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Integrated gasification combined cycle process - with combined methanol synthesis-water gas shift for methanol and electrical power prodn.

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Integrated gasification combined cycle (IGCC) electric power plant process in which (a) the IGCC process converts hydrocarbon fuels in a gasifier producing a carbon monoxide-rich synthesis gas, which in turn is combusted in a gas turbine to produce power; in which (b) the IGCC process also has provision for prodn. of methanol from the synthesis gas prior to combustion; and in which (c) methanol is produced by reacting at least a portion of the synthesis gas in the presence of a methanol synthesis catalyst; the improvement (d) for increasing methanol productivity from the same amt. of synthesis gas comprises combining water/gas shift and methanol synthesis reactions in a single step by reacting the synthesis gas with water in the presence of a catalyst in a liq. phase reactor thereby producing both a crude methanol prod. and a reduced carbon monoxide content and increased hydrogen and carbon dioxide content synthesis gas for combustion.

ADVANTAGE - Improvement for increasing methanol productivity from the same amt. of synthesis gas is the combination of the water/gas shift and methanol synthesis reactions in a single step by reaction the carbon monoxide-rich gas with water in the presence of a catalyst in a liq. phase reactor thereby producing both crude methanol prod. and a reduced carbon monoxide content and increased hydrogen and carbon dioxide content synthesis gas, suitable for combustion in a gas turbine. (25pp Dwg.No.0/10)

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