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(54) Title: PROCESSES AND SYSTEMS FOR PRODUCTION OF SUSTAINABLE AVIATION FUEL FROM SYNGAS VIA MIXED ALCOHOLS

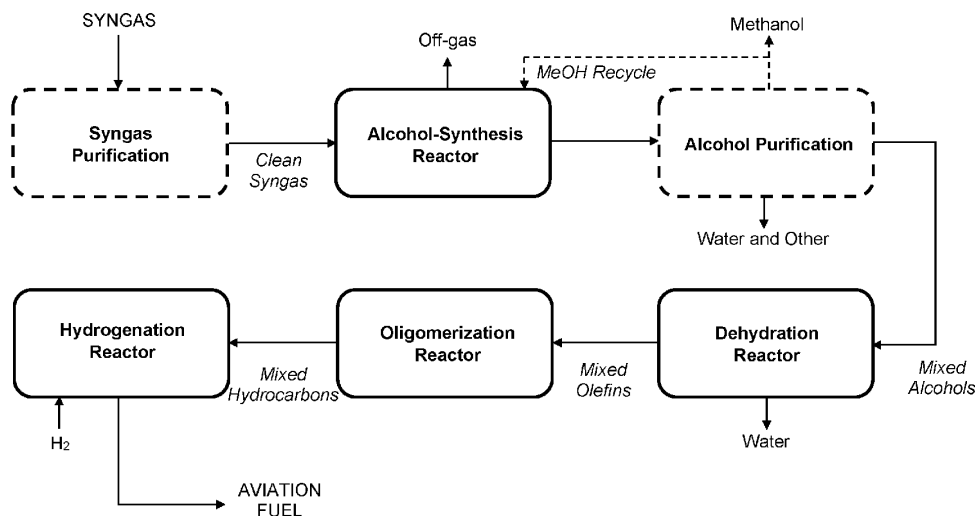


FIG. 1

(57) Abstract: Technology to convert syngas into aviation fuel is described. Some variations provide a process comprising: providing a starting syngas stream comprising H₂ and CO; purifying the syngas feed stream, if necessary; feeding the clean syngas stream to an alcohol-synthesis reactor, to catalytically convert syngas to a C₁–C₁₀ mixed-alcohol stream; feeding the C₁–C₁₀ mixed-alcohol stream to a dehydration reactor, to catalytically convert C₁–C₁₀ mixed alcohols to C₂–C₁₀ mixed olefins; feeding the mixed olefins to an oligomerization reactor, to catalytically convert the C₂–C₁₀ mixed olefins to C₅–C₁₆ mixed hydrocarbons; feeding the C₅–C₁₆ mixed hydrocarbons and hydrogen to a hydrogenation reactor, to catalytically hydrogenate C=C double bonds within the C₅–C₁₆ mixed hydrocarbons, thereby generating stabilized C₅–C₁₆ mixed hydrocarbons; and recovering the stabilized C₅–C₁₆

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Declarations under Rule 4.17:

- *as to the identity of the inventor (Rule 4.17(i))*
- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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mixed hydrocarbons as aviation fuel. In preferred embodiments, the aviation fuel is sustainable aviation fuel (SAF) under ASTM D7566-24a.