

Search query (28): [SP]: [0001] ballasted solids treatment system and method [0002] related applications [0003] this application claims priority under 35 u.s.c. 119(e) to u.s. provisional application serial no. 62/346,786, titled "ballasted solids digester preconditioning," filed on June 7, 2016, which is herein incorporated by reference in its entirety. [0004] background [0005] technical field [0006] the technical field relates generally to wastewater treatment systems which utilize ballast to treat solids and recover ballast from treated solids. [0007] background discussion [0008] various methods for the treatment of wastewater involve biological treatment of the wastewater in aerobic and/or anaerobic treatment units to reduce the total organic content and/or biochemical oxygen demand of the wastewater. the treatment methods may include physical and/or chemical treatment of wastewater in coagulation and/or flocculation units using coagulants and/or polymers to remove organic and/or inorganic contaminants from the wastewater. various methods of wastewater treatment may also involve the removal of flocculated solids formed by a coagulation flocculation process from treated wastewater. these forms of biological, physical and/or chemical treatment typically result in the formation of sludge. sludge may comprise dead bacteria and byproducts of the biological treatment. in some methods, the sludge is removed from the wastewater after undergoing biological, physical, and/or chemical treatment by settling in a settling unit or clarifier. [0009] summary [0010] aspects and embodiments are directed to systems and methods for treating wastewater. in accordance with an aspect of the present disclosure there is provided a system for treating wastewater. the wastewater treatment system comprises a biological reactor having an inlet in fluid communication with a source of wastewater and an outlet, the biological reactor configured to treat wastewater from the source of wastewater and output a biologically treated wastewater from the outlet, a solids-liquid separation system having an inlet in fluid communication with the outlet of the biological reactor and configured to separate the biologically treated wastewater into a solids-lean effluent and a solids-rich waste activated sludge (was), a treatment subsystem comprising a digester, an inlet in fluid communication with a was outlet of the solids-liquid separation system, and an outlet for providing ballasted and digested was, and a ballast feed system configured to deliver ballast to one of the biological reactor and the treatment subsystem. [0011] in accordance with some embodiments the system further comprises a ballast recovery system configured to receive the ballasted and digested was from the outlet of the treatment subsystem. in accordance with some embodiments the ballast recovery system is further configured to separate unballasted digested was from ballast in the ballasted and digested was, and to provide recovered ballast as a source of ballast that is delivered to one of the biological reactor and the treatment subsystem. [0012] in accordance with some embodiments the digester of the treatment subsystem has an inlet for receiving ballasted was and is configured to provide the ballasted and digested was to the outlet of the treatment subsystem. in accordance with some embodiments the ballast feed system is configured to feed ballast to the biological reactor. in accordance with some embodiments the was provided by the solids-liquid separation system is the ballasted was received by the inlet of the digester. [0013] in accordance with some embodiments the treatment subsystem further comprises a holding tank positioned upstream from the digester and having an outlet for providing the ballasted was to the inlet of the digester. in accordance with some embodiments the holding tank is configured to thicken the ballasted was. in accordance with some embodiments the holding tank is in fluid communication with the inlet of the treatment subsystem, and the ballast feed system is configured to feed ballast to the holding tank of the treatment subsystem. in accordance with some embodiments the holding tank is configured to incorporate ballast into the was to generate the ballasted was. [0014] in accordance with some embodiments the treatment subsystem further comprises a ballast impregnation system in fluid communication with the inlet of the treatment subsystem and positioned upstream from the holding tank, and the ballast feed system is configured to feed ballast to the ballast impregnation system. in accordance with some embodiments the ballast impregnation system is configured to incorporate ballast into the was to generate the ballasted was and provide the ballasted was to an inlet of the holding tank. in accordance with some embodiments the treatment subsystem is configured to receive at least one of a coagulant, a flocculant, and an adsorbent. [0015] in accordance with some embodiments the ballast comprises at least one of a magnetic material and sand. in accordance with some embodiments the magnetic material is magnetite. [0016] in accordance with another aspect of the present disclosure, there is provided a method of treating wastewater. the method comprises receiving wastewater from a source of wastewater in a biological treatment unit, biologically treating the wastewater in the biological treatment unit to produce a biologically treated wastewater, settling the biologically treated wastewater to generate waste activated sludge (was), ballasting one of the was and the wastewater with a ballast to generate ballasted was, and digesting at least a portion of the ballasted was to produce ballasted and digested was. [0017] in accordance with some embodiments the method further comprises passing the ballasted and digested was through a ballast recovery system to produce recovered ballast and unballasted digested was. in accordance with some embodiments ballasting one of the was and the wastewater with a ballast comprises introducing recovered ballast to the was after settling and prior to digesting. in accordance with some embodiments ballasting the was comprises introducing the recovered ballast to a ballast impregnation system and impregnating the was with the recovered ballast. in accordance with some embodiments the method further comprises thickening the ballasted was prior to digestion. [0018] in accordance with another aspect of the present disclosure, there is provided a method of treating wastewater. the method comprises receiving wastewater from a source of wastewater in a biological treatment unit, biologically treating the wastewater in the biological treatment unit to produce a biologically treated wastewater, settling the biologically treated wastewater to generate waste activated sludge (was), and ballasting the was with a ballast to generate ballasted was. [0019] in accordance with some embodiments the method further comprises passing the ballasted was to a ballast recovery system to produce recovered ballast. in accordance with some embodiments ballasting the was comprises impregnating the was with the recovered ballast. in accordance with some embodiments the method further comprises thickening the ballasted was prior to passing the ballasted was to the ballast recovery system. [0020] one or more further aspects of the present disclosure are directed to a method of facilitating treatment of wastewater in a wastewater treatment system. the method of facilitating can comprise receiving wastewater from a source of wastewater in a biological treatment unit, biologically treating the wastewater in the biological treatment unit to produce a biologically treated wastewater, settling the biologically treated wastewater to generate waste activated sludge (was), providing a ballast feed system configured to deliver ballast to one of the wastewater and the was, ballasting the one of the was and the wastewater with the delivered ballast to generate ballasted was and digesting at least a portion of the ballasted was to produce ballasted and digested was. [0021] one or more further aspects of the present disclosure are directed to a method of facilitating treatment of wastewater in a wastewater treatment system. the method of facilitating can comprise receiving wastewater from a source of wastewater in a biological treatment unit, biologically treating the wastewater in the biological treatment unit to produce a biologically treated wastewater, settling the biologically treated wastewater to generate waste activated sludge (was), providing a ballast feed system configured to deliver ballast to the was, and ballasting the was with the delivered ballast to generate ballasted was. [0022] still other aspects, embodiments, and advantages of these example aspects and embodiments, are discussed in detail below. moreover, it is to be understood that both the foregoing information and the following detailed description are merely illustrative examples of various aspects and embodiments, and are intended to provide an overview or framework for understanding the nature and character of the claimed aspects and embodiments. [0023] embodiments disclosed herein may be combined with other embodiments, and references to "an embodiment," "an example," "some embodiments," "some examples," "an alternate embodiment," "various embodiments," "one embodiment," "at least one embodiment," "this and other embodiments," "certain embodiments," or the like are not necessarily mutually exclusive and are intended to indicate that a particular feature, structure, or characteristic described may be included in at least one embodiment. the appearances of such terms herein are not necessarily all referring to the same embodiment.

Results: 4

Search history

Search treat+ and water+ (Results 416436)

1:

Search biologic+ (Results 43280)

2:

Search STEEL 1w PIPES+ (Results 27640)

3:

Search 1 and 2 and 3 (Results 4)

4:

Search 1 and 3 (Results 367)

5:

Search EXCAVAT+ OR DIG+ OR BURROW+ OR SINK+ (Results 513515)

6:

Search DUMP+ OR EMPT+ OR TIP OR SLOP+ (Results 1000000)

7:

Search WATERPROOF+ OR WATERLIGHT OR RAINFPROOF+ OR IMPERMEAB+ (Results 411609)

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Search CONNECT+ OR JOIN OR PLUG+ OR PLUMB+ OR ATTACH+ OR LINK OR MERG+ (Results 1000000)

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Search CAST+ 1w CONCRETE (Results 13582)

10:

Search SEWAG+ OR EFFLUENT OR wastewater (Results 288905)

11:

Search 6 and 7 (Results 49427)

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Search 12 and 9 (Results 25610)

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Search 11 and 1 and 3 (Results 80)

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Search 19 and 10 (Results 0)

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Search 19 and 2 (Results 1)

21:

Search 19 and 6 (Results 38)

22:

Search 22 and 9 (Results 37)

23:

Search 19 and C02F 3/30 (Results 0)

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Search C02F 3/30 (Results 0)

25:

Search IC=(C02F3/30) (Results 14994)

26:

Search 19 and 26 (Results 1)

27:

Search 28: [SP]: [0001] ballasted solids treatment system and method [0002] related applications [0003] this application claims priority under 35 u.s.c. 119(e) to u.s. provisional application serial no. 62/346,786, titled "ballasted solids digester preconditioning," filed on June 7, 2016, which is herein incorporated by reference in its entirety. [0004] background [0005] technical field [0006] the technical field relates generally to wastewater treatment systems which utilize ballast to treat solids and recover ballast from treated solids. 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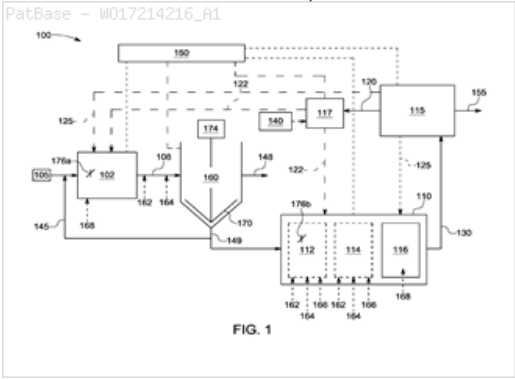
description are merely illustrative examples of various aspects and embodiments, and are intended to provide an overview or framework for understanding the nature and character of the claimed aspects and embodiments. [0023] embodiments disclosed herein may be combined with other embodiments, and references to "an embodiment," "an example," "some embodiments," "some examples," "an alternate embodiment," "various embodiments," "one embodiment," "at least one embodiment," "this and other embodiments," "certain embodiments," or the like are not necessarily mutually exclusive and are intended to indicate that a particular feature, structure, or characteristic described may be included in at least one embodiment. the appearances of such terms herein are not necessarily all referring to the same embodiment. (Results 4)

Title: BALLASTED SOLIDS TREATMENT SYSTEM AND METHOD

Abstract: Disclosed are apparatus and methods for treating wastewater. In one example a system for treating wastewater treatment is provided. The system comprises a biological reactor having an inlet in fluid communication with a source of wastewater and an outlet, the biological reactor configured to treat wastewater from the source of wastewater and output a biologically treated wastewater from the outlet, a solids-liquid separation system having an inlet in fluid communication with the outlet of the biological reactor and configured to separate the biologically treated wastewater into a solids-lean effluent and a solids-rich waste activated sludge (WAS), a treatment subsystem comprising a digester, an inlet in fluid communication with a WAS outlet of the solids-liquid separation system, and an outlet for providing ballasted and digested WAS, and a ballast feed system configured to deliver ballast to one of the biological reactor and the treatment subsystem.

Classifications:

International (IPC 8-9): C02F1/28 C02F3/12 C02F3/28
C02F3/30 (Advanced/Invention)
CPC: C02F3/1226 C02F1/488 C02F1/5245 C02F1/56 C02F11/04
C02F2209/005 C02F2209/20 C02F2305/12 Y02W10/15



Family:

Publication number	Publication date	Application number	Application date
AU2017277405 AA	20171214	AU20170277405	20170607
CA3024165 AA	20181113	CA20173024165	20170607
WO17214216 A1	20171214	WO2017US36255	20170607

Priority:

US20160346786P 20160607 WO2017US36255 20170607

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Inventor(s): (std): LINDEMANN TIMOTHY ; WHITTIER MICHAEL CASEY

Agent(s): SHELSTON IP PTY LTD; GOWLING WLG CANADA LLP; WILKINS FREDERICK C

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 DJ 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 KH KM KN KP KR KW 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

Title: COLLECTION SYSTEM FOR A WET DRUM MAGNETIC SEPARATOR

Abstract: An improved collection system for a wet drum magnetic separator including a tank for receiving a flow of a mixture of magnetic and non-magnetic particles in a feed port. A collection system includes a rotating drum having a roughened collection surface disposed in the tank, an array of permanent magnetic elements disposed inside the drum arranged in a fixed position relative to an azimuthal section of the drum for establishing an azimuthal magnetic interaction region defined by a level of the mixture in the tank for attracting the magnetic particles to the roughened collection surface, a non-magnetic particle discharge port located on an opposite side of the tank that receives the flow for removing the non-magnetic particles, a magnetic particle discharge port located outside the tank for receiving the magnetic particles, and a magnetic particle removal subsystem for removing the magnetic particles trapped in the roughened collection surface and dispensing the magnetic particles to the magnetic particle discharge port.

Classifications:

International (IPC 8-9): B01D21/01 B01D24/00 B01D35/00 B03C1/00 B03C1/03 B03C1/14 B03C1/247 C02F1/36 C02F1/38 C02F1/48 C02F1/52 C02F1/56 C02F3/00 C02F3/02 C02F3/08 C02F3/12 C02F3/14 C02F3/26 C02F3/28 C02F3/30 C02F3/34 C02F9/04 C02F9/14 (Advanced/Invention); C02F1/28 C02F1/36 C02F1/38 C02F1/48 C02F1/52 C02F1/56 C02F3/12 (Advanced/Non-invention); B01D21/01 B03C1/00 B03C1/02 C02F1/52 C02F3/00 C02F3/02 C02F3/08 C02F3/12 C02F3/14 C02F3/26 C02F3/30 C02F3/34 C02F9/00 C02F9/14 (Core/Invention); C02F1/52 (Core/Non-invention); C02F (Subclass/Invention)

International (IPC 1-7): C02F3/00

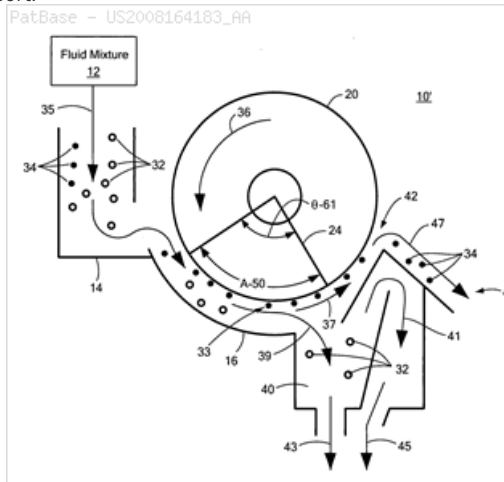
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US: 209/214 209/219 210/150 210/151 210/151S 210/173 210/173S 210/189 210/192 210/192S 210/194 210/194S 210/195.1 210/195.100S 210/195.3 210/195.300S 210/197 210/198.1 210/200 210/200S 210/202 210/202S 210/205 210/207 210/207S 210/209 210/220 210/222 210/223 210/512.1 210/532.1 210/601 210/607 210/608 210/610 210/614 210/614S 210/615 210/616 210/616S 210/620 210/626 210/631 210/663 210/670 210/675 210/676 210/679 210/695 210/723 210/768 210/787

JP F-Term: 4D015 4D015/BA19 4D015/BA21 4D015/BA28 4D015/CA01 4D015/CA02 4D015/DA30 4D015/DA37 4D015/DC07 4D015/DC08 4D015/DC10 4D015/EA32 4D015/FA11 4D028 4D028/AA02 4D028/AC01 4D028/AC05 4D028/BC17 4D028/BC18 4D028/BD16 4D028/BD17 4D028/CA12 4D040 4D040/BB33 4D040/BB73 4D040/BB91

JP F-Index: B01D21/01/105 C02F1/52/E C02F3/12/D C02F3/34/101/C

**Family:**

Publication number	Publication date	Application number	Application date
AU2007342680 AA	20080717	AU20070342680	20070815
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AU2008205248 AA	20080717	AU20080205248	20080109
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BR112012005131 A2	20160503	BR20121105131	20100907
BRPI0806315 A2	20110906	BR2008PI06315	20080109
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CA2675108 AA	20090709	CA20072675108	20070815
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CN101568493 B	20111026	CN200880000974	20080109
CN101610850 A	20091223	CN200780039817	20070815
CN101610850 B	20120704	CN200780039817	20070815
CN102574714 A	20120711	CN201080039853	20100907
CN102858693 A	20130102	CN201180021491	20110131
CN102858693 B	20150729	CN201180021491	20110131
CN102869618 A	20130109	CN201180021490	20110131
CN106242041 A	20161221	CN201610621553	20100907
DE602010046781 D1	20171228	DE201060046781T	20100907
DE602011041369 D1	20171019	DE201160041369T	20110131
EP2101919 A1	20090923	EP20070836872	20070815
EP2101919 A4	20120822	EP20070836872	20070815
EP2104649 A1	20090930	EP20080724459	20080109
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EP2104649 B1	20180919	EP20080724459	20080109
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EP2563728 A1	20130306	EP20110775393	20110131
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EP2563729 A1	20130306	EP20110775392	20110131
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IN01995DN2012 A	20150724	IN2012DN01995	20120306
JP2010515567 T2	20100513	JP20090545592T	20080109
MX2009007407 A1	20091102	MX20090007407	20080109
MX2012002839 A1	20120612	MX20120002839	20100907
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WO08086010 A1	20080717	WO2008US00323	20080109
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WO11136835 A1	20111103	WO2011US00179	20110131
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Priority:

US20070879373P	20070109	US20070893255	20070815	US20070893350	20070815
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US20130019483	20130905	US20130094447	20131202		

Probable Assignee: EVOQUA WATER TECHNOLOGIES LLC

Assignee(s): (std): CAMBRIDGE WATER TECHNOLOGY INC ; CAMBRIDGE WATER TECHNOLOGY INC US ; EVOQUA WATER TECH LLC ; MARSTON PETER G ; WECHSLER IONEL ; SIEMENS IND INC ; SIEMENS INDUSTRY INC ; SIEMENS WATER TECHNOLOGIES LLC ; EVOQUA WATER TECHNOLOGIES LLC ; SIEMENS WATER TECH LLC ; WOODARD STEVEN ; WOODARD STEVEN E

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Inventor(s): MARSTON PETER GUS ; WECHSLER IONELUS ; WOODARD STEVENUS

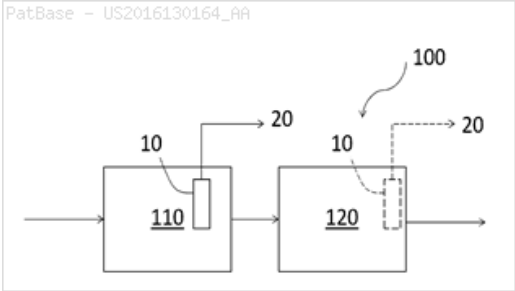
Agent(s): SHELSTON IP; SHELSTON IP PTY LTD; PHILLIPS ORMONDE FITZPATRICK; SIEMENS LTD; MACRAE AND CO; SMART AND BIGGAR; GOWLING LAFLEUR HENDERSON LLP; MURGITROYD AND CO; JONES GRAHAM HENRY; PAYNE JANICE JULIA; CROSBY WENDY AGNES; IANDIORIO AND TESKA, INTELLECTUAL PROPERTY LAW ATTORNEYS; IANDIORIO AND TESKA INTELLECTUAL PROPERTY LAW ATTORNEYS; INTELLECTUAL PROPERTY LAW ATTORNEYS; IANDIORIO TESKA AND COLEMAN; COLEMAN ROY J ET AL; COLEMAN ROY L 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: DEVICES, SYSTEMS AND METHODS FOR FACILITATING NUTRIENT REMOVAL BY ANAEROBIC AMMONIA OXIDATION

Abstract: A system and method of treating wastewater having at least one undesirable biological species is provided. In accordance with embodiments, a wastewater treatment system is provided comprising a main biological treatment train including at least one first unit operation configured to perform an anaerobic ammonium oxidation process, and at least one subsystem configured to increase a concentration of anammox bacteria in the at least one first unit operation, the treatment system arranged to reduce the concentration of total nitrogen in the wastewater.

Classifications:
International (IPC 8-9): C02F3/30 (Advanced/Invention)
CPC: C02F3/307 C02F2203/004
US: 210/192 210/605



Family:

Publication number	Publication date	Application number	Application date
US2016130164 AA	20160512	US20140898340	20140617
US9725346 BB	20170808	US20140898340	20140617
WO14205005 A1	20141224	WO2014US42810	20140617

Priority:

US20130836302P 20130618	US20130868802P 20130822	US20140926452P 20140113
WO2014US42810 20140617	US20140898340 20140617	

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Inventor(s): (std): ANTONNEAU NATE ; ANTONNEAU NATHAN ; WHITTIER MICHAEL CASEY ; LINDEMANN TIMOTHY L ; LINDEMANN TIMOTHY

Agent(s): WILKINS FREDERICK C

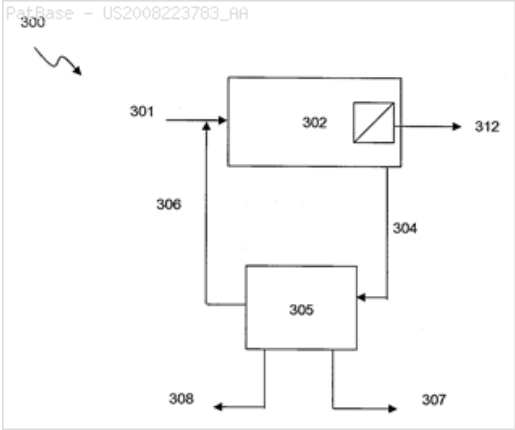
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX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

Title: HIGH PERFORMANCE, ENERGY EFFICIENT SYSTEM AND METHOD FOR WASTEWATER TREATMENT WITH RESOURCE RECOVERY AND REDUCED RESIDUAL SOLIDS GENERATION

Abstract: A wastewater treatment system is provided including an aerobic membrane bioreactor and an anaerobic digester system connected to receive wasted solids continuously from the aerobic membrane bioreactor and also connected to return effluent from the anaerobic digester system continuously to the aerobic membrane bioreactor. Further, a process is provided for treating wastewater including the step of wasting a volume fraction of organic cell mass from an aerobic membrane bioreactor to an anaerobic digester system and maintaining a solids retention time (SRT) in the bioreactor that is (1) greater than a time needed to achieve growth of organisms suitable for converting carbonaceous biochemical oxygen demand (CBOD) into cell mass and (2) less than a time at which substantial decay of the organisms occurs. The system and process may further include optional pretreatment and/or phosphorus and/or nitrogen removal downstream of the membrane bioreactor system.

Classifications:

International (IPC 8-9): C02F3/00 C02F3/30 C02F9/14 (Advanced/Invention); C02F101/10 C02F3/12 C02F3/28 (Advanced/Non-invention); C02F3/00 C02F3/30 C02F9/14 (Core/Invention); C02F3/12 C02F3/28 (Core/Non-invention)
CPC: C02F3/1273 C02F1/001 C02F1/008 C02F1/20 C02F1/288 C02F1/5236 C02F3/1268 C02F3/30 C02F2003/008 C02F2101/105 C02F2101/16 C02F2209/02 C02F2209/40 C02F2209/44 C02F2303/06 C02F2303/16 C02F2303/24 Y02W10/15
European: C02F3/12N9 C02F3/12N9B C02F3/30 M02F1/00D M02F1/00T M02F1/20 M02F1/28L M02F1/52F M02F101/10C M02F101/16 M02F209/02 M02F209/40 M02F209/44 M02F3/00Z M02F303/06 M02F303/16 M02F303/24
US: 210/195.1 210/195.100S 210/621 210/624 210/630 210/631 210/631S



Family:

Publication number	Publication date	Application number	Application date
GB200918213 A0	20091202	GB20090018213	20091016
GB2460985 A1	20091223	GB20090018213	20091016
US2008223783 AA	20080918	US20070966267	20071228
US7713417 BB	20100511	US20070966267	20071228
WO08115444 A2	20080925	WO2008US03452	20080314
WO08115444 A3	20081211	WO2008US03452	20080314

Priority:

US20070918551P 20070316 US20070966267 20071228 WO2008US03452 20080314

Probable Assignee: HSBC BANK PLC

Assignee(s): (std): SHAW ENVIRONMENTAL AND INFRASTRU ; ENVIROGEN TECHNOLOGIES INC ; SUTTON PAUL M ; SHAW ENVIRONMENTAL AND INFRASTRUCTURE INC

Assignee(s): BASIN WATER INC ; ENVIORNGEN TECHNOLOGIES INC ; HSBC BANK PLC

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Inventor(s): PAUL M SUTTON

Agent(s): RATNERPRESTIA; COHEN JOSHUA L

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 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 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 ZA ZM ZW