

## Executive Summary

Emerging Fuels Technology (EFT) has developed a BioGas to Liquids (BioGTL) plant designed to produce Drop-In compatible transportation fuels - diesel, jet and naphtha (gasoline blend stock) - from renewable biogas. The key to utilizing biogas as a feedstock lies in our ability to shrink the plant size down to fit available biogas resources. The plant is designed for remote, unmanned operation at landfills, agricultural bio-digesters and wastewater treatment facilities that produce renewable biogas. The resulting transportation fuels qualify for Federal D3 and D7 RINs (Renewable Identification Numbers) under RFS2 (Renewable Fuels Standard) California's LCFS (Low Carbon Fuel Standard) credits are also possible for product delivered to California. Carbon Intensity (CI) scores under LCFS can vary widely based on the biogas source and any methane mitigation credits. In North America, these resources are sufficient to support several thousand BioGTL plants. EFT's BioGTL design delivers the lowest CAPEX per unit of plant capacity of any known advanced biofuel pathway. Recent pricing of the modules from a qualified engineering/construction fabricator plus an estimated cost of installation of the entire system in a gulf coast location indicates this plant can be built and installed (US gulf coast) for under \$200,000 per barrel of daily capacity. We believe this is the lowest CAPEX per barrel of capacity for any known cellulosic renewable liquid fuel plant at any size!

## Summary of Features

- Nominal capacity - 1,100,000 Gal/yr (75 BPD)
- Feedstock - Biogas with methane content between 48% and 62%
- Plot area required – less than 100 ft x 200 ft
- Generates most of its own power needs
- Requires no water source
- Will run unattended with remote (satellite) monitoring and control as needed
- Built entirely from truckable modules
- Can be disassembled and moved relatively easily
- Product storage is included in cost estimate

Recent improvements in EFT upgrading technology, when combined with our highly selective FT catalyst, produces some of the highest middle distillate yields in the industry.

- In "Diesel mode" - 85% Diesel, 15% Naphtha
  - In "Jet mode" - 80% SPK\*, 20% Naphtha
- \* Synthetic Paraffinic Kerosene (SPK) ASTM 7566, Annex 1. Also referred to as Sustainable Aviation Fuel (SAF).

## Product Specifications

EFT upgrading technology can produce diesel to a variety of different specifications including European and Military specs. Yields may vary. Typical product specifications for Diesel, Synthetic Paraffinic Kerosene (SPK) and Paraffinic Naphtha are available on our website.

### Operations & Maintenance

The BioGTL plant is designed to be fully autonomous. Each Plant will be equipped with a satellite link and multiple cameras to remotely monitor, with the ability to take control as needed. The system will also provide the ability to remotely authorize custody transfer of products.

### Summary

We believe BioGTL is the lowest cost path to cellulosic renewable fuels. It is very low risk to implement with huge potential for mass production and deployment in numerous locations around the world. The much shorter time to complete a project makes the development of multiple BioGTL projects advantageous when compared to a single larger biomass to liquids project as is demonstrated in our white paper “Comparing BioGTL to Larger Renewable Fuels Plants.”

Call us anytime to discuss...

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### About Us:

Emerging Fuels Technology (EFT) is a technology company focused on methods for producing synthetic fuels and specialty products from a variety of feedstocks such as natural gas, biogas, biomass, municipal solid waste (MSW), sources of CO<sub>2</sub> and bio-derived oils. EFT is one of the world’s foremost authorities on Fischer-Tropsch (FT) and related synthesis, licensing the core technologies and upgrade packages for projects from 50 to 10,000 barrels per day. [www.emergingfuels.com](http://www.emergingfuels.com)

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