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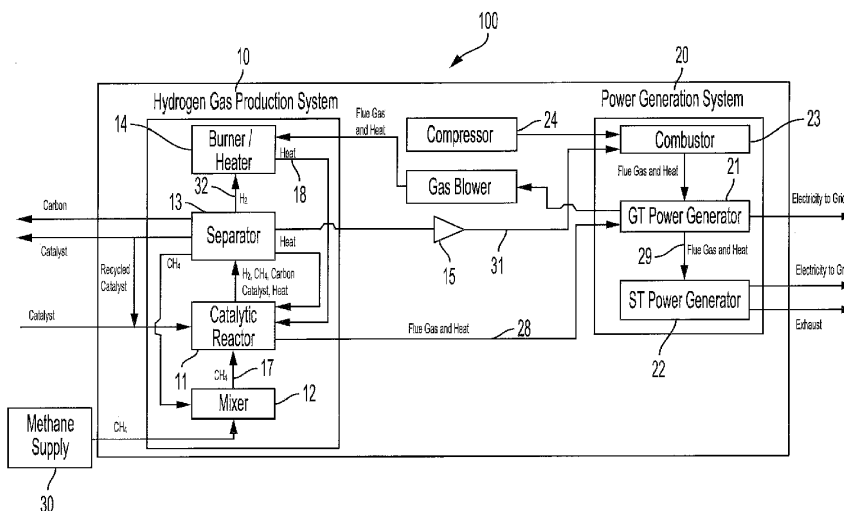


FIG. 1

(57) Abstract: A system includes a hydrogen gas production system and a power generation system. The hydrogen gas production system includes a heated gas supply line configured for flow of a heated gas, a hydrocarbon supply line, a catalytic pyrolysis reactor configured to be in thermal contact with the heated gas of the heated gas supply line and produce a hydrogen containing gas by pyrolyzing a hydrocarbon introduced therein via the hydrocarbon supply line, and a separator configured to extract a hydrogen gas from the hydrogen containing gas discharged from the catalytic pyrolysis reactor. The power generation system includes a heated gas collection line configured to collect the heated gas after the thermal contact with the catalytic pyrolysis reactor and supply the heated gas to the power generation system, and a gas turbine having a combustor configured to burn the hydrogen gas introduced therein from the separator via a hydrogen supply line.

[Continued on next page]

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