

Gasoline and Diesel from Wood, Agricultural Waste, and Algae R&D

Gas Technology Institute (GTI) will conduct R&D on hydro-pyrolysis and hydro-conversion processes to make gasoline and diesel.

The project is located at GTI's Research Campus in Des Plaines, Illinois. The goal of this research and development (R&D) project is to develop the design basis for an integrated pilot-scale facility to process 1 ton per day of wood products, agricultural waste, or algae into gasoline and diesel products.

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Project Description

GTI is conducting R&D on a novel process—integrated hydro-pyrolysis and hydro-conversion (IH²)—for the economic conversion of wood, agricultural waste, and algae biomass into fungible gasoline and diesel.

The woody material for testing will be supplied by Johnson Timber and will be the residue from harvesting and manufacturing, including roundwood, chips, and sawdust. Cornstover will be provided by Cargill. Algae test samples will be provided by both Aquaflow and Blue Marble.

The project objectives and the value proposition support the national goals of energy independence, greenhouse gas reduction, and green job creation and retention.

These goals include:

- Research in optimal catalyst and test conditions for integrated hydro-pyrolysis and hydro-conversion



Gas Technology Institute's 50kg/d IH² pilot unit to be installed at GTI's main facility in Des Plaines, IL

- Demonstrate the effective use of wood and agricultural waste, including cornstover, and algae for gasoline and diesel production
- Analyze testing data for the three types of biomass material
- Gather metrics for the construction and scale up to a 1 ton per day integrated pilot facility and a commercial size facility.
- Running a continuous 50kg/day IH² pilot for an extended period to gather catalyst life and attrition data

Potential Impact

Outside of the scope of the U.S. Department of Energy (DOE) funded R&D project, GTI may pursue plans to build a 1-50 ton per day pilot facility, which is scheduled for startup in 2013.

Once the proposed thermochemical process has been demonstrated to work at 1-50 ton per day scale, it can be expanded to produce fungible gasoline and diesel in large amounts sufficient enough to allow the United States to reduce its dependence on imported oil.

Initial results for a variety of biomass feedstocks—wood, cornstover, bagasse, algae—all achieve good yields of low oxygen (< 1%) gasoline and diesel.

Other Participants

Cargill, Criterion/CRI Catalysts Inc., Johnson Timber, Aquaflow, Blue Marble Energy, Michigan Technical University and the National Renewable Energy Laboratory.

Prime	Gas Technology Institute
Location	Des Plaines, IL (Office and Project Site)
Feedstock(s)	Wood, agricultural byproducts, and algae
Size	R&D
Primary Products	Renewable gasoline and diesel
Capacity	Bench scale and 50kg/day
Award Date	January 29, 2010
GHG Reduction	> 85% reduction
Anticipated Job Creation	15 Jobs over the life of the project
Company Point of Contact	Michael Roberts, 847-768-0518