

**MULTI-STAGE DIFFUSION DIALYSIS SYSTEM UTILIZING E.M.F POTENTIAL
DIFFERENCE FOR GENERATING POWER AND THE METHOD THEREOF**

ABSTRACT OF THE DISCLOSURE

A multi-stage diffusion dialysis (MSDD) system for power generation using brine and fresh
5 water is disclosed. The main feature of the MSDD system is utilizing potential difference of
ions in the system and low resistance loss. The MSSD system comprises a series of at least
4 stack tanks, a plurality of chambers within each of the four stack tanks, and a pair of cathode
and anode for each pair of chambers within the stack tank, wherein when there is an excess
of sodium ions in a chamber due to either outward diffusion of Cl^- ions to, or inward diffusion
10 of Na^+ from, neighbouring chambers, the excess sodium ions will gather at the cathode and
attract the electron at the adjacent chamber through the anode and an external circuit.
Similarly, an environment of excess chlorine ions due to either outward diffusion of Na^+ ions
to, or inward diffusion of Cl^- ions from, neighbouring chambers will cause Cl^- to gather at the
anode and release electrons. The result of these two phenomena, the potential difference
15 between Na^+ and Cl^- being tapped to generate an electrical potential, generates an electrical
current. The present invention also discloses a method of power generation using multi-stage
diffusion dialysis.

FIG. 3