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(54) **SYSTEM AND METHOD FOR HIGH EFFICIENCY POWER GENERATION USING A NITROGEN GAS WORKING FLUID**

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See application file for complete search history.

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(57) **ABSTRACT**

A method of power production using a high pressure/low pressure ratio Brayton Power cycle with predominantly N_2 mixed with CO_2 and H_2O combustion products as the working fluid is provided. The high pressure can be in the range 80 bar to 500 bar. The pressure ratio can be in the range 1.5 to 10. The natural gas fuel can be burned in a first high pressure combustor with a near stoichiometric quantity of pressurized preheated air and the net combustion gas can be mixed with a heated high pressure recycle N_2+CO_2+H_2O stream which moderates the mixed gas temperature to the value required for the maximum inlet temperature to a first power turbine producing shaft power.

23 Claims, 2 Drawing Sheets