

Search history

Search 1: wastewater and treatment and biolog* and solid and phosph* and nitrate* and removal (Results 1938)

Search 2: 1 and tac=((process or apparatus) and waste) (Results 667)

Search 3: 2 and separat* and (Anoxic* or anaerob*) (Results 486)

Search 4: 3 and recycl* and (biomass or bacteria) and (population or aggregate) (Results 164)

Search 5: (4) AND IPC=(C02) (Results 134)

Search 6: 5 and tac=(biomass or bacter* or bioreactor) (Results 105)

Search 7: 6 and tac=(separat* and (Anoxic* or anaerob*)) (Results 49)

Search 8: 7 and (hydrocyclone or gravim* or centrifug*) (Results 29)

Search 9: (8) AND PD=(2009 OR 2013 OR 2014 OR 2008 OR 2006 OR 2007 OR 2002 OR 2004 OR 2011 OR 2012 OR 1991 OR 2005 OR 2010 OR 1994 OR 1998 OR 2003) (Results 25)

Search 10: 9 and sludge (Results 22)

Title: PRODUCTION OF NON-BULKING ACTIVATED SLUDGE

Abstract: A modified activated sludge system is provided wherein BOD-containing wastewater and recycled sludge are initially admixed under anaerobic conditions in the substantial absence of oxygen or oxidizing agents and subsequently subjected to aeration and clarification. By the disclosed operation the selective production of non-bulking biomass is favored while effective removal of phosphates is obtained. By a further alternative modification, nitrates and nitrites are also removed by interposing an anoxic treating zone between the anaerobic zone and the aerating zone.

Classifications:

International (IPC 8-9): A23K1/00 A23K1/14 C02F11/12 C02F3/00 C02F3/12 C02F3/28 C02F3/30 C02F3/34 C05F17/00 C05F7/00 C12N1/00 (Advanced/Invention);

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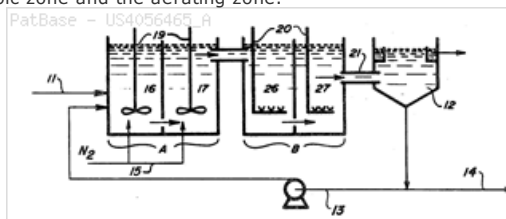
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US: 210/605 210/621 210/623 210/629 210/630 210/903 210/906 210/908 71/12

**Family:**

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FR2398700 B1	19841102	FR19780021327	19780707
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Priority:

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Probable Assignee: AIR PROD AND CHEM

Assignee(s): (std): AGFA GEVAERT AG ; AIR PROD AND CHEM ; AIR PROD CHEM INC ; AIR PRODUCTS AND CHEMICALS INC ALLENTOWN PA US ; AIR PRODUCTS AND CHEMICALS INC TE ALLENTOWN PENNSY

Assignee(s): AIR PRODUCTS AND CHEMICALS INC ; AIR PRODUCTS CHEMICAL INC ; I KRUGER INC A OF IL CORP ; AIR PRODUCTS AND CHEMICALS INC 18105 ALLENTOWN PA US ; AIR PRODUCTS AND CHEMICALS INC TE ALLENTOWN PENNSYLVANIA VER ST V AM ; SPECTOR MARSHALL L ; AIR PRODUCTS AND CHEMICALS INC TE ALLENTOWN PENNSYLVANIA VERSTVAM ; AIR PRODUCTS AND CHEMICALS ; I KRUGER INC ; AIR PRODUCTS AND CHEMICALS INC 18105 ALLENTOWN PA ; AIR PROD AND CHEM INC ; AIR PROD AND CHEMICALS INC

Inventor(s): (std): M L SPECTOR ; MAASHARU RUISU SUPEKUTAA ; MAASHIYARU RUI SUPEKUTAA ; MAASHIYARU RUISU SUPEKUTAA ; MARSHALL LOUIS SPECTOR ; ML SPECTOR ; SPECTOR M ; SPECTOR MARSHALL LOUIS

Inventor(s): ALLENTOWN PA ; SPECTOR MARSHALL LOUIS ; SPECTOR MARSHALL L ; SPECTOR M L
Agent(s): LOUIS SPECTOR MARSHALL
SHERMAN; REINHOLD COHN AND PARTNERS

Title: FLOW-CONTROL APPARATUS AND PROCESS FOR AN OXIDATION DITCH

Abstract: This flow-control apparatus for an oxidation ditch comprises a barrier which divides a channel of an oxidation ditch into an intake channel and a discharge channel, at least one submerged turbine which pumps mixed liquor from the intake channel, and at least one discharge duct which connects each turbine to the discharge channel and passes beneath the barrier. Compressed air is supplied to each turbine and/or to each discharge duct. Activated sludge is fed to the anoxic portion of the ditch and/or to each turbine which provides complete mix and propels the mixed liquor in plug-type flow through the channels of the oxidation ditch. By selectively and independently controlling turbine speed and amount and/or feed location of compressed air, the timed aerobic/anoxic ratio for the ditch can be controlled in accordance with independent parameters, such as seasonal temperatures.

Classifications:

International (IPC 8-9): C02F3/00 C02F3/02 C02F3/12 C02F3/16 C02F3/20 C02F3/22 C02F3/28 C02F3/30 C02F3/34 (Advanced/Invention);

C02F3/28 C02F3/34 (Advanced/Non-invention);

C02F3/00 C02F3/02 C02F3/12 C02F3/14 C02F3/20 C02F3/22

C02F3/28 C02F3/30 C02F3/34 (Core/Invention)

International (IPC 1-7): B01D21/02 B01F13/02 B01F5/10 C02C1/06

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CPC: Y10S210/903 Y10S210/926 Y10S261/75 C02F3/1294 B01F3/04517 B01F3/04524 B01F3/04609 B01F3/04758

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Y02W10/15 C02F3/006 C02F3/16 C02F3/1257 C02F3/207 C02F3/301 C02F3/302

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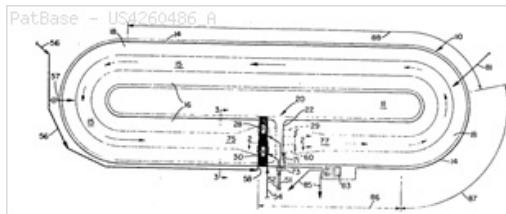
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US: 210/170 210/170.06 210/170.08 210/170.1 210/194 210/195.3 210/197 210/219 210/220 210/242.2 210/261 210/614

210/627 210/628 210/629 210/630 210/739 210/903 210/926 210/96.1 261/120 261/123 261/124 261/36.1 261/36R 261/77

261/87 261/91 261/93 261/DIG.75 415/7



Family:

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AU197840634 A1	19800417	AU19780040634	19781011
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US4260486 A	19810407	US19780957432	19781103
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Priority:

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Probable Assignee: REID J H

Assignee(s): (std): REID J ; REID J H ; REID JOHN ; REID JOHN H ; REID JOHN HAGER

Assignee(s): REIDO JON HAAGAA ; REID JH

Inventor(s): (std): REID J ; REID JOHN H ; REID JOHN HAGER ; REID JOHN

Inventor(s): JOHN HAGER REID ; REIDO JON HAAGAA

Agent(s): DJ; SMART AND BIGGAR

Designated states: BR CH DE FR GB JP LU SE

Title: WATER CLARIFYING APPARATUS

Abstract: Water clarifying apparatus has a cylindrical tank where particulate contaminants suspended in raw water are separated using flotation techniques. A set of concentric mutually spaced, conical plates are positioned in the flotation tank. The plates rotate about the tank, preferably in unison with a (i) header that distributes equal quantities of raw water to each annular zone in the tank defined by the conical plates and (ii) a scoop for removing the contaminants which form a floated sludge layer. A screw conveyor is located in a discharge pipe of the floated sludge scoop. An infrared sludge detection array in a window in the side wall of the tank senses the sludge-water interface. Air dissolving tubes operating in parallel have common feeds and discharges coupled through three way valves operated to pressurize a closed volume of water with high pressure air in one tube while reloading and discharging the other tube.

Classifications:

International (IPC 8-9): A61K31/421 A61K31/422 A61K31/426 A61K31/427 A61K31/4439 A61K31/454 A61K31/496 A61K31/506 A61K31/5377 A61K31/662 A61P1/00 A61P21/00 A61P21/04 A61P25/00 A61P25/02 A61P25/04 A61P25/14 A61P25/16 A61P25/24 A61P25/28 A61P29/00 A61P43/00 A61P9/00 B01D21/00 B01D21/02 B01D21/24 B01D21/28 B01D21/32 B01D24/00 B01D24/02 B01D24/24 B01D24/46 B01D29/00 B01D29/46 B01D29/62 B01D29/66 B01D35/12 B01D36/00 B01D37/03 B01D43/00 B03B13/00 B03D1/14 B03D1/24 C02F1/00 C02F1/24 C02F1/30 C02F1/40 C02F1/52 C02F3/06 C02F3/08 C02F3/10 C02F3/30 C02F9/00 C07D263/32 C07D263/34 C07D263/38 C07D263/46 C07D263/48 C07D277/20 C07D277/32 C07D277/40 C07D277/54 C07D413/00 C07D413/04 C07D413/12 C07D413/14 C07D417/04 C07D417/14 C07D521/00 (Advanced/Invention); B01D24/02 B01D29/62 B01D29/66 C02F1/00 C02F1/24 C02F1/52 C02F101/00 C02F103/02 C02F103/04 C02F103/28 C02F3/06 C02F3/30 (Advanced/Non-invention); A61K31/421 A61K31/422 A61K31/426 A61K31/427 A61K31/4427 A61K31/4523 A61K31/496 A61K31/506 A61K31/5375 A61K31/662 A61P1/00 A61P21/00 A61P25/00 A61P29/00 A61P43/00 A61P9/00 B01D21/00 B01D21/02 B01D21/24 B01D24/00 B03B13/00 B03D1/14 C02F1/00 C02F1/24 C02F3/06 C02F3/10 C02F3/30 C07D263/00 C07D277/00 C07D413/00 C07D417/00 C07D521/00 (Core/Invention)

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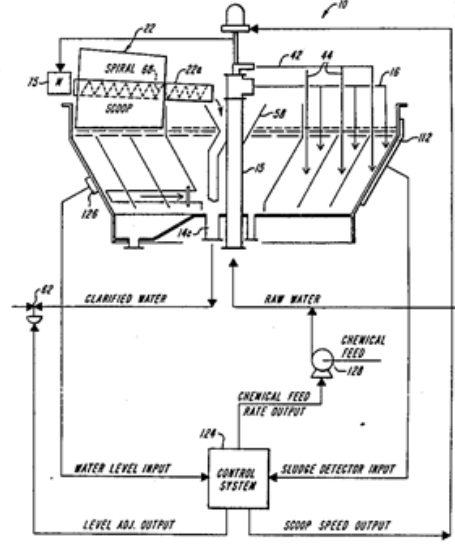
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**Family:**

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Probable Assignee: KROFTA MILOS

Assignee(s): (std): KROFTA MILOS ; KROFTA MILOS DR ; LENOX INST OF WATER TEHNOLOGY ; LENOX INST RES ; LENOX WATER TECH INST ; LENOX INST OF WATER TECHNOLOGY ; MAJLOS KROFTA US ; MILOS KROFTA DR ; MILOS KROFTA ; MAJLOS KROFTA

Assignee(s): LENOX INST OF WATER TECHNOLOGY LEONOX MASS ; THE LENOX INSTITUTE OF WATER TEHNOLOGY ; THE LENOX INSTITUTE OF WATER TECHNOLOGY ; THE LENOX INSTITUTE OF WATER TECHNOLOGY INC ; MAJLOS KROFTA[US] ; LENOX INST OF WATER TECHNOLOGY INC ; LENOX INST OF WATER TECHNOLOGY INCORPORATION ; LENOX INSTITUTE FOR RESEARCH INC ; LENOX INSTITUTE OF WATER TECHNOLOGY INC ; LENOX INSTITUTE OF WATER TECHNOLOGY INCORPORATION ; LENOX INSTITUTE OF WATER TECHNOLOGY ; LENOX INSTITUTE OF WATER TECHNOLOGY LEONOX MASS ; LENOX INST FOR RESEARCH INC ; LENOX INSTITUTE OF WATER TECHNOLOGY LEONOX MASS US ; KTC ACQUISITION LLC ; KROFTA TECHNOLOGIES LLC ; KROFTA MILOS DR LENOX MASS US ; LENNOX INST OF WATER TECHNOLOGY INC ; LENOX INST ; KROFTA TECHNOLOGIES CORP ; DIKE BRONSTEIN ROBERTS AND CUSHMAN LLP ; DR MILOS KROFTA ; KEMI NUO

Inventor(s): (std): KROFTA DR MILOS ; KROFTA MILOS ; KROFTA MILOS DR ; LANGDON ROBERT P ; MAJLOS KROFTA ; MILOS KROFTA

Inventor(s): MAJLOS KROFTA[US] ; KROFTA MILOS LENOX MA 01240 US ; DR MILOS KROFTA ; KROFTA ; MILOS

Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; RICHES MCKENZIE AND HERBERT LLP; BARROS

Designated states: AT AU BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CZ DE DK ES FI FR GA GB GN GR HU IE IT JP KP

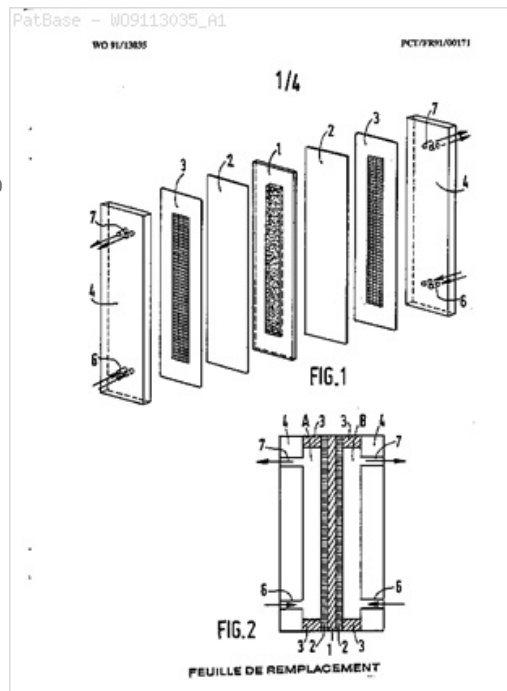
KR KZ LI LK LU LV MC MG ML MN MR MW NE NL NO NZ PL PT RO RU SD SE SI SK SN TD TG UA UZ VN

Title: BIOLOGICAL PROCESS FOR DENITRIFICATION OF LIQUID MEDIA AND APPARATUS FOR IMPLEMENTING SAID PROCESS

Abstract: Biological process for denitrification of liquid media, particularly water for human consumption, by reducing nitrates by means of a source of carbon and an immobilized biological system. The nitrates and the carbon source are fed to the immobilized biological system which may be any microorganism capable of anaerobic respiration of nitrates, particularly a bacteria of the *Pseudomonas* type, in the form of two separate flows. The bacteria are immobilized preferably in a gel of the agar type, the thickness of which takes into account the nature and the concentrations of the substrates and the gel encompassed by two microporous membranes. The carbon source may be methanol or industrial effluents or foul water containing organic compounds.

Classifications:

International (IPC 8-9): C02F3/10 C02F3/28 C02F3/34 C12M1/40 (Advanced/Invention); C02F3/10 C02F3/28 C02F3/34 C12M1/40 (Core/Invention)
International (IPC 1-7): C02F1/58 C02F3/10 C02F3/28
CPC: C12M21/18 C12M23/34 C12M25/14 C12M29/04 C12M41/34 C02F3/108 C02F3/2806 C02F3/34 C02F3/342 Y02E50/343 Y02W10/15
European: C02F3/10K6 C02F3/28C C02F3/34 C02F3/34B C12M1/40



Family:

Publication number	Publication date	Application number	Application date
EP0445043 A1	19910904	EP19910400579	19910301
FR2659076 A1	19910906	FR19900002689	19900302
WO9113035 A1	19910905	WO1991FR00171	19910301

Priority:

FR19900002689 19900302

Probable Assignee: CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE

Assignee(s): (std) CENTRE NAT RECH SCIENT

Assignee(s): CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE ; CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS ; CENTRE NAL RECHERC SCIENTIFIQUE

Inventor(s): (std) THIERRY JOUENNE ; GUY ALAIN JUNTER ; DENIS LEMOINE ; LEMOINE DENIS ; JUNTER GUY ALAIN ; JOUENNE THIERRY

Designated states: AT BE CH DE DK ES FR GB GR IT JP LI LU NL SE US

Title: GAS DISSOLVING SYSTEM AND METHOD

Abstract: An improved gas dissolving and releasing system involving the use of multistages of porous gas dissolving media at the center and near the wall of a pressure vessel is described. The gas dissolving system includes a liquid pressure pump, a pressure vessel with tangential inlet and outlet, a gas injector, an inlet nozzle assembly, a center gas dissolving tube, one or more wall-mounted gas dissolving plate assembly, a gas compressor, gas regulators, gas flow meter(s), pressure gauge(s), safety valve(s), sight tube(s), a bleed-off point, a pressurized water release unit, and a liquid flow meter. The liquid flow pattern inside of the pressure vessel is controlled to be of either swirling upflow, swirling downflow or swirling horizontal flow at a rotation speed of over 2,500 rpm. A set of special nozzles with different orifices is designated for precise liquid flow control and liquid rotation speed control. More than one gases introduced at different inlets are dissolved simultaneously and efficiently in the pressure vessel under controlled pressure at 2-7 atm. The improved gas dissolving system is compact, simple and cost-effective, and is applied to ozonation, chlorination, recarbonation, oxygenation, nitrogenation, aeration, and flotation processes.

Classifications:

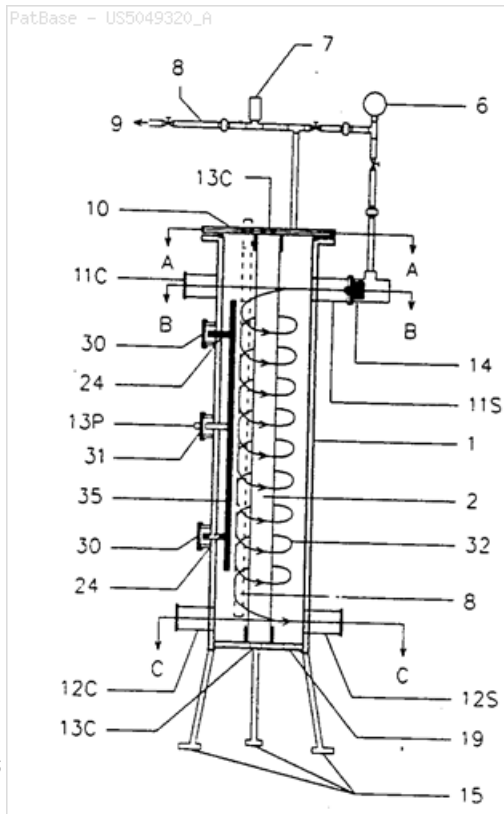
International (IPC 8-9): B01D53/04 B01D53/46 B01D53/68 B01D53/72 B01D53/86 B01F13/06 B01F3/04 B01F5/04 B01J19/18 B03D1/02 B03D1/04 B03D1/14 B09B3/00 B09C1/00 B09C1/02 B09C1/08 B09C1/10 B60K35/00 C02F1/20 C02F1/24 C02F1/28 C02F1/463 C02F1/465 C02F1/52 C02F1/66 C02F1/72 C02F11/02 C02F3/00 C02F3/12 C02F3/26 C02F3/34 G01D11/28 G01D13/02 G02F1/1335 G02F1/13357 G04B19/32 G04G9/00 G09F13/20 G09F13/42 G09F9/00 H01H13/02 H01H13/712 H05B33/00 (Advanced/Invention); B01F5/00 C02F1/00 C02F1/52 (Advanced/Non-invention); B01D53/04 B01D53/46 B01D53/86 B01F13/00 B01F3/04 B01F5/04 B03D1/00 B03D1/14 B09C1/00 B60K35/00 C02F1/20 C02F1/24 C02F1/461 C02F1/463 C02F1/52 C02F1/72 C02F11/02 C02F3/00 C02F3/12 C02F3/26 C02F3/34 G01D11/28 G01D13/00 G02F1/13 G04B19/30 G04G9/00 G09F13/00 G09F13/20 G09F9/00 H01H13/02 H01H13/70 H05B33/00 (Core/Invention); B01F5/00 C02F1/00 C02F1/52 (Core/Non-invention)

International (IPC 1-7): B01D11/14 B01D17/035 B01D33/64 B01D53/02 B01D53/04 B01D53/14 B01D53/34 B01F3/04 B08B3/14 C02F1/20 C02F1/24 C02F1/28 C02F1/52 C02F1/72 C02F11/02 C02F11/14 C02F3/02 C02F3/12 C02F3/22 C02F3/26 C02F3/30 C02F3/34 C02F9/00

CPC: B01D53/10 B01D53/46 B01D53/68 B01J19/18 B09B3/0075 B09C1/00 B09C1/08 B09C1/10 C02F2301/022 Y10S261/75 Y10S210/908 B01F3/04836 B01F3/0446 B01F3/04496 B01F5/045 B01F5/0476 B01F13/065 B01F2003/0439 B01F2003/04865 B01F2003/04893 B01F2003/04907 B01F2003/04921 B01F2005/0017 B01F2005/002 B01F2215/0431 B01F2215/0468 B01J2219/182 B01J2219/187 C02F1/463 C02F1/52 C02F3/12 C02F3/26 C02F2301/02 C02F2301/024 C02F2301/026 C02F2301/066 C02F3/1263 B01D53/72 B01D53/8668 B01J2208/00 B01J2219/00029 B01J2219/00164 B01J2219/00177 B03D1/02 B03D1/04 B03D1/1431 B03D1/1437 C02F1/24 C02F1/465 C02F3/34 C02F3/342 C02F2303/04 B03D1/028 B03D1/1462 B03D1/1493 Y02W10/27 Y02W10/15 C02F3/006 B01D53/04 B01D53/047 B01D2253/102 B01D2253/202 B01D2257/708 B01D2259/401 B09C1/02 Y02A50/235

European: B01D53/04 B01D53/10 B01D53/46 B01D53/68 B01D53/72 B01D53/86P B01F13/06B B01F3/04C4 B01F3/04C4C B01F3/04C9A B01F5/04C13 B01F5/04C14C2 B01J19/18 B03D1/02 B03D1/04 B03D1/14 B03D1/14D B03D1/14E B09B3/00M B09C1/00 B09C1/02 B09C1/08 B09C1/10 C02F1/24 C02F1/463 C02F1/465 C02F3/00R C02F3/12 C02F3/12N8 C02F3/26 C02F3/34 C02F3/34B L01D253/102 L01D253/202 L01D257/708 L01D259/401 L01D53/04 L01D53/047 L01F215/04F2F L01F215/04F4N L01F3/04C1B2U10 L01F3/04C20B12 L01F3/04C20B4 L01F3/04C20B6 L01F3/04C20B8 L01F5/00A6 L01F5/00A8 L01J208/00 L01J219/00A6B L01J219/00B12 L01J219/00B6 L01J219/18B L01J219/18F M02F1/52 M02F301/02 M02F301/02B M02F301/02D M02F301/02F M02F301/06D M02F303/04

US: 134/26 134/42 209/170 210/137 210/139 210/141 210/142 210/143 210/177 210/178 210/179 210/180 210/187 210/188 210/194 210/195.1 210/195.3 210/197 210/199 210/202 210/205 210/206 210/208 210/209 210/218 210/219 210/220 210/221.2 210/221.252 210/250 210/251 210/252 210/256 210/258 210/259 210/260 210/266 210/295 210/322 210/525 210/601 210/603 210/604 210/605 210/608 210/615 210/621 210/622 210/624 210/626 210/63 210/630 210/631 210/632 210/703 210/707 210/747 210/747.1 210/748 210/748.01 210/804 210/805 210/908 261/121.1 261/122 261/122.1 261/22.1 261/DIG.75 96/10 96/204

**Family:**

Publication number	Publication date	Application number	Application date
CN1040070 C	19981007	CN19921002719	19920413
CN1067227 A	19921223	CN19921002719	19920413
TW283138 B	19960811	TW19920103617	19920509
US5049320 A	19910917	US19900547982	19900703
US5167806 A	19921201	US19910708777	19910529
US5232584 A	19930803	US19920929987	19920817
US5240600 A	19930831	US19920891826	19920601
US5275732 A	19940104	US19920984319	19921202
US5354458 A	19941011	US19920871041	19920420
US5399267 A	19950321	US19930029697	19930311
US5451320 A	19950919	US19900550515	19900710
US5552051 A	19960903	US19910714381	19910611

Priority:

US19900547982 19900703	US19900550515 19900710	US19900551543 19900711
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Probable Assignee: INT ENVIRONMENTAL SYSTEMS INC USA

Assignee(s): (std): INT ENVIRONMENTAL SYTEM INC ; INT ENVIRONMENTAL SYSTEM INC

Assignee(s): INT ENVIRONMENTAL SYSTEMS INC ; INT ENVIRONMENT SYSTEMS INC ; INT ENVIRONMENTAL SYSTEMS INC ; INT ENVIRONMENTAL SYSTEMS INC USA ; INTERNATIONAL ENVIRONMENTAL SYSTEM

INC ; INTERNATIONAL ENVIRONMENTAL SYSTEMS INC ; INTERNATIONAL ENVIRONMENTAL SYSTEMS
INC USA

Inventor(s): (std): HYRCYK OREST ; KURLKO L ; KURLKO LUBOMYR ; SUNG MU HAO ; WANG LAWRENCE K ; WANG MU
HAO S ; WANG MU HAO SUNG ; WANG LAWRENCE KONGPU ; HRYCYK OREST ; WANG MU H S

Inventor(s): MU HAO SUNG WANG ; LUBOMYR KURLKO ; MU HAO SUNG ; LAWRENCE KONGPU WANG ; L KURLKO

Title: BIO-SLURRY REACTION SYSTEM AND PROCESS FOR HAZARDOUS WASTE TREATMENT

Abstract: A method for improved slurry-phase bioremediation treatment of organic sludge and mixtures of organic sludge and organics-contaminated soils by dissolving the contaminants into an aqueous phase and microbially degrading same. A high solids slurry of the sludge and soils is formed with water and an active bioslurry consisting of large populations of acclimated hydrocarbon-utilizing bacteria and small amounts of biodegradation residue. The slurry is passed through a plurality of in-series bioreactors in each of which a low hydraulic shear is maintained to promote the development of a large population of microorganisms that will form flocculent suspensions. The output from the series of bioreactors is flowed continuously or semicontinuously to a liquid-solids separator to partition the mixed liquor bioslurry from the biodegraded waste residue. The mixed liquor bioslurry containing small amounts of biodegradation residue is returned to the slurry being processed for recycling. Off-gas components from the system are recirculated back to one or more of the bioreactors, to return high volatility toxic constituents for increased microbial degradation and control of volatile toxic constituent emissions from the process. The related system is also disclosed and claimed.

Classifications:

International (IPC 8-9): A62D3/00 A62D3/02 B09B3/00 B09C1/10 C02F3/12 C02F3/22 C02F3/28 C02F3/34 C12P1/04 (Advanced/Invention);

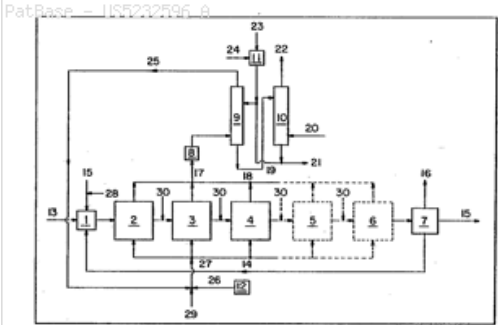
A62D3/00 B09C1/10 C02F3/12 C02F3/22 C02F3/28 C02F3/34 C12P1/04 (Core/Invention)

International (IPC 1-7): A62D3/00 B09B3/00 C02F3/00 C02F3/12 C02F3/34

CPC: Y02W10/15 C12R1/38 B09C1/10 C02F3/121 C02F3/1231 C02F3/223 C02F3/28 C02F3/34 C12P1/04 C12R1/01

European: A62D3/00E1 A62D3/00F B09C1/10 C02F3/12A2 C02F3/12A9 C02F3/22C C02F3/28 C02F3/34 C12P1/04 C12R1/01 C12R1/38

US: 210/603 210/805



Family:

Publication number	Publication date	Application number	Application date
AU199226988 A1	19930503	AU19920026988	19920924
CA2102121 AA	19931029	CA19922102121	19920924
CA2102121 C	20020101	CA19922102121	19920924
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EP0609399 B1	19971126	EP19930906337	19920924
ES2110087 T3	19980201	ES19930906337T	19920924
JP6511194 T2	19941215	JP19930506951T	19920924
MX9205734 A1	19930501	MX19920005734	19921006
US5232596 A	19930803	US19910773344	19911007
WO9306953 A1	19930415	WO1992US08117	19920924

Priority:

US19910773344 19911007 WO1992US08117 19920924

Probable Assignee: RADIAN INTERNATIONAL LLC

Assignee(s): (std): RADIAN CORP ; RADIAN INT LLC

Assignee(s):

RADIAN INT ; WELLS FARGO BANK NATIONAL ASSOCIATION ADMINISTR AS ; O BRIEN KREITZBERG INC ; RADIAN ACQUISITION CORP ; SIGNET TESTING LABORATORIES INC ; SRA TECHNOLOGIES INC ; WALK HAYDEL AND ASSOCIATES ; URS CORP ; RADIAN INT LLC AUSTIN TEX ; RADIAN INTERNATIONAL LLC ; WELLS FARGO BANK NATIONAL ASSOCIATION ADMINISTRATI ; RADIAN INT LLC AUSTIN TEX US ; O'BRIEN KREITZBERG INC ; O'BRIEN KREITZBERG INC ; WELLS FARGO BANK NATIONAL ASSOCIATION AS ADMINISTR ; WELLS FARGO BANK NATIONAL ASSOCIATION ADMINISTRATIVE AGENT AS ; AMAN ENVIRONMENTAL CONSTRUCTION INC ; BOVAY NORTHWEST INC ; BRW GROUP INC ; BRW HAZELET AND ERDAL OF MICHIGAN INC ; CANADIAN IMP ; BRW HAZELET AND ERDAL OF OHIO INC ; CLEVELAND WRECKING CO ; COLOR CAVE INC ; CANADIAN IMP BANK OF COMMERCE ADMINISTRATIVE AGENT ; CASTALDI FRANK J ; CANADIAN IMP BANK OF COMMERCE ADMINISTRATIVE AGENT AS ; DAMES AND MOORE GROUP ; CONTRACTING RESOURCES INT ; DM INVESTORS INC ; DAMES AND MOORE AMERICA LP ; DAMES AND MOORE FOREIGN BRANCH OPERATIONS INC ; DAMES AND MOORE GROUP INC ; DAMES AND MOORE INC ; DAMES AND MOORE SERVICING CO ; DAMES AND MOORE VENTURES ; DECISIONQUEST INC ; DQ SQUARED INC ; FOURTH DIMENSION INTERACTIVE INC ; CREDIT SUISSE FIRST BOSTON ; CONTRACTING RESOURCES INT INC ; DAMES AND MOORE GROUP NY INC ; DAMES AND MOORE GROUP (NY) INC

Inventor(s): (std): CASTALDI FRANK ; CASTALDI FRANK J

Inventor(s): RADIAN CORP ; FRANK J CASTALDI

Agent(s): OGILVY RENAULT LLP SENCRL SRL

Designated states: AT AU BE BR CA CH DE DK ES FR GB GR IE IT JP KR LU MC NL SE

Title: TREATMENT OF WASTEWATER AND SLUDGES

Abstract: A system for wastewater and sludge treatment utilizes an anaerobic reactor to modify the wastewater and generate sludge and liquid effluent. The sludge is transferred to a conditioner wherein anaerobic, aerobic and chemical means may be utilized to cultivate the required strains of organisms and break down various pollutants. Various chemicals may be solubilized, or precipitated, or adsorbed to remove them from the waste stream. Aerobic conditioning may be used to increase the volume of sludge, and to increase the temperature of the sludge. A shell having multiple compartments can provide for the entire process by utilizing the upper portion for anaerobic reaction and the lower portion for conditioning. An aerobic reactor can be disposed centrally of the conditioning compartments. Pipes and pumps can be used to transfer components from one compartment to another, and to discharge the cleaned effluent. The sludge is further subjected to aerobic reaction and bioheating. Some chemicals may be added to assist in removal of heavy metals and other toxic substances. Finally, the sludge and water are separated, and the sludge is dried.

Classifications:

International (IPC 8-9): C02F11/04 C02F11/12 C02F3/00 C02F3/12 C02F3/28 C02F3/30 (Advanced/Invention);

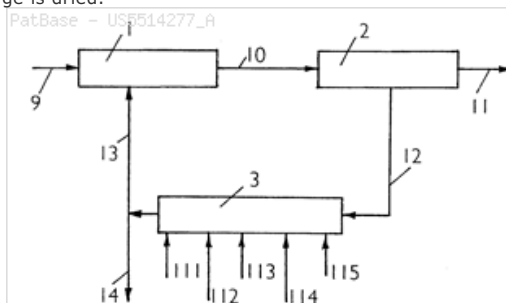
C02F3/00 C02F3/12 C02F3/28 C02F3/30 (Core/Invention)

International (IPC 1-7): C02F11/04 C02F11/12 C02F3/12 C02F3/28 C02F3/30

CPC: Y02E50/343 C02F3/302 C02F2307/08 Y02W10/15 C02F3/1221 C02F3/006 C02F3/28 C02F3/2806 C02F3/30 C02F3/308 C02F2209/02 C02F2209/06 C02F2209/08 C02F2209/20 C02F2209/22 C02F2209/245 C02F2209/28 C02F2209/38 C02F2209/40

European: C02F3/00R C02F3/12A6 C02F3/28 C02F3/28C C02F3/30 C02F3/30D C02F3/30F M02F209/02 M02F209/06 M02F209/08 M02F209/20 M02F209/22 M02F209/24G M02F209/28 M02F209/38 M02F209/40 M02F3/30 M02F307/08

US: 210/151 210/195.1 210/218 210/262 210/603 210/605 210/607 210/623 210/624 210/625 210/629 210/630 210/631 210/747 210/747.1

**Family:**

Publication number	Publication date	Application number	Application date
AU199466212 A1	19941108	AU19940066212	19940328
AU199515623 A1	19950801	AU19950015623	19950109
BRPI9405922 A	19951212	BR1994PI05922	19940328
BRPI9505641 A	19960109	BR1995PI05641	19950109
CA2160373 AA	19951011	CA19942160373	19940328
US5514277 A	19960507	US19930102618	19930805
US5514278 A	19960507	US19940181387	19940113
US5616241 A	19970401	US19950532606	19951012
US5846424 A	19981208	US19960602085	19960215
US6015496 A	20000118	US19970824608	19970326
WO9424056 A1	19941027	WO1994US03374	19940328
WO9519322 A1	19950720	WO1995US00317	19950109

Priority:

US19930046788	19930412	US19930102618	19930805	US19940181387	19940113
WO1994US03374	19940328	WO1995US00317	19950109	US19950532606	19951012
US19960602085	19960215	US19970824608	19970326		

Probable Assignee: KHUDENKO ENGINEERING INC

Assignee(s): (std): BORIS M KHUDENKO ; KHUDENKO BORIS M ; KHUDENKO ENGINEERING INC

Assignee(s): KHUDENKO BORIS MIKHAILOVICH

Inventor(s): (std): KHUDENKO BORIS M ; KHUDENKO BORIS MIKHAILOVICH

Inventor(s): BORIS M KHUDENKO

Agent(s): FINLAYSON AND SINGLEHURST

Designated states: AM AT AU BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CZ DE DK EE ES FI FR GA GB GE GN GR HU IE IT JP KE KG KP KR KZ LK LR LT LU LV MC MD MG ML MN MR MW NE NL NO NZ PL PT RO RU SD SE SI SK SN SZ TD TG TJ TT UA US UZ VN

Title: CONCEPT FOR SLURRY SEPARATION AND BIOGAS PRODUCTION

Abstract: The present invention concerns an anaerobic digestion of animal manures, energy crops and similar organic substrates. The process is capable of refining nutrients comprised in the digested biomass to fertilizers of commercial quality. The invention also provides a method for oprocessing animal carcasses or fractions thereof including meat and bone meal etc., with the objective of providing an alternative means for processing the organic waste material of animal origin while at the same time facilitating the production of fertilizers. The risk of spreading BSE prions or any other prions to animals or humans is thus substantially reduced if not eliminated. The biogas and slurry separation system according to the present invention is preferably integrated with the operations of animal husbandries into a total concept in which the internal and external performances of animal husbandries are optimised. The internal performances concern quality aspects related to the management of the animal houses and include industrial hygiene, animal welfare, gaseous and dust emissions and food safety. The external performances concern mainly energy production and emissions to the environment of nutrients and greenhouse gases and the sale of high quality food product.

Classifications:

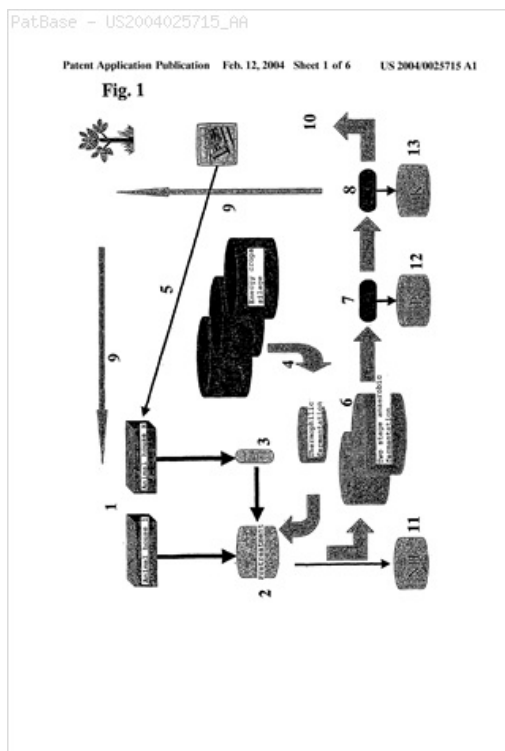
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International (IPC 1-7): A01C3/02 A23L1/00 A61L101/20 A61L11/00 A61L2/04 A61L2/16 A61L2/18 B01D53/14 C02F1/20 C02F1/58 C02F11/00 C02F11/02 C02F11/04 C02F11/18 C05B15/00 C05B7/00 C05C3/00 C05D1/00 C05F1/02 C05F11/00 C05F3/00 C05F3/06 C10L3/06

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US: 435/236 435/243 435/262.5 435/264 435/267 435/268 99/484 99/484S 99/485 99/485P

**Family:**

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NZ524883 A	20040625	NZ20010524883	20010822
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Priority:

DK20000001246 20000822 DK20000000171 20010201 DK20010000171 20010201
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Probable Assignee: GFE PATENT A S

Assignee(s): (std): BONDE TORBEN A ; GFE PATENT AS ; GREEN FARM ENERGY AS ; GREEN FARM ENERGY AS AF 2 JULI ; GREEN FARM ENERGY AS AF JULI 2 ; GREEN FARM ENERGY AF 2 JULI AS ; GREEN FARM ENERGY AF JULI 2 AS ; GRIN FARM EHNERDZHI AS ; GREEN FARM ENERGY AS RANDERS ; PEDERSEN LARS JOERGEN ; GRREN FARM ENERGY AS ; GREEN FARM ENERGY RANDERS AS

Assignee(s): BONDE TORBEN ; GRIN FARM EHNERDZHI A S ; PEDERSEN LARS JORGEN ; GRREN FARM ENERGY A S ; GREEN FARM ENERGY AF 2JULI 2004 AS ; GREEN FARM ENERGY A S AF 2JULI 2004 ; GREEN FARM ENERGY AS AF 2 JULI 2004 ; GREEN FARM ENERGY A S AF JULI ; GREEN FARM ENERGY A S AF JULI 2004 ; GREEN FARM ENERGY A S RANDERS ; GREEN FARM ENERGY A S AF JULI 2004 LAURBJERG ; GREEN FARM ENERGY A S ; GREEN FARM ENERGY A S AF 2 JULI 2004 ; GFE PATENT A S

Inventor(s): (std): TORBEN A BONDE ; PEDERSON LARS J ; PEDERSEN LARS JORGEN ; PEDERSEN LARS JOERGEN ; PEDERSEN LARS J RGEN ; PEDERSEN LARS J ; PEDERSEN LARS ; PEDERSEN LAR JORGEN ; PEDERSEN JORGEN ; LARS JORGEN PEDERSEN ; LAR JORGEN PEDERSEN ; LARS J PEDERSON ; BONDE TORBEN ; JORGEN PEDERSEN LARS ; BONDE TORBEN A

Inventor(s): LARS JOERGEN PEDERSEN

Agent(s): SHELSTON IP; SHELSTON IP PTY LTD; DEETH WILLIAMS WALL LLP; AAMAND JESPER L; IVER P

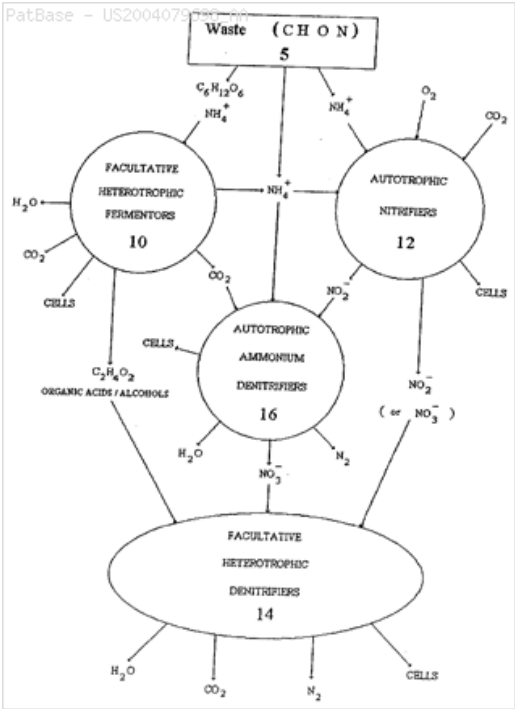
Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

Title: LOW OXYGEN ORGANIC WASTE BIOCONVERSION SYSTEM

Abstract: The present invention is directed to a substantially odorless biological treatment process for solid and liquid organic wastes. The present invention also provides for a novel nutrient rich humus material produced from the biological treatment process. The bioconversion process of the present invention results from low oxygen concentrations and high quantities of microorganisms in a diverse microbial community.

Classifications:

International (ipc 8-9): B09B3/00 C02F101/10 C02F101/16 C02F101/38 C02F3/00 C02F3/30 C02F3/34 C05F17/00 C05F3/00 C05F3/06 C05F5/00 C05F7/00 C12N1/00 (Advanced/Invention); C02F101/10 C02F101/16 C02F101/38 (Advanced/Non-invention); B09B3/00 C02F3/00 C02F3/30 C02F3/34 C05F17/00 C05F3/00 C05F7/00 C12N1/00 (Core/Invention)
International (ipc 1-7): C02F3/00 C02F3/34 C05F3/00 C05F5/00
CPC: C02F3/30 C02F3/327 C02F2103/20 Y10S210/903 Y10S210/906 Y02W30/43 Y02W30/47 C02F3/302 C02F3/308 C05F17/0027 C05F17/0036 C02F3/00 C02F3/34 C02F2209/08 C02F2209/16 C05F3/00 C05F17/0018 Y02P20/145 Y02A40/205 Y02A40/228
European: C02F3/00 C02F3/30 C02F3/30D C02F3/30F C02F3/34 C05F17/00D C05F17/00F C05F17/00H C05F3/00 M02F103/20 M02F209/08 M02F209/16 M02F3/30F M02F3/32B
US: 210/170 210/170.08 210/601 210/605 210/609 210/610 210/611 210/615 210/620 210/628 210/630 210/630S 210/631 210/903 210/906 435/243 435/243P 71/32 71/54 71/9



Family:

Publication number	Publication date	Application number	Application date
AU2002227224 AA	20020521	AU20020227224	20011108
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Priority:

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Probable Assignee: BION TECHNOLOGIES INC

Assignee(s): (std): BION TECHNOLOGIES INC ; BION ENVIRONMENTAL TECHNOLOGIE ; NORTHROP JERE ; MORRIS JAMES W

Assignee(s): POSNER STEPHEN J ; KIRSCH JODI ; LEVINGER GEORGE ; MAGER DAVID ; MITCHELL DAVID J ; ORPHANOS ANTHONY G ; ELLEN GILBERTSON TRUSTEE LAWRENCE PODELL IRREV TRU ; STIFEL NICOLAUS CUSTODIAN FOR JONATHAN BERG IRA AC ; ELLEN GILBERTSON TRUSTEE LAWRENCE PODELL IRREV TRUST U A DTD 8 27 91 ; STIFEL NICOLAUS CUSTODIAN FOR JONATHAN BERG IRA ACCT 14992225 ; STIFEL NICOLAUS CUSTODIAN FOR JONATHAN BERG IRA ACCT# 14992225 ; CHRIS

DAN LLC DOMINIC ; BION DAIRY A COLORADO CORP ; BION DAIRY CORP ; BION ENVIRONMENTAL TECHNOLOGIES INC ; BION ENVIRONMENTAL TECHNOLOGIES INC A PUBLICLY HEL ; BION ENVIRONMENTAL TECHNOLOGIES INC A PUBLICLY HELD COLORADO CORP ; BRIGHT CAPITAL LTD ; BLITZ HARVEY ; CASADONTE VIRGINIA ; CHRIS DAN LLC ; DENNIS ROSEN MD PROFIT SHARING PLAN ; BIONSOIL INC ; BION TECHNOLOGIES INC A COLORADO CORP ; BIONSOIL INC A COLORADO CORP ; CHRIS DAN LLC (DOMINIC)

Inventor(s): (std): NORTHROP JERE ; MORRIS JAMES W

Inventor(s): MORRIS JAMES ; JERE NORTHROP ; JAMES W MORRIS

Agent(s): SHELSTON IP; SHELSTON IP PTY LTD; SMART AND BIGGAR; KENYON AND KENYON; KENYON AND KENYON LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI 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 PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

Title: METHODS AND APPARATUS FOR BIOLOGICAL TREATMENT OF WASTE WATERS

Abstract: In a vertical shaft bioreactor, improved devices and methods are provided for enhanced secondary and/or tertiary treatment of wastewater, including residential, municipal and industrial wastewater. The devices and methods of the invention are useful for enhanced secondary wastewater treatment, including BOD and TSS removal. Tertiary treatment can alternately or additionally be achieved in the bioreactor with nitrification of ammonia, with nitrification and denitrification, and with nitrification, denitrification, and chemical phosphorus removal. A vertical shaft bioreactor is also provided which achieves thermophilic aerobic digestion and pasteurization of sewage sludges, optionally to produce class A biosolids.

Classifications:

International (IPC 8-9): B01D19/00 B01D21/01 B01D21/30 B01D29/50 B01D29/60 B01D35/00 B01D35/30 B01D61/14 B01D61/18 B01D63/00 B01D65/02 B01D69/10 B01F3/04 B01F5/06 B03D1/14 B23P11/00 C02F1/20 C02F1/24 C02F1/32 C02F1/44 C02F11/02 C02F11/14 C02F11/18 C02F3/00 C02F3/02 C02F3/06 C02F3/12 C02F3/20 C02F3/22 C02F3/30 C02F3/34 F16L9/18 (Advanced/Invention); C02F1/24 C02F1/32 C02F3/12 C02F3/20 C02F3/22 (Advanced/Non-invention);

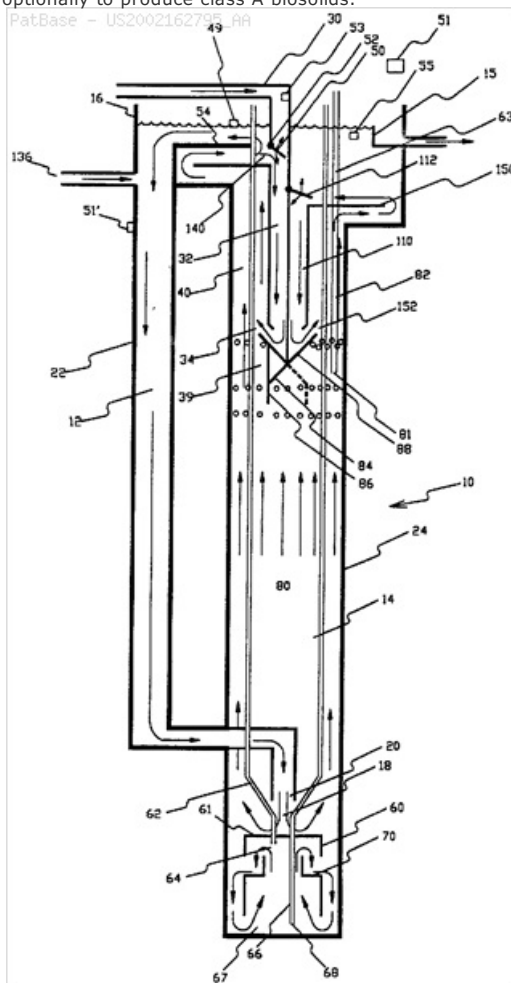
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International (IPC 1-7): B01D19/00 B01D21/01 B01D63/00 B01D65/02 C02F1/20 C02F1/24 C02F1/32 C02F11/02 C02F11/14 C02F11/18 C02F3/00 C02F3/02 C02F3/06 C02F3/20 C02F3/22 C02F3/30 C02F3/34 F16L9/18

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US: 210/136 210/136S 210/137 210/137S 210/143 210/150 210/151 210/188 210/194 210/196 210/197 210/202 210/220 210/221.1 210/221.100S 210/221.2 210/221.200S 210/232 210/232S 210/239 210/239S 210/532.1 210/608 210/608P 210/610 210/610S 210/614 210/614S 210/620 210/620S 210/621 210/626 210/626S 210/629 210/630 210/630S 210/637 210/90 210/90P 210/97 29/428 29/428S

**Family:**

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US7332077 BB	20080219	US20060336642	20060120
WO02072485 A2	20020919	WO2002IB01849	20020225
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Priority:

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Probable Assignee: VOST ENVIRONMENTAL TECHNOLOGIES INC

Assignee(s): (std): BRODD GREGORY ; BRODD GREGORY B ; POLLOCK DAVID ; POLLOCK DAVID C ; V A I LTD ; VOST ENVIRONMENTAL TECHNOLOGIES ; VOST ENVIRONMENTAL TECHNOLOGIE

Assignee(s): VOST ENVIRONMENT TECHNOLOGIES INC ; VOST ENVIRONMENT TECHNOLOGIES ; VAI LTD ; VOST ENVIRONMENTAL TECHNOLOGIES INC ; NORMAN ENTERPRISES INC

Inventor(s): (std): BRODD GREGORY ; BRODD GREGORY B ; POLLOCK DAVID ; POLLOCK DAVID C

Inventor(s): DAVID C POLLOCK ; DAVID POLLOCK ; GREGORY BRODD

Agent(s): PIZZEYS PATENT AND TRADE MARK ATTORNEYS PTY LTD; PIZZEYS PATENT AND TRADE MARK ATTORNEYS; A J PARK; AJ PARK; SMART AND BIGGAR; WALKER ROSS THOMSON ET AL; MATSUNAGA NOBUYUKI; OGOU SOICHI; SATO RYOTARO; GRAYBEAL JACKSON HALEY LLP; JEFFREY J KING, WOODCOCK WASHBURN LLP; JEFFREY J KING WOODCOCK WASHBURN LLP; BLACK LOWE AND GRAHAM PLLC; JEFFREY J KING ESQ BLACK LOWE AND GRAHAM PLLC; KING JEFFREY J; JEFFREY J

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM 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 MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

Title: SYSTEM AND METHOD FOR DISSOLVING GASES IN LIQUIDS

Abstract: Apparatus and methods for dissolving a gas into a liquid comprises a saturation tank, a high pressure liquid pump in fluid communication with the tank, and a pressurized gas source in communication with a regulated gas head space of the saturation tank. The saturation tank comprises a pressure vessel for containing the liquid and has a regulated gas head space above the liquid, contains at least one liquid spray nozzle that permits passage of liquid into the pressure vessel, and an outlet for the liquid containing dissolved gas. Upon passing the gas-containing liquid into a second fluid, the gas is released in the form of microbubbles. The microbubbles aid in flocculation of suspended particles and promote dissolution of the gas in the second fluid. Preferred gases for use with the apparatus are oxygen, air, and ozone. Anticipated uses include treatment of rivers, streams, and ponds in natural or industrial settings, as well as smaller scale applications.

Classifications:

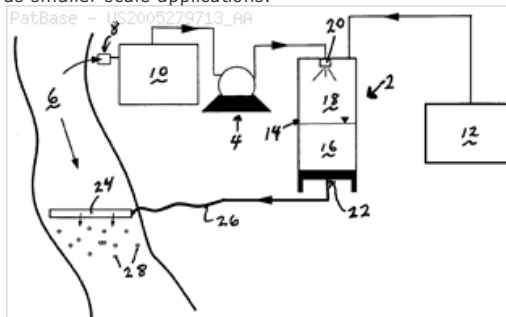
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European: B01F15/00K60D B01F15/00K60H B01F15/00K60N B01F3/04C2 B01F3/04C6 B01F3/04C6A6 B01F3/08F4 B01F5/04C13M B01F5/04C13M4 B01F5/04C13S2 B01F5/10F C02F1/78 C02F7/00 L01F215/00A62 L01F3/04 L01F3/04C20B4A L01F3/04C20B4C L01F3/04C20B4E M02F1/70 M02F1/72 M02F1/72S M02F1/74 M02F1/76E M02F1/78 M02F101/30E M02F101/30P M02F103/00H M02F103/34P M02F201/782 M02F201/784 M02F209/02 M02F209/22 M02F3/02 M02F301/02D M02F303/04

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**Family:**

Publication number	Publication date	Application number	Application date
AU2006249808 AA	20061130	AU20060249808	20060525
AU2006249808 BB	20110714	AU20060249808	20060525
CA2609030 AA	20061130	CA20062609030	20060525
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US2007267334 AA	20071122	US20070825682	20070709
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Priority:

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Probable Assignee: BLUEINGREEN LLC

Assignee(s): (std): BLUEINGREEN LLC ; OSBORN GREGORY SCOTT ; MATLOCK MARTY D ; OSBORN GREGORY S ; S BOARD OF TRUSTEES OF ; LINGUIST LARRY K ; MILLIGAN CHRISTOPHER B ; MATLOCK MARTY M ; TRUSTEES OF UNIV OF ; TELTSCHIK SHANDI S ; TELTSCHIK ; S THE BOARD OF TRUSTEES OF THE ; UNIV ARKANSAS ; THOMPSON CLAY R ; SELTSCHIK SHANDI S

Assignee(s): S THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ARKAN ; THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ARKANSAS ; S THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ARKANSA ; WINDSAIL CREDIT FUND LP ADMINISTRATIVE AGENT AS ; THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ARKANSA ; NATIONAL SCIENCE FOUNDATION ; NATIONAL INSTITUTES OF HEALTH NIH US DEPT OF HEALTH AND HUMAN SERVICES DHHS US GOVERNMENT ; S BOARD OF TRUSTEES OF UNIV OF ARKANSA ; BOARD OF TRUSTEES OF THE UNIVERSITY OF ARKANSAS ; BOARD OF TRUSTEES OF UNIV OF ARKANSAS ; BOARD OF TRUSTEES OF UNIV OF ARKANSAS ; BOARD OF TRUSTEES OF UNIV OF ARKANSAS LITTLE ROCK

Inventor(s): (std): MATLOCK MARTY D ; OSBORN GREGORY SCOTT ; TELTSCHIK SHANDI S ; OSBORN GREGORY S ; MILLIGAN CHRISTOPHER B ; MATLOCK MARTY M ; THOMPSON CLAY R ; TELTSCHIK ; SELTSCHIK SHANDI S ; LINGUIST LARRY K ; SCOTT OSBORN GREGORY

Inventor(s): MATLOCK MARTY ; OSBORN GREGORY ; OSBORN GREGORY SCOTT FAYETTEVILLE ; SELTSCHIK SHANDI S MINOT AFB ; SHANDI S SELTSCHIK ; TELTSCHIK SHANDI ; MATLOCK MARTY D FAYETTEVILLE ; GREGORY SCOTT OSBORN ; MARTY D MATLOCK

Agent(s): FB RICE PTY LTD; FB RICE; KIRBY EADES GALE BAKER; VOSSIUS AND PARTNER PATENTANWAELTE RECHTSANWAELTE MBB; VOSSIUS AND PARTNER; VOSSIUS AND PARTNER PATENTANWAELTE RECHTSANWAELTE MBB; JAMES H MEADOWS AND MEDICUS ASSOCIATES; JAMES H MEADOWS MEDICUS ASSOCIATES; MEDICUS ASSOCIATES; JAMES H; RICHARD BLAKELY

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

Title: PROCESS TO ENHANCE PHOSPHORUS REMOVAL FOR ACTIVATED SLUDGE WASTEWATER TREATMENT SYSTEMS

Abstract: Contaminated wastewaters comprising biochemical oxygen demand (BOD), nitrogen and phosphorus are treated by an activated sludge process. The process utilizes an activated sludge tank, a solid-liquid separator, and a bioreactor to significantly reduce, or eliminate, waste activated sludge (WAS) within a sludge stream. A sidestream reactor is employed downstream from the bioreactor to remove soluble phosphates left in the sludge stream by the low WAS process. Within the sidestream reactor, a source of multivalent metal ions is added to a slightly alkaline sludge stream to precipitate the phosphates. The solid phosphates have a specific gravity higher than that of the organic matter in the sludge stream and may be separated from the sludge stream based upon differential settling velocity.

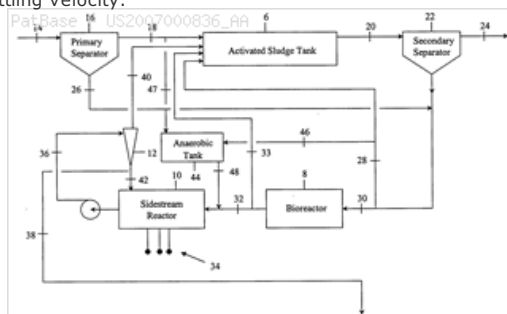
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CPC: Y02W10/15 C02F3/1221 C02F1/38 C02F1/5236 C02F3/1215 C02F2209/06 C02F2301/043

European: C02F3/12A4 C02F3/12A6 M02F1/38 M02F1/52F M02F209/06 M02F301/04B

US: 210/605 210/605S 210/607 210/620 210/625 210/626 210/903 210/903S 210/906 210/906S



Family:

Publication number	Publication date	Application number	Application date
US2007000836 AA	20070104	US20050170864	20050630
US7344643 BB	20080318	US20050170864	20050630
WO07005167 A2	20070111	WO2006US21549	20060602
WO07005167 A3	20070315	WO2006US21549	20060602

Priority:

US20050170864 20050630

Probable Assignee: EVOQUA WATER TECHNOLOGIES LLC

Assignee(s): (std): ELEFRITZ ROBERT ; SIEMENS WATER TECHNOLOGIES HOL ; SIEMENS WATER TECH CORP ; UNITED STATES FILTER CORP ; BARNES DENNIS J ; SIEMENS WATER TECH HOLDG CORP

Assignee(s): SIEMENS WATER TECHNOLOGIES LLC ; CREDIT SUISSE CAYMAN ISLANDS BRANCH COLLATERAL AGENT AG AS ; USFILTER CORP ; EVOQUA WATER TECHNOLOGIES LLC ; RENESAS ELECTRONICS CORP ; SIEMENS IND INC ; SIEMENS WATER TECHNOLOGIES CORP ; SIEMENS WATER TECHNOLOGIES HOLDING CORP

Inventor(s): (std): BARNES DENNIS J ; ELEFRITZ ROBERT ; ELEFRITZ ROBERT A JR ; ELEFRITZ JR ROBERT A

Inventor(s): BARNES DENNIS ; ELEFRITZ ROBERT A ; ELEFRITZ ROBERT AJR

Agent(s): MICHAEL BEST AND FRIEDRICH LLP

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

Title: APPARATUS AND METHOD FOR TREATING FGD BLOWDOWN OR SIMILAR LIQUIDS

Abstract: A process has steps of one or more of aerobic treatment to remove COD and nitrify a waste stream, anoxic treatment to denitrify a waste stream, anoxic treatment to remove selenium and anaerobic treatment to remove heavy metals and sulphur. The process may be used to treat, for example, FGD blow down water. The process may further include one or more of (a) membrane separation of the waste stream upstream of the anoxic digestion to remove selenium, (b) dilution upstream of the biological treatment step, (c) physical/chemical pretreatment upstream of the biological processes or dilution step to remove TSS and soften the waste stream, or (d) ammonia stripping upstream of the biological treatment steps or dilutions step. These processes may be provided in a variety of suspended growth or fixed film reactors, for example a membrane bioreactor or a fixed film reactor having a GAC bed. Processes for biological treatment of inorganic compounds in a fixed medium reactor is described including steps of one or more of maintaining desired ORP levels, optionally by controlling nutrient addition, and removing solids or gas bubbles from the medium bed.

Classifications:

International (IPC 8-9): B01D53/22 C02F1/52 C02F3/00 C02F3/04 C02F3/06 C02F3/28 C02F3/30 C12M1/00 (Advanced/Invention);

B01D53/00 B01D53/22 C02F3/00 C02F3/28 C02F3/30 (Core/Invention)

CPC: Y10S210/903 Y10S210/912 Y10S210/914 Y02W10/15

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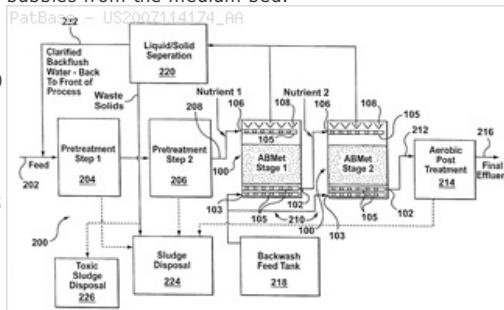
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US: 210/150 210/198.1 210/200 210/202 210/601 210/601S 210/605

210/610 210/615 210/617 210/630 210/631 210/903 210/912

210/914

**Family:**

Publication number	Publication date	Application number	Application date
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Priority:

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Probable Assignee: ZENON TECHNOLOGY PARTNERSHIP

Assignee(s): (std): HUSAIN HIDAYAT ; PEETERS JEFFREY GERARD ; PICKETT TIMOTHY MICHAEL ; ZENON TECHNOLOGY PARTNERSHIP ; PEETERS JEFFREY G ; ZENON ENVIRONMENTAL INC ; ZENON TECHNOLOGY PARTNERSHIP CORP TRUST CO CORP TRUST CT ; BONKOSKI WILLIAM A ; COTE PIERRE L ; COTE PIERRE LUCIEN ; ZENON TECH PARTNERSHIP

Assignee(s): GE WATER AND PROCESS TECHNOLOGIES CANADA ; ZENON TECHNOLOGY PARTNERSHIP TRUST CO TRUST CENTRE CORP ; ZENON TECHNOLOGY PARTNERSHIP WILMINGTON

Inventor(s): (std): BONKOSKI WILLIAM A ; COTE PIERRE L ; COTE PIERRE LUCIEN ; HUSAIN HIDAYAT ; PEETERS JEFFREY G ; PEETERS JEFFREY GERARD ; MICHAEL PICKETT TIMOTHY ; LUCIEN COTE PIERRE ; HIDAYAT HUSAIN ; GERARD PEETERS JEFFREY ; PICKETT TIMOTHY MICHAEL

Inventor(s): PICKETT TIMOTHY MICHAEL SALT LAKE CITY ; PEETERS JEFFREY GERARD TORONTO ; HUSAIN HIDAYAT OAKVILLE ; COTE PIERRE LUCIEN DUNDAS ; BONKOSKI WILLIAM A WILMINGTON

Agent(s): BERESKIN AND PARR LLP SENCRL SRL; BORDEN LADNER GERVAIS LLP; RUEGER BARTHELT AND ABEL; BEDFORD GRANT RICHARD; CARPINTERO MARIO; JAECKLE FLEISCHMANN AND MUGEL LLP; BERESKIN AND PARR (MISSISSAUGA) / GE; BERESKIN AND PARR MISSISSAUGA GE; SCOTT

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR 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 MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: MULTIVALENT METAL ION MANAGEMENT FOR LOW SLUDGE PROCESSES

Abstract: A method for managing multivalent metal ion concentrations in low-yield wastewater treatment processes. The method includes combining wastewater containing BOD with bacteria-laden sludge in a mainstream reactor to form a mixed liquor, separating the mixed liquor into a clear effluent and an activated sludge stream, returning a first portion of the activated sludge stream to the mainstream reactor, processing a second portion of the activated sludge stream in a sidestream bioreactor, returning at least a portion of the activated sludge stream in the sidestream bioreactor to the mainstream reactor, and adding multivalent metal ions to at least one of the wastewater, the mixed liquor, the activated sludge stream and combinations thereof to reduce the generation of waste activated sludge.

Classifications:

International (IPC 8-9): C02F3/02 C02F3/12

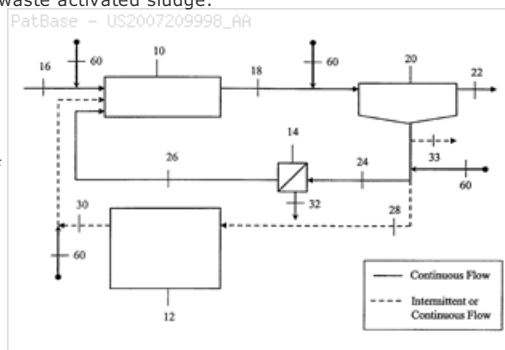
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CPC: Y02W10/27 Y02W10/45 C02F3/12 C02F1/5236 C02F1/68
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Y02W10/15

European: C02F11/02 C02F11/04 C02F3/12 C02F3/12A6 M02F1/52F
M02F1/68 M02F209/04 M02F301/04D

US: 210/607 210/610 210/620 210/623 210/624 210/625 210/626
210/631



Family:

Publication number	Publication date	Application number	Application date
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US7473364 BB	20090106	US20070683162	20070307
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WO07103499 A3	20071129	WO2007US05929	20070307

Priority:

US20060780169P 20060307 US20070683162 20070307

Probable Assignee: EVOQUA WATER TECHNOLOGIES LLC

Assignee(s): (std): SIEMENS WATER TECH CORP ; ABU ORF MOHAMMAD

Assignee(s): CREDIT SUISSE CAYMAN ISLANDS BRANCH COLLATERAL AG AS ; SIEMENS WATER TECHNOLOGIES CORP ; SIEMENS IND INC ; EVOQUA WATER TECHNOLOGIES LLC ; SIEMENS WATER TECHNOLOGIES HOLDING CORP ; SIEMENS WATER TECHNOLOGIES LLC

Inventor(s): (std): ABU ORF MOHAMMAD ; ABU ORF MOHAMMAD M

Agent(s): MICHAEL BEST AND FRIEDRICH LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM 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 LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: PROBIOTIC SYSTEM AND AQUACULTURE DEVICES

Abstract: An aquaculture or wastewater effluent water quality device to improve water quality and food supply in an aquaculture pond or body of water by incubating beneficial microbes in a temperature controlled environment and systematically releasing them to the surrounding water, allowing the beneficial microbes to perform sanitation functions and to help such systems or water bodies overcome the natural production of harmful microbial species without substantially heating or cooling the entire system any more than is required by the present state of the system or body of water or the inhabitants thereof.

Classifications:

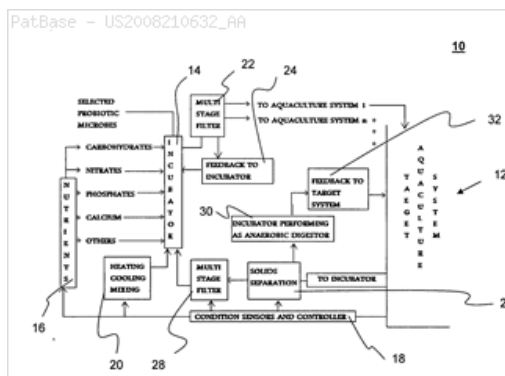
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CPC: Y10S210/906 Y02W10/18 Y02W10/37 A01K63/04 C02F3/06 C02F3/327 C02F3/348 C02F2103/007 Y02W10/15

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US: 119/200 119/227 210/601 210/602 210/611 210/612 210/631 210/906

**Family:**

Publication number	Publication date	Application number	Application date
US2008210632 AA	20080904	US20080019418	20080124
US7736509 BB	20100615	US20080019418	20080124

Priority:

US20070897085P 20070124 US20080019418 20080124

Probable Assignee: KRUSE ALAN

Assignee(s): (std): KRUSE ALAN

Inventor(s): (std): KRUSE ALAN

Agent(s): BIOTECH BEACH LAW GROUP PC; RAYMOND

Title: ENHANCED WATER TREATMENT FOR RECLAMATION OF WASTE FLUIDS AND INCREASED EFFICIENCY TREATMENT OF POTABLE WATERS

Abstract: Disclosed is a process for reclamation of waste fluids. A conditioning container is employed for receipt of waste material on a continuous flow for treatment within the container by immersible transducers producing ultrasonic acoustic waves in combination with a high level of injected ozone. The treated material exhibits superior separation properties for delivery into a centrifuge for enhanced solid waste removal. The invention discloses a cost efficient and environmentally friendly process and apparatus for cleaning and recycling of flowback, or frac water, which has been used to stimulate gas production from shale formations. The apparatus is mobile and containerized and suitable for installation at the well site.

Classifications:

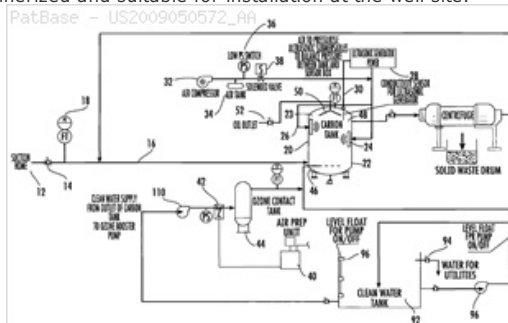
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C02F2305/026 C02F1/001

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US: 1/1 166/267 166/267S 166/308.1 166/90.1 166/90.100S 204/572 204/660 204/660S 204/665 204/665S 204/667 210/150 210/150S 210/151 210/151P 210/151S 210/153 210/170.09 210/171 210/171S 210/177 210/177S 210/190 210/190S 210/198.1 210/198.100S 210/199 210/199S 210/200 210/205 210/205S 210/206 210/206S 210/209 210/243 210/638 210/638P 210/660 210/665 210/665S 210/668 210/668S 210/669 210/702 210/702S 210/706 210/721 210/747 210/747.1 210/747.100P 210/748 210/748.01 210/748.02 210/748.020P 210/748.03 210/748.04 210/748.040S 210/748.1 210/748.100S 210/748.16 210/748.160S 210/749 210/760 36/660 422/127 422/128 422/186 422/20 422/22 422/24 422/27 422/43



Family:

Publication number	Publication date	Application number	Application date
US2009050572 AA	20090226	US20080184716	20080801
US2009230059 AA	20090917	US20090399481	20090306
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US9266752 BB	20160223	US20150691385	20150420
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Priority:

US20070953584P	20070802	US20080184716	20080801	US20090399481	20090306
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Probable Assignee: ECOSPHERE TECHNOLOGIES INC

Assignee(s): (std): ECOSPHERE TECHNOLOGIES INC ; JAKHETE SANJEEV ; MCGUIRE DENNIS

Assignee(s): BRISBEN WATER SOLOUTIONS LLC ; BRISBEN WATER SOLTIONS LLC ; BRISBEN WATER SOLUTIONS LLC

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Agent(s): MCHALE AND SLAVIN PA; SLAVIN MICHAEL A ET AL; SLAVIN MICHAEL A

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 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

Abstract: The inventive process scheme and its various embodiments described herein will comprise filtering a selenium containing water by reverse osmosis or nanofiltration to produce a primary permeate stream at least meeting the water stream effluent discharge requirements of the location and a concentrate stream containing the removed selenium and other species, a RO or NF concentrate treatment specific to the case which will treat and reduce the selenium content of the concentrate, optionally in conjunction with a sulfate removal process, and result in a highly concentrated sludge or other output, and a selenium depleted aqueous overflow stream, a portion of which will be combined with the primary permeate stream so that the selenium content of the combined stream does not exceed the local requirement, and the remainder of the selenium depleted aqueous overflow stream will be returned to be combined with the selenium containing water entering the inlet of the primary reverse osmosis treatment.

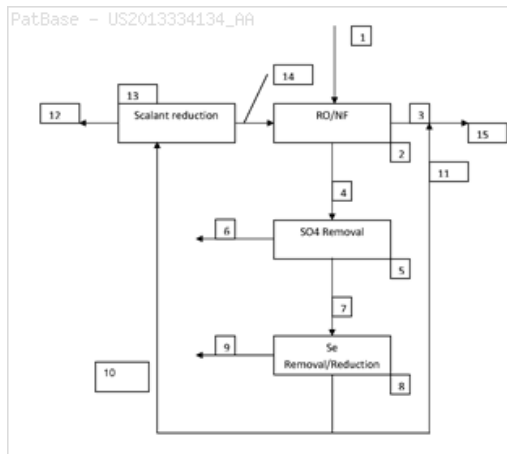
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C02F9/00 (Advanced/Invention);
C02F101/10 (Advanced/Non-invention)

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European: C02F1/44B C02F1/44C C02F1/70C C02F3/30

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US: 210/607 210/638 210/651



Publication number	Publication date	Application number	Application date
AU2011305313 AA	20120329	AU20110305313	20110923
AU2011305313 BB	20150122	AU20110305313	20110923
CA2812455 AA	20130322	CA20112812455	20110923
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Assignee(s): EVOQUA WATER TECHNOLOGIES LLC ; SIEMENS WATER TECHNOLOGIES LLC ; SIEMENS WATER TECHNOLOGIES PTE LTD

Inventor(s): (std): RIFFE MICHAEL R ; SASSAMAN FRANK L ; WISMER MICHAEL W ; SATHRUGNAN KARTHIKEYAN ;
MIERZEJEWSKI MAREK

Agent(s): SIEMENS LTD; SHELSTON IP; SHELSTON IP PTY LTD; SMART AND BIGGAR; GOWLING LAFLEUR HENDERSON LLP; PAYNE JANICE JULIA; DONALDSON AND BURKINSHAW; WILKINS FREDERICK C 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 QA RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TI TM TN TR TT TZ UA UG US UY UZ VN VC VU VV VY VC VZ ZM ZW

Title: PROCESSES FOR STARTING UP DEEP TANK ANAEROBIC FERMENTATION REACTORS FOR MAKING OXYGENATED ORGANIC COMPOUND FROM CARBON MONOXIDE AND HYDROGEN

Abstract: Processes are provided for starting up of anaerobic, deep tank fermentation systems used in the anaerobic bioconversion of hydrogen and carbon monoxide in a gaseous substrate stream to oxygenated organic compounds such as ethanol. In the processes injectors using a motive liquid are used to introduce gas substrate into the deep tank fermentation reactor where at least one of: (i) adjusting the gas to liquid flow ratio through an injector, (ii) changing the rate of liquid flow through an injector, and (iii) adjusting the carbon monoxide mole fraction in the gas feed by admixture with at least one other gas, wherein the mass transfer of carbon monoxide to an aqueous menstuum in the reactor is controlled to obtain the robust growth of the microorganism while maintaining the carbon monoxide concentration below that amount which is unduly adverse to the microorganism. In preferred aspects of the invention, recycled gas from the head space of the reactor is used to modulate the supply of carbon monoxide to the aqueous menstuum.

Classifications:

International (IPC 8-9): C02F11/04 C02F3/28 C12M1/00 C12M1/02 C12M1/04 C12M1/06 C12M1/34 C12M1/36 C12P5/00 C12P7/00 C12P7/02 C12P7/04 C12P7/06 C12P7/14 C12P7/16 C12P7/52 C12P7/54 (Advanced/Invention); C12M1/06 C12P7/06 (Core/Invention)

CPC: Y10S435/801 C12P7/52 C12P7/16 C12P7/54 C12M29/06 C12M41/32 C12P7/14 C12P5/023 C01B3/34 C01B3/36 C01B2203/0233 C01B2203/0255 C01B2203/06 C01B2203/0811 C01B2203/141 C12P7/02 Y02E50/343 C12P7/06 Y02P20/125 C12P7/065 Y02P20/582 C12P7/04 Y02E50/10 Y02E50/17

US: 435/132 435/140 435/141 435/157 435/160 435/161 435/162 435/245 435/267 435/801 585/240

PatBase - US2013078693_AA

Patent Application Publication Mar. 28, 2013 Sheet 1 of 3 US 2013/078693 A1

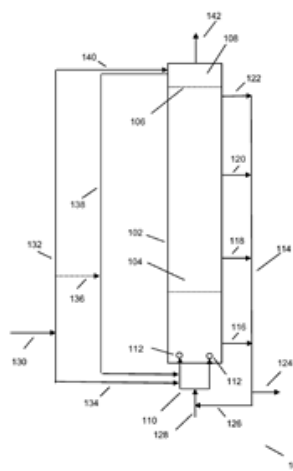


FIGURE 1

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AU2015287843 AA	20160114	AU20150287843	20150708
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EA201490505 A1	20140829	EA20140090505	20120914
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EP3166891 A1	20170517	EP20150819675	20150708
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EP3190188 A1	20170712	EP20170153760	20120914
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WO16007654 A1	20160114	WO2015US39587	20150708

Priority:

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Probable Assignee: SYNATA BIO INC

Assignee(s): (std): COSKATA ENERGY ; TOBEY RICHARD E ; HICKEY ROBERT ; COSKATA INC ; TSAI SHIH PERNG ; SYNATA BIO INC

Assignee(s): 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 ; ADVANCED TECHNOLOGY VENTURES VII LP ; ATV ENTREPRENEURS VII LP ; COSKATA ASSIGNMENT FOR BENEFIT OF CREDITORS LLC

Inventor(s): (std): HICKEY ROBERT ; RICHARD E TOBEY ; TOBEY RICHARD E ; TSAI SHIH PERNG ; SHIH PERNG TSAI ; ROBERT HICKEY

Agent(s): ADAMS PLUCK; RIDOUT AND MAYBEE LLP; CHUNG HSU MIN; HGF LTD; CARDINAL LAW GROUP; WILSON LESLIE B; WILSON LESLIE

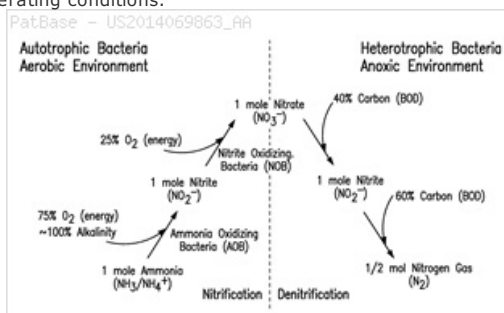
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Title: METHOD AND APPARATUS FOR NITROGEN REMOVAL IN WASTEWATER TREATMENT

Abstract: A reactor and control method thereof for nitrogen removal in wastewater treatment achieves a measured control of maintaining high ammonia oxidizing bacteria (AOB) oxidation rates while achieving nitrite oxidizing bacteria (NOB) repression, using various control strategies, including: 1) ammonia and the use of ammonia setpoints, 2) operational DO and the proper use of DO setpoints, 3) bioaugmentation of a lighter flocculant AOB fraction, and 4) proper implementation of transient anoxia within a wide range of reactor configurations and operating conditions.

Classifications:

International (IPC 8-9): C02F C02F1/24 C02F1/74 C02F3/00 C02F3/02 C02F3/08 C02F3/10 C02F3/12 C02F3/28 C02F3/30 C02F3/34 (Advanced/Invention); C02F1/24 C02F3/08 C02F3/10 C02F3/12 C02F3/34 (Advanced/Non-invention); C02F (Subclass/Invention)
CPC: C02F3/348 C02F1/24 C02F3/08 C02F3/104 C02F3/1257 C02F3/1263 C02F3/1268 C02F2209/001 C02F2209/10 C02F2209/44 C02F3/302 C02F2209/005 C02F2209/006 C02F2209/14 C02F2209/15 C02F2209/22 Y02W10/15 C02F2003/001 C02F3/34 C02F2101/16 C02F2103/005 C02F3/006 C02F3/303 C02F3/305 C02F3/301 C02F3/307 C02F3/00 C02F3/28 C02F3/30
US: 1/1 210/605 210/608 210/610 210/614 210/96.1 210/96.2

**Family:**

Publication number	Publication date	Application number	Application date
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Priority:

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Probable Assignee: DC WATER AND SEWER AUTHORITY

Assignee(s): (std): D C WATER AND SEWER AND AUTHORITY ; D C WATER AND SEWER AUTHORITY ; HAMPTON ROADS SANITATION DISTR ; DI SI UOTER END SYUER OTORITI

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Agent(s): SPRUSON AND FERGUSON; RIDOUT AND MAYBEE LLP; POTTER CLARKSON LLP; OOO YURIDICHESKAYA GORODISSKIY I PARTNERY FA; BLANK ROME LLP; THRONSON MARK J

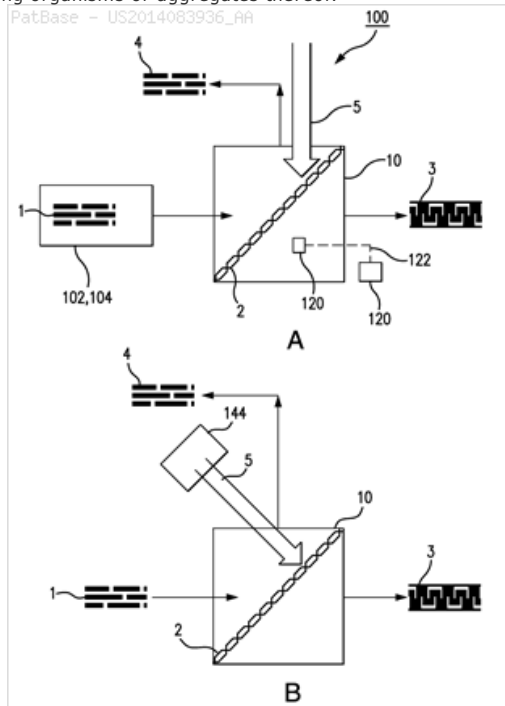
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW 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: METHOD AND APPARATUS FOR WATER TREATMENT USING SCREENS

Abstract: An apparatus and method for selecting, retaining or bioaugmenting solids in an activated sludge process for improving wastewater treatment using screens. The screens can be used to separate and retain solids based on size, compressibility or shear resistance. The screens are used to separate and select slow growing organisms, faster settling organisms, or materials added to absorb, treat or remove constituents in the activated sludge process. A swapping screen arrangement provides another means of selecting various particles. The exposed shear rate or time, particle compression, or SRTs can be adjusted manually and/or automatically in response to detected readings from an instrument such as a spectrophotometer or other optical approaches to optimize selection of organisms. The present disclosure may be configured as an activated sludge system operated at different solids residence times (SRT) for different solids fractions allowing slow growing organisms to get established in competition with faster growing organisms or aggregates thereof.

Classifications:

International (IPC 8-9): B01D24/48 B01D29/01 B01D29/60 B01D33/12 B01D33/06 B01D36/00 B01D36/02 C02F1/00 C02F1/52 C02F3/00 C02F3/12 C02F3/28 C02F3/30 (Advanced/Invention); C02F3/30 (Advanced/Non-invention)
CPC: C02F3/00 C02F3/1236 C02F3/1226 C02F3/307 B01D3/12 C02F1/52 B01D36/00 C02F3/1205 C02F3/2866 C02F3/006 C02F3/12 C02F3/1221 C02F2209/005 C02F2209/10 C02F2209/105 C02F2303/24 Y02E50/343 Y02W10/15
US: 210/138 210/173 210/174 210/194 210/195.3 210/259 210/601 210/605 210/607 210/623 210/624 210/625 210/626 210/805 210/96.1

**Family:**

Publication number	Publication date	Application number	Application date
AU2013317919 AA	20140327	AU20130317919	20130920
AU2013317919 BB	20170427	AU20130317919	20130920
BR112015006444 A2	20170704	BR20151106444	20130920
CA2884724 AA	20150311	CA20132884724	20130920
CN104854039 A	20150819	CN201380049244	20130920
EP2897912 A1	20150729	EP20130839299	20130920
EP2897912 A4	20160615	EP20130839299	20130920
IN02753DN2015 A	20150828	IN2015DN02753	20150403
JP2015533642 T2	20151126	JP20150533225T	20130920
JP6271559 B2	20180131	JP20150533225T	20130920
KR20150086239 A	20150727	KR20157010139	20130920
MX2015003645 A1	20150925	MX20150003645	20130920
RU2015114778 A	20161110	RU20150114778	20130920
SG11201502140T A1	20150429	SG20151102140	20130920
US2014083936 AA	20140327	US20130032952	20130920
US2014131273 AA	20140515	US20130033686	20130923
US2016272521 AA	20160922	US20160090092	20160404
US9802847 BB	20171031	US20130033686	20130923
WO14047459 A1	20140327	WO2013US60962	20130920
ZA201501742 A	20151223	ZA20150001742	20150313

Priority:

US20120703844P 20120921 US20130032952 20130920 WO2013US60962 20130920
 US20130033686 20130923 US20160090092 20160404

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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 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: METHOD AND APPARATUS FOR UNICELLULAR BIOMASS PRODUCTION USING PH CONTROL SYSTEM AND INDUSTRIAL WASTEWATER WITH HIGH BIOCHEMICAL OXYGEN DEMAND LEVELS

Abstract: Methods and systems for the growth of heterotrophic eukaryotic biomass that use pH modulations in order to treat wastewater and produce biomass in optimized quantities.

Classifications:

International (IPC 8-9): C02F1/66 C02F3/28 C02F3/30 C02F3/32

C02F3/34 (Advanced/Invention);

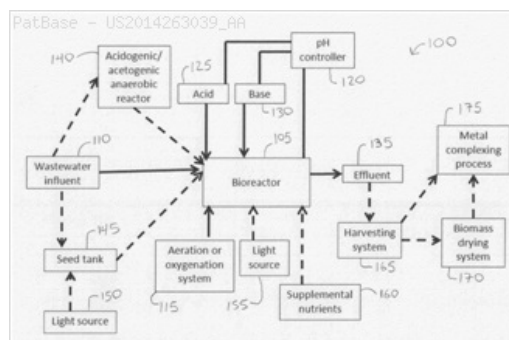
C02F3/12 (Advanced/Non-invention)

CPC: C02F3/28 C02F3/322 C02F1/66 C02F3/1263 Y02E50/343

Y02W10/12 Y02W10/37 Y02W10/15 C02F2209/02 C02F2209/06

C02F2209/08 C02F2209/11

US: 210/601 210/602 210/605 210/610



Family:

Publication number	Publication date	Application number	Application date
BR112015023610 A2	20170822	BR20151123610	20140314
CA2906637 AA	20150914	CA20142906637	20140314
CN105683094 A	20160615	CN201480025310	20140314
EP2969980 A1	20160120	EP20140768123	20140314
EP2969980 A4	20161026	EP20140768123	20140314
US2014263039 AA	20140918	US20140211100	20140314
WO14152599 A1	20140925	WO2014US27516	20140314

Priority:

US20130800617P 20130315

US20140211100 20140314

WO2014US27516 20140314

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Agent(s): RIDOUT AND MAYBEE LLP; ROQUES SARAH ELIZABETH; WARD JACOB M

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