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(54) Title: LOW EMISSION TRIPLE-CYCLE POWER GENERATION SYSTEMS AND METHODS

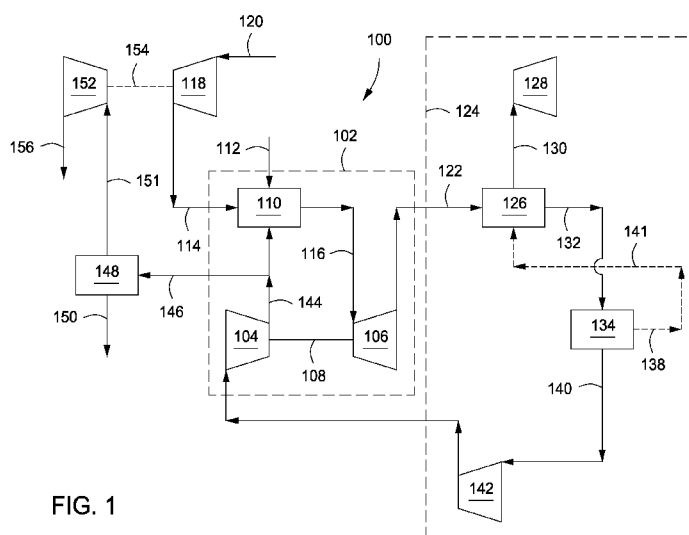


FIG. 1

(57) **Abstract:** Methods and systems for low emission power generation in combined cycle power plants are provided. One system includes a gas turbine system that stoichiometrically combusts a fuel and an oxidant in the presence of a compressed recycle stream to provide mechanical power and a gaseous exhaust. The compressed recycle stream acts as a diluent to moderate the temperature of the combustion process. A boost compressor can boost the pressure of the gaseous exhaust before being compressed into the compressed recycle stream. A purge stream is tapped off from the compressed recycle stream and directed to a CO₂ separator which discharges CO₂ and a nitrogen-rich gas which can be expanded in a gas expander to generate additional mechanical power.



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