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(54) Title: POWER GENERATION SYSTEMS AND METHODS REGARDING SAME

(57) Abstract: A solid fuel power source that provides at least one of thermal and electrical power such as direct electricity or thermal to electricity is further provided that powers a power system comprising (i) at least one reaction cell for the catalysis of atomic hydrogen to form hydrinos, (ii) a chemical fuel mixture comprising at least two components chosen from: a source of H₂O catalyst or H₂O catalyst; a source of atomic hydrogen or atomic hydrogen; reactants to form the source of H₂O catalyst or H₂O catalyst and a source of atomic hydrogen or atomic hydrogen; one or more reactants to initiate the catalysis of atomic hydrogen; and a material to cause the solid fuel to be highly conductive, (iii) at least one set of electrodes that confine the fuel and an electrical power source that provides a short burst of low-voltage, high-current electrical energy to initiate rapid kinetics of the hydrino reaction and an energy gain due to forming hydrinos, (iv) a product recovery systems such as a condenser, (v) a reloading system, (vi) at least one of hydration, thermal, chemical, and electrochemical systems to regenerate the fuel from the reaction products, (vii) a heat sink that accepts the heat from the power-producing reactions, (viii) a power conversion system that may comprise a direct plasma to electric converter such as a plasmadynamic converter, magnetohydrodynamic converter, electromagnetic direct (crossed field or drift) converter, direct converter, and charge drift converter or a thermal to electric power converter such as a Rankine or Brayton-type power plant.

