

Search history

Search 1: FT=(reactor and hydrolytic) (Results 8199)
Search 2: 1 and pd<20260615 (Results 8199)
Search 3: 1 and pd<20160615 (Results 7735)
Search 4: 3 and water (Results 7271)
Search 5: 4 and sludge (Results 685)
Search 6: 5 and acidogenic (Results 66)

Title: SYSTEMS AND METHODS FOR ANAEROBIC DIGESTION OF BIOMATERIALS

Abstract: Source: US2012125840A Systems and methods for performing anaerobic digestion of biomaterials using a clarifier, a batch **reactor**, and/or a digester are disclosed. The clarifier performs pretreatment processing of biomaterial to improve anaerobic digestion. The batch **reactor** and/or the digester are coupled to the clarifier and are configured to digest the processed biomaterial. A control system for an anaerobic digestion process includes a flow control system, a temperature control system, and a totalization system. The flow control system controls the flow of biomaterial and the delivery of chemical agents to the biomaterial based on conductivity, temperature, pressure, and/or composition of the biomaterial. The temperature control system includes a heat source and heat exchangers that control the temperature of the biomaterial. The totalization system senses the volume of biomaterial in at least one stage of an anaerobic digestion process and a controller controls the flow control system based upon the sensed volume of biomaterial.

Classifications:

International (IPC 8-9): C02F11/04 C02F3/00 C02F3/28 C02F9/00

C12M1/00 C12M1/34 C12M1/36 (Advanced/Invention);

C02F1/68 C02F101/20 C02F103/20 C02F103/26 C02F11/18

C02F3/34 (Advanced/Non-invention)

CPC: C02F3/282 C02F3/006 C02F3/28 C02F1/683 C02F3/34

C02F3/343 C02F11/04 C02F11/185 C02F2101/20 C02F2103/20

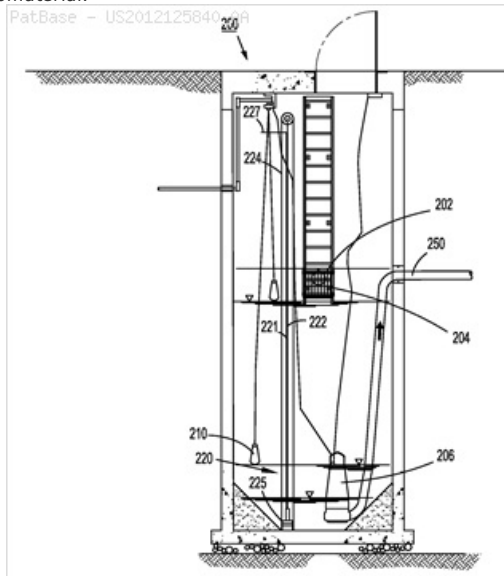
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C12M41/34 C12M41/40 C12M41/44 C12M41/48 Y02W10/30

US: 210/103 210/104 210/120 210/137 210/143 210/143S 210/149

210/601 210/603 210/612 210/614 210/631 210/96.1 210/97

**Family:**

Publication number	Publication date	Application number	Application date
US2012125840 AA	20120524	US20120360669	20120128
US2013193067 AA	20130801	US20120676051	20121113
US2014263040 AA	20140918	US20140293038	20140602
US8308946 BB	20121113	US20120360669	20120128
US8758615 BB	20140624	US20120676051	20121113
US9815721 BB	20171114	US20140293038	20140602

Priority:

US20120360669 20120128 US20120676051 20121113 US20140293038 20140602

Probable Assignee: EPCOT CRENSHAW CORP

Assignee(s): (std): EPCOT CRENSHAW CORP ; SMITH CHARLES SATISH

Inventor(s): (std): SMITH CHARLES SATISH

Agent(s): CARTER DELUCA FARRELL LLP AND SCHMIDT; CARTER DELUCA FARRELL AND SCHMIDT LLP

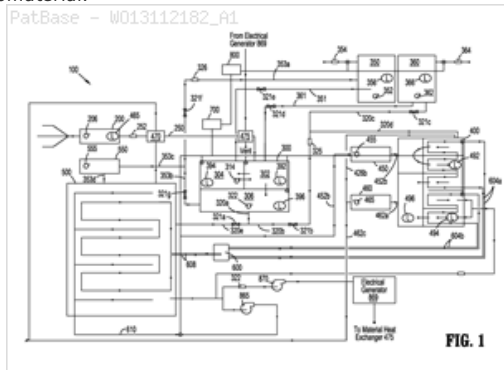
Title: SYSTEMS AND METHODS FOR ANAEROBIC DIGESTION OF BIOMATERIALS

Abstract: Source: ZA201405543A Systems and methods for performing anaerobic digestion of biomaterials using a clarifier, a batch **reactor**, and/or a digester are disclosed. The clarifier performs pretreatment processing of biomaterial to improve anaerobic digestion. The batch **reactor** and/or the digester are coupled to the clarifier and are configured to digest the processed biomaterial. A control system for an anaerobic digestion process includes a flow control system, a temperature control system, and a totalization system. The flow control system controls the flow of biomaterial and the delivery of chemical agents to the biomaterial based on conductivity, temperature, pressure, and/or composition of the biomaterial. The temperature control system includes a heat source and heat exchangers that control the temperature of the biomaterial. The totalization system senses the volume of biomaterial in at least one stage of an anaerobic digestion process and a controller controls the flow control system based upon the sensed volume of biomaterial.

Classifications:

International (IPC 8-9): C02F C02F11/04 C02F3/28 C02F3/30 C12M C12M1/00 C12M1/107 C12M1/34 C12M1/36 C12P1/00 C12P5/02 C12P7/54 C12Q3/00 C2F3/30 (Advanced/Invention)

CPC: C12M21/04 C12M23/34 C12M41/34 C12M45/06 Y02E50/343 C02F3/28 C02F11/04 C02F11/185 C02F2103/005 C02F2103/20 C02F2103/22 C02F2209/005 C02F2209/04 C02F2209/06 C05F17/0027 C05F17/0072 G01N1/2226 Y02W30/43 Y02W30/47 Y02P20/145

**Family:**

Publication number	Publication date	Application number	Application date
CA2862792 AA	20140725	CA20122862792	20120128
CA2862792 C	20170620	CA20122862792	20120128
EP2807122 A1	20141203	EP20120703932	20120128
W013112182 A1	20130801	WO2012US23045	20120128
ZA201405543 A	20160330	ZA20140005543	20140728

Priority:

WO2012US23045 20120128 ZA20140005543 20140728

Probable Assignee: EPCOT CRENSHAW CORP

Assignee(s): (std): EPCOT CRENSHAW CORP ; SMITH CHARLES SATISH

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Inventor(s): (std): SMITH CHARLES SATISH

Inventor(s): SMITH CHARLES SATISHUS

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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: BIOGAS PROCESS WITH NUTRIENT RECOVERY

Abstract: Source: US2015275234A The invention is a method of two-phase anaerobic digestion where monitoring and adjusting the nitrogen status (carbon to nitrogen molar ratio, i.e. C/N molar ratio or total or ammoniacal nitrogen content) enables maintaining optimum conditions during the process. The method improves the use of a variety of feedstock materials or facilitates monodigestion of one feedstock. Especially the introduction of nitrogen rich feedstock materials in the process is amended. A community of hydrolyzing and **acidogenic** microorganisms in the first phase digester performs ammonification i.e. release of organic nitrogen as ammonia. Nitrogen and phosphorus are removed and recovered from the digestate which then undergoes biogasification in the second phase of the process. Reject **water** from biogasification can be recycled within the process.

Classifications:

International (IPC 8-9): C02F11/04 C02F3/00 C02F3/28 C02F3/34 C12M1/00 C12M1/107 C12M1/34 C12N1/00 C12N1/20 C12P3/00

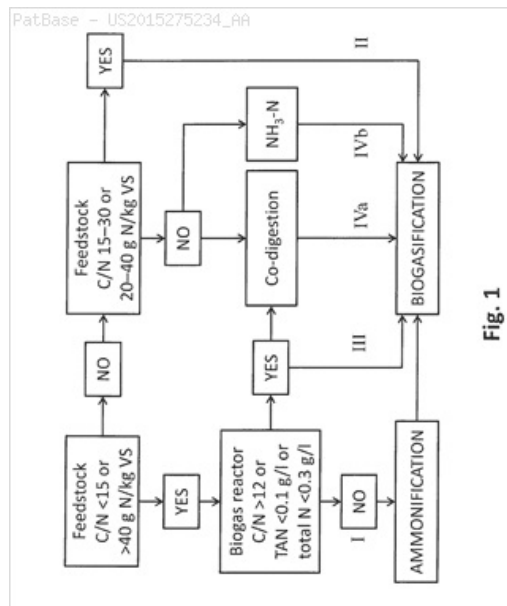
C12P5/02 C12Q3/00 (Advanced/Invention);

C12P23/00 (Advanced/Non-invention);

C12P5/02 (Core/Invention)

CPC: C12P5/023 C12M21/04 C12P23/00 Y02E50/343

US: 435/167 435/287.5 435/289.1

**Family:**

Publication number	Publication date	Application number	Application date
AP201609507 A0	20161031	AP20160009507	20150331
AU2015242254 AA	20151008	AU20150242254	20150331
CA2943323 AA	20160920	CA20152943323	20150331
CL2016002464 A1	20170623	CL20160002464	20160929
CN106471126 A	20170301	CN201580029051	20150331
EA201691977 A1	20170130	EA20160091977	20150331
EP3126507 A1	20170208	EP20150716150	20150331
IN201627032430 A	20161028	IN201627032430	20160922
JP2017511141 T2	20170420	JP20160560742T	20150331
KR20160140853 A	20161207	KR20167030354	20150331
MX2016012211 A1	20170501	MX20160012211	20150331
TH170431 A	20171116	TH20161005906	20150131
US2015275234 AA	20151001	US20150675132	20150331
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WO15151036 A1	20151008	WO20151B52379	20150331

Priority:

US20140973577P 20140401 US20150675132 20150331 WO20151B52379 20150331

Probable Assignee: DUCTOR OY

Assignee(s): (std): DUCTOR OY ; KETOLA ARI ; KOSKENNIEMI KERTTU ; LAHTINEN MINNA ; VIROLAINEN NINA ; NUMMELA JARKKO ; VIRKAJAERVI ILKKA

Assignee(s): VIRKAJARVI ILKKA

Inventor(s): (std): ARI KETOLA ; ILKKA VIRKAJAERVI ; JARKKO NUMMELA ; KERTTU KOSKENNIEMI ; KETOLA ARI ; KOSKENNIEMI KERTTU ; LAHTINEN MINNA ; MINNA LAHTINEN ; NINA VIROLAINEN ; NUMMELA JARKKO ; VIRKAJAERVI IILKA ; VIRKAJAERVI ILKKA ; VIRKAJARVI ILKKA ; VIROLAINEN NINA

Inventor(s): VIRKAJ RVI ILKKA

Agent(s): AHEARN FOX; SHAPIRO COHEN LLP; ESTUDIO VILLASECA Y CIA; KOLSTER OY AB; KATORI TAKAO; HIROTAKA KITAJIMA; CARTER DELUCA FARRELL AND SCHMIDT LLP; ROBERT P; MICHAL ROBERT P

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: CONTINUOUS COUNTER-CURRENT ORGANOSOLV PROCESSING OF LIGNOCELLULOSIC FEEDSTOCKS

Abstract: Source: US2008295980A A modular process for organosolv fractionation of lignocellulosic feedstocks into component parts and further processing of said component parts into at least fuel-grade ethanol and four classes of lignin derivatives. The modular process comprises a first processing module configured for physico-chemically digesting lignocellulosic feedstocks with an organic solvent thereby producing a cellulosic solids fraction and a liquid fraction, a second processing module configured for producing at least a fuel-grade ethanol and a first class of novel lignin derivatives from the cellulosic solids fraction, a third processing module configured for separating a second class and a third class of lignin derivatives from the liquid fraction and further processing the liquid fraction to produce a distillate and a stillage, a fourth processing module configured for separating a fourth class of lignin derivatives from the stillage and further processing the stillage to produce a sugar syrup.

Classifications:

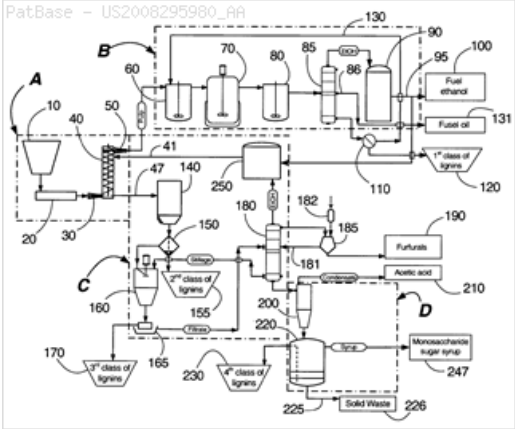
International (IPC 8-9): B01D11/00 B01D11/02 B01D3/00 B01D3/14 B01J19/00 B09B3/00 C02F11/04 C02F3/28 C07C29/00 C07C29/74 C07D307/50 C07G1/00 C07G17/00 C07G99/00 C07H19/00 C08H19/00 C08H5/02 C08H5/04 C08H7/00 C08H8/00 C08L3/02 C08L5/04 C08L97/00 C10L1/02 C10L3/06 C12C1/00 C12C11/00 C12M1/00 C12M1/107 C12M1/40 C12M1/42 C12M31/07 C12P C12P1/00 C12P17/04 C12P19/00 C12P19/02 C12P19/14 C12P3/00 C12P5/00 C12P5/02 C12P7/00 C12P7/02 C12P7/06 C12P7/08 C12P7/10 C12P7/40 C12P7/54 C12P7/56 C13B10/00 C13K1/02 D21B1/12 D21C11/00 D21C3/20 D21C7/00 D21C7/12 D21C9/00 D21H17/00 (Advanced/Invention); B01D3/14 B09B3/00 C02F3/28 C07G1/00 C07H19/00 C10L1/00 C12C11/00 C12M1/00 C12M1/42 C12P19/00 C12P7/02 D21C3/00 D21C7/00 (Core/Invention)

International (IPC 1-7): C08H5/02 C08H5/04

IPC: Y02E50/10 B01D3/143 B01D3/145 B01D3/148 C12P7/16 C12P7/18 C12P7/56 Y02W10/23 C12M21/04 C12M43/02 C12P19/00 D21C1/00 D21C3/00 C07H19/00 B01D3/002 B01D3/14 B01D11/0226 C02F3/34 C02F11/04 C08H6/00 C08H8/00 C08L3/02 C08L5/04 C12M21/12 C12M45/02 C12M45/04 C12M45/06 C12M45/09 C12P5/023 C12P7/00 C12P7/08 C12P7/10 C12P7/40 C12P7/54 C12P19/14 C13K1/02 D21H17/00 Y02E50/16 Y02E50/17 Y02E50/343 B01D11/0288

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US: 127/1 127/1S 127/32 127/32S 127/37 127/37S 127/44 162/14 162/14P 162/14S 162/234 162/234S 162/237 162/237S 422/187 426/16 426/16P 426/481 435/126 435/126S 435/132 435/132S 435/139 435/139P 435/140 435/140S 435/158 435/158S 435/161 435/161P 435/165 435/165P 435/165S 435/167 435/167P 435/286.1 435/286.100S 435/289.1 435/289.100S 435/294.1 435/300.1 435/300.100S 435/41 435/41S 435/72 435/99 527/400 530/500 530/500S 549/489 549/489S 568/700 568/913 568/913S 99/275 99/276 99/277



Family:

Publication number	Publication date	Application number	Application date
AU2008255540 AA	20081204	AU20080255540	20080523
AU2008255540 BB	20131128	AU20080255540	20080523
AU2008255598 AA	20081204	AU20080255598	20080425
AU2008271884 AA	20090108	AU20080271884	20080704
BRPI0811901 A2	20141118	BR2008PI11901	20080425
BRPI0812072 A2	20141125	BR2008PI12072	20080523
BRPI0812882 A2	20141230	BR2008PI12882	20080704
CA2597135 AA	20080907	CA20072597135	20070824
CA2597135 C	20110726	CA20072597135	20070824
CA2687916 AA	20091117	CA20082687916	20080523
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CA2691634 AA	20090108	CA20082691634	20080704
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CN101711263 B	20121128	CN200880017996	20080425
CN101784668 A	20100721	CN200880103958	20080704
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US2008299628 AA	20081204	US20070839378	20070815
US2008299629 AA	20081204	US20080022831	20080130
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US2009117226 AA	20090507	US20080268417	20081110
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WO09003292 A1	20090108	WO2008CA01249	20080704
WO10060183 A1	20100603	WO2009CA01527	20091022

Priority:

CA20072597135	20070824	US20070839378	20070815	US20070914609P	20070427
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Probable Assignee: FIBRIA INNOVATIONS INC

Assignee(s): (std): GJENNESTAD GORDON ; GJENNESTAD GORDON ; HALLBERG CHRISTER ; LIGNOL ENERGY CORP ; RUSHTON MICHAEL ; LIGNOL INNOVATIONS LTD ; PYE EDWARD KENDALL ; MACLACHLAN JOHN ROSS ; O CONNOR DONALD ; MA RAYMOND ; MCLACHLAN JOHN ROSS ; BERLIN ALEX

Assignee(s): FIBRIA INNOVATIONS INC ; LIGNOL INNOVATIONS LTD101 - 4705 WAYBURN DRIVEBURNABYB1V5G 3L1CA

Inventor(s): (std): CHRISTER HALLBERG ; CONNOR DONALD O ; DONALD O CONNOR ; GJENNESTADT GORDON ; GORDON GJENNESTAD ; MACLACHLAN JOHN ROSS ; MICHAEL RUSHTON ; ROSS MACLACHLAN JOHN ; RUSHTON MICHAEL ; PYE EDWARD KENDALL ; O CONNOR DONALD ; MCLACHLAN JOHN ROSS ; MA RAYMOND ; KENDALL PYE EDWARD ; HALLBERG CHRISTER ; GJENNESTAD GORDON ; GJENNESTAD GORDON ; ALEX BERLIN ; BERLIN ALEX

Inventor(s): BERLIN ALEXCA ; EDWARD KENDALL PYE ; O'CONNOR DONALD ; JOHN ROSS MACLACHLAN ; OCONNOR DONALD ; O CONNOR DONALDCA ; PYE EDWARD KENDALLCA

Agent(s): SPRUSON AND FERGUSON; FASKEN MARTINEAU DUMOULIN LLP; GOWLING LAFLEUR HENDERSON LLP; SWINKELS BART WILLEM; GOWLING LAFLEUR HENDERSON; POLONENKO DANIEL R

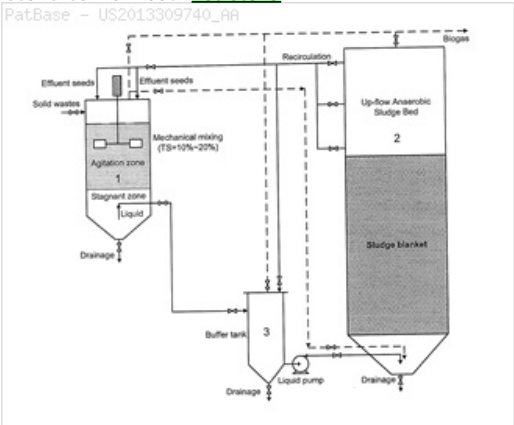
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Title: TWO-STAGE ANAEROBIC DIGESTION SYSTEMS WHEREIN ONE OF THE STAGES COMPRISES A TWO-PHASE SYSTEM

Abstract: Source: US2013309740A Low cost, efficient two-stage anaerobic digestion systems for the production of biogas (e.g. methane) are provided. During the first stage, biogas is produced in a first **reactor** by anaerobic microbes cultured in two phases: a high solids phase and a low solids phase. During the second stage, biogas is produced in a second **reactor** by a methanogen-rich anaerobic culture cultured in low solids medium. Removal of effluent comprising pH lowering reaction products assists in maintaining a suitable pH in the high solids phase. The transfer of effluent from the second **reactor** to the first **reactor** assists in maintaining a suitable pH in the high solids phase, in mixing of the high solids phase, and in reseedling the high solids phase with methanogens. Methane is produced in and recovered from both **reactors**.

Classifications:

International (IPC 8-9): C12M1/00 C12M1/107 C12M1/34
C12P5/02 (Advanced/Invention)
CPC: C12P5/023 C12M21/04 C12M23/58 C12M29/18 C12M41/26
Y02E50/343
US: 435/167 435/294.1



Family:

Publication number	Publication date	Application number	Application date
US2013309740 AA	20131121	US20120673273	20121109
US2015056676 AA	20150226	US20140522075	20141023
US9567611 BB	20170214	US20140522075	20141023

Priority:

US20110563012P 20111122 US20120673273 20121109 US20140522075 20141023

Probable Assignee: WASHINGTON STATE UNIV

Assignee(s): (std): UNIV WASHINGTON STATE ; UNIV WASHINGTON STATE RES FDN ; WASHINGTON STATE UNIV

Assignee(s): WASHINGTON STATE UNIV RESEARCH FOUNDATIO ; WASHINGTON STATE UNIV RESEARCH FOUNDATION

Inventor(s): (std): CHEN SHULIN ; FREAR CRAIG ; MA JINGWEI ; YU LIANG ; ZAHER USAMA

Agent(s): WHITHAM CURTIS AND COOK PC

Title: SYSTEMS AND METHODS FOR ANAEROBIC DIGESTION OF BIOMATERIALS

Abstract: Source: US2012132586A Systems and methods for performing anaerobic digestion of biomaterials using a clarifier, a batch **reactor**, and/or a digester are disclosed. The clarifier performs pretreatment processing of biomaterial to improve anaerobic digestion. The batch **reactor** and/or the digester are coupled to the clarifier and are configured to digest the processed biomaterial. A control system for an anaerobic digestion process includes a flow control system, a temperature control system, and a totalization system. The flow control system controls the flow of biomaterial and the delivery of chemical agents to the biomaterial based on conductivity, temperature, pressure, and/or composition of the biomaterial. The temperature control system includes a heat source and heat exchangers that control the temperature of the biomaterial. The totalization system senses the volume of biomaterial in at least one stage of an anaerobic digestion process and a controller controls the flow control system based upon the sensed volume of biomaterial.

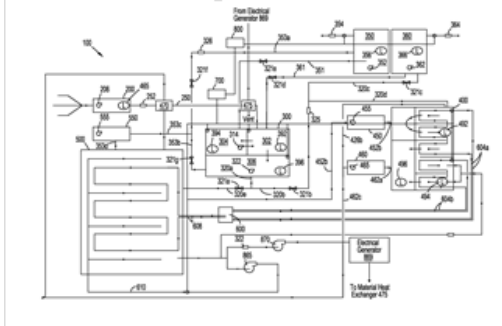
Classifications:

International (IPC 8-9): C02F3/28 C02F3/34 (Advanced/Invention)

CPC: Y02E50/343 C02F3/006 C02F1/683 C02F3/28 C02F3/34
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US: 210/143 210/151 210/151S 210/175 210/205 210/603 210/614
210/96.1 210/96.100S

PatBase - US2012132586_AA



Family:

Publication number	Publication date	Application number	Application date
US2012132586 AA	20120531	US20120360668	20120128
US8414770 BB	20130409	US20120360668	20120128

Priority:

US20120360668 20120128

Probable Assignee: EPCOT CRENSHAW CORP

Assignee(s): (std): EPCOT CRENSHAW CORP ; SMITH CHARLES SATISH

Inventor(s): (std): SMITH CHARLES SATISH

Agent(s): CARTER DELUCA FARRELL AND SCHMIDT LLP

Title: PROCESS FOR PRODUCING METHANE FROM BIOMASS

Abstract: Source: US2012094350A The invention pertains to a process for producing methane by a two-stage anaerobic digestion of organic feed, comprising i) subjecting an organic feed suspension (a) to acidogenesis and methanogenesis in a first **reactor** (1); ii) withdrawing an effluent (b) from said first **reactor** and subjecting it to solid/liquid separation (2), thus obtaining effluents high (d) and low (c) in solids, wherein the volatile fatty acid (VFA) concentration in said first **reactor** is controlled by the withdrawal rate; iii) subjecting the effluent low in solids (c) to acidogenesis and methanogenesis in a second **reactor** (3), thus producing methane gas in said first and second **reactor**.

Classifications:

International (IPC 8-9): C12M1/00 C12M1/107

C12P5/02 (Advanced/Invention)

CPC: C12M25/16 C12M29/18 C12P5/023 C12M21/04 C12M23/58 Y02E50/343

European: C12M21/04 C12M23/58 C12P5/02B Y02E50/34B

US: 435/167 435/167P 435/289.1 435/289.100S

PatBase - US2012094350_AA

Patent Application Publication Apr. 19, 2012 Sheet 1 of 2 US 2012/0094350 A1

Fig 1

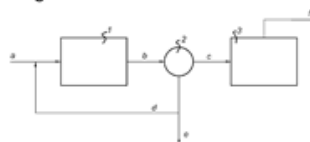
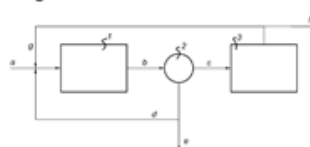


Fig 2



Family:

Publication number	Publication date	Application number	Application date
DE602010023184 D1	20150430	DE201060023184T	20100415
EP2419516 A1	20120222	EP20100713038	20100415
EP2419516 B1	20150318	EP20100713038	20100415
US2012094350 AA	20120419	US20100264708	20100415
US8642304 BB	20140204	US20100264708	20100415
WO10120173 A1	20101021	WO2010NL50193	20100415

Priority:

EP20090158176 20090417 EP20100713038 20100415 WO2010NL50193 20100415

Probable Assignee: COOPERATIE COSUN UA KONINKLL

Assignee(s): (std): BROOIJMANS PETRUS WILHELMUS ALPHONSUS MARIA ; KONINK COOPERATIE COSUN U A ; KONINK COOPERATIE COSUN U A ; RAAP JOHANNES FRANCISCUS MARIA

Assignee(s): KONINKLIJKE COOPERATIE COSUN U A ; KONINKLIJKE COOPERATIE COSUN U A ; COOPERATIE COSUN UA KONINKLL ; COOPERATIE COSUN UA KONINKLL

Inventor(s): (std): BROOIJMANS PETRUS WILHELMUS ALPHONSUS MARIA ; RAAP JOHANNES FRANCISCUS MARIA

Agent(s): KILBURN AND STRODE LLP; BOT DAVID SIMON MARIA; NEDERLANDSCH OCTROOIBUREAU; GILBERTO M; FOLEY AND LARDNER LLP; SUNIT; KETELAARS MAARTEN

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: APPARATUS AND PROCESS FOR TREATING WASTE

Abstract: Source: US2013029394A A method for treating municipal solid waste and other waste is provided which comprises: introducing said waste into a rotary autoclave which is downwardly inclined towards its discharge end and has a door at the discharge end; and injecting steam through said door into said autoclave to treat the load. A method is also provided for treating waste, comprising steam autoclaving the waste, anaerobically digesting an organic-rich fraction of the autoclaved waste, recovering methane-containing gas from anaerobic digestion, internally combusting the methane-containing gas to generate power and exhaust gas, and generating steam for autoclaving using the waste heat. A plant for treating the waste may comprise at least one autoclave for steam treating the waste, at least one anaerobic digestion tank for digesting an organic-rich fraction of the autoclaved waste, a recovery system for recovering methane-containing gas from the or each digestion tank, at least one internal combustion engine for combusting the methane-containing gas and generating power, and a steam generator fed with combustion gas from the internal combustion engine for generating and accumulating steam for supply to said at least one autoclave. Also provided is a method of treating waste material in a rotary autoclave, which comprises: loading the waste material into a top opening of the autoclave whilst rotating the autoclave in a first direction in which screw flights within the autoclave convey the waste forwardly along a downwardly inclined body of the autoclave towards a base of the autoclave; rotating the autoclave in a second direction opposite to the first direction so as to establish a circulation of the loaded material between the upper and lower ends of the autoclave to facilitate vacuum and/or steam treatment thereof; and monitoring the load imparted by the autoclave adjacent upper and lower ends thereof during the reverse rotation, increase of the load adjacent the upper end of the autoclave providing an indication of effective load circulation. A door structure for a commercial-scale autoclave based on a castellated door and a locking ring with lock blocks of inwardly facing U-structure is also provided.

Classifications:

International (IPC 8-9): A61L11/00 A61L2/07 B01J19/28 B02C17/00 B03B9/00 B03B9/06 B09B3/00 C12M1/107

C12P5/02 (Advanced/Invention);

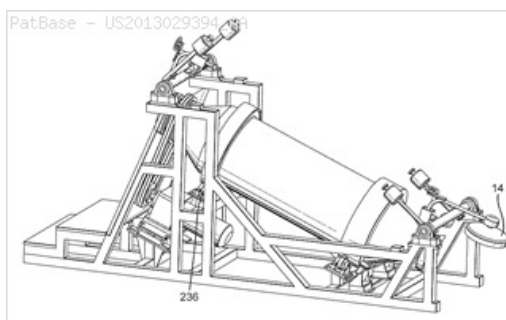
A61L11/00 B02C17/00 B03B9/00 B09B3/00 (Core/Invention)

CPC: B02C17/00 B02C17/007 B03B9/00 B03B9/06 B09B3/00

A61L11/00 B01J19/28 B09B3/0091 Y02E50/343 Y02W30/20

European: A61L11/00 B09B3/00 B09B3/00T2

US: 1/1 422/119 422/26 422/295 435/167 435/294.1

**Family:**

Publication number	Publication date	Application number	Application date
AU2011210201 AA	20110804	AU20110210201	20110128
AU2011210201 BB	20170202	AU20110210201	20110128
EP2528699 A2	20121205	EP20110701862	20110128
GB201001375 A0	20100317	GB20100001375	20100128
GB201101493 A0	20110316	GB20110001493	20110128
GB201101500 A0	20110316	GB20110001500	20110128
GB2477422 A1	20110803	GB20110001493	20110128
GB2477422 B2	20120201	GB20110001493	20110128
GB2477422 B8	20120215	GB20110001493	20110128
GB2477423 A1	20110803	GB20110001500	20110128
GB2477423 B2	20120215	GB20110001500	20110128
US2013029394 AA	20130131	US20110575268	20110128
US9156069 BB	20151013	US20110575268	20110128
WO11092509 A2	20110804	WO2011GB50145	20110128
WO11092509 A3	20111027	WO2011GB50145	20110128
WO11092509 A4	20120112	WO2011GB50145	20110128

Priority:

GB20100001375 20100128 WO2011GB50145 20110128

Probable Assignee: AEROTHERMAL GROUP HOLDINGS LTD

Assignee(s): (std): AEROTHERMAL GROUP HOLDINGS LTD ; AEROTHERMAL GROUP LTD ; TOLL CHRISTIAN ANDREW IAN ; BAILEY NIGEL ANTHONY ; TOLL IAN CECIL ; WANG ZHENGJIAN ; AEROTHERMAL GROUP PLC

Assignee(s): AEROTHERMAL HOLDINGS LTD ; THERMO PRESSURE TECHNOLOGIES LTD ; AEROTHERMAL GROUP LIMITED

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Inventor(s): ZHENGJIAN WANG ; CHRISTIAN ANDREW IAN TOLL ; IAN CECIL TOLL ; NIGEL ANTHONY BAILEY

Agent(s): A J PARK; AJ PARK; LUCAS BRIAN RONALD; SCHWEGMAN LUNDBERG AND WOESSNER PA

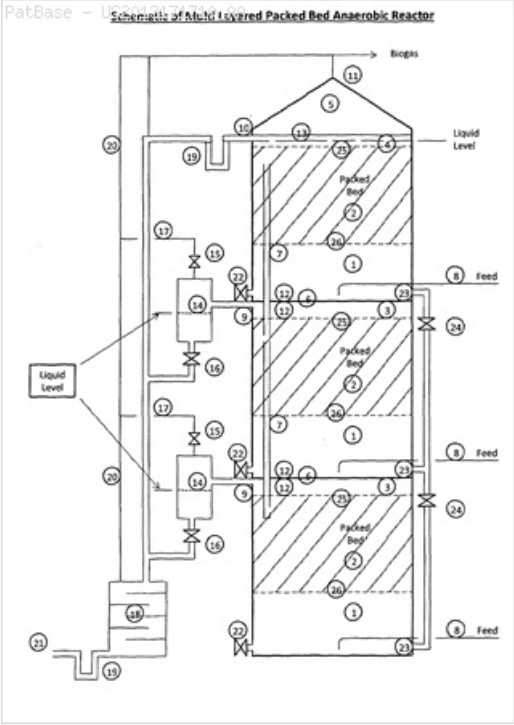
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: ANAEROBIC REACTOR

Abstract: Source: US2013171710A An anaerobic reactor comprising two or more discrete reaction chambers arranged one above the other is disclosed. The reactor may be in the form of a tank separated into discrete chambers by means of solid members, or the reactor may be in the form of separate and stackable chambers. Additionally, the reactor may be a packed bed reactor, a fluidised bed reactor, or a hybrid reactor comprising at least one packed bed reaction chamber and at least one fluidised bed reaction chamber. Use of an anaerobic reactor according to the invention enables an increase in the yield of biogas that can be produced per unit area of land occupied by an anaerobic reactor. A method of producing biogas is also disclosed, the method comprising providing an anaerobic reactor according to the invention, providing input biomass, carrying out anaerobic digestion of the biomass in the reactor, and collecting the biogas produced.

Classifications:

International (IPC 8-9): B09B3/00 C02F11/04 C02F3/28 C10L3/06 C12M C12M1/00 C12M1/107 C12P5/02 (Advanced/Invention); C05F17/02 (Advanced/Non-invention); C12M (Subclass/Invention)
CPC: C12P5/023 C12M21/04 C12M23/34 C12M23/36 C12M41/40 Y02E50/343 Y02W30/43 Y02W30/47
European: C12M21/04 C12M23/34 C12M23/36 C12M41/40 Y02E50/34B
US: 435/167 435/287.1 435/289.1



Family:

Publication number	Publication date	Application number	Application date
AU2010332568 AA	20110623	AU20100332568	20101214
BR112012014411 A2	20170509	BR20121114411	20101214
CA2784213 AA	20110623	CA20102784213	20101214
CN102939369 A	20130220	CN201080063847	20101214
EP2513284 A2	20121024	EP20100796455	20101214
GB200921836 A0	20100127	GB20090021836	20091214
IL220368 A0	20120830	IL20100220368	20101214
IN06177DN2012 A	20131206	IN2012DN06177	20120712
JP2013529123 T2	20130718	JP20120543889T	20101214
RU2012130014 A	20140127	RU20120130014	20101214
US2013171710 AA	20130704	US20100516056	20101214
WO11073618 A2	20110623	WO2010GB02271	20101214
WO11073618 A3	20141002	WO2010GB02271	20101214
ZA201205174 A	20140827	ZA20120005174	20120712

Priority:

GB20090021836 20091214 WO2010GB02271 20101214

Probable Assignee: ADVANCED BIOGAS TECHNOLOGIES SRL

Assignee(s): (std): ADVANCED BIOGAS TECH SRL ; ADVANCED BIOGAS TECHNOLOGIES SRL ; PREBBLE ANDREW

Inventor(s): (std): ANDREW PREBBLE ; PREBBLE ANDREW

Agent(s): GRIFFITH HACK; SIM AND MCBURNEY; KING LAWRENCE; CRAIG ROBERT TURNER ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: MEMBRANE SUPPORTED BIOREACTOR FOR CONVERSION OF SYNGAS COMPONENTS TO LIQUID PRODUCTS

Abstract: Source: US2008305539A Ethanol and other liquid products are produced by contacting syngas components such as CO or a mixture of CO₂ and H₂ with a surface of a membrane and transferring these components in contact with a biofilm on the opposite side of the membrane. These steps provide a stable system for producing liquid products such as ethanol, butanol and other chemicals. The gas fed on the membrane's gas contact side transports through the membrane to form a biofilm of anaerobic microorganisms that converted the syngas to desired liquid products. The system can sustain production with a variety of microorganisms and membrane configurations.

Classifications:

International (IPC 8-9): B01D53/22 B01D61/00 B01D69/08
C10G2/00 C10G5/00 C10L1/30 C12M1/00 C12M1/04 C12M1/12
C12M1/14 C12M1/34 C12M1/40 C12M3/00 C12N1/20 C12N5/00
C12N5/02 C12P1/00 C12P1/04 C12P7/00 C12P7/04 C12P7/06
C12P7/14 C12P7/16 C12P7/18 C12P7/30 C12P7/40 C12P7/52
C12P7/54 C12R1/145 (Advanced/Invention);
B01D61/00 C10G2/00 C10G5/00 C12M1/00 C12M1/04 C12P7/04
C12P7/06 C12P7/52 C12R1/145 (Advanced/Non-invention);
C10G5/00 C10L1/10 C12M1/00 C12M1/04 C12M1/12 C12M3/00
C12N1/20 C12P1/00 C12P1/04 C12P7/00 C12P7/02
C12P7/40 (Core/Invention)

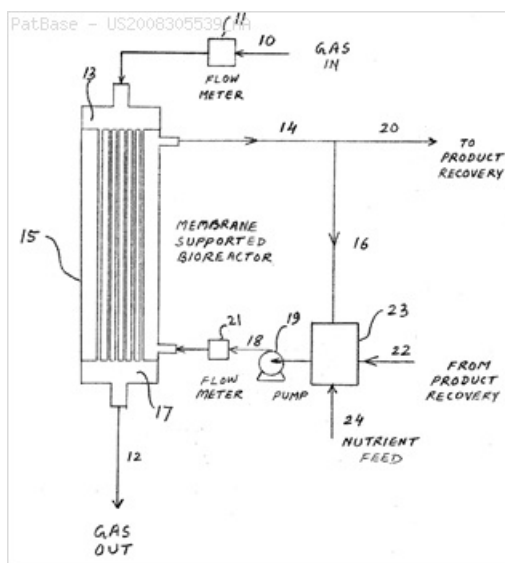
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CPC: C12M23/58 C12M41/28 C12P7/06 Y02E50/17 C12M21/12
C12M23/24 C12M23/44 C12M25/10 C12M29/16 C12P7/04

European: C12M21/12 C12M23/24 C12M23/44 C12M23/58

C12M25/10 C12M29/16 C12M41/28 C12P7/04 Y02E50/17

US: 435/132 435/132S 435/136 435/140 435/140P 435/141
435/141S 435/154 435/157 435/157S 435/160 435/160S 435/161
435/161P 435/161S 435/162 435/162S 435/165 435/170 435/170P
435/170S 435/252.7 435/252.700P 435/279.2 435/284.1 435/286.6
435/287.8 435/289.1 435/289.100P 435/289.100S 435/293.1
435/294.1 435/294.100S 435/297.1 435/297.100P 435/297.100S
435/297.2 435/297.3 435/297.4 435/297.400S 435/297.5 435/299.1
435/304.1 435/305.1 435/400 435/401 435/41 435/41S

**Family:**

Publication number	Publication date	Application number	Application date
AU2009215667 AA	20090827	AU20090215667	20090211
AU2009215667 BB	20140116	AU20090215667	20090211
BRPI0907593 A2	20160426	BR2009PI07593	20090211
CA2715256 AA	20090827	CA20092715256	20090211
CN101952393 A	20110119	CN200980106175	20090211
CN101952393 B	20140604	CN200980106175	20090211
CN102197138 A	20110921	CN200980141705	20091022
CN102197138 B	20141231	CN200980141705	20091022
DE602009036168 D1	20160324	DE200960036168T	20090211
EA017607 B1	20130130	EA20100070986	20090211
EA201070986 A1	20110429	EA20100070986	20090211
EP2245118 A1	20101103	EP20090711905	20090211
EP2245118 A4	20131204	EP20090711905	20090211
EP2245118 B1	20160210	EP20090711905	20090211
IN05903CN2010 A	20110422	IN2010CN05903	20100920
JP2011512795 T2	20110428	JP201100547691T	20090211
JP5524085 B2	20140618	JP201100547691T	20090211
KR20100132007 A	20101216	KR20107021061	20090211
US2008305539 AA	20081211	US20070781717	20070723
US2008305540 AA	20081211	US20080972454	20080110
US2009017514 AA	20090115	US20080205540	20080905
US2009029434 AA	20090129	US20080111734	20080429
US2009104676 AA	20090423	US20080258204	20081024
US2009215142 AA	20090827	US20080258162	20081024
US2009215153 AA	20090827	US20080258180	20081024
US2009215163 AA	20090827	US20080036007	20080222
US2010047886 AA	20100225	US20090574499	20091006
US2011183390 AA	20110728	US20110084318	20110411
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US2012070888 AA	20120322	US20110302642	20111122
US2014377822 AA	20141225	US20140481746	20140909
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US8017384 BB	20110913	US20080111734	20080429
US8062873 BB	20111122	US20080258162	20081024
US8101387 BB	20120124	US20080258204	20081024
US8198055 BB	20120612	US20080205540	20080905
US8222026 BB	20120717	US20080258180	20081024
US8309348 BB	20121113	US20110240848	20110922
US8329456 BB	20121211	US20080036007	20080222
US8518691 BB	20130827	US20110302642	20111122
US8541214 BB	20130924	US20110084318	20110411
US8828692 BB	20140909	US20110101535	20110505
WO08154301 A1	20081218	WO2008US65941	20080605
WO09105372 A1	20090827	WO2009US33817	20090211

WO10048421 A2	20100429	WO2009US61705	20091022	
WO10048421 A3	20100812	WO2009US61705	20091022	
WO11068576 A1	20110609	WO2010US47791	20101109	

Priority:

EP20090711905	20090211	US20070781717	20070723	US20070942938P	20070608
US20080205540	20080905	US20080111734	20080429	US20080036007	20080222
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US20080258162	20081024	US20090574499	20091006	US20110084318	20110411
US20110101535	20110505	US20110240848	20110922	WO2009US33817	20090211
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Probable Assignee: SYNATA BIO INC

Assignee(s): (std): BASU RAHUL ; DATTA RATHIN ; COSKATA INC ; COSKATA ENERGY INC ; COSKATA ENERGY ; TSAI SHIH PERNG ; HICKEY ROBERT ; YOON SEONG HOON ; TOBEY RICHARD E ; RAHUL BASU

Assignee(s): COSKATA ASSIGNMENT FOR BENEFIT OF CREDITORS LLC ; COSKATA INC WARRENVILLE ; ADVANCED TECHNOLOGY VENTURES VII B LP ; ADVANCED TECHNOLOGY VENTURES VII C LP ; KHOSLA VENTURES III LP ; VINOD KHOSLA AND NEERU KHOSLA TRUSTEES OF KFT TRUST DATED NOVEMBER 17 1986 ; SYNATA BIO INC ; CALIPER LIFE SCIENCES INC ; ADVANCED TECHNOLOGY VENTURES VII LP ; ATV ENTREPRENEURS VII LP

Inventor(s): (std): HICKEY ROBERT ; RAHUL BASU ; RATHIN DATTA ; SEONG HOON YOON ; SHIH PERNG TSAI ; TOBEY RICHARD E ; TSAI SHIH PERNG ; BASU RAHUL ; DATTA RATHIN ; YOON SEONG HOON

Inventor(s): YOON SEONG HOON NAPERVILLE ; DATTA RATHIN CHICAGO ; BASU RAHUL NAPERVILLE ; TSAI SHIH PERNG NAPERVILLE

Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; HAYES ADRIAN CHETWYND; BOULT WADE TENNANT; CARDINAL LAW GROUP; HLETKO PAUL M

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW