We claim:

1. An electrolytic water treatment system (100) with automated cathode cleaning mechanism thereof, the electrolytic water treatment system (100) comprising:

an electrolytic reactor (30) having,

a housing (14) having at least one gas vent (8) configured on a housing plate (10) positioned on a top portion thereof, and a detachable bottom portion (12),

a plurality of cathodes (16) placed in shell in shell type arrangement at an inner side of the housing (14) and attached to the bottom portion (12) with the help of a support (20), and

a plurality of anodes (18) arranged in a circular fashion between two shells (16') of the cathode (16) and attached to the bottom portion (12) with the help of a plurality of bottom rings (22) and supported by a ring (24) at a top portion of anodes (18);

a scrapper mechanism for removing the scales deposited on the plurality of cathodes (16), the scrapper mechanism having,

a plurality of triangular shape scrapper blades (32) placed in a gap between the two cathodes shells (16') thereby making a contact with an inner surface (16A) of one shell (16') and an outer surface (16B) of another shell (16'), and

a scrapper top gear plate (36) having holes (34) configured thereon for release of gas produced during an electrolysis process;

a gear mechanism having,

at least one gear motor (42) attached with the scrapper mechanism by means of the scrapper top gear plate (36), and

a gear pinion (44) placed nearly at the center of the inner cathode shell and attached to the gear motor (30) to rotate a movable gear train with the scrapper mechanism;

a water circulation pump (46) for pumping water to the electrolytic reactor (30), wherein water flow passes through an annular space between the shells (16') of the cathodes (16),

an optional pH meter (48) and a total dissolved solids meter (50)

provided at an outlet (4) of the electrolytic reactor (30);

a direct current power source (54) mounted on a skid for supplying direct current to the electrolytic reactor (30) for conducting the electrolysis process therein;

a control panel (52) mounted on the skid for controlling the operations of the electrolytic reactor (30), the water circulation pump (46), the pH meter (48) and the total dissolved solids meter (50),

wherein, rotation of the gear pinion (44) causes rotation of the top gear plate in a clockwise direction or an anticlockwise direction depending on motor rotation that in turn causes rotation of the scrapper arrangement thereby scraping off of the scale deposited on an internal surface (16A) of one shell (16') and an external surface (16B) of another adjacent shell (16') of the cathode (16) thereby ensuring periodic cleaning of the cathode shells (16').

2. The electrolytic water treatment system (100) as claimed in claim 1, wherein the plurality of cathodes (16) is cylindrical in shape and made up of stainless steel.

3. The electrolytic water treatment system (100) as claimed in claim 1, wherein the plurality of anodes (18) is arc shaped mesh type anodes made of titanium metal and has a coating of oxides of precious metal like iridium, ruthenium and titanium thereon.

4. The electrolytic water treatment system (100) as claimed in claim 1, wherein the plurality of triangular shape scrapper blades (32) is attached with the gear mechanism by means of the scrapper top gear plate (36), a scrapper top ring (38) and a plurality of scrapper bottom rings (40).

5. The electrolytic water treatment system (100) as claimed in claim 1, wherein the scrapper top gear plate (36) has a male guide on the top of which moves in a female guide mounted on the housing plate (10) of the electrolytic rector (30).

6. A method for electrolytic water treatment system with automated cathode cleaning mechanism, the method comprising the steps of:

providing an electrolytic reactor (30);

placing a plurality of cathodes (16) in shell in shell type arrangement at an inner side of a housing (14) of the electrolytic reactor (30) and attached to a detachable bottom portion (12) with the help of a support (20);

arranging a plurality of anodes (18) in a circular fashion between two shells (16') of the cathode (16) and attached to the bottom portion (12) with the help of a plurality of bottom rings (22) and supported by a ring (24) at a top portion of anodes (18);

removing scales deposited on the plurality of cathodes (16) by a scrapper mechanism; and

pumping water using a water circulation pump (46) to the electrolytic reactor (30), wherein water flow passes through an annular space between the shells (16') of the cathodes (16).

7. The method as claimed in claim 6, wherein controlling and the operation of the electrolytic reactor (30) and the water circulation pump (46) are performed by a control panel (52).

8. The method as claimed in claim 6, wherein the plurality of cathodes (16) is cylindrical in shape and made up of stainless steel.

9. The method as claimed in claim 6, wherein the plurality of anodes (18) is arc shaped mesh type anodes made of titanium and has a coating of oxides of precious metal like iridium, ruthenium and titanium thereon.