



INVENCIONES ESPAÑOLAS EN EL CAMPO DEL APROVECHAMIENTO TERMOQUÍMICO DE LA BIOMASA

Con el fin de mostrar una perspectiva general de la evolución de la actividad innovadora en España, dentro del área de la conversión de la biomasa mediante tratamientos termoquímicos, se ha realizado una búsqueda de solicitantes españoles, tanto de patentes como de modelos de utilidad, en las bases de datos Invenes y Espacenet. Se han identificado 107 invenciones de residentes españoles, agrupadas por familias en la Tabla 1, -un 18% corresponde a modelos de utilidad-. Las invenciones más antiguas identificadas, que llevan por título "Procedimiento de carbonización de la madera y de desperdicios vegetales lechosos" y "Aparato gasógeno perfeccionado", datan de 1941 y 1945, respectivamente.

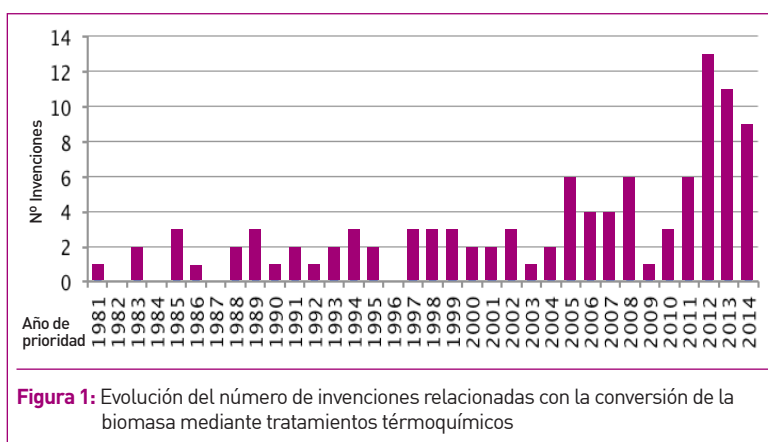


Figura 1: Evolución del número de invenciones relacionadas con la conversión de la biomasa mediante tratamientos termoquímicos

La siguiente invención "Instalación para la obtención de gases combustibles a partir de residuos vegetales" fue solicitada en 1981.

En el análisis de la evolución temporal se muestra que en los últimos años, las invenciones han experimentado un importante aumento (Figura 1). El 36% de las invenciones corresponden al periodo 2011-2014. Es importante indicar que el número de invenciones, principalmente durante el año 2013 y 2014, puede incrementarse ya que pueden existir invenciones para las que se hayan solicitado protección y que aun no se hayan publicado sus solicitudes. Cabe señalar que 8 de las 9 invenciones identificadas en 2014 corresponden a modelos de utilidad. Las 107 invenciones identificadas han dado lugar a 127 solicitudes de patentes y modelos de utilidad (Tabla 1). El 81,1% corresponden a solicitudes nacionales, seguidas de las solicitudes internacionales (11,8%). El 80,4% de las invenciones solo han sido protegidas en España. Para el 8,4% de las invenciones además de pedir protección nacional también se han realizado solicitudes internacionales y solamente para un 3,7% de las invenciones no se ha solicitado protección nacional.

La mayoría de la invenciones, aproximadamente el 45%, se refieren a elementos, aparatos y dispositivos que se utilizan

para la obtención de energía a través de tratamientos térmicos (estufas, calderas, parrillas, chimeneas, gasificadores, etc). En segundo lugar se encuentran aquellas donde se solicita la protección de instalaciones y/o procedimientos para la valorización energética de la biomasa (30%), seguidas, con un 12%, de las que utilizan los tratamientos térmicos para la producción de combustibles sólidos (carbón vegetal, briquetas, etc.).

En la Figura 2 se refleja la distribución de las invenciones dependiendo del tipo de entidad del solicitante. Como se puede apreciar, la participación más importante corresponde a las empresas (50%) y a las personas físicas (39%). Los principales solicitantes, con tres invenciones, son: Calorífica Domestica, SL, Environmental International Engineering SL, Sener Ingeniería & Sistemas y Tecnoholding, SA (Tabla 1).

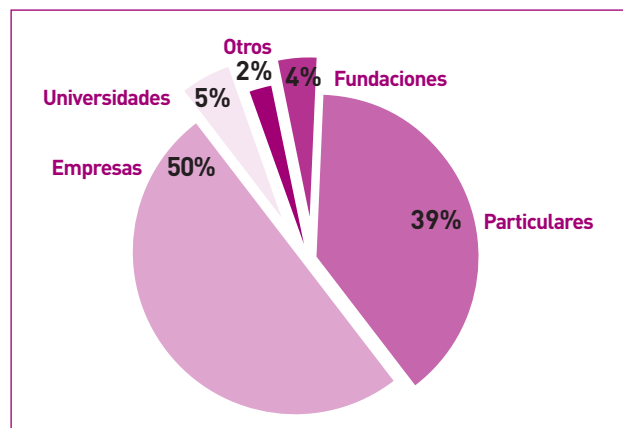


Figura 2: Distribución de las invenciones por el tipo de entidad solicitante

Tabla1:

PATENTES RELACIONADAS CON LOS TRATAMIENTOS TERMOQUÍMICOS DE LA BIOMASA TÍTULO DE LA PATENTE, Nº DE PUBLICACIÓN DE LA SOLICITUD			
Nº	Título	Nº Publicación	Solicitante
1	Quemador horizontal para carbón o biomasa	ES8407569	Actran, SA
2	Método y dispositivo para la fabricación de carbón vegetal a partir de biomasa	ES2437717	Aguilar Lozano, MI García Sancho, A
3	Quemador de biomasa de llama horizontal	ES2523952	Alatoz Energy Systems, SL
4	Sistema de mejora de combustión de biomasa en la cámara de combustión de un quemador	ES1124630	
5	Caldera perfeccionada	ES0274645	Aragones Cid, JE
6	Estufa de calentamiento alimentada por combustible sólido	ES1134455	Arcos Cantero, A
7	Proceso de gasificación de residuos de biomasa	ES2086262	Areizaga Iglesias, A. de
8	Procedimiento industrial para el tratamiento de residuos de piel curtida para la obtención de energía, compuestos de cromo y otros productos químicos	ES2018379	Asociación de Investigación para la Industria del Calzado y Conexas (INESCOP)
9	Caldera de biomasa	ES1059434	Aspiraciones Zamoranas Miz, SA
10	Procedimiento de obtención de gas de combustible a partir de materiales combustibles	ES2190689	Azcoitia y Villanueva, L Ribesse, JM
11	Instalación conjunta, continua y automática para la transformación de los residuos alpechín y orujo procedentes de la industria del aceite de oliva	ES2064247	Bedmar Olmedilla, B
12	Caldera de biomasa con quemador en cascada	ES1053300	Bioebro, SL
13	Quemador para calderas de biomasa	ES1065212	
14	Procedimiento para la gasificación de biomasa, dispositivo para aplicar dicho procedimiento	ES2477120	Blueplasma Power, SL
15	Equipo compacto de calefacción y refrigeración	ES1101081	Bronpi Calefacción, SL
16	Quemador de basura	ES2125117	Cabrero Sánchez, M
17	Dispositivo de alimentación y combustión de biomasa para calderas de calefacción	ES1059293	Calorifica Domestica, SL
18	Caldera modular	ES1075583	
19	Caldera modular (2013-08-27)	ES1091055	
20	Caldera biomasa policombustibles	ES1104580	Caralt Alborna, J
21	Dispositivo para disgregar biomasa y sistema para disgregar y quemar biomasa	ES2400649	Carulla Oliva, JM
22	Quemador de biomasa adaptable a calderas, domésticas y hornos	ES1077640	Cascales Rodríguez, C
23	Calefacción para naves avícolas-ganaderas (2006-04-27)	ES1062960	Cascales Rodríguez, J
24	Incinerador de residuos, restos de cadáveres de animales y otros restos domésticos y agroganaderos e industriales	ES2186460	Comercial Ganadera Vegas, SL
25	Procedimiento de preparación de briquetas combustibles sin humo con carbón y biomasa	ES2183706	CSIC
26	Proceso de secado de alperujo	ES2208112	Dalering Desarrollos Energéticos
27	Caldera para calentamiento preferentemente de agua	ES1077147	Domusa Calefacción, S. Coop
28	Planta transformadora de residuos sólidos y/o biomasa en un gas combustible	ES2199612	Energía Natural de Mora, SL
29	Planta transformadora de residuos sólidos en gas combustible	WO2009121982 EP2275517	

PATENTES RELACIONADAS CON LOS TRATAMIENTOS TERMOQUÍMICOS DE LA BIOMASA

TÍTULO DE LA PATENTE, Nº DE PUBLICACIÓN DE LA SOLICITUD

Nº	Título	Nº Publicación	Solicitante
30	Planta de valorización de residuos por gasificación	ES2193790	
31	Reactor de gasificación	ES2182608	Environmental International Engineering, SL
32	Reactor de gasificación	ES2237262	
33	Método de fabricación de briquetas combustibles	ES2142260	Esfaxa Explotaciones Forestales
34	Incinerador perfeccionado	ES290582	EYHER, SL
35	Dispositivo de extracción de parilla de quemado por la parte trasera para quemadores de biomasa	ES1077344 EP2662622	Forte Jiménez, P
36	Dispositivo de refrigeración para cañón de quemador de biomasa	ES1135111	
37	Procedimiento para obtener energía eléctrica renovable a partir de la biomasa y dos motores de combustión	ES2427018	Fundación Centro de Innovación y Desarrollo Tecnológico
38	Procedimiento para la obtención de hidrogeno, a partir de la biomasa y carbón vegetal	ES2370619	Fundación Investigación e Innovación para el Desarrollo Social
39	Planta de generación eléctrica y térmica a partir de la gasificación de biomasa	ES2332624 WO2008119859 EP2145939	Fundación CIDAUT
40	Caldera vertical de combustible sólido	WO2014064300	
41	Estufa exterior alimentada con pellets de biomasa	ES2490941 WO2014118419	
42	Procedimiento y dispositivo para la combustión de biomasa sin emisión de dióxido de carbono	ES2339733 WO2010058054 EP2359925	Gas Natural SDG, SA
43	Aparato gasogeno perfeccionado	ES0169070	Girona Ferrer, R
44	Quemador de biomasa sólida-líquida	ES1026489	Gómez Piña, JD
45	Proceso de generación de calor mediante la combustión de biomasa en dos etapas	ES2206056	Gonzalo Callejo, AI Sánchez Cebrian, JL
46	Procedimiento de pirólisis de una carga de biomasa y posterior gasificación del carbón obtenido mediante dicha pirólisis y reactor para llevarlo a cabo	ES2327019	Grau Almirall, J
47	Reactor para la obtención de gas a partir de biomasa o residuos orgánicos y procedimiento para la obtención de gas en dicho reactor	WO2014023854	Greene Waste to Energy, SL
48	Módulo transportable para la producción de agua caliente mediante combustión de biomasa	ES2408809	Grupo Clavijo ELT, SL
49	Gasificador modular de biomasa	ES2325105	Guascor Explotaciones Energéticas, SA
50	Parrilla de quemado para quemadores de biomasa y quemador de biomasa	ES1126705	H2O Renovables, SL
51	Procedimiento de valorización integral de residuos para la obtención de combustible diesel sintético	ES2503442	Huguet Farre, J
52	Sistema de auto-combustión controlada de residuos sólidos urbanos	ES2108597	Incisud, SL
53	Producto de biocombustible y proceso de obtención	ES2457073 WO2014044888	
54	Método de carbonización hidrotermal con reactor de flujo invertido e instalación	ES2339320 EP2484437	Ingelia, SL
55	Conjunto integrado horno-caldera-incinerador de aprovechamiento energético a partir de la eliminación de residuos y subproductos orgánicos, animales y biomasa	ES1069204	Ingeniería del Medio Ambiente Ibermed, SL

PATENTES RELACIONADAS CON LOS TRATAMIENTOS TERMOQUÍMICOS DE LA BIOMASA

TÍTULO DE LA PATENTE, Nº DE PUBLICACIÓN DE LA SOLICITUD

Nº	Título	Nº Publicación	Solicitante
56	Procedimiento de obtención de un producto combustible a partir de residuos urbanos, lodos y aceites industriales	ES2128998	Ingenieria 10, SA
57	Sistema híbrido de generación eléctrica a partir de energía solar y biomasa	WO2013087949	Ingeteam Power Technology, SA
58	Chimenea de biomasa con turbina de efecto combinado	ES1076805	Jiménez Torrijos, C
59	Quemador de biomasa	ES1078884	Lago Bouzon, FR Rodríguez Campo, C
60	Instalación para el tratamiento de residuos sólidos	ES8609667 EP0206803	Lago Lucia, JM Moreno Llorente, Q
61	Caldera para calefacción	ES1059771	Laguna Mateo, A
62	Procedimiento complementario para la depuración del alpechín	ES2032162	Lara García de, R
63	Estufa de biomasa	ES2406654 WO2014177738	Lasian Tecnologia del Calor, SL
64	Instalación solar termoeléctrica híbrida de pequeña escala	ES2387173	Manso i Camps, JM
65	Estufa alimentada por biomasa	ES1078471	Marheat, SL
66	Aparato calefactor por combustión de excrementos de animales y residuos diversos	ES2014073	Mecanicas Segales, SA
67	Proceso de pirólisis de biomasa en dos etapas con calentador mecánico	ES2387145	Medina Aguiar, JV
68	Quemador de biomasa y procedimiento de utilización	ES2499118	Metalúrgica Manlleuense, SA
69	Caldera de biomasa para múltiples combustibles	ES2432475	Moratalla Martínez, JE
70	Procedimiento de obtención de un material combustible a partir de residuos sólidos urbanos, agrícolas e industriales	ES2114432	Narbona Palomares, J Trivino Vázquez, F
71	Instalación generadora de energía a partir de biomasa	ES2321784	Nicolas Correa Service, SA
72	Quemador de biomasa sólida	ES1129530	Orihuel Pons, JB
73	Caldera perfeccionada de combustión de residuos de madera	ES283898	Philopatent, SA
74	Quemador para hornos de biomasa	ES1076664	Quemadores Hornos Biomassas 180, SL
75	Método para el tratamiento de residuos agrícolas y forestales	ES2150393 WO0058037	Recuperacion y Tratamiento de Biomasa, TRABISA, SL
76	Sistema para la transformación de residuos	ES2006264 EP0324668	Iriart Henrri, JF Internacional Systems Residuos
77	Sistema para gasificar biomasa combustible y procedimiento de gasificación de biomasa combustible	ES2390146	Riba Picola, J
78	Procedimiento para el tratamiento de residuos sólidos urbanos e instalación para llevar a cabo dicho procedimiento	ES2086264	Rivera Montanes, C
79	Central térmica de biomasa móvil	ES2407530	Robles Ruzafa, PJ
80	Quemador de biomasa granular	ES2308873	Rodríguez Coronado, J
81	Briquetas combustibles y procedimiento de obtención de las mismas	ES2298078	ROMEROIL, SL
82	Sistema de reciclaje polivalente de neumáticos y otros residuos industriales	ES2335567 WO2010109047	Ruiz Rueda JT, et al
83	Método de fabricación de un combustible sólido, a partir de orujo y producto así obtenido	ES2012878	Sánchez Villanueva, J
84	Procedimiento catalítico de pirólisis flash para la obtención de bio-oil o biofuel a partir de materias poliméricas carbonadas	ES2447615	Sedamir Renovables, SL

PATENTES RELACIONADAS CON LOS TRATAMIENTOS TERMOQUÍMICOS DE LA BIOMASA

TÍTULO DE LA PATENTE, Nº DE PUBLICACIÓN DE LA SOLICITUD

Nº	Título	Nº Publicación	Solicitante
85	Instalación para la obtención de gases combustibles a partir de residuos vegetales	ES8305408	Segui Florit, A Ense at Bauza, J
86	Sistema para la generación de energía eléctrica a partir de la combustión de residuos sólidos y urbanos y asimilables	ES2010890	
87	Mejoras introducidas en la patente nº 8900947 presentada el 15.03.89 relativa a un sistema para la generación de energía eléctrica a partir de la combustión de residuos sólidos urbanos y asimilables	ES2032185	Sener Ingeniería & Sistemas
88	Procedimiento para la generación de energía eléctrica a partir de combustibles no tradicionales	ES2221816 WO2005116523	
89	Procedimiento de generación de electricidad a partir de generación térmica solar y biomasa	ES2279658	Serled Consultores, SL
90	Procedimiento para fabricar un material combustible sólido a partir de residuos sólidos urbanos y/o industriales asimilables a urbanos y/o agrícolas	ES2036480	
91	Mejoras introducidas en la patente de invención nº 9102485 por: Procedimiento para fabricar un material combustible sólido a partir de residuos sólidos urbanos y/o industriales asimilables a urbanos y/o agrícolas	ES2128894	Sistemas Ibéricos de residuos, SA (SIBERSA)
92	Procedimiento de carbonización de la madera y de desperdicios vegetales leñosos	ES0155197	Sorron Zabala, F
93	Procedimiento para la generación de electricidad a partir de biomasa	ES2345760	Sues Technology & Solutions, SL
94	Procedimiento de desalación de agua con cogeneración de energía eléctrica y térmica	ES2151811	
95	Procedimiento e instalación para la valorización energética de residuos sólidos urbanos	ES2265766 WO2006125839	Tencnoholding, SA
96	Procedimiento e instalación para la generación de energía eléctrica a partir de fuentes de energía renovables	ES2328539	
97	Procedimiento de gasificación de glicerina	ES2319026 EP1961698	UEE Enviroconsult, SL
98	Briquetas combustibles de cáscara de almendras	ES2128259	
99	Proceso mejorado de fabricación de briquetas combustibles	ES2201862	Univ. Alicante
100	Sistema combinado de calefacción y enriquecimiento carbónico a partir de biomasa	ES2514090	Univ. Almería
101	Dispositivo para la combustión en continuo de residuos sólidos	ES2148026	Univ. País Vasco
102	Quemador autónomo de biocombustible sólido	ES2447665	Univ. Vigo
103	Procedimiento para convertir la fracción CDR en un gas de síntesis	ES2411101 WO2014188028	Urbaser, SA
104	Equipo doméstico de biomasa para generar electricidad	ES1126555	Valle Ros, I
105	Gasificador de biomasa	ES2307412 EP1955763	Vitella Pons, J
106	Aparato generador de aire caliente de biomasa	ES2482215 WO2014102427	Villoria Otero, DA
107	Instalación para producir carbón vegetal a partir de madera, con recuperación de subproductos	ES8801699	Zuluaga Areitio, AR Pardo Serralta, E

*Solo se recogen, las solicitudes españolas, internacionales y europeas

ANÁLISIS DE PATENTES

Durante el cuarto trimestre de 2014 se han identificado en la base de datos WPI (World Patent Index) 1.225 familias de patentes sobre tecnologías de conversión de la biomasa para la producción de energía (Tabla 2). El 48% de las referencias encontradas están relacionadas con las tecnologías bioquímicas y el 43% con termoquímicas. La tecnología de digestión anaeróbica es la que cuenta con mayor número de resultados, 38% de los totales, seguida de la gasificación/pirólisis (25%).

Tipos de tecnologías de conversión de la biomasa	4º trimestre. 2014
Tecnologías termoquímicas	530
Combustión directa	225
Gasificación/pirólisis	305
Tecnologías bioquímicas	582
Digestión anaeróbica	467
Fermentación de azúcares	115
Tecnologías químicas (transesterificación, Fischer-Tropsch síntesis de metanol)	113
Nº TOTAL FAMILIAS DE PATENTES	1.225

Tabla 2. Número de familias de patentes clasificadas por tecnologías

En la Tabla 3 se muestran los países que han publicado 10 o más documentos de patente en el último trimestre de el 2014. El país líder es China con 716 documentos de patente, en segundo lugar, y con gran diferencia, le siguen las solicitudes internacionales (PCT). En tercero y cuarto lugar se encuentra EE.UU. y Corea con 120 y 82 documentos, respectivamente. En España durante este trimestre se han publicado 15 documentos.

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

	País	Nº referencias
1	China (CN)	716
2	Solicitud PCT (WO)	190
3	EE.UU. (US)	120
4	Corea (KR)	82
5	Japón (JP)	73
6	Alemania (DE)	35
7	Patente Europea (EP)	23
8	España (ES)	15
9	Francia (FR)	10
10	Rusia (RU)	10

Tabla 3. Ranking por países.

TECNOLOGÍAS TERMOQUÍMICAS

Patentes

COMBUSTIÓN DIRECTA		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2014183592	ZHU HONGFENG (CN)	Biomass fuel stove preventing smoke and fire backing up. A biomass fuel stove preventing smoke and fire backing up, utilizing biomass fuel particles, and comprising a body capable of being placed on the ground; the body comprises a combustion box and an auxiliary device box; the combustion box accommodates a combustor; the auxiliary device box accommodates a fuel conveying mechanism and an electrical device; the fuel conveying mechanism comprises a hopper, a feeding cartridge, and a feeding rod rotatably accommodated in the feeding cartridge; a section on the feeding rod opposing a combustor window is fixedly provided with a plurality of paddle blades radially extending outward; a section from the outer end of the feeding cartridge to the paddle blades is fixedly provided with a forward helical blade thereon, and a section from the inner end of the feeding cartridge to the paddle blades is fixedly provided with a reverse helical blade thereon.

COMBUSTIÓN DIRECTA

Nº Publicación	Solicitante (País)	Contenido técnico
ES1126705	H2O RENOVABLES, SL (ES)	<p>Parrilla de quemado para quemadores de biomasa y quemador de biomasa. 1. Parrilla de quemado para quemadores de biomasa, que tiene practicadas en su superficie una pluralidad de perforaciones para permitir el paso por su parte inferior de aire comburente proveniente de la zona inferior de la cámara de combustión del quemador de biomasa, caracterizada porque la parrilla de quemado comprende al menos una placa intermedia dispuesta en su parte inferior que actúa de obstáculo al paso de aire comburente por dicha zona inferior. 2. Parrilla de quemado según la reivindicación 1, caracterizada porque la al menos una placa intermedia se dispone perpendicular a la base de la parrilla de quemado. 3. Parrilla de quemado según cualquiera de las reivindicaciones anteriores, caracterizada porque la al menos una placa intermedia tiene forma de segmento circular. 4. Parrilla de quemado según cualquiera de las reivindicaciones anteriores, caracterizada porque comprende una pluralidad de placas intermedias. 5. Parrilla de quemado según la reivindicación 4, caracterizada porque las placas intermedias presentan un obstáculo creciente al paso de aire comburente conforme éste avanza por la zona inferior de la cámara de combustión. 6. Parrilla de quemado según la reivindicación 5, caracterizada porque las placas intermedias son de diferentes alturas. 7. Parrilla de quemado según cualquiera de las reivindicaciones 4 a 6, caracterizada porque las placas intermedias disponen de aperturas para permitir el paso de aire a su través. 8. Parrilla de quemado según cualquiera de las reivindicaciones anteriores, caracterizada porque comprende adicionalmente una placa de cierre frontal dispuesta en su extremo posterior y que actúa de obstáculo al paso de aire comburente proveniente de la zona inferior. 9. Parrilla de quemado según cualquiera de las reivindicaciones anteriores, caracterizada porque las perforaciones practicadas en su superficie se implementan en forma de orificios y ranuras. 10. Parrilla de quemado según la reivindicación 9, caracterizada porque la parrilla de quemado dispone de ranuras en su base y orificios en su lateral. 11. Quemador de biomasa, caracterizado porque comprende una parrilla de quemado según una cualquiera de las reivindicaciones 1 a 10. 12. Quemador de biomasa según la reivindicación 11, caracterizado porque comprende unas guías laterales en el interior de la cámara de combustión que permiten la extracción de la parrilla de quemado por la parte frontal del quemador de biomasa. 13. Quemador de biomasa, caracterizado porque comprende al menos una placa intermedia dispuesta en la parte inferior de la cámara de combustión que actúa de obstáculo al paso de aire comburente por la zona inferior. 14. Quemador de biomasa según la reivindicación 13, caracterizado porque la al menos una placa intermedia se dispone perpendicular a la base de la parrilla de quemado. 15. Quemador de biomasa según cualquiera de las reivindicaciones 13 a 14, caracterizado porque comprende una pluralidad de placas intermedias. 16. Quemador de biomasa según la reivindicación 15, caracterizado porque las placas intermedias presentan un obstáculo creciente al paso de aire comburente conforme éste avanza por la zona inferior de la cámara de combustión. 17. Quemador de biomasa según la reivindicación 16, caracterizado porque las placas intermedias son de diferentes alturas. 18. Quemador de biomasa según cualquiera de las reivindicaciones 15 a 17, caracterizado porque las placas intermedias disponen de aperturas para permitir el paso de aire a su través. 19. Quemador de biomasa según cualquiera de las reivindicaciones 13 a 18, caracterizado porque comprende adicionalmente una placa de cierre frontal dispuesto en el extremo posterior de la cámara de combustión y que actúa de obstáculo al paso de aire comburente proveniente de la zona inferior.</p>
WO2014188063	VALMET POWER OY (FI)	<p>A thermal system and a method for controlling a thermal process. A method for controlling a thermal process, which produces energy and/or fuel in a thermal device. The method comprises producing some gaseous compound comprising measurable particles and conveying at least part of the gaseous compound comprising measurable particles to an analyzer. The method further comprises detecting, using the analyzer, the electric charge of at least some of the particles of the gaseous compound comprising measurable particles; providing information indicative of the electric charge of at least some of the particles; and controlling, by a flow controller and by using the information indicative of the electric charge of at least some of the particles, a flow into or out of the thermal device. In addition, a corresponding thermal system.</p>

COMBUSTIÓN DIRECTA

Nº Publicación	Solicitante (País)	Contenido técnico
ES1129530	ORIHUEL PONS, JB (ES)	Solid biomass feeding burner i.e. wood pellet, for replacing hydrocarbon fuel in heating applications, has feeding body, ventilator and combustion device that are introduced in energy device, and chamber connected with tube. The burner has a feeding body, a ventilator, a flame sensor and a temperature sensor and a combustion device that are introduced in a thermal energy device. A combustion chamber is connected with a flame projection tube. A control system is equipped with the flame sensor. Two temperature probes are arranged in a heated enclosure. An oxygen signal probe is located in a smoke exit installation. A bottom part of the combustion chamber is equipped with air transmission orifices. A guidance system tracks a front body with respect to a rearbody. USE :Solid biomass feeding burner i.e. wood pellet, for replacing hydrocarbon fuel or oil in heating and industrial applications.
WO2014175216	EBARA ENVIRONMENTAL PLANT CO LTD (JP)	In-bed heat transfer tube for fluidized bed boiler, and fluidized bed boiler. Provided is an in-bed heat transfer tube for a fluidized bed boiler, which has a sufficient heat transfer effect, and with which molten salt corrosion can be suppressed, thereby limiting the reduction in the thickness of the tube and providing excellent durability. This in-bed heat transfer tube is configured from: an inner tube, in the interior of which a fluid (water, saturated water, steam, a binary fluid, or the like) flows; inner tube fins provided on the outer circumference of the inner tube as a securing part; and a protector, which is provided on the outer circumferential side of the inner tube so as to form a 0.25-0.75 mm gap therebetween, and which protects the inner tube. A pair of the inner tube fins is affixed to the outer circumferential surface of the inner tube by welding, and the protector is affixed to the inner tube fins by welding in the same manner. Multiple slits with a width of 0.5 mm are formed in the protector at 50 mm intervals.
ES2486090	MARTINEZ NAVARRERE DAVID (ES); et al	Cajón recogecenizas para quemadores de biomasa o combustibles sólidos. La presente invención se refiere a un cajón recogecenizas con bandeja superior adaptada para soportar un material combustible sobre la misma y formada por una pluralidad de aberturas que dejan pasar los residuos de la combustión o ceniza hacia el interior del cajón y al ser de fácil extracción pueden ser limpiados con facilidad al vaciar el contenido del cajón. El cajón está diseñado para su uso en quemadores de biomasa o combustibles sólidos, ante la dificultad de la limpieza de los residuos de la combustión o ceniza que quedan en el interior del cañón del quemador o tobera debido a su paso a través de las distintas aberturas de las bandejas usadas para soportar el material combustible.
WO2014163689	POTTER STEPHEN (US)	Helical fuel burner. A burner for consuming a fuel includes a base with a lower end, an upper end, and at least one side wall. A fuel inlet port of the upper end of the base includes at least an inner wall and a bottom wall. At least one helical conduit is fixed outside of the inner wall of the fuel inlet port and conveys air from an open lower end thereof to an opposing open top end thereof at the upper end of the base. A bottom end of an annular glass burning chamber is fixed with the upper end of the base, such that the second end of the at least one conduit terminates therebetween. As such, the fuel in the fuel inlet port mixes with the air entering the burning chamber from the at least one helical conduit and burns in a helical pattern within the burning chamber.
WO2014170814	BERLINCIONI GIOVANNI (IT)	A pellet oven. The present invention regards the field of devices for cooking foods indoors or outdoors, without requiring in any case connection to the electrical or gas network, and more precisely it regards a pellet-fed transportable oven, also adapted for use as a heater.
WO2014149368	RES TRIANGLE INST (US)	Biomass combustion device with a thermoelectric-powered control. A thermoelectrically-powered combustion control device or a stove add-on unit for insertion into an open door of a combustion chamber. The combustion control device and add-on unit include a reentrant tube entering the opening and extending into an interior region of the combustion chamber inside the interior wall and above the opening, a blower configured to force air through the reentrant tube and inject air into the interior region of the combustion chamber, a thermoelectric element which supplies power to the blower, and a control unit programmed to control power to the blower such that air is injected into the interior region of the combustion chamber above a first predetermined rate which induces turbulent mixing of the air with combustion products produced from burning the fuel and below a second predetermined rate where excess air beyond the second predetermined rate compromises carbon emission.

COMBUSTIÓN DIRECTA

Nº Publicación	Solicitante (País)	Contenido técnico
EP2787280	LIGNO HEIZSYSTEME GMBH (AT); et al	Device and method for the combustion of free-flowing solid fuel. The invention relates to a method and an apparatus for the combustion of free-flowing, solid fuel, such as pellets or wood chips, wherein the fuel in the combustion chamber in a drying section a drying process in a Ausgasungsbereich a Ausgasungsprozess and in a burnout region passes through a Ausbrandprozess, said conveying means for continuously conveying the fuel through the drying area, the Ausgasungsbereich and the burnout region are provided.
ES2499118	METALURGICA MANLLEUENSE SA (ES)	Quemador de biomasa y procedimiento de utilización. Quemador de biomasa que comprende una cámara de combustión con una parrilla de combustión, una entrada de combustible cercana al borde trasero, una tapa frontal, móvil entre una posición de reposo adjunta a la parrilla de combustión y una posición distante de ésta. El quemador comprende además un rastrillo, provisto de orificios pasantes, móvil entre una posición de reposo donde se sitúa en el borde trasero de la cámara de combustión y una posición intermedia (40-50% generalmente) de la parrilla de combustión. La tapa frontal y el rastrillo se mueven al mismo tiempo, preferiblemente en la misma dirección, la misma distancia y con los mismos medios.; El procedimiento de utilización del quemador de biomasa comprende la repetición sucesiva de las etapas de combustión parcial, desplazamiento del rastrillo y la tapa frontal y su retorno y realimentación en combustible.
WO2014162117	DRAX POWER LTD (GB)	Biomass combustion. The present invention relates to a means and method for at least injecting mitigant particles into the combustion region (fireball) of a biomass boiler. The mitigant particles mitigate the slagging, fouling and corrosion problems caused by biomass ash by at least capturing the biomass ash. The mitigant particles capture the biomass ash by forming a physical bond with the biomass ash such that it adheres to the surface of mitigant particles. By injecting the mitigant particles into the combustion region, the opportunity to capture biomass ash is optimised.
WO2014158032	STEWART JASON JOREN JENS (NZ)	An improved combustion system. This invention relates to a fireplace which includes a firebase, a primary combustion zone with a first air supply means, a secondary combustion zone, and an exhaust flue. The fireplace place also includes a charcoal/reduction layer which forms between the primary combustion zone and the secondary combustion zone, the arrangement and construction being such that the gases and/or particulate matter produced from the pyrolysis and/or combustion of the biomass fuel in the primary combustion zone have to pass over, or through, the charcoal/reduction layer prior to entering the secondary combustion zone and/or the exhaust flue. The fireplace also includes a second air supply means for introducing heated secondary air into, or adjacent to, the secondary combustion zone, the arrangement and construction being such that said secondary air passes through (or adjacent to the region of) the charcoal/reduction layer to thus heat the secondary air.

PIRÓLISIS/GASIFICACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014168004	MITSUBISHI HEAVY IND ENVIRONMENTAL & CHEMICAL ENGINEERING CO LTD (JP)	Biomass pyrolysis apparatus, and power generation system. Provided is a biomass pyrolysis apparatus comprising: a combustion furnace which produces a heat quantity by causing a stable property fuel to combust; a pyrolysis gasification furnace which produces a semi-carbonised material, and a pyrolysis gas by pyrolysing woody biomass by means of the heat quantity produced by the combustion furnace; and a pyrolysis gas introduction passage which introduces the pyrolysis gas from the pyrolysis gasification furnace into a boiler, into which the semi-carbonised material is introduced.

PIRÓLISIS/GASIFICACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014170647	CHINOOK END STAGE RECYCLING LTD (GB)	Improvements in waste processing. The present invention relates to an apparatus arranged to process waste having an organic content. The apparatus comprises: a first processing chamber arranged to receive and heat said waste in a reduced or substantially zero-oxygen atmosphere to produce syngas and carbonaceous material; a second processing chamber arranged to receive and heat carbonaceous material in a reduced oxygen atmosphere to gasify it to produce carbon monoxide; means for controlling the oxygen content within the second processing chamber comprising a control system configured to monitor a property of the gas produced in the first processing chamber and to control a flow of oxygen containing gas into the second processing chamber in response to said property; and a thermal treatment chamber having a syngas inlet configured to receive syngas from the first chamber and the carbon monoxide from the second chamber. The thermal treatment chamber is configured to heat the gas therein to break down any volatile organic compounds or long chain hydrocarbons therein.
WO2014190161	VIRENT INC (US); et al	Process for converting biomass to aromatic hydrocarbons. The present invention provides methods, reactor systems, and catalysts for increasing the yield of aromatic hydrocarbons produced while converting biomass to hydrocarbons. The invention includes methods of using catalysts to increase the yield of benzene, toluene, and mixed xylenes in the hydrocarbon product.
WO2014190400	PETRÓLEO BRASILEIRO S A PETROBRAS (BR); et al	Vapour reforming process for reducing tar content in synthesis gas streams. The present invention proposes two-step vapour reforming processes; in the first step, a synthesis gas stream is passed through a catalytic bed comprising a catalyst based on alkaline metal and/or iron titanates, and a second step comprises at least one second catalytic bed containing a metal catalyst on a refractory support, preferably a catalyst with NiO as the metal phase supported on barium hexa-aluminate.
EP2808377	CLEANSTGAS GMBH (AT)	Gasifying facility for lumpy fuels. System for gasifying lumpy fuels i.e. biomass fuel such as timber or herbaceous substances. The system has a gas engine whose exhaust gas outlet is connected with an inlet of a post-combustion chamber. An exhaust gas outlet of the post-combustion chamber is connected with a heating gas inlet of a pyrolysis reactor. A pyrolysis gas outlet of the pyrolysis reactor is connected with an inlet of an oxidation chamber. A coke outlet of the pyrolysis reactor is connected with an inlet of a reduction furnace. A product gas outlet of the reduction furnace is connected with an inlet of the gas engine.
WO2014190332	ACCELERGY CORP (US); et al	Producing fuels and biofertilizers from biomass. An IBTL system having a low GHG footprint for converting biomass to liquid fuels in which a biomass feed is converted to liquids by direct liquefaction and the liquids are upgraded to produce premium fuels. Biomass residues from the direct liquefaction, and optionally additional biomass is pyrolyzed to produce structured biochar, hydrogen for the liquefaction and upgrading, and CO ₂ for conversion to algae, including blue green algae (cyanobacteria) in a photobioreactor (PBR). Produced algae and diazotrophic microorganisms are used to produce a biofertilizer that also contains structured biochar. The structured biochar acts as a nucleation agent for the algae in the PBR, as a absorption agent to absorb inorganics from the biomass feed to direct liquefaction or from the liquids produced thereby, and as a water retention agent in the biofertilizer.
WO2014190235	COOL PLANET ENERGY SYSTEMS INC (US)	Enhancing biochar performance using pyrolysis acid stream. A method of producing a modified biochar and the use of the biochar as a soil amendment. The modified biochar can be produced by contacting biochar with an acid-containing solution obtained from an acid containing stream produced in a pyrolysis process, which produces biochar. In accordance with one aspect, a cellulose-containing biomass is pyrolyzed to generate a gaseous organic acid-containing stream, which is condensed to produce an organic acid-containing solution. The biochar is then modified by contact with the organic acid-containing solution.

PIRÓLISIS/GASIFICACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
EP2806016	BONEFFICE SP Z O O (PL)	Method for conducting a biomass torrefaction process, installation for conducting biomass process, torrefied biomass and a method for purifying flue gases from torrefaction process. The method involves directing gas stream from degasser to combustion chamber. The gases are burned in combustion chamber to yield carbon di-oxide and steam. The torrefied biomass dust streams from unit separating solid particles from gas phase. A portion of torrefied biomass dust stream is directed to combustion chamber. The water is formed in degasser intended for steam production is fed to steam superheater. The water is discharged from degasser excess tank. The superheated steam from superheater is directed to reactor.
WO2014184923	GLOBAL ENERGY TRADE CO LTD (JP)	Method for gasifying solid organic raw material and gasification device. Provided is a method for gasifying solid organic raw material that uses a relatively inexpensive gasification device to gasify a solid organic raw material at a low running cost. A solid organic raw material that has been dried and crushed is inserted from the upper end of a cylindrical reaction furnace that is provided with a first circular cavity and a second circular cavity that are formed by expanding the inner diameter of an intermediate area, steam plasma that is generated by an electric arc plasma jet within the first circular cavity is injected, an oxidizing agent such as air that has been heated to 200-600 DEG C is injected into the second circular cavity, and the interior of the lower end section of the reaction furnace is subjected to suction via an exhaust gas passage. Part of the organic component of the solid organic raw material within the first circular cavity is gasified by the introduction of steam plasma, introduced into the second circular cavity, and combusted by reaction with the oxidizing agent. The synergy of the heat generated during combustion and the heating caused by the plasma cause the remaining organic component within the raw material to gasify. As a result, efficient gasification is possible.
WO2014190321	BATTELLE MEMORIAL INSTITUTE (US)	Falling bed reactor. Methods and apparatuses are provided for pyrolysis using a falling bed reactor. The falling bed reactor may result in effective mixing between a heat carrier and biomass, and may reduce or eliminate inert gas requirements.
WO2014177669	SHELL INT RESEARCH (NL); et al	Process for converting a solid biomass material. A process comprising a) pyrolyzing a biomass material to produce a biomass-derived pyrolysis product; b) providing a petroleum-derived hydrocarbon composition having a C7-asphaltenes content of equal to or more than 0.2 wt%, based on the total weight of the petroleum-derived hydrocarbon composition, which petroleum-derived hydrocarbon composition has a total acid number of equal to or more than 0.5 mg KOH/g and/or a density at 15.5 DEG C of equal to or more than 0.8 grams/ml and/or a viscosity at 37.8 DEG C of equal to or more than 500 centiStokes (cSt); c) mixing at least part of the biomass-derived pyrolysis product and at least part of the petroleum-derived hydrocarbon composition to produce a hydrocarbon-containing mixture; d) dewatering the hydrocarbon-containing mixture to produce a dewatered hydrocarbon-containing mixture.
WO2014177668		Process for converting a biomass material. A process for converting a biomass material comprising a) pyrolyzing a biomass material to produce a biomass-derived pyrolysis product; b) mixing at least part of the biomass-derived pyrolysis product and a petroleum-derived hydrocarbon composition, which petroleum derived hydrocarbon composition has a C7-asphaltenes content of equal to or more than 0.2 wt%, based on the total weight of the petroleum-derived hydrocarbon composition, to produce a hydrocarbon-containing mixture; c) dewatering the hydrocarbon-containing mixture to produce a dewatered hydrocarbon-containing mixture; d) contacting the dewatered hydrocarbon-containing mixture with hydrogen in one or more ebullating bed reactors comprising a catalyst at a temperature in the range from 350 to 500 DEG C to produce a reaction product.

PIRÓLISIS/GASIFICACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014181192	UNIV ALBERTA (CA)	Pyrolysis reactions in the presence of an alkene. Described herein are methods for producing branched alkanes and branched alkenes from a radical precursor. In one aspect, the method involves heating a source having one or more radical precursors in the presence of one or more alkenes. The phrase "a source of the radical precursor" is defined herein as any material that contains carbon-based molecules that can be converted to free radicals upon pyrolysis in the presence of an alkene. In one aspect, the source of the radical precursor can be a heavy oil, a biomass feedstock, or a fatty acid resource.
WO2014180753	SIEMENS AG (DE)	Hydrothermal carbonization of wastewater sludge and black liquor. The invention relates to a method and to an apparatus for withdrawal of biomass from a sludge. This involves converting biomass present in the sludge to porous carbon particles by hydrothermal carbonization of the sludge, and then filtering the carbon particles out of the hydrothermally carbonized sludge. The invention further relates to the processing of black liquor and wastewater by means of the method according to the invention. In the hydrothermal carbonization, the sludge is preferably heated to 180 DEG C in a pressure vessel and/or a pressure in the sludge is raised to 10 bar.
ES2477120	BLUEPLASMA POWER, SL (ES)	Procedimiento para la gasificación de biomasa, dispositivo para aplicar dicho procedimiento. Procedimiento para la gasificación de biomasa que comprende la recirculación del calor del gas final de tal modo que este es cedido al gas inicial, al fluido que permite la gasificación inicial y que puede ser un metal fundido y a los fluidos reactantes que se introducen junto con la materia prima para la gasificación inicial.
WO2014167141	1 ATR ENGINEERING OÜ (EE)	Screw conveyor reactor and use for pyrolysis or torrefaction of biomass. It comprises a reactor shell having generally an elongated shape with a first and a second end, which ends are opposite to each other; a shaftless screw having a central axis, mounted to drive means at the first end of the reactor shell to allow for rotation about the central axis; and a heat transfer tube located concentrically inside the shaftless screw, fixed to the second end of the reactor shell and connected to a source of a heat transfer medium. Due to its construction, the apparatus can be used for a number of physical and chemical operations: it can be employed as a conveyor and dryer, and for thermochemical conversion processes, in particular of biomass and/or waste to oil, char and/or gas, by pyrolysis or torrefaction.
WO2014165457	ABDULLAH ZIA (US); et al	Conversion of pyrolysis gas with a bioreactor. The extraction of bio oil from biomass for use as a biofuel is an area of interest in the search for reliable alternative energy sources. Biomass may be subjected to pyrolysis to create a hot pyrolysis vapor. Bio oil may be extracted from the hot pyrolysis vapor. Additionally, biomass may be subjected to gasification to create a syn gas. Finally, biomass may be used in conjunction with a bioreactor containing microorganisms to produce alkanols, such as butanol.
WO2014175941	UOP LLC (US)	Catalytic pyrolysis of biomass using a multi-stage catalyst regenerator. Disclosed in one embodiment is a method for the catalytic pyrolysis of a carbonaceous material that includes contacting the carbonaceous material with a plurality of catalyst particles to produce a gas phase product and a solid phase product and separating the gas phase product from the solid phase product and the plurality of catalyst particles. The method further includes partially regenerating the plurality of catalyst particles by exposing the solid phase product and the catalyst particles to a first oxidizing condition to produce an oxidized solid phase and a partially-regenerated catalyst and cooling the partially-regenerated catalyst and a non-oxidized portion of the solid phase product. Still further, the method includes further regenerating the partially-regenerated catalyst by exposing the non-oxidized portion of the solid phase product and the partially-regenerated catalyst to a second oxidizing condition.

PIRÓLISIS/GASIFICACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014170555	JÄRVINEN JARMO (FI)	Method and arrangement for producing biofuel. An arrangement for producing biofuel of biomass by thermochemical treatment of said biomass comprises a first processing environment with first elevated temperature for heating said biomass in order to eliminate biological activity of said biomass and produce first type biofuel, and a second processing environment with second elevated temperature being higher than said first elevated temperature for additionally heating said biomass in order to produce second type biofuel. The first processing environment receives the biomass and transfers it through said first processing environment during a first time period. The second processing environment is coupled with said first environment via a coupling means, and comprises transferring means for transferring said biomass through said second processing environment during a second time period to second output means. The arrangement is configured to produce both first and second types of dry biofuel, where the first one, as bedding, is outputted between the first and second environments, and the second one, a coal, is outputted after the second environment.
WO2014165223	ANELLOTECH INC (US)	Regeneration of catalytic fast pyrolysis catalyst. Catalyst that is used in the catalytic pyrolysis of biomass is regenerated by oxidation and washing with a liquid to remove minerals and restore catalyst activity and selectivity to aromatics.
WO2014165995	DIACARBON TECHNOLOGIES INC (CA)	Torrefaction process. A process for producing compacted torrefied biomass from pre-processed biomass. The process includes drying the pre-processed biomass in a dryer with heater exhaust gas from a heater, yielding dried biomass; torrefying the dried biomass with heat generated by the heater; compacting and pre-cooling the torrefied biomass in a cooling compactor and further cooling the compacted torrefied biomass in a cooling tunnel, yielding the compacted torrefied biomass.
WO2014164296	FUNK KIP W (US)	Multiple temperature control zone pyrolyzer and methods of use. A continuous-feed pyrolyzer for converting waste material (feedstock) into ash or char and a combustible gas (syngas) is described. The pyrolyzer can be integrated with subsystems that make use of the syngas to generate energy. In operation, the pyrolytic thermal converter processes the waste through indirect heating of a retort oven.
WO2014161531	FRAUNHOFER GES ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E V (DE)	Method and membrane module for the energy-efficient oxygen generation during biomass gasification. The invention relates to a method and a membrane module for the process-integrated oxygen generation during biomass gasification, the oxygen being generated by means of mixed ionic-electronic conductive ceramic membranes at high temperatures. The aim of the invention is to devise a method and a device for the energy-efficient generation of oxygen during biomass gasification in order to increase the efficiency of the entire process. According to the invention, the disadvantages of the prior art are overcome by a membrane module which is heated directly with the synthesis gas stemming from the biomass gasification. The heating, however, should cover only less than 20% typically less than 10% and, under optimum conditions, only approximately 5% of the heat requirement of the membrane module. The major part of the heat required to heat the fresh air is removed from the exhaust air of the membrane module by heat exchange.

TECNOLOGÍAS BIOQUÍMICAS

Patentes

DIGESTIÓN ANAERÓBICA		
Nº Publicación	Solicitante (País)	Contenido técnico
WO2014188000	UNIV DENMARK TECH DTU (DK)	Methods for upgrading of a fuel gas and succinic acid production. Biogas is currently one of the fastest growing sources of energy. However as biogas is produced from biomass and contains a high proportion of CO ₂ which has a low value as energy source. Thus it is desirable to decrease the content of CO ₂ in biogas by a process often referred to as upgrading of biogas. The most common upgrading methods remove the impurities mechanically or chemically. Until recently, the common industrial scale production method of succinic acid was petroleum derived. Emerging 'green' technologies to produce bio-based succinic acid have a lower operating cost and a more environmentally friendly footprint. These exploit biocatalyst driven fermentation of a carbon source. The present invention provides a novel and innovative use of the biological process of fermenting a carbon source to succinic acid, by exploiting the simultaneous consumption or fixation of CO ₂ of a CO ₂ -containing fuel gas by anaerobic succinic acid-producing microorganisms. This process thus provides for simultaneous fuel gas upgrading and succinic acid production, both of which are commercially relevant products of considerable value.
WO2014188776	SATAKE CHEM EQUIP MFG (JP); et al	Digester. To provide a digester vessel, whereby it becomes possible to provide a proper flow rate over the entire surface of a solid carrier in the vessel, to maintain uniform mixing performance in the vessel, and to prevent the formation of precipitates at the bottom part of the digester vessel with an extremely low power. [Solution] A digester is equipped with: a cylindrical solid carrier which extends in the vertical direction and is immobilized in such a manner that a gap is formed between the solid carrier and the inner wall of a vessel and gaps are formed respectively between the bottom part of the vessel and the solid carrier and between the top part of the vessel and the solid carrier, and which has a through-hole that extends in the vertical direction; a stator vane which is arranged at the bottom part of the vessel and extends radially; and a rotor vane which is arranged above the solid carrier and in the vicinity of the lower part of the liquid level. Digester used for processing raw sludge, surplus sludge and organic refuse, has rotary blade that is provided in upper portion of fixed carrier and in downward vicinity of liquid level.
EP2803729	AGRAFERM TECH- NOLOGIES AG (DE)	Method for operating a biogas system for the continuous fermentation of substrate mixtures and biogas plant for the continuous fermentation of substrate mixtures. Operating a biogas plant for continuous single-stage fermentation of a substrate mixture comprising a biogas fermenter and a separation unit, comprises separating the digestate and process water fermented in fermentation substrate of the biogas fermenter in the separation unit, and recycling the process water is into the biogas fermenter. The substrate mixture contains predominantly animal manure and the amount of recycled process water is adjusted such that fermenter contents in the biogas digester has a dry residue of at least 16%.
ES2516615	UNIV SANTIAGO COMPOSTELA (ES)	Procedimiento y producto de programa informático para el control de codigestores anaerobios. Procedimiento y producto de programa informático para el control de codigestores anaerobios. La codigestión anaerobia de sustratos múltiples permite potenciar la producción de metano así como la calidad del gas y el digerido si se utilizan adecuadamente las características complementarias de los diferentes residuos. Para ello, es necesario definir una mezcla óptima que maximice la conversión de DQO a metano sin causar desestabilizaciones en el digester. La presente invención propone una estrategia de control que por un lado calcula la mezcla óptima de la alimentación mediante optimización por programación lineal, y por otro, mantiene la estabilidad del sistema siguiendo un parámetro fisicoquímico del proceso (relación de alcalinidades).

DIGESTIÓN ANAERÓBICA

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014184004	TROUVE EM-MANUEL (FR); et al	Process and device for treating a biomass mixed with water in order to produce drinking water, biogas and combustible solids. The present invention relates to a process for treating a biomass mixed with water in order to produce, independently, combustible solids and drinking water and biogas and also to a device for treating a biomass mixed with water in order to produce, independently, combustible solids and drinking water and biogas.
WO2014177156	XERGI NIX TECHNOLOGYS (DK)	Method for ph-controlled fermentation and biogas production. The present invention is in the field of biomass processing and bioenergy production and facilitates efficient biomass processing and an increased production of renewable energy from processing and anaerobic fermentation of a wide variety of organic materials. In order to control the pH value of the biomass during processing thereof, a CO ₂ containing gas, such as e.g. biogas or flue gas, is added to the biomass present in the buffer tank and/or in the anaerobic digester operably linked to the buffer tank.
WO2014177639	GREENWATT SA (BE)	Organic matter digestion process and apparatus. The invention relates to a two-step process for methanization of organic matter in which the parameters of each of the steps are controlled independently of one another in order to obtain a satisfactory overall reaction yield according to the nature of the organic matter used in the methanization process. The invention also relates to an apparatus for carrying out the process according to the invention.
WO2014177919	JAYAMANNE ATHULA (LK)	Waste water treatment with zero sludge production and zero energy consumption. This invention reveals a method and apparatus for waste water treatment using cascaded processes of biological treatment comprising: plurality of UAFFs (Up-flow Anaerobic Floating Filter), and plurality of FBTs (Facultative Bacterial Tanks). The process does not leave any sludge and is completely free of mechanical moving components and hence do not consume energy for powering. Moreover, the process facilitates effective collection of bio gas which is a by-product of the treatment process.
WO2014178711	PAQUES I P B V (NL)	A process for anaerobic wastewater treatment. The invention relates to a process for anaerobic wastewater treatment wherein granular and non-granular sludge are formed, the process comprising: a) supplying a wastewater influent containing COD to a reactor vessel containing granular active sludge; b) subjecting the wastewater influent in the reactor vessel to anaerobic treatment conditions; c) obtaining a liquid comprising treated wastewater and dispersed non-granular sludge that is essentially free of granular sludge; d) supplying at least part of the liquid obtained in step c) to a device for removal and/or inactivation of sludge and removing or inactivating at least part of the non-granular sludge to obtain a liquid depleted in active sludge; and e) recycling at least part of the liquid depleted in active sludge to the reactor vessel or, in case the device for removal and/or inactivation of sludge is located in the reactor vessel, maintaining at least part of the liquid depleted in active sludge in the reactor vessel.
WO2014170603	BIO THINK (FR)	Method for producing hydrocarbides. The invention relates to a method for producing hydrocarbides, characterised in that it comprises at least the following steps: a) anaerobic fermentation of a fermentable raw material in order to produce volatile fatty acids, b) elongation of the volatile fatty acids produced in step a) by fermentation with at least one bacterium of the Megasphaera genus, extraction of the fatty acids produced from the fermentation must, and c) production of hydrocarbides by subjecting the fatty acids produced in step b) to a Kolbe electrolysis.
EP2792739	NIEDERBACHER MICHAEL (IT)	Biogas plant with a fermenter feeding device. The invention relates to a biogas plant with a fermenter feed means for feeding of biomass in a fermenter tank of the biogas plant, the digester feed means comprises a cell disruption extruder comprising at least one recorded in an extruder housing auger with a raised snails coiling, and wherein the cell disruption extruder at least one has to be extruded feed for biomass and at least one outlet for extruded biomass.According to the invention, a reamer is in the interior of the auger housing at least arranged with at least one Räumzinken, wherein the at least one Räumzinken or at least one of the Räumzinken is guided by its free zinc end to the associated worm shaft, and that the raised snails helix of each passage area of a Räumzinkens raised by the screw coiling has a Zinkenausriehmung which is penetrated by the respective associated Räumzinken at a screw shaft rotation.

DIGESTIÓN ANAERÓBICA

Nº Publicación	Solicitante (País)	Contenido técnico
ES2490066	AGENCIA DE MEDIO AMBIENTE Y AGUA DE ANDALUCIA (ES); et al	Procedimiento para la obtención de hidrógeno a partir de biogás de vertedero de residuos sólidos urbanos. Procedimiento para la obtención de hidrógeno a partir de biogás de vertedero de residuos sólidos urbanos. La presente invención se refiere a un procedimiento para la obtención de hidrógeno a partir de gas de vertedero de residuos sólidos urbanos. El proceso integra dos fases diferentes: depuración del biogás de vertedero y reformado de metano.
WO2014161877	UNIVERSTIY OF LJUBLJANA (SI)	Method for anaerobic co-treatment of cyanide contaminated water and wastewater comprising fermentable organic material. The topic of the invention is a procedure for anaerobic biological treatment of cyanide and production of biogas from cyanide using a mixture of cyanide contaminated industrial wastes and organic matter rich industrial wastes as inflow for the treatment in typical anaerobic biogas production reactors. The procedure is based on anaerobic degradation of cyanide by microbial communities normally present in biogas production facilities, where the inflow to the reactor is a mixture of cyanide contaminated industrial wastewater and organic carbon rich wastewater of specific type. The procedure enables instant cyanide degradation by microbial consortia. In case of inhibition by cyanide, the reactor conditions enable also chemical reaction of cyanide detoxification that effectively lowers the cyanide inhibitory concentration, and allows for microbially mediated conversion of cyanide and its abiotic derivatives to additional biogas and methane.
WO2014155368	JALOTE ANU-PAM (IN)	Poly-phasic biodigester and its method of biogas production from multiple organic wastes. The present invention relates to a hybrid poly-phasic cum high solids biodigester for the anaerobic digestion of multiple organic matters. More particularly, this invention relates to a highly efficient and low-cost method of production of biogas and enriched organic manure in a specifically designed poly-phasic biodigester. The present invention overcomes the limitations of the prior devices, and is a substantial advance in the art.

FERMENTACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014138672	NOVOZYMES AS (DK), et al	Cellobiohydrolase variants and polynucleotides encoding same. The present invention relates to cellobiohydrolase variants. The present invention also relates to polynucleotides encoding the variants; nucleic acid constructs, vectors, and host cells comprising the polynucleotides; and methods of using the variants. Use: As cellobiohydrolase variant for making transgenic plant; for degrading a cellulosic material; for fermenting a cellulosic material for producing fermentation product (claimed); to hydrolyze the cellulosic material to fermentable sugars, e.g. glucose, cellobiose, and pentose monomers; to saccharify the cellulosic material to fermentable sugars and to convert the fermentable sugars to many useful fermentation products, e.g. fuel (ethanol, n-butanol, isobutanol, biodiesel, jet fuel) and/or platform chemicals (e.g. acids, alcohols, ketones, gases, oils).
WO2014188012	ABENGOA BIOENERGÍA NUEVAS TECNOLOGÍAS SA (ES)	Expression of recombinant beta-xylosidase enzymes. The invention relates to a host cell, preferably a Myceliophthora thermophile cell, which expresses recombinant enzymes with beta-xylosidase activity, to an enzymatic composition comprising said cell and/or the recombinant enzyme with beta-xylosidase activity expressed by said cell, to the use of said host cell, the recombinant enzyme with beta-xylosidase activity expressed by said cell or the composition for the degradation of the biomass, and to a method for producing byproducts, preferably bioethanol, comprising the use of said host cell, the recombinant enzyme with beta-xylosidase activity expressed by said cell or said composition.

FERMENTACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014164323	ABENGOA BIOENERGÍA NUEVAS TECNOLOGÍAS SA (ES)	Methods and systems for use in deactivating organisms used in bioproduct production processes. A method for deactivating organisms used in fermenting a biomass to produce one or more bioproducts (e.g., ethanol, etc.) generally includes an operation of conveying the organisms from a fermentation chamber to a distillation unit, and then an operation of effecting a positive six-log kill of the organisms in the distillation unit. A system for producing the one or more bioproducts, making use of the method, generally includes the fermentation chamber for holding the organisms during the fermentation operation, and the distillation unit configured to receive the fermented biomass, including the organisms, from the fermentation chamber. The distillation unit is operable to effect the positive six-log kill of the organisms in the distillation unit. In some applications of the method and system, the organisms are genetically modified organisms.
WO2014181023		Beta-glucosidase variants having reduced transglycosylation activity. The invention relates to beta-glucosidase variants having reduced transglycosylation activity. The invention also relates to a gene construct, a host cell and an enzyme composition comprising said variants. The invention further relates to a method for producing said variants, a method for producing fermentable sugar and a method for producing a bioproduct, such as bioethanol, from cellulose material with the beta-glucosidase variants, the host cell or the enzyme composition comprising said variants.
WO2014186567	NOVOZYMES AS (DK); et al	Enhancing enzymatic hydrolysis by enzymatic preconditioning. The invention relates to methods of preconditioning pretreated lignocellulose-containing material in the presence of a combination of laccase and beta-glucosidase. The invention also relates to processes of producing sugars and fermentation products including a step of preconditioning pretreated lignocellulose-containing material in the presence of a combination of laccase and beta-glucosidase. The invention also relates to compositions suitable for preconditioning.
WO2014182054	UNIV KOREA RES & BUS FOUND (KR)	Recombinant microorganism metabolizing 3,6-anhydride-L-galactose and a use thereof. The present invention relates to a recombinant microorganism metabolizing 3,6-anhydride-L-galactose and a use thereof, and, more specifically, can produce ethanol from a recombinant microorganism expressing an enzyme group involved in a metabolic pathway of 3,6-AHG.
WO2014175701		Novel recombinant cellulase and use thereof. The present invention provides a recombinant cellulase derived from <i>Hahella chejuensis</i> and a use thereof. The recombinant cellulase according to the present invention has high stability at a high temperature and exhibits optimized activity at a neutral pH, thereby having high process availability. Further, the cellulase according to the present invention exhibits endoglucanase activity as well as exoglucanase activity, and thus can produce monosaccharides when degrading cellulose, thereby requiring no additional treatment necessary for a fermentation process, leading to cost reduction. These activities of the enzyme are favorable to the fermentation for producing biofuel or thermal treatment conditions, thereby promoting industrial profits.
EP2803655	SCHWEITZER CHRISTIAN (DE); et al	System and method for producing aliphatic alcohols. The system comprises a first device for biological production of ethanol and for forming carbon dioxide, and a second device for chemical conversion of carbon dioxide to hydrocarbon such as methanol or methane, where the second device is connected downstream to the first device. The first device is connected to the second device by a first connecting line to introduce the carbon dioxide formed in the first device into the second device. A second connecting line connects the second device to the first device.
WO2014159159	UNIV IDAHO BOARD OF REGENTS (US)	Ethanol fermentation with immobilized yeast. Methods of fermentation utilizing immobilized yeast, wherein growth of the yeast during fermentation is inhibited, provide advantages over methods in which yeast are permitted to grow during fermentation.

FERMENTACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014164581	DU PONT (US)	Gradient pretreatment of lignocellulosic biomass. Lignocellulosic biomass pretreated with ammonia where the concentration of the biomass in the reaction mixture is reduced over time was found to produce more sugars following saccharification, as compared to equivalent biomass pretreated at constant concentration. The concentration of biomass is a solids concentration, which is the percent of dry biomass relative to the total pretreatment reaction mixture on a weight to weight basis.
WO2014159309	BUTAMAX ADVANCED BIOFUELS LLC (US)	Processes and systems for the production of alcohols. The present invention relates to processes and systems for the production of fermentative products such as ethanol and butanol. The present invention also provides methods for separating feed stream components for improved biomass processing productivity.
WO2014160184		Systems and methods for yeast propagation. The present invention relates to systems and methods for propagating yeast using a feedstock material such as starch and one or more enzymes (e.g., an enzyme cocktail) to break down the feedstock material into one or more monosaccharides at a sufficient rate so that the yeast can use the monosaccharides as a carbon source for producing more yeast cells while not producing an undue amount of alcohol.
WO2014159529	POET RES INC (US)	Propagating an organism and related methods and compositions. The present invention is related to methods of propagating one or more organisms by using a carbon source that includes xylose (e.g., xylose syrup from pretreating lignocellulosic feedstock) and/or a nutrient source that includes a stillage component (e.g., thin stillage derived from a corn-to-ethanol process) in the propagation medium. The organisms include those that can convert one or more monosaccharides into an alcohol via fermentation, such as yeast. The present invention is also directed to related compositions.
WO2014159929	ABENGOA BIOENERGY NEW TECHNOLOGIES LLC (US)	Method for adding enzymes to obtain high ethanol yield from cereal mash. The present invention generally relates to processes for production of monosaccharides and ethanol from energy crops. In some aspects, the present invention relates to improvements in ethanol production from energy crops including fractionating liquefied mash to generate a fraction enriched in complex polysaccharides such as cellulose, conversion of the cellulosic components to monosaccharides, and preparation of ethanol therefrom.
WO2014160402	MASCOMA CORP (US)	Co-conversion of carbohydrates to fermentation products in a single fermentation step. Provided are methods for the production of a fermentation product comprising co-fermenting a sugar stream with a pretreated lignocellulosic biomass. Lignocellulosic biomass feedstocks useful in the methods include grass, switch grass, cord grass, rye grass, reed canary grass, miscanthus, sugar-processing residues, sugarcane bagasse, agricultural wastes, rice straw, rice hulls, barley straw, corn cobs, cereal straw, wheat straw, canola straw, oat straw, oat hulls, corn fiber, stover, soybean stover, corn stover, forestry wastes, recycled wood pulp fiber, paper sludge, sawdust, hardwood, softwood, agave, and combinations thereof. Sugar streams useful in the methods include molasses, sugar cane, sugar beet, corn starch, wheat starch, and potato starch. Fermentation products include alcohols (including, e.g., ethanol), lactic acid, and acetic acid. The methods can be performed at existing fermentation facilities, which will increase yield of fermentation products and reduce the costs of production.

FERMENTACIÓN

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014156980	JX NIPPON OIL & ENERGY CORP (JP)	Method for producing raw material for enzymatic saccharification, method for producing sugar, and method for producing ethanol. Liquid ammonia or ammonia containing liquid ammonia each having a temperature of -40 to 80 not C is supplied to a reaction vessel in which a lignocellulose-containing plant-derived biomass is contained, subsequently the temperature in the reaction vessel is raised to a temperature that falls within the range from 60 not C to 135 not C and is higher than the temperature in the reaction vessel at the time of supplying the liquid ammonia or ammonia, and subsequently a treatment with ammonia containing a gas phase or a liquid phase is carried out (the cleavage of an ester bond). Subsequently, the inside of the reaction vessel is cooled to a temperature which falls within the range from a temperature that is lower by 40 not C than the temperature in the reaction vessel to 40 not C, subsequently liquid ammonia or ammonia containing liquid ammonia is further added into the reaction vessel so that the (mass of ammonia in a liquid phase)/(dry mass of the plant-derived biomass) ratio becomes 0.1 to 1.1, and subsequently a treatment with ammonia containing a liquid phase is carried out at -40 to 40 not C (the transformation of a crystal form).
WO2014157492	HONDA MOTOR CO LTD (JP); et al	Thermostable cellobiohydrolase. This thermostable cellobiohydrolase has cellobiohydrolase activity under conditions of at least 75 DEG C and pH 5.5 and is: a polypeptide obtained from an amino acid sequence represented by Sequence No. 1, 3, 5 or 7; a polypeptide obtained from an amino acid sequence in which one or multiple amino acids of an amino acid sequence represented by Sequence No. 1, 3, 5 or 7 have been deleted, substituted or added; or a polypeptide obtained from an amino acid sequence having 80% to less than 100% sequence identity with an amino acid sequence represented by Sequence No. 1, 3, 5 or 7. The cellobiohydrolase is useful in cellulase mixture which is used for preparing degradation products of cellulose (all claimed) contained in plant biomass including bioethanol and biofuel.

TECNOLOGÍAS QUÍMICAS

Patentes

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014190436	POLYVALOR LTD PARTNERSHIP (CA)	Process and system for producing a fatty acid alkyl ester. A process and a system for producing a fatty acid alkyl ester from an alcohol and a feedstock containing transesterifiable lipids are provided. The process: utilizes catalyst that resists mechanical stress and is compatible with catalyst regeneration; occurs at higher temperatures and has potential to produce highly valued chemicals while reducing the number of process steps; provides high quality biodiesel; minimizes mass transfer limitations, low reaction rates, and separating catalyst from the product; exhibits higher through put rates-higher reaction rates, higher selectivity, superior economics, better temperature control in the reactor and smaller pressure drop and/or smaller resistance to diffusion through the particles (in a fluidized bed reactor compared to a fix bed reactor); and allows continuous use of catalyst (no need to recover or dispose)
ES2510765	UNIV CORDOBA; et al	Selecting microbial strain for carrying out transesterification reaction for producing biodiesel, involves culturing microbial strains on solid culture medium supplemented with lipid substrate. A method for obtaining biodiesel, which involves obtaining the supernatant during culturing a microbial strain in the presence of a lipid substrate, mixing 4.8ml oil, 1.5-2ml absolute ethanol and 0.005-0.075ml of aqueous solution of sodium hydroxide or potassium hydroxide to the supernatant for carrying out transesterification reaction at 20-45[deg] C for 1-72 hours at 100-350 revolutions per minute and then extracting the biodiesel; and (2) a kit for producing biodiesel, which comprises a microbial strain, oil, ethanol, sodium hydroxide or potassium hydroxide.

Nº Publicación	Solicitante (País)	Contenido técnico
WO2014189627	THOMPSON JEFFERY (US); et al	MECHANICALLY ENHANCED SEPARATION OF REACTION PRODUCTS IN BIO-DIESEL PRODUCTION. Apparatus and related methods for reacting a natural oil with a short chain alcohol in the presence of an alkaline catalyst and mesh to produce biodiesel, significantly decreasing the amount of time for the glycerol byproduct to settle out of the reaction mixture. The process for the production of biodiesel includes providing animal or vegetable oil to create a first component, combining a short chain alcohol with a strong base to create a second component, and combining the first and second components together in the presence of a mesh, such that the mesh is in contact with the combined components.
ES2503990	UNIV ZARAGOZA (ES)	Aditivo biodegradable para biodiésel. Esta invención se refiere a un procedimiento de obtención de un aditivo biodegradable para biodiésel. El procedimiento comprende una etapa de mezcla de bio-oil, biodiésel y un disolvente.
EP2796446	AFTON CHEMICAL CORP (US)	Alkoxyated quaternary ammonium salts and diesel fuels containing the salts. fuel soluble additive for a diesel engine, a method for improving performance of fuel injectors and a method for cleaning fuel injectors for a diesel engine. The fuel soluble additive includes a quaternary ammonium salt derived from an amido amine containing at least one tertiary amino group and an epoxide, in the presence of a proton donor selected from a carboxylic acid and an alkyl phenol. The amido amine is made in a reaction medium that is substantially devoid of an acylating agent.
WO2014144461	CONSEJO NACIONAL INVESTIGACIONES CIENTÍFICAS (AR); et al	Engineered organisms for production of novel lipids. The present disclosure provides engineered microorganisms, engineered biosynthetic pathways, methods of producing lipid compounds using genetically engineered microorganisms, and the products synthesized by those organisms. In particular, the disclosure provides genetically engineered microorganisms for the production of multi-methyl branched fatty acids (MMBFAs) and MMBFA esters (wax esters) derived from these fatty acids. In addition, the disclosure provides methods for producing acylglycerols with one of more of their acyl substituents being an MMBFA, and methods for producing alcohols derived from MMBFAs (fatty alcohols).
ES2482890	CONSEJO SUPERIOR INVESTIGACIONES CIENTÍFICAS (ES); et al	Procedimiento de obtención de una enzima inmovilizada en un soporte renovable derivado de un residuo agroalimentario. Procedimiento de obtención de una enzima inmovilizada en un soporte renovable derivado de un residuo agroalimentario. Procedimiento de obtención de una enzima inmovilizada en un soporte, caracterizado porque comprende: a) obtener un soporte renovable por tratamiento térmico de un residuo agroalimentario que comprende un compuesto seleccionado del grupo que consiste en sílice, óxido de catión alcalino, óxido de catión alcalinotérreo y mezcla de los anteriores, e b) inmovilizar la enzima en el soporte obtenido en la etapa anterior. Preferiblemente, la enzima es lipasa recombinante del hongo <i>Rhizopus oryzae</i> (SEO ID N DEG 1) y el residuo agroalimentario es cáscara de arroz. Así como el soporte obtenido en la etapa a), la enzima inmovilizada obtenida en la etapa b) y su uso para obtener biodiesel.
EP2792730	SASOL TECH PTY LTD (ZA); et al	Process for producing jet fuel from a hydrocarbon synthesis product stream. The present invention relates to a process for producing jet fuel comprising the following steps: A.1) separating at least a portion of the C 9 to C 15 fraction from the product of a hydrocarbon synthesis process; A.2) converting at least a part of the separated C 9 to C 15 fraction to aromatic hydrocarbons; A.3) obtaining a jet fuel comprising the, optionally further treated, converted separated C 9 to C 15 fraction of step A.2); B.1) separating at least a portion of the C 16+ fraction from the product of a hydrocarbon synthesis process; B.2) reducing the average number of carbon atoms of at least a portion of the separated C 16+ fraction; B.3) optionally, separating the C 9 to C 15 fraction of at least a portion from the product obtained from step B.2); and B.4) adding - at least a portion of the C 9 to C 15 fraction separated in step B.3), if present; or - at least a portion of the product of step B.2) to - the separated C 9 to C15 fraction obtained from step A.1); and/or - the product of one or more of the steps subsequent of step A.1) before step A.3) is effected; and/or - the steps subsequent of step A.1) before step A.3) is effected and/or - step A.3). The present invention furthermore relates to a product obtainable by the process of the invention. The present invention furthermore relates to the use of at least a portion of the C 9 to C 15 fraction from the product of a hydrocarbon synthesis process wherein at least a part of the fraction has been converted to aromatic hydrocarbons together with at least a portion of the C16+ fraction from the product of a hydrocarbon synthesis process wherein of at least a portion of the C 16+ fraction the average number of carbon atoms has been reduced as jet fuel.

Nº Publicación	Solicitante (País)	Contenido técnico
ES2489291	FUNDACION CETENA (ES)	Procedimiento de fabricación de un monolito catalítico por impresión de una tinta catalítica, tinta catalítica y uso. Procedimiento de fabricación de un monolito catalítico por impresión de una tinta catalítica, siendo del tipo de monolitos catalíticos formados por un sustrato ondulado sobre el que se ha impreso una tinta catalítica y que puede ser enrollado, acompañado de una lámina plana del mismo material sobre sí mismos para obtener el monolito, que comprende la selección de un catalizador; la selección de un sustrato; la impresión de una tinta catalítica sobre una primera cara del sustrato por medio de una primera máquina de impresión; el curado de la tinta catalítica impresa en un primer horno; la impresión de la tinta catalítica sobre la segunda cara del sustrato; el curado de la tinta catalítica impresa en un segundo horno; el corrugado del sustrato con la tinta catalítica, y; el calcinado del monolito, siendo estos monolitos catalíticos utilizados en numerosos procesos químicos presentes en diferentes industrias, y, así, pueden ser utilizados en la fabricación de biodiesel, depuración de humos de escape de automóvil, depuración de torres de salidas de humos, depuración de aguas u obtención de hidrocarburos líquidos.
WO2014159439	ONEY STEPHEN K (US)	Systems and methods for cultivating and harvesting blue water bioalgae and aquaculture. Methods and systems for utilizing deep ocean water in the cultivation and harvesting of nutrients and CO2 for algae and other valuable aquaculture species for the production of algal biomass and the like. The systems of the present invention include a floating deep water harvesting barge, a containment device, and a storage or pumping device. The containment device may be a closed system, an open system, or a photo-bioreactor. The present invention is also directed to improved methods for drying algae biomass and further downstream applications and uses of the algae biomass.
WO2014160349	GLOBALTECH FLUIDS LLC (US)	Glycerol engine coolant systems. A system for modifying retained co-products of biodiesel production to provide usable and inexpensive anti-freeze coolant products. A low-toxicity anti-freeze composition is also disclosed.
WO2014140392	UNIV MADRID COMPLUTENSE (ES)	Integrated method of obtaining monounsaturated alcohols, biodiesel and biodegradable products from jojoba oil. The invention concerns the transesterification of jojoba oil in the presence of low- and medium-molecular weight alcohols using enzymatic, heterogeneous or homogeneous catalysts. The reaction product is subjected to various crystallization stages in a system of pure organic solvents or a polar/apolar solvent mixture. The method enables different mixtures of high-purity unsaturated fatty alcohols to be obtained in oily liquid form, which can be used for the transdermal administration of pharmacological agents. Monoalkylic esters which can be used as biodiesel or biodegradable products are obtained as by-products.
WO2014185629	UNIV KOREA RES & BUS FOUND (KR)	Method and device for manufacturing biodiesel from sewage sludge. The present invention relates to a method and a device for manufacturing biodiesel from sewage sludge including water by using, as a cosolvent, xylene or toluene of which the boiling point is higher than the boiling point of water.
WO2014138732	BP CORP NORTH AMERICA INC (US); et al	Microorganisms with altered fatty acid profiles for renewable materials and biofuel production. Biofuel generated from the lipids of oleaginous yeast must conform to industry and regulatory standards for fuel performance and composition. In particular, precise lipid compositions and fuel properties are required for approval of biofuels. Disclosed are genetically modified microorganisms generated from oleaginous yeast that show significant alterations in lipid profile. Also disclosed are methods of producing biofuels and biofuel compositions.

VT BIOMASA

PATENTES

Boletín elaborado con la colaboración de :



MINECO

c/Albacete, 5
28027 Madrid
Tel: 91 603 83 18
E-mail: consultas.sgecpp@mineco.es
www.mineco.es



OEPM

Paseo de la Castellana, 75
28071 Madrid
Tel: 91 349 53 00
E-mail: carmen.toledo@oepm.es
www.oepm.es



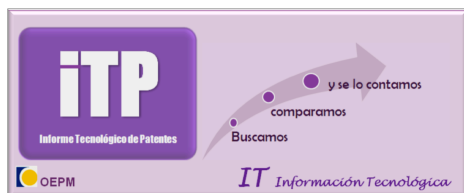
Bioplat

C/ Dr. Castelo 10, 3°C-D
28009 Madrid
Tel.: 91 307 17 61
E-mail: secretaria@bioplat.org
www.bioplat.org



CIEMAT

Avda. Complutense, 40
28040 Madrid
Tel: 91 346 08 99
E-mail: mjose.cuesta@ciemat.es
www.ciemat.es



Esta publicación está bajo licencia Creative Commons Reconocimiento, NoComercial, Compartirigual, (by-nc-sa). Usted puede usar, copiar y difundir este documento o parte del mismo siempre y cuando se mencione su origen, no se use de forma comercial y no se modifique su licencia. Más información: <http://creativecommons.org/licenses/by-nc-sa/3.0/>