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(54) **SYSTEM INTEGRATION OF A STEAM REFORMER AND FUEL CELL**

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(51) **Int. Cl.**⁷ **H01M 8/06**

(52) **U.S. Cl.** **429/17; 429/19**

(58) **Field of Search** 429/2, 3, 12, 13, 429/17, 19

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(57) **ABSTRACT**

A novel process and apparatus for power generation from biomass and other carbonaceous feedstocks are provided. The process integrates a pulse combustor steam reformer with a fuel cell to generate electricity such that (i) efficiencies are higher than those of conventional and emerging advanced power systems, and (ii) emissions are lower than those proposed by the new environmental regulations, i.e. one-tenth of the New Source Performance Standards. The pulse combustor steam reformer generates a hydrogen-rich, medium-Btu fuel gas that is electrochemically oxidized in the fuel cell to generate electricity. The apparatus may be configured to produce only power or combined heat and power.

37 Claims, 17 Drawing Sheets

