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12/570,227 30 September 2009 (30.09.2009) US(71) Applicant (for all designated States except US): **GENERAL ELECTRIC COMPANY** [US/US]; 1 River Road, Schenectady, NY 12345 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **NIU, Ran** [CN/CN]; Global Research, Patent Docket Room, Building K1-4a59, Niskayuna, NY 12309 (US). **YANG, Hai** [CN/CN]; Global Research, Patent Docket Room, Building K1-4a59, Niskayuna, NY 12309 (US). **BARBER, John, H.** [CA/CA]; Global Research, Patent Docket Room, Building K1-4a59, Niskayuna, NY 12309 (US). **HU, Min** [CN/CN]; Global Research, Patent Docket Room, Building K1-4a59, Niskayuna, NY 12309 (US). **XIONG, Rihua** [CN/CN]; Global Research, Patent Docket Room, Building K1-4a59, Niskayuna, NY 12309 (US). **CAI, Wei** [CN/CN]; Global Research, Patent Docket Room, Building K1-4a59, Niskayuna, NY 12309 (US). **GAO, Xin** [CN/CN]; Global Research, Patent Docket Room, Building K1-4a59, Niskayuna, NY 12309 (US). **LIU, Yunfeng** [CN/CN]; Global Research, Patent Docket Room, Building K1-4a59, Niskayuna, NY 12309 (US).(74) Agents: **WINTER, Catherine, J.** et al.; General Electric Company, Global Patent Operation, 2 Corporate Drive, Suite 648, Shelton, CT 06484 (US).

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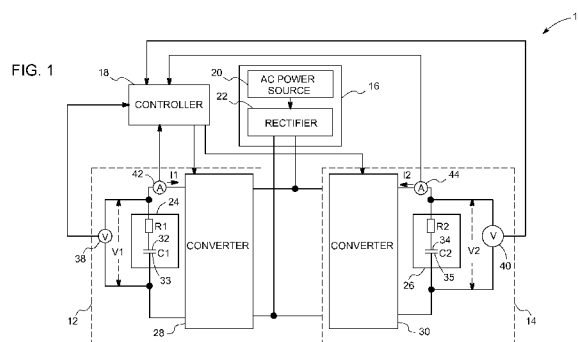
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(54) Title: ELECTROCHEMICAL DESALINATION SYSTEM AND METHOD



(57) **Abstract:** An electrochemical desalination system (10) includes a first and a second electrochemical device (12, 14) and a controller (18). The first and second electrochemical devices (12, 14) each comprises an electrochemical desalination module comprising at least one pair of electrodes (32, 33, 34, 35) and a compartment between each pair of electrodes (32, 33, 34, 35) for receiving an electrolyte solution. Each of the first and second electrochemical desalination devices comprises a plurality of successive operation cycles. Each cycle comprises a charging mode of operation for charging each pair of electrodes (32, 33, 34, 35) and for adsorbing ions in the electrolyte solution on the electrodes, and a discharging mode of operation for discharging the pair of electrodes (32, 33, 34, 35) and for desorbing ions from the pair of electrodes (32, 33, 34, 35). One of the first and second electrochemical desalination devices is in a discharging mode and the at least one pair of electrodes release electrical current, while the other of the first and second electrochemical desalination devices is in a charging mode of operation and receives the electrical current released from said one of the first and second electrochemical desalination device.