

CLAIMS

1. A method and apparatus for treating water or wastewater for drinking and/or industrial use characterized in that wherein the method and apparatus
5 comprises of a plurality of vertically positioned electrodes 2a and 2b which are placed in a treating chamber 3 and wherein the said electrodes are interconnected to one another but the positive and negative electrodes are insulated there-between, and wherein the polarity of the direct current
10 supplied is changeable at regular intervals in order to prevent passivation of the electrodes when reaching an even abrasion, and wherein the current can preferably be of pulsatory, wherein in order to keep the current density between the electrodes at a desired value, the most efficient possible electrolysis is achieved and wherein the space or distance between the electrodes are adjustable.
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2. A method and apparatus as claimed in Claim 1 wherein an electrostatic rod 4 and a plurality of ultraviolet disinfecter lamps 5 could be further included for better coagulation.
- 20 3. A method and apparatus as Claimed in Claim 1 wherein an injector system 6, which sucks air, gas or a liquid coagulant chemical into the reactor room is provided therein.

4. A method and apparatus as claimed in Claim 1 wherein the electrodes 2a and 2b, which are positioned in a treating chamber 3 are separated by a wall 8.
- 5 5. A method and apparatus as claimed in Claim 1 wherein the electrode unit is integrated into a micro flotation system and wherein the flocculated sludge at the outlet 10 is collected in a filter drum and wherein the clear water at the outlet 12 is tested for pH value and is thereafter channeled to a drain.
- 10 6. A method and apparatus as claimed in Claim 1 wherein for increasing the micro flotation process, an air injector for gas is optionally installed at the front portion of the inlet 14.
7. A method and apparatus as claimed in Claim 1 wherein the wastewater
15 goes into a plastic, glass or metal reactor tube 13, in which the electrodes 2a and 2b starts the reaction of flocculation colloid particles and the oxidation of water soluble organic material in the electrochemical cell and wherein the coagulated and oxidated material will thereafter move into the settlement reactor 9 where minerals as well as flocculated colloids 18 sink to the bottom
20 of the settlement reactor 9 and forms a filter bed and wherein, the treated clear water has to go through this filter bed, which can be removed from time to time via an outlet 11.

8. A method and apparatus as claimed in Claims 1 to 7 wherein the positive electrode is composed of several individual electrodes and are designed and selected from any geometrical shapes in cross section and wherein each positive electrode is preferably at least 1 to 20 square
5 centimeters in cross-section size and between 0.30 meters to 3.00 meters in length and wherein the surface of the positive electrodes comprises of a coated layer of titanium or molybdenum or an alloy of both metal or diamante-coated niobium.
- 10 9. A method and apparatus as claimed in Claims 1 to 7 wherein the negative electrode is composed of several individual electrodes and wherein the design and configuration of each negative electrode is similar to the design and configuration of each positive electrode and wherein the characteristics of the negative electrodes or their effective surface are
15 manufactured by using the following composition:
- (i) Metals or metal alloys with at least 80% of aluminum
 - (ii) Metals or metal alloys with at least 80% of magnesium
 - (iii) Metals or metal alloys with at least 80% of total combination of
20 aluminum and magnesium
 - (iv) Conductive carbon in the form of graphite or compacted soot
 - (v) Conductive carbon, which is embedded in plastics
 - (vi) Diamante-coated niobium electrodes
 - (vii) Conductive ceramic or mixtures of ceramic with other materials

10. A method and apparatus as claimed in any of the preceding claims wherein further enhancement would be de-ionizing water or drinking water respectively through traditional ion exchangers or by reverse osmosis
5 methods.
11. A method and apparatus as claimed in any of the preceding claims wherein the combination of the electrodes having different material can be varied to treat water having different properties or composition for a specific
10 water quality.
12. A method and apparatus as claimed in any of the preceding claims wherein some of the electrodes made of specific materials can be powered down to save the power consumption when the target particle present in the
15 source water is removed.
13. A method and apparatus as claimed in any of the preceding claims wherein the method could optionally include pre-treating of water or wastewater in desalination process using reverse osmosis, electro-dialysis or
20 the like.