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## Makers of Ethanol Ponder Alternative

By RUSSELL GOLD

Some ethanol makers, battered by unpredictable profit margins and criticism that production of the corn-based fuel drives up food prices, are being presented with a way out: making biobutanol.

Biofuels entrepreneurs are hoping to snap up idled and financially distressed ethanol plants and convert them to make biobutanol, another plant-based fuel that can be blended into gasoline or used to make plastic products such as water bottles.

Denver-based Gevo Inc., a privately held biofuels start-up, is expected to say Wednesday that it is lining up financing to acquire and retrofit as many as five ethanol plants to produce biobutanol. The company hopes to purchase or partner with plants with capacity to make at least 200 million gallons a year. At going rates for ethanol plants, the total cost of the plants could exceed \$125 million, according to industry experts.

Gevo, backed by renewable-energy investors such as Khosla Ventures and the French global energy giant Total SA, says it has successfully retrofitted its first plant, a demonstration project in Missouri, to show it can quickly and cost-effectively convert existing ethanol plants.

Many ethanol makers landed in bankruptcy-court proceedings last year when corn prices rose and gasoline prices dropped.

"We provide a practical way to get into products that have a whole lot more options than ethanol," said Gevo Chief Executive Patrick Gruber.

Gevo isn't alone. Butamax, a joint venture of BP PLC and DuPont Co., is building its first biobutanol facility in Hull, England, and expects to expand production by retrofitting existing ethanol facilities in the U.S., says a BP spokesman.

Made from corn, wheat and a variety of inedible crops, biobutanol is a versatile fuel. It can be blended into gasoline at higher concentrations than the more common corn-based ethanol. It can be mixed into existing petrochemical infrastructure, unlike ethanol, which can't be moved by pipeline. Also unlike ethanol, biobutanol can be converted into a feedstock for the chemical and plastics industries and used to make flat-screen television sets or water bottles.

Adding to its allure, biobutanol is expected to qualify as an option for satisfying large federal-government biofuels mandates, creating an immediate market for the fuel.

"Think of it as a smart biorefinery," says Hans Blaschek, director of the Center for Advanced Bioenergy Research at the University of Illinois at Urbana-Champaign. "You are able to utilize more feedstocks and make different products. It's like having a portfolio of stocks versus having a single stock."

Still, there are hurdles. Per bushel of corn, biobutanol yields are lower than ethanol, driving up costs, although Mr. Gruber says biobutanol is likely to be competitive with oil as a plastics-industry ingredient as long as the price of oil is above \$45 a barrel. Crude oil closed at \$66.71 a barrel on the New York Mercantile Exchange Tuesday.

But biobutanol production on an industrial scale is only now being tried, so many assumptions remain untested. "Biobutanol holds significant promise as a next-generation fuel, but at this point there isn't commercial-scale production and it remains to be seen which feedstock and which process will be economically viable," says Todd Alexander, a partner with law firm Chadbourne & Parke LLP, who has handled biofuels financing deals.

Cobalt Biofuels, a biofuels start-up based in the San Francisco Bay area, doesn't plan to buy existing ethanol facilities, which by location will likely rely on crops from nearby farms. This link to agricultural prices is what got ethanol in trouble, says Cobalt Chief Financial Officer Steven Shevick. The company is focused on turning trees and other woody biomass into biobutanol.

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