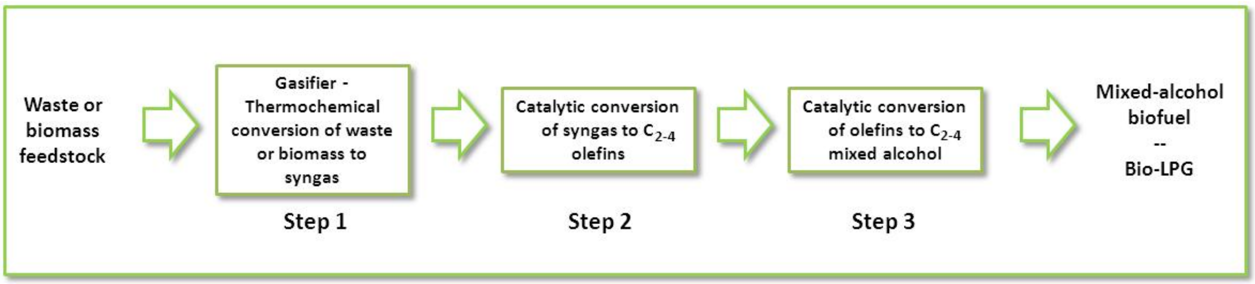
Technology Background

Maverick Biofuels was founded to commercialize a patent-pending process for producing mixed-alcohol biofuels. This mixed-alcohol biofuel can be used as a gasoline replacement fuel in flexible fuel engines or blended with gasoline similar to ethanol. Maverick's mixed-alcohol biofuel can be produced using non-edible feedstocks such as municipal solid waste, purpose-grown feedstocks, and biomass waste (crop, animal, timber, etc.).

The process involves three well-understood thermochemical and chemical processes that have not been previously combined. Each of the major steps is commercially available and currently used to produce other commodities.



Step 1: thermochemical conversion of the feedstock to syngas.

Step 2: catalytic conversion of syngas to a liquid intermediate, an olefinic mixture (olefins are small chain carbon molecules containing one carbon-carbon double bond).

Step 3: catalytic conversion of the olefin to mixed-alcohols via olefin hydration (also known as acid catalysis).

Maverick's Process Represents a Paradigm Shift
With a focus on short carbon chains produced with a modified Fischer-Tropsh process, Maverick's process represents a paradigm shift in syngas to mixed-alcohol technologies. Conventional syngas-to-mixed alcohol technologies convert syngas directly to a mixture of alcohols predominantly containing methanol and ethanol. Because of the methanol content this mixture has significantly lower energy than gasoline. In the best case scenario, producing only ethanol (i.e., no methanol), the energy content would still be less than 70% that of gasoline.

In contrast, Maverick uses a modified Fischer-Tropsch synthesis to produce an intermediate olefin product, which is then converted to a mixture of alcohols. Since olefins must include two or more carbons, methanol cannot be produced and the resultant mixed alcohol product has significantly higher energy content than ethanol. Thus the energy content of Maverick's mixed-alcohol fuel is approximately 85% that of gasoline. Catalytic addition of water across the olefin double bonds produces branched chain (secondary) alcohols that have a higher octane value than the straight chain (i.e., un-branched or primary) alcohols formed using direct syngas to alcohol technologies and adds significantly to the product yield per ton of feedstock.

This two step process ultimately produces more product per ton of feedstock while consuming less energy.