Demonstration Plant: Biomass to Fischer-Tropsch Green Diesel

Construction of an Integrated Biorefinery for production of Green Diesel at an Existing Pulp and Paper Mill.

The project will construct and operate a thermal gasification and gas-to-liquids plant integrated into the Park Falls Mill to produce green diesel for transportation fuel, waxes, and heat and power that replaces natural gas.

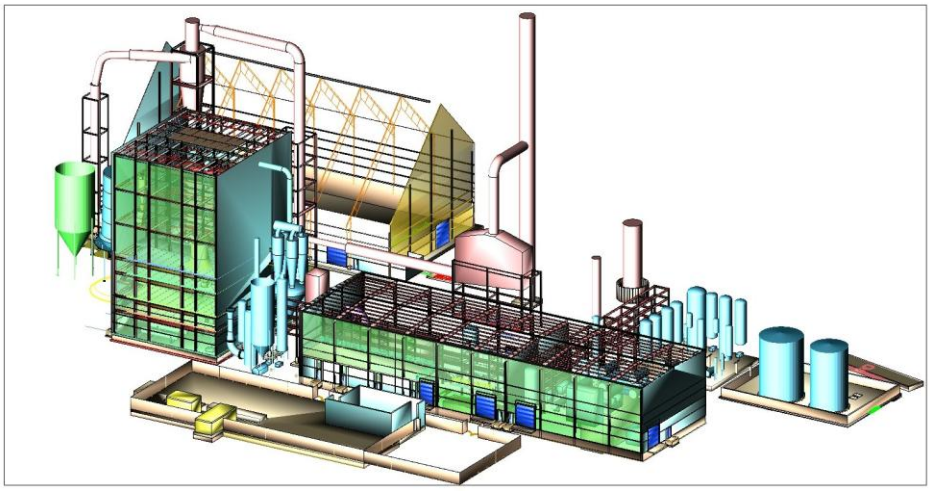
Project Description

The overall goal of this project is to design, build, and operate a 25% scale thermal gasification and gas-to-liquids (GTL) plant at the Flambeau River Papers paper mill to produce 1190 barrels per day of clean, zero sulfur renewable biofuels, waxes, and heat and power that replaces existing natural gas use from forest biomass. The use of under- or non- utilized forest biomass will add revenue (sale of renewable fuel and co-products) and reduce energy costs for existing paper mill infrastructure.

This project consists of the process technologies and equipment for biomass handling, reforming and gasification system, liquid fuel storage and loading equipment, and energy and utilities integration with the existing mill.

The biorefinery will gasify forest biomass to syngas. The syngas will be cleaned and converted to liquid fuels or products through a Fischer-Tropsch conversion process. Unconverted syngas will be burned for heat for use in the biorefinery and to offset some of the existing mill energy needs.

The pilot plant in Raleigh, North Carolina, is providing the operational data to do the final engineering design of two demonstration-scale biorefinery projects in Wisconsin (NewPage Corporation in Wisconsin Rapids and Flambeau River Papers, LLC in Park Falls). NewPage and Flambeau River have demonstrated successful collaboration on their respective DOE projects, illustrating how two historical pulp and paper industry companies can work for a common goal of creating domestically available renewable energy to reduce US dependence on oil and decreasing the carbon footprints of both sites.



A model of the integrated biorefinery that will be added to an existing pulp and paper mill in Park Falls, Wisconsin.

Potential Impacts

The technologies being demonstrated through this project are scaled to fit within the Flambeau River Papers existing industrial infrastructure. The approach is cost-effective, scalable and transferable to hundreds of other locations in the U.S. The project technology estimate is that 357 million barrels of oil/year can be displaced from the pulp and paper sector alone if this technology is deployed at 130+ existing pulp and paper mills; if agricultural residues are included, then an estimated additional 375 million barrels per year can be displaced.

Other Participants

Thermo Recovery International is the gasification technology provider. EFT, Inc. is providing the Fischer-Tropsch conversion technology. AMEC is serving as the engineering firm for the project.

Prime	Flambeau River Biofuels
Location	Park Falls, Wisconsin
Feedstock (s)	Woody biomass
Size	1,000 Tons per day
Primary Products	Green Diesel
Capacity	18 MGY fuel or product
Award Date	September 2008
GHG Reduction	TBD
Anticipated Job Creation	N/A

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