

Search query (2): [SP]: 1. a system for the treatment of wastewater (star), comprising the following 7 stages in series: stage 1) collection and passing through an intake volume regulator box having a discharge outletstage 2) a pretreatment consisting of solid separation screens and desander channelsstage 3) a first secondary treatment or anaerobic biological comprised of at least one biodigester systemstage 4) channeling to drying beds to remove sludge generated in the anaerobic biological treatmentsstage 5) a second biological treatment of anaerobic nature consisting in the passage through at least one uaf system, and the sludge return to the drying bed of stage 4stage 6) a third biological treatment of aerobic nature consisting of the passage through at least one reservoir constituted as constructed wetland andstage 7) a tertiary treatment consisting of its passage through a disinfection unit by chlorine contact or in a uv light process. 2. the star according to claim 1, wherein in stage 1, the constant flow is achieved when passing through a regulator box (8), intake pipe (9), discharge pipe actuated in case of a volume excess (10), guide frame (11), manually operated outlet regulator gate (12), discharge pipe from the regulating box (13). 3. the star according to claim 1, wherein in stage 2 the flow passes through an inlet pipe coming from the regulator box (13), then through a 30 cm channel (14) having two grits, one of a thick mesh (15) made of 1 in wide and ? width strip bars, with an spacing between bars of 4.86 cm and a thin mesh grit (16) made of 1 in wide and ? width strip bars, with an spacing between bars of 2.54 cm, it continues through one of two desander channels (19) whose access is limited by a manually operated gate (18) and a suto-type weir (20) in order to facilitate the sedimentation and to maintain a constant and controlled flow rate of 0.30 m/sec remaining homogeneous during the whole process. 4. the star according to claim 1, wherein stage 2 also requires a pumping system used in case of having no-height minimum difference (with respect the tube grade line) of 1.50 m of the inlet pipe with the pretreatment and consisting of: a pump sump and suction piping of the pumping equipment (21), pump system (22), check and non-rising stem valves (23) discharge to rate regulator box at the upper part of the biodigester (24), the connection continues towards a rate regulator box (24b). 5. the star according to claim 1, wherein in stage 3 the pre-treated water flow crosses an anaerobic biodigester comprising: an inlet box (24c) when there is not a pumping system, intake pipe (25), subdivision forming 2 compartments (26, 27), and the first (26) has in turn two hopped zones (28, 29), connected by a series of communicating pipes (30) at 1.50 m height (31) with the subsequent secondary treatment (27) having a hopped zone (32) having a discharge pipe (33) in communication with the fifth stage in each hopper a sludge discharge pipe (37) which continues through a valve box to remove these solids in each hopper (38), above each hopped zone there is a hopper-maintenance lid (34, 35, 36), a piping system to collect biogas in each compartment (40) and biogas concentration boxes wherein it is passed through a zeolite box scavenging methane and carbon dioxide (41), and where the biodigester is comprised by a total of 6 chambers wherein the process of sedimentation and sludge formation is carried out, minimizing the solid dragging at the bottom, allowing a water flow at constant rate remaining more time near the hopped zones, the inlet pipes height (25) and communicating (30) is important so the water flow is suitable to favor the sedimentation and biodigestion in the hopped zones, favoring the sedimentation and anaerobic digestion process. 6. the star according to claim 1, wherein in stage 4 the removal is carried out of the sludge formed in both the previous stage 3 and the subsequent stage 5, it is comprised by two drying beds, one adjacent to stage 3 and another contiguous to stage 5 having a level difference to each other, and comprising: two deposits made of concrete material with a perimeter wall of 1.5 m height, it is incorporated to an inlet pvc pipe (52) of the sludge being generated at the biodigester hoppers or the uaf, gate (52b), distributor channel (52c), dissipating slab (52d), a bottom of clay mixed with lime in order to avoid leakages to the underground (53), perforated tube to collect the lixivates (54), coarse gravel layer (55), medium gravel layer (56), sand layer (57), collecting pipe outlet (58) sump for the lixiviate concentration (59), and wherein the build-up sludge from stages 3 and 5 are removed after 6 months of operation of the system by hydraulic charge through the non-rising stem valves (38) located at a part of each hopper without requiring pumping. 7. the star according to claim 1, wherein in stage 5 the anaerobic biological treatment is carried out, consisting of an up-flow anaerobic filtering system or uaf, which is a concrete tank characterized by having a gravity hydraulic arrangement, avoiding the use of pumps, taking advantage of the land slope, and because it is comprised by the following elements: a) valve box for sludge discharge (42), an intake box wherein the water enters and then passes through two secondary semi-circular distribution boxes located over de upper slab (43), these boxes uniformly distribute the water towards the reactor bottom and provide a better control and natural cleaning, the water channeling is made through a pvc piping (44b) from the secondary distribution box, the water is directed to the bottom (45), which separates 40 cm the lower slab from the filtering media, and the flow moves upwards the filtering media bed by difference of pressure, the filtering media or packing are rounded river stones or volcanic rock exclusively of 4 to 6 inches diameters (45b), occupying uniformly the uaf volume up to a height of 25 cm before the collecting chutesc) gases generated at the distribution boxes are removed by means of wasters (51), the zones of the side collecting channels (46), central collecting channel (47), concentrating channel and collector abutted at the front (48) andd) at the uaf upper part there are three collecting channels, two at the larger part ends of the reactor (46) and one at the center (47), each has a depth of 15 cm and has straight over-dimensioned walls carrying the treated water to a fourth general collecting channel located at an edge of the uaf (48) front channel treated water discharge (49), which is directed to the concentrating/distributing box (49b) and then to the sixth stage lids for maintenance and checking for the side channels (50), biogas discharge and venting in order to avoid the damaging of the uaf slab (51). 8. the star of claim 1, wherein stage 6 comprises an aerobic biological treatment consisting of a system of at least a subsurface constructed wetland, where from two wetlands, these are connected with a length-wide ratio from 1:2 to 2:2 and are characterized by being delimited concrete reservoirs (61), covered from the bottom and up to the outer upper walls by an impermeable geo-membrane (78) thermally sealed and fixed to the walls with aluminum strip (79) thereby preventing the leakage to the underground, they are fed with the flow coming from the uaf through the concentration/distribution box (49b), and where each one of these reservoirs also comprises: a) intake pipe (63) and wetland inlet pipe (63b), bidirectional wetland inlet pipe in order to achieve a uniform flow of the water under treatment (64), connecting pipe (65) and bidirectional pipe (66) at each part, these three pipes 64, 65 and 66 are flow distributors and allow these to be made as a piston-type homogeneous flow,b) one or more independent pipes operating as air injectors in order to increase the volume of oxygen in the wetlands when the organic loads are high, with solar-powered equipment (67),c) a gravel strata at the wetland base is formed with a 0.70 to 0.75 cm height, forming a rounded coarse river gravel zone or volcanic rock of 4 to 5? (68), and a rounded river gravel zone or volcanic rock of 2 to 3? (69),d) plant material is placed over this strata, tule-type plants (70), water level (71), 10 cm of 1? rounded river gravel layer in order to avoid the heating of the wetland water and to avoid bad odors (72), ande) a perforated tube to collect the effluent and running lengthwise (73), this pipe projects (73b) towards the collecting box (74) and determines the water level in the wetlands, at the lower part and before the elbow special pvc pieces are placed to allow the pipe rotatable movement (73b) thus promoting the plant rhizome growing (70), treated water collecting pipe and it is used as discharge to the chlorine contact box (75), at the same collecting pipe (73) other system to inject pre

Results: 11

Search history

Search FT=(waste water and anaerobic biodigester and up-flow anaerobic filter and regulator box) (Results 1)

1:

Search [SP]: 1. a system for the treatment of wastewater (star), comprising the following 7 stages in series: stage 1) collection and passing through an intake volume regulator box having a discharge outletstage 2) a pretreatment consisting of solid separation screens and desander channelsstage 3) a first secondary treatment or anaerobic biological comprised of at least one biodigester systemstage 4) channeling to drying beds to remove sludge generated in the anaerobic biological treatmentsstage 5) a second biological treatment of anaerobic nature consisting in the passage through at least one uaf system, and the sludge return to the drying bed of stage 4stage 6) a third biological treatment of aerobic nature consisting of the passage through at least one reservoir constituted as constructed wetland andstage 7) a tertiary treatment consisting of its passage through a disinfection unit by chlorine contact or in a uv light process. 2. the star according to claim 1, wherein in stage 1, the constant flow is achieved when passing through a regulator box (8), intake pipe (9), discharge pipe actuated in case of a volume excess (10), guide frame (11), manually operated outlet regulator gate (12), discharge pipe from the regulating box (13). 3. the star according to claim 1, wherein in stage 2 the flow passes through an inlet pipe coming from the regulator box (13), then through a 30 cm channel (14) having two grits, one of a thick mesh (15) made of 1 in wide and ? width strip bars, with an spacing between bars of 4.86 cm and a thin mesh grit (16) made of 1 in wide and ? width strip bars, with an spacing between bars of 2.54 cm, it continues through one of two desander channels (19) whose access is limited by a manually operated gate (18) and a suto-type weir (20) in order to facilitate the sedimentation and to maintain a constant and controlled flow rate of 0.30 m/sec remaining homogeneous during the whole process. 4. the star according to claim 1, wherein stage 2 also requires a pumping system used in case of having no-height minimum difference (with respect the tube grade line) of 1.50 m of the inlet pipe with the pretreatment and consisting of: a pump sump and suction piping of the pumping equipment (21), pump system (22), check and non-rising stem valves (23) discharge to rate regulator box at the upper part of the biodigester (24), the connection continues towards a rate regulator box (24b). 5. the star according to claim 1, wherein in stage 3 the pre-treated water flow crosses an anaerobic biodigester comprising: an inlet box (24c) when there is not a pumping system, intake pipe (25), subdivision forming 2 compartments (26, 27), and the first (26) has in turn two hopped zones (28, 29), connected by a series of communicating pipes (30) at 1.50 m height (31) with the subsequent secondary treatment (27) having a hopped zone (32) having a discharge pipe (33) in communication with the fifth stage in each hopper a sludge discharge pipe (37) which continues through a valve box to remove these solids in each hopper (38), above each hopped zone there is a hopper-maintenance lid (34, 35, 36), a piping system to collect biogas in each compartment (40) and biogas concentration boxes wherein it is passed through a zeolite box scavenging methane and carbon dioxide (41), and where the biodigester is comprised by a total of 6 chambers wherein the process of sedimentation and sludge formation is carried out, minimizing the solid dragging at the bottom, allowing a water flow at constant rate remaining more time near the hopped zones, the inlet pipes height (25) and communicating (30) is important so the water flow

is suitable to favor the sedimentation and biodigestion in the hopped zones, favoring the sedimentation and anaerobic digestion process. 6. the star according to claim 1, wherein in stage 4 the removal is carried out of the sludge formed in both the previous stage 3 and the subsequent stage 5, it is comprised by two drying beds, one adjacent to stage 3 and another contiguous to stage 5 having a level difference to each other, and comprising: two deposits made of concrete material with a perimeter wall of 1.5 m height, it is incorporated to an inlet pvc pipe (52) of the sludge being generated at the biodigester hoppers or the uaf, gate (52b), distributor channel (52c), dissipating slab (52d), a bottom of clay mixed with lime in order to avoid leakages to the underground (53), perforated tube to collect the lixivates (54), coarse gravel layer (55), medium gravel layer (56), sand layer (57), collecting pipe outlet (58) sump for the lixivate concentration (59), and wherein the build-up sludge from stages 3 and 5 are removed after 6 months of operation of the system by hydraulic charge through the non-rising stem valves (38) located at a part of each hopper without requiring pumping. 7. the star according to claim 1, wherein in stage 5 the anaerobic biological treatment is carried out, consisting of an up-flow anaerobic filtering system or uaf, which is a concrete tank characterized by having a gravity hydraulic arrangement, avoiding the use of pumps, taking advantage of the land slope, and because it is comprised by the following elements: a) valve box for sludge discharge (42), an intake box wherein the water enters and then passes through two secondary semi-circular distribution boxes located over de upper slab (43), these boxes uniformly distribute the water towards the reactor bottom and provide a better control and natural cleaning, the water channeling is made through a pvc piping (44)b from the secondary distribution box, the water is directed to the bottom (45), which separates 40 cm the lower slab from the filtering media, and the flow moves upwards the filtering media bed by difference of pressure, the filtering media or packing are rounded river stones or volcanic rock exclusively of 4 to 6 inches diameters (45b), occupying uniformly the uaf volume up to a height of 25 cm before the collecting chutesc) gases generated at the distribution boxes are removed by means of wasters (51), the zones of the side collecting channels (46), central collecting channel (47), concentrating channel and collector abutted at the front (48) anddd) at the uaf upper part there are three collecting channels, two at the larger part ends of the reactor (46) and one at the center (47), each has a depth of 15 cm and has straight over-dimensioned walls carrying the treated water to a fourth general collecting channel located at an edge of the uaf (48) front channel treated water discharge (49), which is directed to the concentrating/distributing box (49b) and then to the sixth stage lids for maintenance and checking for the side channels (50), biogas discharge and venting in order to avoid the damaging of the uaf slab (51). 8. the star of claim 1, wherein stage 6 comprises an aerobic biological treatment consisting of a system of at least a subsurface constructed wetland, where from two wetlands, these are connected with a length-wide ratio from 1:2 to 2:2 and are characterized by being delimited concrete reservoirs (61), covered from the bottom and up to the outer upper walls by an impermeable geo-membrane (78) thermally sealed and fixed to the walls with aluminum strip (79) thereby preventing the leakage to the underground, they are fed with the flow coming from the uaf through the concentration/distribution box (49b), and where each one of these reservoirs also comprises: a) intake pipe (63) and wetland inlet pipe (63b), bidirectional wetland inlet pipe in order to achieve a uniform flow of the water under treatment (64), connecting pipe (65) and bidirectional pipe (66) at each part, these three pipes 64, 65 and 66 are flow distributors and allow these to be made as a piston-type homogeneous flow,b) one or more independent pipes operating as air injectors in order to increase the volume of oxygen in the wetlands when the organic loads are high, with solar-powered equipment (67),c) a gravel strata at the wetland base is formed with a 0.70 to 0.75 cm height, forming a rounded coarse river gravel zone or volcanic rock of 4 to 5? (68), and a rounded river gravel zone or volcanic rock of 2 to 3? (69),d) plant material is placed over this strata, tule-type plants (70), water level (71), 10 cm of 1? rounded river gravel layer in order to avoid the heating of the wetland water and to avoid bad odors (72), ande) a perforated tube to collect the effluent and running lengthwise (73), this pipe projects (73b) towards the collecting box (74) and determines the water level in the wetlands, at the lower part and before the elbow special pvc pieces are placed to allow the pipe rotatable movement (73b) thus promoting the plant rhizome growing (70), treated water collecting pipe and it is used as discharge to the chlorine contact box (75), at the same collecting pipe (73) other system to inject pre (Results 11)

1) Family number: 9111021 (US5091315A)

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Title: BIOCONVERSION REACTOR

Abstract: A bioconversion reactor for the anaerobic fermentation of organic material. The bioconversion reactor comprises a shell enclosing a predetermined volume, an inlet port through which a liquid stream containing organic materials enters the shell, and an outlet port through which the stream exits the shell. A series of vertical and spaced-apart baffles are positioned within the shell to force the stream to flow under and over them as it passes from the inlet to the outlet port. The baffles present a barrier to the microorganisms within the shell causing them to rise and fall within the reactor but to move horizontally at a very slow rate. Treatment detention times of one day or less are possible.

Classifications:

International (IPC 8-9): C02F3/00 C02F3/28 C12M1/00 C12M1/107 C12M1/40 (Advanced/Invention);

C02F3/00 C12M1/00 C12M1/40 (Advanced/Non-invention);

C02F3/00 C02F3/28 C12M1/00 C12M1/107 C12M1/40 (Core/Invention)

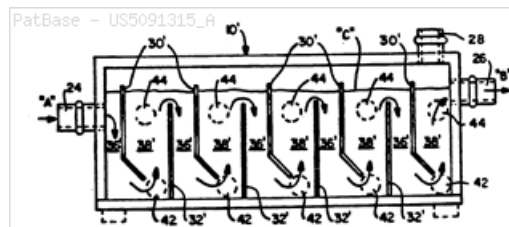
International (IPC 1-7): C02F3/00 C02F3/28 C12M1/00 C12M1/40

CPC: Y10S435/801 C02F3/284 Y02W10/37 C12M21/04 C02F3/28

C02F3/2806 C12M23/34 C12M27/20 Y02E50/343

European: C02F3/28 C02F3/28C C12M21/04 C12M23/34 C12M27/20

US: 210/320 261/123 435/287 435/290.1 435/801



Family:

Publication number	Publication date	Application number	Application date
AU198544435 A1	19870108	AU19850044435	19850628
AU589898 B2	19891026	AU19850044435	19850628
CA1294070 A1	19920107	CA19860500942	19860203
DE3686107 D1	19920827	DE19863686107	19860528
DE3686107 T2	19930304	DE19863686107T	19860528
EP0213691 A2	19870311	EP19860304054	19860528
EP0213691 A3	19880608	EP19860304054	19860528
EP0213691 B1	19920722	EP19860304054	19860528
JP1971981 C3	19950927	JP19850169636	19850731
JP62032876 A2	19870212	JP19850169636	19850731
JP7000030 B4	19950111	JP19850169636	19850731
US5091315 A	19920225	US19890366250	19890613

Priority:

AU19850044435 19850628 JP19850169636 19850731 US19850771972 19850903
CA19860500942 19860203 US19890366250 19890613

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Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; SMART AND BIGGAR

Designated states: DE FR GB

2) Family number: 11705457 (US5951866A)

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Title: COLD CLIMATE WETLAND WASTE WATER TREATMENT SYSTEM

Abstract: A wetland bioreactor treatment cell for use in a waste water treatment process for reducing stated water quality indicators of the waste water is provided. The wetland bioreactor treatment cell comprises a vegetated containment area containing porous media for receiving an influent comprising water and organic waste material with the containment area having a front end and a rear end. A manifold distributor structure for receiving and distributing the influent into the containment area is provided with the manifold distributor structure being positioned entirely within the front end of the containment area and the manifold distributor structure having a port for allowing cleaning or maintenance of the manifold distributor structure. A hydraulic upflow structure is positioned nearingly adjacent and downstream from the manifold distributor structure with the hydraulic upflow structure maintaining a substantial amount of suspended solids in the front end of the containment area. At least one small hydraulic upflow structure is positioned between the manifold distributor structure and the rear end of the containment area. A hydraulic level control structure is positioned entirely within the rear end of the containment area.

Classifications:

International (IPC 8-9): C02F3/32 (Advanced/Invention);

C02F1/28 C02F3/30 (Advanced/Non-invention);

C02F3/32 (Core/Invention);

C02F1/28 C02F3/30 (Core/Non-invention)

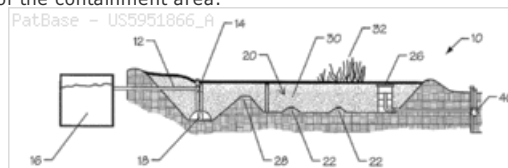
International (IPC 1-7): C02F3/30

CPC: Y10S210/908 C02F3/327 C02F1/28 C02F3/30 C02F2209/42

Y02W10/18 Y02W10/37

European: C02F3/32B M02F1/28 M02F209/42 M02F3/30

US: 210/170 210/170.08 210/283 210/602 210/630 210/747 210/747.1 210/908



Family:

Publication number	Publication date	Application number	Application date
US5951866 A	19990914	US19980054791	19980403

Priority:

US19960688851 19960731 US19980054791 19980403

Probable Assignee: ALDRICH JOHN

Assignee(s): ALDRICH JOHN ; GROVE JOHN E

Inventor(s): (std): ALDRICH JOHN ; GROVE JOHN E

3) Family number: 16059381 (US2003159988A)

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Title: METHOD AND APPARATUS FOR TREATING WASTEWATER USING MEMBRANE FILTERS

Abstract: An apparatus using activated sludge for the removal of biological nutrients from a wastewater includes a bioreactor for containing a mixture of wastewater under treatment and activated sludge. The bioreactor is divided into a plurality of serially connected treatment zones and includes a wastewater inlet, a downstream aerobic zone and an upstream aerobic zone between the wastewater inlet and the downstream aerobic zone, the upstream and downstream aerobic zones being separated by an anoxic zone. A membrane filter is provided in the downstream aerobic zone so that it functions as an immersed membrane filter with a bioreactor containing an operative volume of wastewater and activated sludge. The immersed membrane filter filters treated water flowing from the bioreactor through a first outlet. An aerator is operative associated with the membrane filter for purging solids from the membrane filter. A second outlet in the downstream aerobic zone is connected to an inlet in the upstream aerobic zone for recycling activated sludge charged with oxygen from the downstream aerobic zone to the upstream aerobic zone. A method for removal of nutrients from a wastewater includes providing a wastewater to an inlet of a serial, multi-zone, activated sludge bioreactor containing an activated sludge. The bioreactor has a downstream aerobic zone from which water is removed and an upstream aerobic zone between the wastewater inlet and the downstream aerobic zone, the upstream and downstream aerobic zones being separated by an anoxic zone. Treated water is filtered from the activated sludge in the downstream aerobic zone through an immersed membrane filter. Solids are purged from the immersed membrane filter with an oxygen containing gas and return activated sludge charged with oxygen is recycled from the downstream to the upstream aerobic zone or to an upstream deaeration zone.

Classifications:

International (IPC 8-9): C02F3/00 C02F3/12

C02F3/30 (Advanced/Invention);

C02F1/28 (Advanced/Non-invention);

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

C02F1/28 (Core/Non-invention)

International (IPC 1-7): C02F3/00 C02F3/12 C02F3/30

CPC: Y02W10/15 C02F3/30 C02F1/283 C02F3/006 C02F3/12 C02F3/121

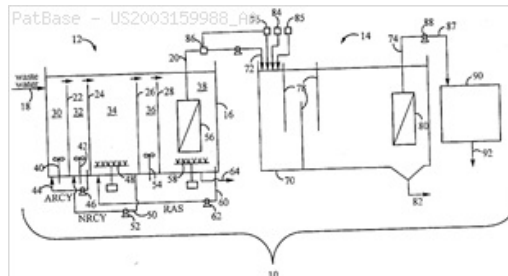
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European: C02F3/00R C02F3/12A2 C02F3/12A8 C02F3/12N9B C02F3/30

C02F3/30F C02F9/00 M02F1/28D M02F209/22 M02F3/12

US: 210/195.2 210/196 210/198.1 210/220 210/605 210/616 210/626

210/694 210/739 210/797



Family:

Publication number	Publication date	Application number	Application date
AT417809 E	20090115	AT20010959182T	20010726
AU2001280766 AA	20020213	AU20010280766	20010726
AU2001280766 BB	20050721	AU20010280766	20010726
AU200180766 A1	20020213	AU20010080766	20010726
AU200180766 A5	20020213	AU20010080766	20010726
CN1232450 C	20051221	CN20018014775	20010726
CN1449363 A	20031015	CN20018014775	20010726
DE60137054 D1	20090129	DE20016037054	20010726
EP1313669 A1	20030528	EP20010959182	20010726
EP1313669 A4	20050713	EP20010959182	20010726
EP1313669 B1	20081217	EP20010959182	20010726
HK1057532 A1	20060407	HK20040100317	20040115
US2003159988 AA	20030828	US20030365567	20030211
US6517723 BA	20030211	US20000626879	20000727
US6863818 BB	20050308	US20030365567	20030211
WO0210077 A1	20020207	WO2001US23405	20010726

Priority:

US20000626879 20000727 WO2001US23405 20010726 US20030365567 20030211

Probable Assignee: CH2M HILL INC

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Assignee(s): CH2M HILL ENGINEERS INC ; CH2M HILL INC 6060 SOUTH WILLOW DRIVEDE NV ; WELLS FARGO BANK NATIONAL ASSOCIATION ; WILMINGTON TRUST NATIONAL ASSOCIATION SECURED NOTES COLLATERAL AGENT AS

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Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; PRINS ADRIANUS WILLEM ET AL; SWANSON AND BRATSCHUN LLC

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 PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

4) Family number: 29982578 (US6447682B)

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Title: PROCESS AND SYSTEM FOR ENHANCED NITROGEN REMOVAL IN A WETLAND WASTEWATER TREATMENT FACILITY

Abstract: A process and system for enhanced nitrogen removal in a wetlands wastewater treatment facility is disclosed. Air is bubbled into the wetland to form an overall aerobic zone to enhance nitrification of the ammonia in the wastewater. A portion of the effluent is recycled back to the nutrient rich, anaerobic zone of the inlet of the wetland to enhance denitrification of the wastewater.

Classifications:

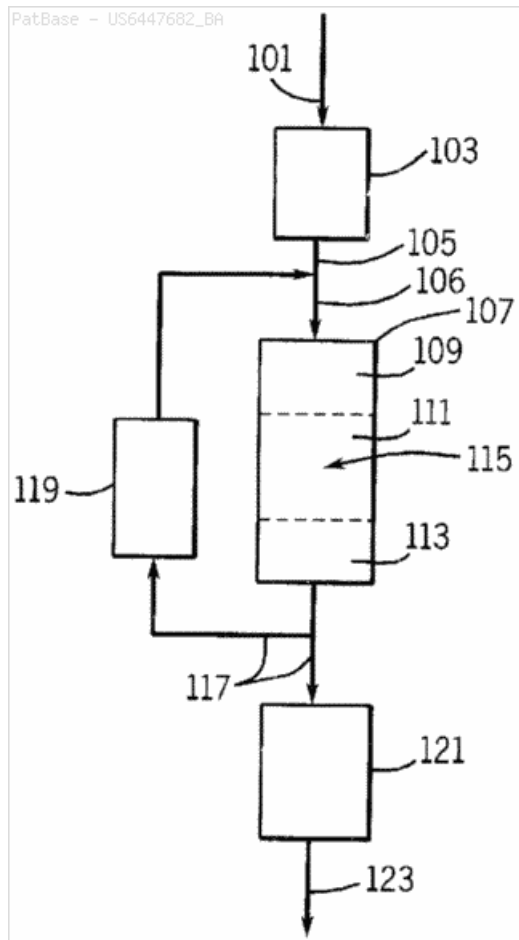
International (IPC 8-9): C02F3/30 C02F3/32 (Advanced/Invention);
C02F3/30 C02F3/32 (Core/Invention)

International (IPC 1-7): C02F3/32 C02F7/00

CPC: Y10S210/903 Y10S210/908 Y10S210/906 C02F3/327 C02F3/302
C02F2201/009 Y02W10/18 Y02W10/37 Y02A20/212

European: C02F3/30D C02F3/32B M02F201/00I M02F201/00P

US: 210/170 210/170.01 210/170.09 210/194 210/199 210/602 210/605
210/747 210/747.1 210/747.9 210/805 210/903 210/906 210/908



Family:

Publication number	Publication date	Application number	Application date
US6447682 BA	20020910	US20010681978	20010703
US6558555 BA	20030506	US20020683514	20020111

Priority:

US20010681978 20010703 US20020683514 20020111

Probable Assignee: FLOWERS DAVID A

Assignee(s): FLOWERS DAVID A

Inventor(s): (std): FLOWERS DAVID A

5) Family number: 32670790 (MXPA01001811A)

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Title: WETLANDS SYSTEM (UNDERGROUND FLOW ARTIFICIAL SWAMPS).

Abstract: THE PRESENT INVENTION REFERS TO A WASTE WATER TREATMENT BY AN ANAEROBIC PROCESS, WHICH USES FIVE MAIN ELEMENTS FOR OBTAINING AN EFFICIENCY OF FROM ABOUT 90 PERCENT IN DBO AND SST IN THE TREATMENT OF WATER. THE PURPOSE OF THE INVENTION IS TO PROVIDE THE TREATMENT OF MUNICIPAL AND HOUSEHOLD WASTE WATERS WITH AN ALTERNATIVE PROCESS BY MEANS OF USING THE FOLLOWING ELEMENTS: A PRE-TREATMENT, AN ANAEROBIC BIODIGESTER, AN ANAEROBIC FILTER OF UPWARD FLOW, WETLANDS (UNDERGROUND FLOW ARTIFICIAL SWAMPS) AND DRYING BEDS, THEREBY REDUCING OPERATION AND MAINTENANCE COSTS. THE INVENTION FURTHER COMPRISES THE POSSIBILITY OF BEING MANUFACTURED IN STAGES OR MODULES FOR FUTURE APPLICATIONS.

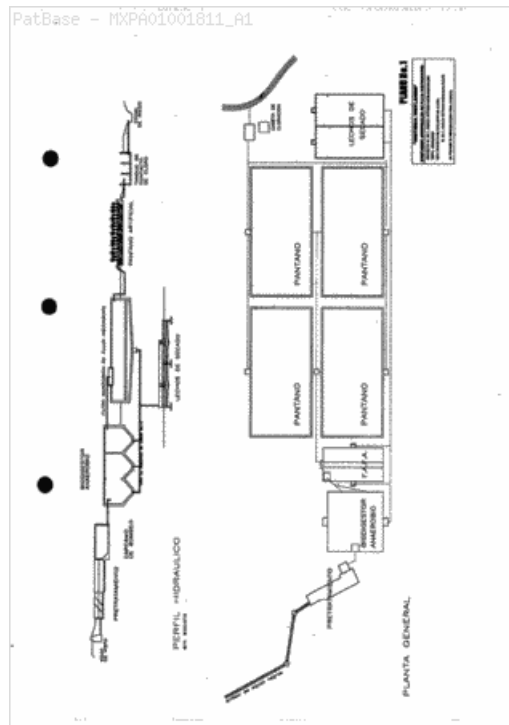
Classifications:

International (IPC 8-9): C02F3/28 C02F9/14 (Advanced/Invention);

C02F3/28 C02F9/14 (Core/Invention)

International (IPC 1-7): C02F3/28 C02F9/14

CPC: Y02W10/12



Family:

Publication number	Publication date	Application number	Application date
■ MXP01001811 A1	20050428	MX2001PA01811	20010215

Priority:

MX2001PA01811 20010215

Probable Assignee:	MARCO ANTONIO CASTELLANOS ROLD
Assignee(s): (std):	MARCO ANTONIO CASTELLANOS ROLD
Assignee(s):	MARCO ANTONIO CASTELLANOS ROLDAN
Inventor(s): (std):	MARCO ANTONIO CASTELLANOS ROLD
Inventor(s):	MARCO ANTONIO CASTELLANOS ROLDAN

6) Family number: 32867516 (US2006086662A)

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Title: WASTE TREATMENT SYSTEMS

Abstract: Waste treatment systems and methods of using them to treat septage, domestic sludge or both are disclosed. Certain examples provided herein relate to waste treatment systems that include a plurality of stages, such as, for example, a plurality of ecosystems, configured to treat domestic sludge, septage or both.

Classifications:

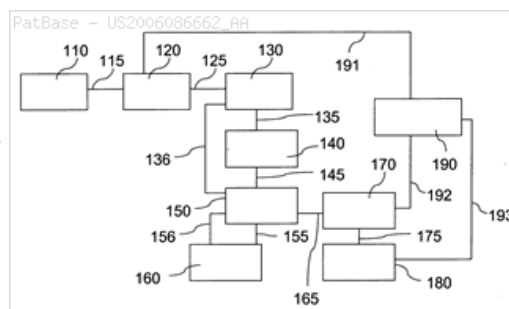
International (IPC 8-9): C02F3/00 C02F3/02 C02F3/12
C02F3/32 (Advanced/Invention);
C02F3/00 C02F3/02 C02F3/12 C02F3/32 (Core/Invention)

International (IPC 1-7): C02F3/02

CPC: Y02E50/343 C02F3/32 C02F3/327 C02F3/34 C02F11/02 C02F11/04
C05F7/00 C05F17/0018 C05F17/0027 Y02W10/18 Y02W10/27 Y02W10/37
Y02W30/43 Y02W30/47 Y02P20/145 Y02A40/213

European: C02F3/32 C02F3/32B C02F3/34 C05F17/00D C05F17/00F
C05F7/00 M02F11/02 M02F11/04

US: 210/150 210/151 210/195.1 210/195.100 210/202 210/220 210/602
210/620 210/622 210/623 210/624 210/626 210/627 210/628 210/631



Family:

Publication number	Publication date	Application number	Application date
■ CN101087733 A	20071212	CN200580044271	20051021
■ EP1812350 A2	20070801	EP20050815367	20051021
■ EP1812350 A4	20110622	EP20050815367	20051021
■ IN02198CN2007 A	20070907	IN2007CN02198	20070522
■ US2006086662 AA	20060427	US20040972285	20041022
■ US2008156725 AA	20080703	US20070958060	20071217
■ US7361268 BB	20080422	US20040972285	20041022
■ US7790032 BB	20100907	US20070958060	20071217
■ WO06047225 A2	20060504	WO2005US37769	20051021
■ WO06047225 A3	20070518	WO2005US37769	20051021

Priority:

US20040972285 20041022 WO2005US37769 20051021 US20070958060 20071217

Probable Assignee: NATURAL SYSTEMS UTILITIES LLC**Assignee(s):** (std): BIOREGEN SYSTEMS ; BIOREGEN SYSTEMS LLC ; EARTH WORKS INST ; OGDEN MICHAEL H**Assignee(s):** OGDEN MICHAEL ; NATURAL SYSTEMS UTILITIES LLC ; BARCLAY LESLIE ; EARTH WORKS INSTITUTE ; HERITAGE BANK OF COMMERCE**Inventor(s):** (std): OGDEN MICHAEL H**Inventor(s):** OGDEN MICHAEL**Agent(s):** LOWRIE LANDO AND ANASTASI; LOWRIE LANDO AND ANASTASI LLP; LANDO AND ANASTASI 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 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**7) Family number: 42782362 (CN101318756A)**

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Title: TRIDIMENSIONAL OLIGODYNAMIC WASTEWATER TREATMENT FACILITIES

Abstract: The invention relates to a stereoscopic micropower sewage treatment facility. The facility comprises a rising countercurrent anaerobic filter chamber, a garden wetland, a lift pump (13) and a pipeline (14). The invention is characterized in that: a working surface of the rising countercurrent anaerobic filter chamber is lower than the ground; the garden wetland is arranged on the upper part of the rising countercurrent anaerobic filter chamber; the rising countercurrent anaerobic filter chamber and the garden wetland are overlapped up and down to form a stereotype structure; and a water outlet of the rising countercurrent anaerobic filter chamber is connected with a water distributing pipe (16) of the garden wetland by the pipeline (14) and the lift pump (13). The facility has the following advantages that: (1) the facility has a small occupied area and does not occupy a ground surface area as the rising countercurrent anaerobic filter chamber is embedded into the ground; and (2) the ground surface corresponding to the rising countercurrent anaerobic filter chamber is the garden wetland; and vegetables are grown on the wetland and can further absorb and process harmful substances in sewage water and beautify the ground surface environment corresponding to sewage treatment equipment.

Classifications:**International (IPC 8-9):** C02F3/28 C02F3/32

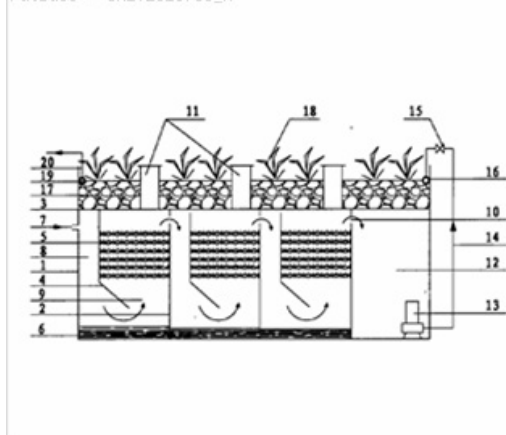
C02F9/14 (Advanced/Invention);

C02F3/28 C02F3/32 (Advanced/Non-invention);

C02F3/28 C02F3/32 C02F9/14 (Core/Invention)

CPC: Y02W10/12 Y02W10/18

PatBase - CN101318756_A

**Family:**

Publication number	Publication date	Application number	Application date
 CN101318756 A	20081210	CN200810031460	20080607

Priority:

CN200810031460 20080607

Probable Assignee: HUNAN HONGDA ENVIRONMENTAL PRO**Assignee(s):** (std): HUNAN HONGDA ENVIRONMENTAL PRO**Assignee(s):** HUNAN HONGDA ENVIRONMENTAL PROTECTION EQUIPMENT MANUFACTURING CO ; HUNAN HONGDA ENVIRONMENTAL PROTECTION EQUIPMENT MFG CO**Inventor(s):** (std): CHUANYI PENG**Inventor(s):** PENG CHUANYI**8) Family number: 49180836 (US2012006745A)**

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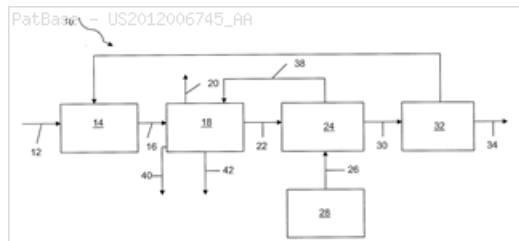
Title: METHODS AND SYSTEMS FOR PRODUCING GRANULES OF BIOMASS IN THE TREATMENT OF WASTEWATER

Abstract: Methods and systems for the production of granules of biomass in the treatment of wastewater. Organic matter is removed from wastewater in an anaerobic zone and then in an aerobic zone. Waste activated sludge is transferred from the aerobic zone to the anaerobic zone and is used in the formation of granulated biomass in the anaerobic zone. Excess granulated biomass may be removed from the anaerobic zone.

Classifications:**International (IPC 8-9):** C02F101/30 C02F103/34 C02F3/12 C02F3/28

C02F3/30 (Advanced/Invention);

C02F101/30 C02F103/34 (Advanced/Non-invention);
C02F101/30 C02F103/34 C02F3/12 C02F3/30 (Core/Non-invention)
CPC: Y02W10/30 C02F3/282 C02F3/12 C02F3/2846 C02F2101/345
C02F2103/36 C02F2103/365 C02F2203/002 C02F2303/10 Y02W10/15
European: C02F3/12 C02F3/28H C02F3/28N M02F101/34P M02F103/36
M02F103/36P M02F203/00A M02F303/10
US: 210/195.3 210/195.300S 210/605



Family:

Publication number	Publication date	Application number	Application date
■ CN102695680 A	20120926	CN201080060306	20101230
■ CN102695680 B	20150722	CN201080060306	20101230
■ IN06029DN2012 A	20131206	IN2012DN06029	20120705
■ TW201130750 A	20110916	TW20100146891	20101230
■ TWI519488 B	20160201	TW20100146891	20101230
■ US2012006745 AA	20120112	US20100982244	20101230
■ WO11082329 A1	20110707	WO2010US62545	20101230

Priority:

US20090291147P 20091230 US20100982244 20101230 WO2010US62545 20101230

Probable Assignee: BP PLC

Assignee(s): (std): BP CORP NORTH AMERICA INC ; KALEY SCOTT ; SCHMIT CAROLYN ; URGUN DEMIRTAS MELTEM

Assignee(s): BP NORTH AMERICA INC CORP ; BP PLC

Inventor(s): (std): CAROLYN SCHMIT ; KALEY SCOTT ; MELTEM URGUN DEMIRTAS ; SCHMIT CAROLYN ; SCOTT KALEY ; URGUN DEMIRTAS MELTEM

Inventor(s): URGUN-DEMIRTAS, MELTEM

Agent(s): CARPENTER ROBERT

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 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

9) Family number: 51537285 (ES2385002A)

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Title: REACTOR BIOLOGICO DE MEMBRANAS DE TRES ETAPAS, METANOGENICA, AEROBIA Y DE FILTRACION, PARA LA DEPURACION DE AGUAS RESIDUALES. MEMBRANE BIOLOGICAL REACTOR FOR THREE STAGES, methanogenic, FILTER AEROBIC AND, FOR WASTEWATER PURIFICATION. (Machine translation)

Abstract: Source: ES2385002A [ES] Reactor biologico de membranas de tres etapas, metanogenica, aerobia y de filtracion, y procedimiento para la depuracion de aguas residuales urbanas o industriales. El reactor consta de tres camaras, una camara anaerobia metanogenica (1), una camara aerobia (2) y una camara de filtracion (3). En la camara anaerobia (1) se promueve la eliminacion de la materia organica presente en el agua residual, usando biomasa anaerobia, generandose un biogas con alto contenido en metano. En la camara aerobia (2) se mantiene un soporte de particulas plasticas, con una biopelícula de microorganismos aerobios para eliminar la materia organica remanente en el agua. El reactor incorpora una camara de filtracion (3) con modulos de microfiltracion o ultrafiltracion de membranas sumergidas con los que se obtiene un agua depurada, libre de solidos en suspension y microorganismos. El reactor se caracteriza por una baja generacion de fango y consumo de energia.

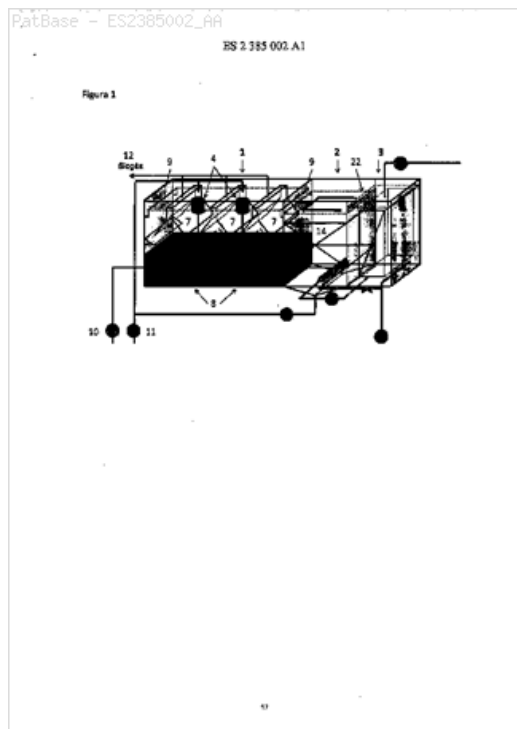
Machine translation: Membrane bioreactor three stages, methanogenic, aerobic and filtration, and process for the purification of urban and industrial wastewater. The reactor has three cameras, a methanogenic anaerobic (1), an aerobic chamber (2) and a filtration chamber (3). In the anaerobic chamber (1) promotes the removal of organic matter present in wastewater using anaerobic biomass, generating a biogas with high methane content. In the aerobic chamber (2) is maintained bracket plastic particles, with a biofilm of aerobic microorganisms to remove the remaining organic matter in the water. The reactor incorporates a filtration chamber (3) with microfiltration or ultrafiltration modules submerged membrane with which you get a purified water, free of suspended solids and microorganisms. The reactor is characterized by a low sludge generation and energy consumption.

Classifications:

International (IPC 8-9): C02F3/08 C02F3/30

C02F9/02 (Advanced/Invention)

CPC: C02F3/08 C02F3/30 C02F9/00 Y02W10/15



Family:

Publication number	Publication date	Application number	Application date
ES2385002 AA	20120717	ES20090001615	20090721
ES2385002 BB	20130419	ES20090001615	20090721

Priority:

ES20090001615 20090721

Probable Assignee: UNIV SANTIAGO COMPOSTELA

Assignee(s): (std): UNIV SANTIAGO COMPOSTELA

Assignee(s): UNIVERSIDADE DE SANTIAGO DE COMPOSTELA

Inventor(s): (std): BUNTNER DAGMARA ; GARRIDO FERNANDEZ JUAN MANUEL ; LEMA RODICIO JUAN MANUEL

Inventor(s): JUAN MANUEL GARRIDO FERNANDEZ ; JUAN MANUEL LEMA RODICIO ; DAGMARA BUNTNER

10) Family number: 53528924 (US2015368131A)

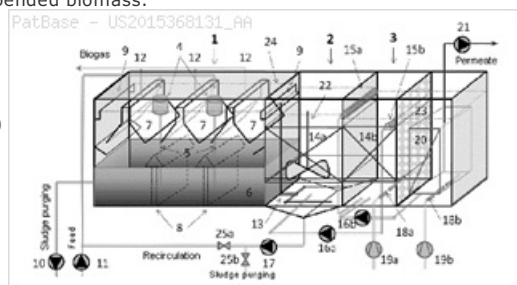
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Title: INTEGRATED SYSTEM OF A METHANOGENIC ANAEROBIC REACTOR AND MEMBRANE BIOREACTOR FOR THE ELIMINATION OF ORGANIC MATERIAL AND NITROGEN FROM WASTEWATER

Abstract: Integrated methanogenic anaerobic reactor and membrane bioreactor, and method for eliminating organic matter and nitrogen in urban or industrial wastewater, preferably with COD concentrations between 150 and 5000 mg/L and where the eliminations of total nitrogen that occur are between 15 and 50 mg/L, at temperatures above 15 degrees centigrade The wastewater treatment takes place thanks to three stages of treatment: methanogenic anaerobic stage, anoxic stage with biofilms and suspended biomass and aerobic filtration stage with biofilms and suspended biomass.

Classifications:

International (IPC 8-9): C02F103/00 C02F3/08 C02F3/10 C02F3/12 C02F3/28 C02F3/30 C02F9/02 C12M1/00 C12M1/06 (Advanced/Invention); C02F101/16 C02F103/00 C02F3/08 (Advanced/Non-invention)
CPC: C02F3/301 C12M29/04 C12M29/00 C12M23/38 C12M27/02 C12M29/18 C02F3/305 C02F2203/006 C02F2101/16 C02F3/085 C02F3/10 C02F3/1273 C02F3/2806 C02F3/2846 C02F3/286 C02F3/302 C02F2209/08 C02F2209/16 Y02W10/15 Y02E50/343
US: 210/251 210/264 210/605



Family:

Publication number	Publication date	Application number	Application date
BR112015018299 A2	20170718	BR20151118299	20140130
CL2015002128 A1	20160401	CL20150002128	20150729
EP2952483 A1	20151209	EP20140745956	20140130
EP2952483 A4	20160803	EP20140745956	20140130
ES2401445 AA	20130419	ES20130030118	20130201
ES2401445 BB	20140120	ES20130030118	20130201
MX2015009836 A1	20160222	MX20150009836	20140130

PE15502015 A1	20151110	PE20150001575	20140130
US2015368131 AA	20151224	US20140765055	20140130
US9725345 BB	20170808	US20140765055	20140130
WO14118416 A1	20140807	WO2014ES70067	20140130

Priority:

ES20130030118 20130201 WO2014ES70067 20140130

Probable Assignee: UNIV SANTIAGO COMPOSTELA

Assignee(s): (std): UNIV SANTIAGO COMPOSTELA

Assignee(s): UNIVERSIDAD DE SANTIAGO DE COMPOSTELA ; UNIVERSIDADE DE SANTIAGO DE COMPOSTELA

Inventor(s): (std): ALBERTO SANCHEZ SANCHEZ ; DAGMARA BUNTNER ; FERNANDEZ JUAN MANUEL GARRIDO ; JUAN MANUEL GARRIDO FERNANDEZ ; JUAN MANUEL LEMA RODICIO ; RODICIO JUAN MANUEL LEMA ; SANCHEZ ALBERTO SANCHEZ ; SANCHEZ SANCHEZ ALBERTO ; LEMA RODICIO JUAN MANUEL ; GARRIDO FERNANDEZ JUAN MANUEL ; BUNTNER DAGMARA

Agent(s): BEUCHAT BARROS Y PFENNIGER; SUGRANES PATENTES Y MARCAS; SUGHRUE MION PLLC

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

11) Family number: 57311427 (US2016207808A)

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Title: SYSTEM AND MULTI-FUNCTIONAL METHOD FOR TREATING WASTEWATER

Abstract: The invention relates to a municipal wastewater treatment system (STAR) for forming a wastewater treatment plant (PTAR), characterized by the functional and structural relationship between the components thereof. The invention comprises seven treatment stages in the STAR and the arrangement thereof, including: an intake regulator box having a discharge outlet; a pretreatment stage consisting of solid separation screens and grit channels; and anaerobic biodigester; an up-flow anaerobic filter; drying beds; subsurface flow constructed wetlands; and a chlorine contact channel. The STAR and PTAR according to the invention are suitable for use in a single home, as well as for use by communities of approximately 5,000 (thousand) inhabitants, and their capacity can be increased to the extent that new elements are provided at each of the different steps, simply by adding and adapting modules, without having to replace the already operating elements.

Classifications:

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

C02F9/00 (Advanced/Invention);

C02F1/10 C02F1/32 C02F1/76 C02F101/16 C02F11/16 C02F3/28

C02F3/32 (Advanced/Non-invention)

CPC: C02F2001/007 C02F2101/105 C02F2101/16 C02F3/30 C02F1/32

Y02W10/37 C02F1/004 C02F1/76 C02F3/2826 C02F3/327 C02F9/00

C02F11/16 C02F2203/002 C02F2303/04 C02F2303/24 Y02W10/18

US: 210/188



Family:

Publication number	Publication date	Application number	Application date
CL2015001991 A1	20151211	CL20150001991	20150715
CO16046704 A2	20160909	CO20160046704	20160224
EP3042879 A1	20160713	EP20140841824	20140717
EP3042879 A4	20170125	EP20140841824	20140717
IN201617006044 A	20160805	IN201617006044	20160222
MX2013010211 A1	20140604	MX20130010211	20130906
PE04672016 A1	20160530	PE20160000295	20140717
SV2016005164 A	20161109	SV20160005164	20160226
US2016207808 AA	20160721	US20140916601	20140717
WO15034338 A1	20150312	WO2014MX00110	20140717

Priority:

MX20130010211 20130906 WO2014MX00110 20140717

Probable Assignee: MARCO ANTONIO CASTELLANOS ROLDAN

Assignee(s): (std): CASTELLANO ROLDAN MARCO ANTONIO ; CASTELLANOS ROLDAN MARCO ANTONIO ; ROLDAN MARCO ANTONIO CASTELLANOS

Assignee(s): MARCO ANTONIO CASTELLANOS ROLDAN

Inventor(s): (std): CASTELLANO ROLDAN MARCO ANTONIO ; CASTELLANOS ROLDAN MARCO ANTONIO ; ROLDAN MARCO ANTONIO CASTELLANOS

Inventor(s): MARCO ANTONIO CASTELLANOS ROLDAN

Agent(s): GALLARDO ROJAS MAURICIO HERNAN; JOSE ANDRES RINCON USCATEGUI; AWAPATENT AB

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