

Gasoline produced from biomass could be in fuel tanks by 2010 with new technology

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(PhysOrg.com) -- Turning everyday waste into gasoline may seem like a distant dream, but thanks to researchers with the Texas Engineering Experiment Station (TEES) and Byogy Renewables Inc., it could become a reality within two years.

Dr. Kenneth Hall, associate director of TEES and the Jack E. & Frances Brown Chair and professor in the Artie McFerrin Department of Chemical Engineering at Texas A&M University, and his colleagues, Mark T. Holtzapple, a professor in chemical engineering, and Sergio A. Capareda, a professor in biological and agricultural engineering, have developed a process to make converting biomass to high-octane gasoline possible.

The advanced process is possibly the only integrated system that converts biomass directly to gasoline. Most other emerging processes convert the biomass into alcohol and then blend it with gasoline. The system is relatively inexpensive and focuses on using biomass waste streams and non-food energy crops rather than food products such as corn.

Additionally, the cost of such a conversion would lie between \$1.70 and \$2.00 per gallon excluding all government subsidies and tax credits. This cost range is dependent on the type and cost of feedstock as well as the size of the biorefinery. This would provide some much-needed relief for consumers when it comes to fueling their vehicles, whose current options are to pay more or drive less.

Biomass includes garbage, biosolids from wastewater treatment plants, green waste such as lawn clippings, food waste, and any type of livestock manure. Additionally, since it does not use crops such as corn, it will not put a strain on food supplies. The process could also utilize non-food/feed crops grown specifically for biomass energy.

"This technology is important because it addresses many issues - eliminating waste, producing economical fuel quickly and being friendly to our environment," Hall said. "It's a win-win for industry and consumers. Furthermore, this technology is ready to be commercialized now and does not require any new scientific or technological breakthroughs to become a reality."

Through an agreement with the Texas A&M University System, Byogy has licensed the process and hopes to have a plant using the technology up and running within 18 months to two years. The intent is to have raw garbage going in one end of the plant and 95-octane gasoline coming out the other.

Texas A&M University's Department of Chemical Engineering is world-renowned in the area of process design, integration and optimization. A team led by professor Mahmoud El-Halwagi, a pioneer in the field of Process Integration, has been assembled to conduct the initial process integration work to provide a detailed set of design and operating procedures that will lead to the most competitive biofuels production processes for this technology.

"Our goal with this technology is to achieve as much as a 2 percent contribution to the nation's gasoline demand by 2022 through the building of 200 more bio-refineries," said Benjamin J. Brant, President and Chief Technology Officer of Byogy. "We firmly believe the TEES technology combined with the Byogy team offers this possibility."

The focus at the initial plant would be on using urban waste, which the plant would grind, sort and then convert into gasoline. The fuel produced by this process could immediately be used as a drop-in substitute to the current petroleum gasoline supplies with a seamless integration into the existing fuel distribution infrastructure. Nothing needs to be changed at retail gas stations, pipelines, regional fuel terminals or in any motor vehicle.

"Our plan is to produce two-and-a-half billion gallons or more of carbon neutral renewable gasoline per year, said Daniel L. Rudnick, Chief Executive Officer of Byogy. We are positioning ourselves not only to handle the opportunity biomass waste streams that are available today, but also the sustainable biomass energy crops of the future. This green substitute for conventional gasoline is the Holy Grail of all biofuels."

For more information on Byogy visit www.byogy.com .

Provided by Texas A&M University

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