

ABSTRACT

STOICHIOMETRIC COMBUSTION OF ENRICHED AIR WITH EXHAUST GAS RECIRCULATION

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Methods and systems for low emission power generation in hydrocarbon recovery processes are provided. One system includes a gas turbine system configured to stoichiometrically combust a compressed oxidant derived from enriched air and a fuel in the presence of a compressed recycle exhaust gas and expand the discharge in an expander to generate a recycle exhaust stream and drive a main compressor. A boost compressor receives and increases the pressure of the recycle exhaust stream and prior to being compressed in a compressor configured to generate the compressed recycle exhaust gas. To promote the stoichiometric combustion of the fuel and increase the CO₂ content in the recycle exhaust gas, the enriched air can have an increased oxygen concentration.

(Figure 1)