and animal fats are hydrolyzed to fatty acids for a Kolbe reaction. The invention relates to a high productivity Kolbe reaction process for electrochemically decarboxylating C4-C28 fatty acids derived from sources selected based on their saturated and unsaturated fatty acid content in order to lower anodic passivation voltage during synthesis of C6-C54 hydrocarbons. The C6-C54 hydrocarbons may undergo olefin metathesis and/or hydroisomerization reaction processes to synthesize heavy fuel oil, diesel fuel, kerosene fuel, lubricant base oil, and linear alpha olefin products useful as precursors for polymers, detergents, and other fine chemicals.
EP2342013	Exxonmobil Res & Eng Co (US)	Hydrotreatment and dewaxing treatments for improving freezing point of jet fuels. This invention relates to a process for improving the yield and properties of jet fuel from a kerosene feed. More particularly, a kerosene feedstock is hydrotreated and dewaxed using a ZSM-48 catalyst to produce a jet fuel in improved yield and having improved properties.
ES2760529	Neste Oyj(FI)	Method for catalytic conversion of ketoacids and hydrotreatment to hydrocarbons. The present invention relates to catalytic conversion of ketoacids, including methods for increasing the molecular weight of ketoacids, the method comprising the steps of providing in a reactor a feedstock comprising at least one ketoacid. The feedstock is then subjected to one or more C-C-coupling reaction(s) in the presence of a catalyst system comprising a first metal oxide and a second metal oxide.
US10640721	Neste Oyj(FI)	Method for producing renewable middle-distillate composition, use of the composition and fuel containing the same. The present invention provides a fuel comprising a renewable middle distillate composition obtainable by hydrodeoxygenation of a feedstock comprising levulinic acid dimers/oligomers and fractionated distillation. The renewable middle distillate composition contains less than 10.0 wt.-% aromatics.
EP3184611	Neste Corp(FI)	Method for producing an aviation fuel composition. The present invention relates to an aviation fuel composition comprising an aviation range fuel component and a diesel range fuel component originating from renewable sources, the diesel range fuel component having a cloud point of at most about -20°C and existent gum more than about 7 mg/ 100 ml, wherein existent gum of the aviation fuel composition is at most about 7 mg/100 ml.
AU2017264777	Reg Synthetic Fuels LLC (US)	Biorenewable kerosene, jet fuel, jet fuel blendstock, and method of manufacturing. The present technology provides compositions that include at least about 98 weight percent ("wt%") n-paraffins which, among other surprising features, may be suitable for use as a diesel fuel, an aviation fuel, a jet fuel blendstock, a blendstock to reduce the cloud point of a diesel fuel, a fuel for portable heaters, and/or as a charcoal lighter fluid. The composition includes at least about 98 wt% C.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2020083997	Topsoe Haldor AS (DK)	Method for co-production of aviation fuel and diesel. The present disclosure relates to a process plant and a process for production of a hydrocarbon suitable for use as jet fuel from a feedstock being a renewable feedstock or an oxygenate feedstock, comprising the steps of combining the feedstock with an amount of a liquid diluent, directing it to contact a material catalytically active in hydrodeoxygenation under hydrotreating conditions to provide a hydrodeoxygenated intermediate product, directing at least an amount of said hydrodeoxygenated intermediate product to contact a material catalytically active in hydrocracking under hydrocracking conditions providing the hydrocracked intermediate product, separating said hydrocracked intermediate product in a vapor fraction and a liquid fraction, optionally providing at least an amount of said liquid hydrocracked product as said liquid diluent, directing at least an amount of said liquid hydrocracked product to contact a material catalytically active in isomerization under isomerization conditions to provide an isomerized intermediate product, and fractionating said isomerized intermediate product to provide at least a hydrocarbon suitable for use as jet fuel, with the associated benefit of such a process being well suited for efficiently converting the upper-boiling point of a renewable feedstocks to a lower boiling product, such as non-fossil kerosene. In addition to said hydrocarbon suitable for use as jet fuel, diesel and other hydrocarbons may also be produced.
EP2989073	Univ California et al. (US)	Methods to produce fuels. The present disclosure generally relates to the catalytic conversion of alcohols into hydrocarbon ketones suitable for use as fuels. More specifically, the present disclosure relates to the catalytic conversion of a mixture of isopropanol-butanol-ethanol (IBE) or acetone-butanol-ethanol (ABE), into ketones suitable for use as fuels. The ABE or IBE mixtures may be obtained from the fermentation of biomass or sugars.
US10618856	Univ California et al. (US)	Methods for producing cyclic and acyclic ketones. Provided herein are methods for producing cyclic and acyclic ketones from trimerization and dimerization of alkyl ketones, including for example methyl ketones. Such cyclic and acyclic ketones may be suitable for use as fuel and lubricant precursors, and may be hydrodeoxygenated to form their corresponding cycloalkanes and alkanes. Such cycloalkanes and alkanes may be suitable for use as fuels, including jet fuels, and lubricants.
US10619106	Virent Inc et al. (US)	Method and systems for making distillate fuels from biomass. The present invention provides methods, reactor systems and catalysts for converting biomass and biomass-derived feedstocks to C8+ hydrocarbons using heterogenous catalysts. The product stream may be separated and further processed for use in chemical applications, or as a neat fuel or a blending component in jet fuel and diesel fuel, or as heavy oils for lubricant and/or fuel oil applications.

Otros biocombustibles (bio-hidrógeno, bio-oils, biopropano, etc.)

Nº Publicación	Solicitante (País)	Contenido técnico
CA2874826	Chevron USA Inc (US)	Process for producing ketones from fatty acids. The invention relates to a process for producing ketones or hydrocarbon base oil from fatty acids preferably derived from a biological origin or other renewable source. The process is directed at making an aliphatic ketone or a mixture of aliphatic ketones having 14 to 52 carbon atoms, comprising a ketonization reaction of a fatty acid in a vapor phase with a decarboxylation-coupling catalyst to provide ketones, which can be deoxygenated to give saturated hydrocarbons, unsaturated hydrocarbons, and mixtures thereof. Base oils and transportation fuels may be produced from the process herein.

Nº Publicación	Solicitante (País)	Contenido técnico
EP3658649	Corbus AB (SE)	Process and apparatus for hydrotreatment of pyrolysis oil. An apparatus and process are disclosed for producing hydrocarbons from biomass, the apparatus comprising: a pyrolysis reactor (2) in which dry biomass (Bd) is heated in an environment substantially free from oxygen and halogens, wherein a pyrolysis product (PP) and char (C) is produced; a gasification reactor (3) in which the separated char (C) is heated in an environment containing steam (Wst) so as to reduce said char (C) to produce a synthesis gas (Sh), a gas cooler (4) in which the produced synthesis gas (Sh) is cooled to a cooled synthesis gas (Srt); a conditioning and pressure system (5), in which the cooled synthesis gas (Srt) is refined so as to produce a purified synthesis gas (Sp); a separation device (6), in which hydrogen gas (H2) is separated from the purified synthesis gas (Sp). The apparatus also comprises a hydrogenation device (7), into which pyrolysis oil (PO) retrieved from the pyrolysis product (PP), and at least a portion of the separated hydrogen gas (H2) recuperated from the separation device (6) are introduced for a hydrogenation step, in which the pyrolysis oil (PO) is hydrogenated by the presence of the hydrogen gas (H2), wherein hydrocarbons (BO) that are substantially free from oxygen are produced.
WO2020068820	Exxonmobil Res & Eng Co (US)	Co-processing hydrothermal liquefaction oil and co-feed to produce biofuels. The present disclosure relates to processes for producing biofuel compositions by processing hydrocarbon co-feed and a bio-oil obtained via hydrothermal liquefaction (HTL) of a cellulosic biomass to form an HTL oil. The cellulosic mass can be processed at an operating temperature of about 425°C or less and an operating pressure of about 200 atm or less. The HTL oil is co-processed with a hydrocarbon co-feed (e.g., petroleum fraction) in a cracking unit, such as an FCC unit, a coker unit or a visbreaking unit, in the presence of a catalyst to produce a cracked product (biofuel). The bio content of the cracked product provides RIN credits for the cracked product.
US10633622	Greenfield Specialty Alcohols Inc (CA)	Integrated system for hydrogen and methane production from industrial organic wastes and biomass. The present invention provides a method that has been devised to overcome the two most important limitations for sustained biological hydrogen production, namely contamination of the microbial hydrogen-producing cultures with methane-producing cultures necessitating frequent re-start-up and/or other methanogenic bacteria inactivation techniques, and the low bacterial yield of hydrogen-producers culminating in microbial washout from the system and failure. The method includes biological hydrogen production, followed by a gravity settler positioned downstream of the CSTR, which combination forms a biohydrogenator. The biomass concentration in the hydrogen reactor is kept at the desired range through biomass recirculation from the bottom of the gravity settler and/or biomass wastage from the gravity settler's underflow. The gravity settler effluent is loaded with volatile fatty acids, as a result of microbiological breakdown of the influent waste constituents by hydrogen-producing bacteria, and is an excellent substrate for methane-forming bacteria in the downstream biomethanator.
WO2020074870	SCG Chemicals Co Ltd et al. (TH)	Catalytic process. A catalytic process for the deoxygenation of an organic substrate, such as a biomass or bio-oil, is described. The catalytic process is conducted in the presence of a gaseous mixture containing both hydrogen and nitrogen. The presence of nitrogen in the gaseous mixture gives rise inter alia to increased catalytic activity and/or increased selectivity for aromatic reaction products.
KR20200038952	Sea Nergy Pty Ltd (AU)	Hydrogen production. A method for producing a carboxylic acid compound from seawater is disclosed. The method comprises mixing a predetermined amount of a sugar with the seawater for a sufficient period of time such that catabolism of the sugar is able to occur, whereby the carboxylic acid compound is produced. The solution comprising the carboxylic acid compound can be electrolysed to produce, inter alia, hydrogen.
EP3532568	UOP LLC (US)	Processes for producing a fuel from a renewable feedstock. Processes for the production of transportation fuel from a renewable feedstock. A catalyst is used which is more selective to hydrodeoxygenate the fatty acid side chains compared to decarboxylation and decarbonylation reactions. A gaseous mixture of carbon monoxide and hydrogen can be supplied to the conversion zone. Water may also be introduced into the conversion zone to increase the amount of hydrogen.

Nº Publicación	Solicitante (País)	Contenido técnico
US10633605	UPM Kymmene (FI)	Process for modifying bio-oil. Disclosed is a process for modifying of bio-oil, the process including the steps where feedstock including bio-oil is allowed react with a reducing agent in at least one polar solvent, to obtain modified bio-oil. Also disclosed is the use modified bio-oil, obtainable by the process, as heating oil, as starting material in processes for producing fuels, fuel components, fine chemicals, chemical building-blocks, and solvents.
EP2051824	VWP Waste Proc Ltd (GB)	Recycling of domestic waste material. A process and apparatus for recycling municipal domestic waste comprises subjecting the waste to steam at 150°C-200°C at above atmospheric pressure but less than twice atmospheric pressure, After steam treatment, the resultant material is separated into constituent parts and biomass and/or plastics subjected to further treatment: The further treatment preferably produces bioethanol from the biomass and diesel from the plastics. As an alternative, some or all of the biomass may be gasified in order to produce hydrogen which may, in turn be fed to a fuel cell to produce an electrical output.
WO2020069073	Worcester Polytech Inst (US)	Hydrothermal liquefaction for biomass. Catalyst composition and parameters for catalytic hydrothermal liquefaction of biomass to bio-oil fuels target municipal solid waste (MSW) rather than lignin rich plant waste typically sought for bio-oil production. An HTL (Hydrothermal Liquefaction) reactor generates bio-fuel from municipal solid waste (MSW), including receiving, in the HTL reactor, non-lignin based waste from a municipal processing stream, and adding a solvent for extracting sugars from green waste components of the municipal processing stream. The reactor extracts a liquid from the received waste, and converts water soluble products in the liquid into oil soluble products via C-C (carbon-to-carbon) coupling reactions. A catalyst added to the resulting aqueous stream recovers a beneficial oil product, and is optimized by tuning acid and base sites on the solid catalyst.

PATENTES BIOPRODUCTOS

Biomateriales (de construcción, medicina, embalaje, etc.)		
Biocomposites y biofibras		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2020072009	B Preg Kompozit Ve Tekstil Muhendislik Danismanlik Sanayi Ticaret Anonim Sirketi (TR)	Semi-finished composite materials containing natural fibers and production thereof. The invention comprises unidirectional thermoplastic prepreg structures containing reciprocal surfaces/faces, wherein one surface includes uni-directionally oriented natural fibers and the other surface includes randomly oriented natural fibers and the production of these structures in one step.
WO2020065503	Dalrymple Smith Terrot (FR)	Natural plant fibre based construction products and their manufacture, and construction methods using the products. During recent times many artificial fibres have been developed that are particularly strong and versatile. These fibres have revolutionised the manufacture of lightweight and yet durable structures such as boat hulls or aircraft fuselages. However, such products are not friendly on the environment. Bamboo is a naturally grown fibre with a high strength to weight ratio. The present invention provides a method of manufacturing long ribbons or tapes from bamboo fibre, and using those ribbons or tapes in the manufacture of construction products, of in the manufacture of articles such as boat hulls or the coachwork of railway carriages. The method of manufacture involves splitting bamboo culms and flattening them, and joining the strips end to end to form useful lengths of ribbon or tape made from the high strength bamboo fibres.
EP3628790	Fundacion Tecnalia Res & Innovation et al. (ES)	Composite profile for curtain walls. The present invention discloses a framing profile of reinforced composites comprising a thermoset resin matrix such as epoxy resin or polyester resin reinforced with a blend of high performance fibers and natural fibers, which is suitable for use in the manufacturing a curtain wall, a multilayer facade, a window or an interior partition.
WO2020116518	Furukawa Electric Co Ltd (JP)	Cellulose fiber-dispersed resin composite material, molded body, and composite member. Provided is a cellulose fiber-dispersed resin composite material that has cellulose fiber dispersed in resin and includes an aggregate of the cellulose fiber. At least part of the aggregate has a surface area of 2.0×10^4 - $1.0 \times 10^6 \mu\text{m}^2$, in the planar view. Also provided are a molded body using this composite material and a composite member using this molded body.
WO2020068151	Georgia Pacific Nonwovens Llc (US)	Latex-free and formaldehyde-free nonwoven fabrics. A nonwoven fabric comprising a fiber web in an amount of 85-99.99 wt.%, and a cured natural binder in an amount of 0.01-15 wt.%; wherein the fiber web comprises natural fibers and synthetic fibers; wherein natural fibers are present in the nonwoven fabric in an amount of 70-90 wt.%; wherein synthetic fibers are present in the nonwoven fabric in an amount of from 10-30 wt.%; wherein the cured natural binder comprises modified cellulose and a strengthening agent in a weight ratio of strengthening agent to modified cellulose of 1:2 to 1:1,000, wherein modified cellulose comprises CMC and/or sodium CMC, wherein the strengthening agent comprises a crosslinking agent and/or a wet strength agent, wherein the crosslinking agent comprises a carboxylic acid having two or more carboxyl groups, and wherein the wet strength agent comprises a reactive functional group selected from the group consisting of halide, chloride, fluoride, hydroxyl, and combinations thereof.
WO2020062010	Maanshan MCC17 Engineering Tech Co Ltd (CN)	Preparation method and use of phosphogypsum-based spray-type fireproof mortar reinforced with straw fiber. Disclosed are a preparation method and a use of a phosphogypsum-based spray-type fireproof mortar reinforced with a straw fiber, which is prepared using the following materials at the following weight percents: 65-85% of a composite cementitious material, 10-30% of a lightweight fine aggregate, 0.6-2.8% of a carbon fiber, 0.2-1.5% of a straw fiber, 0.4-2.5% of a high molecular polymer, 0.8-2.4% of an organosilane coupling agent, and 0.1-0.5% of a high performance compound water reducing agent. The above components at the above proportions can increase the fire resistance of mortar, thus decreasing the risk of fire damage in a building having a steel structure. Moreover, the mortar material is simple and convenient to apply and use, and exhibits a firm bonding to a building having a steel structure.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2020115363	Sulapac OY (FI)	Compostable wood composite material for thin-walled articles. A composition comprising a continuous thermoplastic polymer matrix having a melting point greater than 110 °C and, distributed within the matrix, particles of hydrophilic natural fiber material having a sieved size of less than 1.0 mm, the weight ratio of the thermoplastic polymer to the wood particles being from 99:1 to 35:65. An improvement in biodegradability of biopolymers, such as PLA, can be achieved. On the other hand, the addition of wood fibers enhances the material's ability to resist thermal deformation. The present compositions can be used for manufacturing hollow structures, by injection blow molding, of bottles with a wall thickness between 0.1 mm and 5 mm, in particular from 0.3 to 1 mm or continuous extruded products with a wall thickness from 0.3mm to 1.5 mm.
WO2020066286	Toyota Auto Body Co Ltd (JP)	Sound absorbing insulating member and method for manufacturing same. The present invention has: a first step for laminating a cellulosic fiber on a net material while a stock liquid is sucked from a liquid suction unit through the net material in a state in which a mold is immersed in the stock liquid containing the cellulosic fiber; a second step for forming a projection by drying the cellulosic fiber laminated on the net material, and forming the outer shape of a communication unit by drying the cellulosic fiber laminated on a recess; and a third step for communicating the inside and the outside of the projection with each other by means of a passage port in of the communication unit formed at a trace of arrangement of a protrusion by removing the dried projection and the communication unit from the mold.
WO2020095845	Univ Kyoto et al. (JP)	Fiber-reinforced resin composition and production method therefor, and molded article. The purpose of the present invention is to provide a fiber-reinforced resin composition having excellent strength and elastic modulus, and excellent impact strength. The present invention pertains to a fiber-reinforced resin composition containing (A) microfibrillated cellulose fibers, (B) plant fibers, and (C) a thermoplastic resin, wherein the microfibrillated cellulose fibers (A) include a non-chemically modified or chemically modified cellulose polymer (requirement (a)), and the plant fibers (B) are non-chemically modified plant fibers or chemically modified plant fibers (requirement (b)).
WO2020073010	Univ North Carolina State (US)	Cellulosic fiber processing. Strengthening the dry and wet tenacity of regenerated cellulosic fibers can be performed through the addition of an aldaric acid, such as (but not limited to) glucaric acid. In some embodiments, regenerated cellulosic fibers that include an aldaric acid or a salt thereof, produced by the disclosed methods are also described. The produced fibers have advantageous properties due at least in part to the inclusion of the aldaric acid.

Bioplásticos

Nº Publicación	Solicitante (País)	Contenido técnico
EP3643742	Arctic Biomaterials OY (FI)	Reinforced biodegradable composite material. The present disclosure relates to a composite material comprising glass fiber and a polymer blend comprising polylactic acid (PLA) and polybutylene succinate (PBS), wherein the composite material comprises about 10 wt-% to about 80 wt-% of glass fibre, and wherein the polymer blend comprises about 20 wt-% to about 60 wt-% of PLA and about 40 wt-% to about 80 wt-% of PBS. The disclosure also relates to an article comprising the reinforced composite material.
WO2020115619	B V Padmanabha (IN)	Composition of a bioplastic and process for preparation of a bioplastic film. A composition of a bioplastic and process for preparation is provided. The composition includes 4 to 10 percentage weight of agarose, 50 to 70 percentage weight of plasticizer to weight of the agarose, 3 to 10 percentage weight of silicon dioxide (SiO2) to weight of the plasticizer, and 3 to 10 percentage weight sodium dodecyl sulphate (SDS) to the weight of plasticizer. The composition of bioplastic provides eco-friendly and 100 percentage bio-degradable plastics. In addition, the present composition of the bioplastics will not release toxic gases during the decomposition so that no need for a commercial composting facility to avoid toxic gases.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2020074445	BYK Chemie GmbH (DE) et al.	A composition comprising a grafted polylactic acid. A composition is provided comprising an epoxide functional polymer comprising epoxide functional groups, wherein the epoxide functional polymer has a number average molecular weight of 1000 to 10.000 g/mol and a grafted polylactic acid, wherein the polylactic acid is grafted with an acid-functional ethylenically unsaturated polymerizable monomer and/or an acid anhydride-functional ethylenically unsaturated polymerizable monomer and has a total amount of carboxylic acid groups and carboxylic acid anhydride groups between 10.0 and 60.0 mg KOH/g.
WO2020072772	Fashion Chemicals GmbH & Co KG (DE) et al.	Novel coupled esters of polylactic acid and coupled esters of polyglycolic acid and compositions thereof. Esters of polylactic acid, including polyethylene glycol esters of polylactic acid, that are coupled with an acid are disclosed. Exemplary coupled esters of polylactic acid can be used as textile finishes. Methods of making the coupled esters of polylactic acid via direct and/or transesterification reactions are also disclosed.
WO2020118303	Ohio State Innovation Foundation (US)	Bio-based polymer compositions and methods of making and using thereof. Disclosed are polymeric compositions comprising polyhydroxyalkanoates. These compositions can comprise a blend comprising a polyhydroxyalkanoate (PHA) polymer, and a rubber polymer. The blend can comprise a biphasic mixture comprising a first phase comprising the PHA polymer, and a second phase comprising the rubber polymer dispersed with the first phase. The rubber polymer can be crosslinked, for example, through reaction with a free radical initiator. By incorporating the dynamically crosslinked rubber polymer, the polymer composition can exhibit one or more improved characteristics relative to PHA alone, including improved thermal stability, improved melt strength, improved flexibility, improved toughness, or a combination thereof. Also provided are articles formed at least in part from these polymeric compositions, as well as methods of making these polymeric compositions.
ES1245650	Onate Molina Enrique et al. (ES)	Filamento antibacteriano, repelente de insectos y aromatizado para impresoras 3D. El objeto del presente modelo de utilidad es un filamento para impresoras 3D fabricado a base de diferentes polímeros y elastómeros tales como el ácido poliláctico (PLA), el poliuretano termoplástico (TPU), el acrilonitrilo butadieno estireno (ABS) u otros elastómeros (TPE's), que se utiliza esencialmente para la impresión de figuras u objetos de forma tridimensional en impresoras diseñadas para tal uso, cuya composición permite dotar a los materiales de propiedades antibacterianas, repelentes de insectos y aromatizadas.
US2020172789	Proaction Fluids Llc (US)	Composition and method for a self-suspending lost circulation material fluid system. A well fluid composition includes powdered polylactic acid having a selected melting temperature below a lowest expected temperature of a subsurface formation into which the composition is to be introduced. The composition includes powdered polymer suspension aide and/or viscosifier in an amount which when hydrated enables suspension of the powdered polylactic acid in liquid for at least 2 hours and up to 24 hours. The powdered polylactic acid and the powdered polymer solids suspension aide and/or viscosifier are mixed with a liquid capable of hydrating the powdered polymer solids suspension aide and/or viscosifier.
WO2020066987	Sumitomo Forestry (JP)	Technique for controlling molecular weight of PHA copolymer produced by halobacterium. The purpose of the present invention is to provide a PHA, in particular PHBV, having a molecular weight exceeding 3,610,000 and/or a method for producing such a PHA while controlling the molecular weight thereof. Provided is a copolymer having a weight-average molecular weight exceeding 3,610,000 wherein 3-hydroxybutanoic acid and 3-hydroxyvaleric acid are copolymerized at random.
WO2020072590	SWM Luxembourg SARL (LU) et al.	Polymer blend compositions and degradable extruded netting made therefrom. Degradable extruded nettings include a plurality of interconnected strands, at least some of the strands being made from a polymeric blend, the polymeric blend including polylactic acid polymer composition, polybutyrate adipate terephthalate polymer composition, polylactic acid-polybutyrate compatibilizer, and a degradation additive, the degradation additive including a degrader in a carrier resin.

Nº Publicación	Solicitante (País)	Contenido técnico
US2020165561	Univ Nat Cheng Kung (TW)	Method for producing paecilomyces saturates mycelia, bioplastic and method for treating wastewater. A method for producing mycelia of Paecilomyces saturatus, a bioplastic, and a method for treating wastewater are disclosed. The method for producing mycelia of Paecilomyces saturatus includes steps of: providing a culturing medium containing at least one monosaccharide and at least one inorganic substance; placing spores of Paecilomyces saturatus into the culturing medium; cultivating the spores of Paecilomyces saturatus in an aerobic environment for a predetermined period of time to grow mycelia of Paecilomyces saturatus; and filtering to obtain the mycelia of Paecilomyces saturatus.

Bioproductos químicos (biofertilizantes, biocosméticos, biofarmaceúticos...)

Biofertilizantes, bioadhesivos y biocosméticos

Nº Publicación	Solicitante (País)	Contenido técnico
EP3666490	Gillette Co Llc (US)	Method of manufacturing cutting-edge structures. A novel cutting-edge structure and method and apparatus for manufacturing the cutting-edge structure is provided. The cutting-edge structure is comprised of naturally derived or renewable material at greater than 50% by volume fraction. In one embodiment, the naturally derived material is a cellulose nanostructure such as a cellulose nanocrystal. The cellulose nanocrystal is processed using a base or mold structure to provide a cutting edge of any shape such as linear or circular edge structures. The process includes dual cure steps to produce an optimal cutting-edge structure without shrinkage. The formed cutting-edge structure can be utilized as a razor blade as it is formed with very sharp tip and edge suitable for cutting hair. The base structure can form one or more cutting-edge structures simultaneously.
US2020102254	Harvard College (US)	Biofertilizer and methods of making and using same. The disclosure provides a bioreactor system for conducting nitrogen fixation with renewable electricity to produce an engineered soil microbiome enriched in ammonia and carbon. The disclosure further provides an inorganic-biological hybrid bioreactor system that couples the generation of H ₂ by electricity-dependent H ₂ O-splitting with the nitrogen-fixing capabilities of autotrophic, N ₂ -fixing microorganisms to cultivate NH ₃ -enriched and/or carbon-enriched biomass. The disclosure also provides methods for using NH ₃ -enriched and/or carbon-enriched biomass for applications, such as, biofertilizers for improving the characteristics and performance of soils, e.g., to enhance the yield of agricultural crops. The disclosure further provides biofertilizers, as well as engineered soils and seeds augmented with a biofertilizer.
WO2020127500	Henkel IP & Holding GmbH (DE) et al.	Hot melt adhesive composition and use thereof. The invention is related to fast setting, bio-based hot melt adhesive compositions and use thereof. The bio-based hot melt adhesive compositions are based on renewable-based feedstock, making them environmentally friendly, and particularly suitable for sealing cardboard case, carton, and cardboards.
FR3087771	Inst Des Sciences et Industries du Vivant et de L'environnement Agroparistech (FR)	Catalytic synthesis of anti-uv and antioxidant conjugated 8-8 dimers in a green solvent. The invention relates to biobased anti-UV molecules. In particular, the invention relates to a novel process for preparing b-b dimers having anti-UV and antioxidant properties, from p-hydroxycinnamic esters and amides disubstituted in the ortho position with respect to the phenol function and from ketones disubstituted in the ortho position with respect to the phenol, in particular from sinapic acid esters and amides and ketone analogues. The dimers of formulae (I), (II), (III) and (IV) as obtained by means of the process according to the invention can be used for the production of polymers/plastics (in plastics technology), for the protection of plants against the cold and as cosmetic or food-processing ingredients.
WO2020110689	Lintec Corp (JP)	Release paper, and pressure-sensitive adhesive sheet, label base paper, and label all including same. The purpose of the present invention is to provide: release paper which includes a sealing layer comprising a biomass-derived resin and/or a biodegradable resin and which, despite this, is equal in releasability to conventional release papers including a layer of a fossil-fuel-derived polyolefin; and a pressure-sensitive adhesive sheet, a label base paper, and a label all including the release paper. The present invention provides release paper which comprises: a paper base; one or two sealing layers disposed on one or both surfaces of the paper base and each comprising a biomass-derived resin and/or a biodegradable resin; and a release layer disposed on at least one of the sealing layers.

Nº Publicación	Solicitante (País)	Contenido técnico
RU2721705	Sinitsyn Grigorii Alekseevich (RU)	Method of microbiological processing of organic wastes. The invention relates to bioconversion of wastes of poultry and livestock farms. Method of microbiological processing of organic wastes involves treatment thereof with a microbiological preparation. Organic wastes are pre-fermented in the clamps at temperature of 50-60 °C, then loaded into fermenter together with non-chlorinated water and microbiological preparation in following ratio of components: 35-60 wt% bioorganic wastes, 25-45 wt% non-chlorinated water and 15-35 wt% microbiological preparation. Fermentation process is carried out at temperature of 25-33 °C for 3-4 days with subsequent separation of the biomass into a liquid and paste-like form.EFFECT: simple method of producing effective and safe bioorganic fertilizer in liquid and paste-like form with preserved mesophilic microflora.3 cl, 3 tbl
WO2020105001	Spicer Consulting Ltd (GB)	Modified strains of chlorella vulgaris and method of production. Disclosed are modified strains of Chlorella vulgaris having a very low chlorophyll content. Also disclosed is a method for producing them. The method involves performing mutagenesis of a parental strain of Chlorella vulgaris. Furthermore, disclosed is a composition comprising algae biomass derived from the modified strains of Chlorella vulgaris and their use in food and/or cosmetics amongst other applications.
US2020131096	Sustainable Community Dev Llc (US)	Biofertilizer Composition and Method of Manufacture. A biofertilizer composition and method of manufacturing the same contains a microorganism consortium in culture medium, a first additive having an organic acid chelating agent, a second additive having a nitrogen source, a potassium source, a chelated metal, and a salt, and water. The microorganism consortium comprises, at least, beneficial lactic acid fermenting microbes, bacteria belonging to the Bacilli class, and yeast.
WO2020081673	The Schepens Eye Res Institute Inc et al. (US)	Bioadhesive for soft tissue repair. The present invention provides compositions and methods for repair and reconstruction of defects and injuries to soft tissues. Some aspects of the invention provide tissue adhesives comprising a hybrid hydrogel by using a naturally derived polymer, gelatin and a synthetic polymer, polyethylene glycol, wherein the hydrogel is biocompatible, biodegradable, transparent, strongly adhesive to corneal tissue, and have a smooth surface and biomechanical properties similar to the cornea.
WO2020097314	Univ Washington State (US)	Vegetable oil-derived epoxy compositions having improved performance. Embodiments of this invention are directed to bio-based epoxy compositions, and method of their preparation and use. Other embodiments are directed to cured bio-based epoxies, and manufactured articles having bio-based epoxy coatings, adhesives, or composites.

Biofarmaceúticos		
Nº Publicación	Solicitante (País)	Contenido técnico
US2020171117	Access Business Group Int Llc (US)	Dry eye botanicals. A composition for administration to a subject with dry eye or a dry eye-associated ocular condition is disclosed. The composition includes a botanical active agent in an amount effective for treating, preventing, and/or ameliorating dry eye or a dry eye-associated ocular condition in a subject upon administration of the composition thereto. The botanical active agent comprises a Zingiber officinale extract, an Eriobotrya japonica extract, or combinations thereof. The composition may be adapted for oral administration to the subject, and formulated as a nutraceutical, pharmaceutical, or supplement, e.g. in a single dosage form of a capsule or softgel. A method of treating, preventing, and/or ameliorating dry eye or a dry eye-associated ocular condition in a subject is also disclosed. The method comprises administering an effective amount of the composition to a subject.
WO2020069002	Adaptive Phage Therapeutics Inc (US)	Monitoring host cell contamination of virus-based biological products. The invention relates to the production of biopharmaceuticals and, more particularly, to a novel method of monitoring for contamination of such products with components of any host cells used or involved in the manufacturing process. The method comprises a step of determining the presence in a biopharmaceutical (e.g. a therapeutic phage composition) of a ribosomal subunit protein unique to bacteria (or protein fragments thereof) or a nucleic acid molecule comprising a nucleotide sequence derived from a gene encoding a ribosomal subunit protein unique to bacteria.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2020079608	European Nutritional Supplements SRL (IT)	Chocolate matrix comprising curcumin and resveratrol. The present invention relates to a chocolate matrix comprising cocoa, ethanol, maltitol and at least one plant derivative selected from the group consisting of: curcumin and resveratrol, a nutraceutical product comprising said matrix, a nutraceutical kit for use as a food supplement or a functional food comprising said nutraceutical product, and a confectionery product comprising said matrix.
WO2020039104	GE Healthcare Bio Sciences AB (SE)	Monitoring system and method for biopharmaceutical products. A monitoring system comprises a manufacture system with capability to manufacture a plurality of biopharmaceutical products, at least one image capture device arranged to capture a scene comprising the manufacture system, and a processing element connected to said at least one image capture device and arranged to process images captured by said at least one image capture device to track operator interactions and/or a result of operator interactions within the scene. The processing element is further arranged to compare a predefined workflow process scheme relating to the selected biopharmaceutical product to at least a part of the tracked operator interactions with the manufacture system and/or to at least a part of the result of the tracked operator interactions with the manufacture system, and determine whether at least one pre-set criterion set by the workflow process scheme is fulfilled based on the comparison.
US2020158636	Gennext Tech Inc (US)	Flash Photo-Oxidation Device And Higher Order Structural Analysis. Flash Photo-Oxidation Device and Higher Order Structural Analysis is employed for higher order structural analysis of biomolecules. Biomolecular higher order structure (HOS) results from the confounded superimposition of a biomolecule's secondary, tertiary, and quaternary structure and defines the manner in which a biomolecule presents itself and interacts with other biomolecules in living systems. A rapidly growing class of therapeutic drugs, known as biotherapeutics, comprises a variety of proteins, whose therapeutic properties are inherently linked and dependent upon their HOS. As such, HOS analysis of biotherapeutics is an important analytical requirement in the biopharmaceutical industry. The present invention provides new means and methods for the determination of biopharmaceutical HOS and associated conformation using improved devices and methodologies for flash photo-oxidation of proteins to determine their higher order biomolecular structure, and such is responsive to the increased demand for new and improved HOS analytical means in the biopharmaceutical industry.
WO2020099424	Global Life Sciences Solutions USA Llc (US) et al.	Method and system for monitoring a set-up for manufacture of a biopharmaceutical product. The present disclosure relates to a system and method for monitoring a set-up for manufacture and/or setting up for manufacture and/or tearing down after manufacture of a biopharmaceutical product. The method comprises: processing at least one image of a scene comprising the set-up for manufacture of the biopharmaceutical product. The processing of the at least one image comprises performing a first process on the at least one image for classifying first objects in the image, said first objects being devices such as clamps, pumps, valves and/or sensors and/or any other bio processing equipment. The first process comprising identifying, localizing and classifying the first objects in the image. A second process is performed on the at least one image for identifying and localizing connections in the images. The second process comprises classifying each pixel with an associated second object classifier, said second object classifier classifying a second object selected from a group comprising the first objects and connections, segmenting out pixels associated with a connection and identifying connection mappings with the first objects. The method further comprises forming compiled information comprising information relating to the identified connection mappings obtained from the second process and the first objects as identified by the first process.
WO2020094555	Nestle SA (CH)	Compositions and methods using a combination of curcumin and an omega-3 fatty acid for cellular energy. Compositions may be used for a variety of therapeutic applications, including treating and/or preventing a disease or disorder related to reduced or inadequate mitochondrial activity, such as aging or stress, diabetes, obesity, and neurodegenerative diseases. The compositions can be administered to an older adult or an elderly individual. It can also be administered to a patient in ICU. The compositions contain a combination of curcumin and an omega-3 fatty acid. The compositions can be food products, nutritional supplements or nutraceutical. The compositions can also be used advantageously in generally healthy individuals to increase or maintain metabolic rate, decrease percent body fat, increase or maintain muscle mass, manage body weight, improve or maintain mental performance (including memory), improve or maintain muscle performance, improve or maintain mood, and manage stress.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2020100052	Nutrilinea SRL (IT)	Composition comprising ginseng, moringa and rutin and the use thereof in the treatment of male sexual dysfunctions. The present invention regards a composition based on Panax (ginseng) extract, Moringa extract and rutin, the innovative formulation thereof as a pharmaceutical or nutraceutical composition and the use thereof for the treatment of male sexual dysfunctions, in particular, the treatment of erectile dysfunction and damage of the endothelial microcirculation of the male genital organ.
US2020172503	Orochem Tech Inc (US)	Process for purifying tetrahydrocannabinol using a chromatographic stationary phase. Embodiments of a method of purifying tetrahydrocannabinol (THC) from a composition containing THC and at least one impurity, e.g., from pesticides, waxes, lipids, pigments, and other cannabinoids, can use a continuous simulated moving bed process, a batch column chromatography method, or a single column, and a combination of one or more of a sequence of purification steps including: filtration, decolorization, activation or decarboxylation, dewaxing, polishing, and crystallization to separate a cannabinoid from the cannabis plant and to provide various cannabinoid products. The THC products can be used in various pharmaceutical and nutraceutical applications.
WO2020128988	Tessieri Alessio (IT)	Nanoparticles of cocoa extract and use thereof as antioxidants. The present invention relates to chitosan-based nanoparticles, in an aqueous suspension or in a powder to be reconstituted in an aqueous solvent, encapsulating an extract of cocoa hulls and/or nibs comprising polyphenols. The present invention also relates to the process for the preparation thereof and the use thereof as antioxidant agents in the prevention of the cellular oxidative stress, in the treatment or in the prevention of the risk of pathological conditions of the cardiovascular system of an individual, and/or for the preparation of nutraceutical, pharmaceutical, cosmetic or food formulations.

Bioaditivos alimentarios		
Nº Publicación	Solicitante (País)	Contenido técnico
US10646529	Board of Trustees Rutgers the State Univ of New Jersey et al. (US)	Methods of obtaining natural products from the comestible fluids and methods of use. Described herein is an enriched substance containing a ground edible material comprising one or more concentrated bioactive natural products from plant juice, as well as methods of producing such enriched substances and methods of using such solids to provide beneficial effects to humans or other animals. Enriched foods comprising the enriched substance(s) are also provided. Also provided are non-sorbed natural products such as sugars, fats oils, and carotenoids found in the non-sorbed plant liquor fraction of plant juice.
US2020154748	Cavaleri Franco (CA)	Food and beverage sweeteners. Natural sweetener compositions are disclosed, which generally include various combinations of steviol glycosides extracted from a Stevia rebaudiana plant; Siraitia grosvenorii (Monk Fruit) plant extract (including mogrosides extracted from such plant species); and an amino acid component consisting of free glycine. The natural sweetener compositions may optionally further include gymnemic acid (such as an extract of a Gymnemic sylvestre herb that includes 25%-75% gymnemic acid). The natural sweetener compositions may consist essentially of those two, three, or four components—or may be included in beverages, beverage powders, and foods.
US2020146324	Corn Products Dev Inc (US)	Sulfite-free, rapid setting, thermal-reversible modified potato starch gelling agent and products made therefrom. This specification discloses a potato starch modified to have a narrow carboxylation and viscosity profile, and sulfite levels that are below detection levels by titration. The disclosed starch forms thermal-reversible gels having a fast gelling rate and that are useful in imitation cheese.
EP2094110	Givaudan (CH)	Colour-coated flavour encapsulate particles. The present invention relates to the field of flavoured particulate food and/or beverage compositions. More in particular it relates to such compositions incorporating flavour encapsulate particles, which have been adapted in such a way that they appear to be similar to the particles contained in said food or beverage compositions as used without additional flavouring. These and further objects have been realized by the present invention by providing flavour encapsulate particles comprising a core particle coated with an inner coating layer comprising one or more flavourings contained in a carrier matrix and an outer coating layer comprising a substantial amount of an extract a plant material. Said outer coating contains substantial amounts of colouring substances naturally present in the plant material.

Nº Publicación	Solicitante (País)	Contenido técnico
US2020154739	Kings Farm Foods Ltd (GB)	Flavored protein beverage and method of making the same. A flavored protein beverages include egg whites, water, a plant-based milk, a juice component, flavoring, a thickening agent, and an acidifier. The egg whites constitute a majority of the weight of the beverage and serve as the primary source of protein. The acidifier is malic acid, and the pH of the protein beverage is between about 4 and about 4.6. The pH value of 4.6 is significant because <i>Clostridium botulinum</i> cannot grow and produce toxin below this value, whereas the taste of the beverage when the pH is below 4.0 has been found to be unacceptable. After pasteurization, the flavored beverage has a shelf life of up to about six (6) months without refrigeration and without the use of non-natural preservatives. A pH between about 4.2 and 4.3 is best to optimize taste throughout the entire shelf life.
US2020128865	Mederer GmbH (DE)	Food substitutes. A semi-solid food substitute is provided having a base composition including starch syrup, saccharides, and at least one gelling agent and having a protein content between 10% by weight and 30% by weight and a fat content between 5% by weight and 20% by weight.
EP1978831	Nestle SA (CH)	A bouillon and/or seasoning tablet containing cereal, vegetable and/or fruit fibers. The present invention concerns a bouillon and/or seasoning tablet, which comprises, in total % in weight, 1-10% oil, and/or 1-5% fat, binders, salt, between 2 and 3 % of total water, as well as optionally spices, flavors, dehydrated vegetables, herb leaves and/or plant extracts and between 0.5 and 8 % of vegetable or cereal fibers.
EP3247220	Proteifood SA (BE)	Expanded dry protein-based food product and method for producing same. The invention relates to an expanded dry food product comprising at least the following ingredients: a food-grade plant- or animal-based protein concentrate; a food-grade fat; a food-grade texturizing additive selected from the group consisting of plant-based hydrocolloids and gelling agents, starch, preferably modified starch, proteolytic additives and hydrolysis products thereof, and acidifying agents and salts thereof; and residual water. The invention also relates to a method for producing said expanded dry food product from a thermally expandable precursor.
WO2020094830	Univ Danmarks Tekniske (DK)	A novel class of pigments in aspergillus. The invention provides a novel class of natural red azaphilone pigments: cavernamines and their hydroxyl-derivatives; as well as the orange/yellow precursor cavernine. Additionally, methods for their production by fermentation using a fungal strain belonging to the species <i>Aspergillus cavernicola</i> , is provided; and further the use of the novel pigments as a colouring agent for food items and/or non-food items, and for cosmetics. The cavernamine pigments have the structure of Formula I or II, the hydroxyl-derivative of said cavernamine pigment has the structure of Formula III: Cavernine pigments having the structure of Formula IV or V are precursors of the cavernamine pigments I-III above.
WO2020076257	SBS Bilimsel Bio Coezuemler Sanayi ve Ticaret Anonim Sirketi (TR)	A healthy soft jelly candy formulation and its production method. The invention relates to a healthy soft gel candy formulation containing water, gelling agent, honey, pollen, pure propolis extract, and at least one fruit extract, specially developed for the food industry, to meet the daily antioxidant needs of children and adults

Bioproductos alimenticios para animales

Nº Publicación	Solicitante (País)	Contenido técnico
EP3629709	Agrivida Inc (US)	Immunomodulating transgenic plants and related methods. The transgenic plants expressing one or more antagonist IL-10R peptides and anti-IL-10 single domain antibodies that stimulate or modulate the immune system and improve gastrointestinal physiology of an animal fed the transgenic plants or tissues thereof and the genes encoding the antagonist IL-10R peptides and anti-IL-10 single domain antibodies are described. The animal feed additives and animal feed incorporating the transgenic plants or tissues thereof are also described. Methods of stimulating or modulating an animal's immune system, improving an animal's gastrointestinal physiology, improving animal performance by using the transgenic plants or tissues thereof, and treating animals infected with a gastrointestinal pathogen are provided.
EP3656223	AWP Srl (IT)	Food additive for animal feeds comprising food acids and essential oils. A food additive for farm animal or pet feeds comprising a composition of a mixture of food acids and a mixture of essential oils.

Nº Publicación	Solicitante (País)	Contenido técnico
ZA201803791	Commw Scient Ind Res Org (AU) et al.	Rice grain with thickened aleurone. The present invention relates to rice grain with thickened aleurone. Also provided is a rice plant comprising at least one genetic variation which reduces the activity of at least one ROS1a gene in the plant. Grain of the invention, or aleurone therefrom, has improved nutritional properties, and hence is particularly useful for human and animal feed products.
EP3354728	Danisco US Inc (US)	Alpha-amylase variants. Disclosed alpha-amylase/variant alpha-amylase enzymes, nucleic acids encoding the same, and compositions and methods related to the production and use thereof. The alpha-amylase/variant alpha-amylases are useful, for example, for starch liquefaction and saccharification, for cleaning starchy stains in laundry or dishwashing, for textile processing (e.g., desizing), in animal feed for improving digestibility, and for baking and brewing.
WO2020074488	Evonik Operations GmbH (DE)	Animal feed for improving the growth performance. Condensed algal residue solubles turned out to be a beneficial feed ingredient for feeding animals, in particular for improving the growth performance of beef cattle.
EP3634147	Grassa BV (NL)	Method and system for the production of non-ruminant animal feed. The present invention relates to a method for the production of non-ruminant animal feed from plants and/or plant parts of the family of Poaceae, the method comprises the steps of harvesting plants and/or plant parts; extracting protein and fructan from said plants and/or plant parts; separating protein for feeding non-ruminant animals; and separating fructan for feeding non-ruminant animals, wherein the fructan stimulates bacterial growth and protein production in the large intestine of said non-ruminant animals and reduces the concentration of amino acid catabolites in the large intestine.
US2020113209	ICM Inc (US)	Fractionated stillage separation and feed products. This disclosure describes methods to separate solids from liquids in a production facility. A process separates components in the process stream by applying non-condensable media to create density differences and then using a mechanical device to separate the solids from the liquids based on the density difference. The process produces the liquids and solids, which may be further processed to create valuable animal feed products.
EP3639847	Pepsis Ltd (GB)	Horse feed supplement and its use. The invention relates to a horse feed additive comprising a malt extract comprising a plurality of enzymatically active enzymes, the enzymes comprising a plurality of carbohydrases including at least one or more amylases and one or more fructanases, for use in enhancing pre-caecal digestion of carbohydrate in an equine. The feed additive may be provided in combination with a vegetable material feed and further improve digestion by increasing the energy utilisation from/improving use of the energy stored in the feed. The malt extract preferably has a high diastatic powder of 35° Lintner (94°WK) or above. The horse feed additive may be used for the prevention or treatment of an intestinal disease or food digestion associated condition selected from acidosis, colic, diarrhoea and laminitis.
WO2020095727	Unicharm Corp (JP)	Pet food manufacturing method. This pet food manufacturing method includes: a step (A) for loading, into a container, soy protein grains containing soy protein; a step (B) for loading a liquid raw material into the container containing the soy protein grains; and a step (C) for impregnating the soy protein grains fed into the container with the liquid raw material to obtain wet soy protein grains in which the liquid raw material content is 40-150 parts by mass with respect to 100 parts by mass of the soy protein grains.
US2020120955	Wenger MFG (US)	Method and apparatus for production of high meat content pet foods. High meat content extruded pet feeds and methods of preparation thereof, make use of relatively high meat contents which include quantities of previously dewatered meat. In an embodiment, the total meat content of the feeds consists essentially of dewatered emulsified poultry meat or other meat sources commonly used in the pet food industry. In the methods, mixtures containing starch, fat, and meat, the latter including dewatered meat, are passed through an extruder followed by staged drying. The extruder may be of twin screw design having hollow core screws permitting introduction of steam or other heat exchange media into the screws.

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