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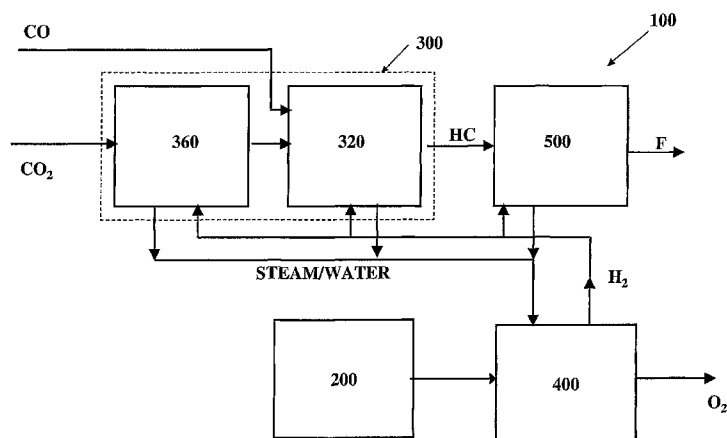
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(54) Title: SYSTEMS, METHODS, AND COMPOSITIONS FOR PRODUCTION OF SYNTHETIC HYDROCARBON COMPOUNDS



(57) Abstract: A process and system for producing hydrocarbon compounds or fuels that recycle products of hydrocarbon compound combustion - carbon dioxide or carbon monoxide, or both, and water. The energy for recycling is electricity derived from preferably not fossil based fuels, like from nuclear fuels or from renewable energy. The process comprises electrolyzing water, and then using hydrogen to reduce externally supplied carbon dioxide to carbon monoxide, then using so produced carbon monoxide together with any externally supplied carbon monoxide and hydrogen in Fischer-Tropsch reactors, with upstream upgrading to desired specification fuels - for example, gasoline, jet fuel, kerosene, diesel fuel, and others. Energy released in some of these processes is used by other processes. Using adiabatic temperature changes and isothermal pressure changes for gas processing and separation, large amounts of required energy are internally recycled using electric and heat distribution lines. Phase conversion of working fluid is used in heat distribution lines for increased energy efficiency. The resulting use of electric energy is less than 1.4 times the amount of the high heating value of combustion of so produced hydrocarbon compounds when carbon dioxide is converted to carbon monoxide in the invention, and less than 0.84 when carbon monoxide is the source.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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