CLAIMS

1. A compact system for treating a stream of wastewater, the system comprising:

a hybrid wastewater treatment unit, the treatment unit comprising:

a first tank for receiving an inflow of the wastewater stream, the first tank comprising:

a first chamber having a moving bed biofilm reactor (MBBR), the MBBR comprising a biological carrier media having an active surface area greater than 4000 m^2/m^3 for biological microorganisms in the wastewater stream to attach, grow, and carry out a biological process for substantially reducing organic matter and total suspended solids (TSS) in the wastewater stream;

an electrolytic cell for generating an electrochlorinated/electrochemical disinfectant, the electrolytic cell comprising:

a housing comprising a slidable cover;

a second tank in fluid communication with the first tank, the second tank comprising:

a first chamber; and

a recirculation line communicating between the electrolytic cell and the first chamber of the second tank for continually recirculating a stream of the electrochlorinated/electrochemical disinfectant.

2. The system according to claim 1, wherein the wastewater treatment unit is in fluid communication with a wastewater storage tank.

3. The system according to claim 1, wherein the first chamber of the first tank further comprises an actuated sludge discharge valve for draining waste sludge produced during the biological process, wherein the waste sludge includes dead microorganisms.

4. The system according to claim 3, wherein the sludge is piped to a sludge storage tank or to a sludge processor.

5. The system according to claim 1, wherein the first tank includes a second chamber, and wherein the first tank further comprises a pipe configured to transport a process flow from the first chamber of the first tank to a base of the second chamber of the first tank to settle the TSS therein.

6. The system according to claim 5, wherein the second chamber of the first tank is fitted with a baffle plate for diverting a process stream comprising a substantially clarified effluent to the first chamber of the second tank.

7. The system according to claim 1, wherein the second tank includes a second chamber, and wherein the second tank further comprises a pipe configured to transport a process flow from the first chamber of the second tank to an upper surface of the second chamber of the second tank.

8. The system according to claim 7, wherein a filtration unit is installed within a mouth/opening to the second chamber of the second tank.

9. The system according to claim 8, wherein the filtration unit comprises a basket-like structure.

10. The system according to claim 9, wherein a filtration media is placed inside the basket-like structure.

11. The system according to claim 8, wherein the filtration unit further comprises a washable filter screen having a predetermined pore size, wherein the pore size is configured to entrap residual TSS in the process flow from the first chamber of the second tank to provide a substantially filtered water for discharge.

12. The system according to claim 7, wherein the second chamber of the second tank comprises a level transmitter to monitor the inflow of the wastewater stream, and wherein the level transmitter is configured to commence and/or stop a treatment cycle.

13. The system according to claim 1, wherein the housing comprises one or more integral locking grooves/slides configured to align the cover with the housing.

14. The system according to claim 1, wherein the housing comprises one or more stoppers for securing the cover substantially proximal to a base of the housing.

15. The system according to claim 1, wherein the housing comprises one or more closures to seal the cover to an outer body of the electrolytic cell.

16. The system according to claim 1, wherein the housing comprises a compartment for enclosing a plurality of electrodes.

17. The system according to claim 16, wherein the plurality of electrodes includes one bipolar electrode and two terminal electrodes.

18. The system according to claim 11, further comprising a tank for storing a dechlorination/neutralization solution, and wherein an injection pump is configured to inject the dechlorination solution into the filtered water prior to discharge.

19. A process for treating a stream of wastewater, comprising:

(A) providing a hybrid wastewater treatment unit, the treatment unit having:

a first tank for receiving an inflow of the wastewater stream, the first tank comprising: a first chamber having a MBBR, the MBBR comprising a biological carrier media having an active surface area greater than 4000 m^2/m^3 for biological microorganisms in the wastewater stream to attach and carry out a biological process for substantially reducing organic matter and suspended TSS in the wastewater stream; and

an electrolytic cell for generating an electrochlorinated/electrochemically generated sodium hypochlorite/disinfectant, the electrolytic cell comprising:

a housing comprising a slidable cover;

a second tank in fluid communication with the first tank;

(B) continually re-generating the electrochlorinated/electrochemically generated sodium hypochlorite/disinfectant by recirculating the electrochlorinated/electrochemically generated sodium hypochlorite/disinfectant between a first chamber of the second tank and the electrolytic cell via a recirculation line.

20. The process according to claim 19, further comprising monitoring an inflow of the wastewater stream, and wherein a treatment cycle is commenced and/or stopped when a predetermined setpoint is reached in a second chamber of the second tank.

21. The process according to claim 20, further comprising installing a filtration unit within a mouth/opening to the second chamber of the second tank, wherein the filtration unit is configured to entrap residual TSS in a process flow from the first chamber of the second tank to provide a substantially filtered water for discharge.

22. The process according to claim 21, further comprising neutralizing/dechlorinating the filtered water prior to discharge.

23. The process according to claim 19, further comprising diverting a first stream of the generated sodium hypochlorite/disinfectant to clean and disinfect the treatment unit.

24. The process according to claim 23, further comprising diverting a second stream of the generated sodium hypochlorite/disinfectant for disinfecting one or more surfaces.

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25. The process according to claim 19, wherein the electrolytic cell continues generating the sodium hypochlorite/disinfectant and recirculating it for an adjustable time period even when no wastewater stream enters the treatment unit.