

Green Gasoline from Wood Pilot Biorefinery Demonstration Project

Haldor Topsoe, Inc. has integrated the Andritz Carbona Gasification, GTI/Uhde Morphysorb, and Haldor Topsoe TIGAS (Topsoe Improved Gasoline Synthesis) proprietary processes to produce renewable gasoline from woody biomass.

Haldor Topsoe, Inc.'s project took place within Gas Technology Institute's Gasification Testing Complex in Des Plaines, Illinois, with a goal of processing an estimated 20 tons of pellets per day to produce up to 22.5 barrels of "green" gasoline per day. For more information, visit the Haldor Topsoe, Inc. website.

Project Description

Haldor Topsoe, Inc. has demonstrated a new, economical thermochemical process for the conversion of wood waste and woody biomass to gasoline.

Haldor Topsoe, Inc. sourced the feedstock wood from UPM-Kymmene, a pulp and paper company. UPM began deliveries in 2012. All wood supplies are the result of milling processes and have been harvested from non-Federal lands in Minnesota, in accordance with the Minnesota Harvesting Guidelines.



Image of GTI facility, 2010



Image of GTI facility, 2012

Gas Technology Institute's Advanced Gasification Test Facility in Des Plaines, IL

The objectives and the value proposition of the project promote the national goals of energy independence, greenhouse gas reduction, and green job creation and retention. They include the following achievements:

- Operation of the pilot-scale integrated biorefinery in three campaigns from early 2013 through early 2014.
- Demonstration of the effective use of pulp mill wood waste and non-merchantable wood for gasoline production.
- Production of over 10,000 gallons of high-octane gasoline blending stock.
- Validation of the gasoline quality in third-party engine and fleet testing.
- Gathering metrics for the scale-up and construction of a commercial-size facility.

Potential Impact

The Haldor Topsoe, Inc. pilot plant started up in early 2013 and completed testing in early 2014. Having been demonstrated to work at pilot scale, the TIGAS process can be expanded to produce "green" gasoline in amounts large enough to allow the United States to reduce its dependence on imported oil. This approach brings a carbon-neutral fuel to the existing fleet of 300 million gasoline-powered vehicles without the need for yet-to-be-proven vehicle technologies or extensive changes to the fuel delivery infrastructure.

Other Participants

Haldor Topsoe, Inc. has collaborative agreements with Gas Technology Institute, Andritz-Carbona, UPM, and Phillips 66.

Prime	Haldor Topsoe, Inc.
Location	Houston, Texas (US HQ), Des Plaines, Illinois (Project Site)
Feedstock (s)	Wood pellets
Size	20 tons per day (6% moisture content)
Primary Products	Renewable gasoline
Capacity	345,000 gallons per year (approximate)
Award Date	December 29, 2009
GHG Reduction	92% reduction versus fossil product at commercial scale
Anticipated Job Creation	35 jobs during peak construction and 25 sustained jobs during operation
Company Point of Contact	Niels Udengaard, 281-228-5065, nru@topsoe.com