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More Minnesota ethanol plants seeking profits beyond ethanol

- Article by: DAVID SHAFFER , Star Tribune
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Three producers see advantages in making another kind of alcohol that can be sold as a higher-value chemical as well as a biofuel.

Central MN Ethanol Co-op is located on Hwy. 371 in Little Falls Minnesota on Highway 30 miles north of St. Cloud. Construction of the plant was completed and production began in March 1999. CMEC purchases approximately 7.5 million bushels of corn per year from a 100 mile radius and produces approximately 20.8 million gallons of ethanol per year. In September, Green Bio

Minnesota, a pioneer in the ethanol industry with 21 production plants, is leading a shift away from the fuel.

Two more ethanol plants, in Lamberton and Little Falls, are seriously considering retrofits to produce an alcohol called biobutanol. The ethanol plant in Luverne, Minn., already has made the switch.

It's happening as many ethanol makers struggled in the past year with high, drought-related corn prices that have left 20 U.S. plants still closed. The interest in potentially higher-value alternative alcohols seems to have converged on Minnesota.

‘‘You are definitely in the middle of a hotbed of activity — there is no other way to say it,” said Steven Slome, a New York-based consultant for the strategic advisory service Nexant.

Slome is working on a report for Nexant clients, “Biobutanol and Downstream Markets: Will You Be Buying Bio?”

The hoped-for answer is ‘‘yes’’ for companies like Green Biologics, the U.S. unit of a British biotech firm. In September, it signed a letter of intent to acquire the Little Falls ethanol plant. The company intends to invest “tens of millions” to switch production to a chemical called normal butanol that sells for $6.50 per gallon vs. $2 per gallon for ethanol.

In Luverne, Gevo Inc. is ramping up production of a chemical cousin called isobutanol. Gevo is trying to build a market for the product as jet and marine fuel and as a chemical building block for such products as renewable plastic bottles for the Coca-Cola Co.

Butamax Advanced Biofuels, the Wilmington, Del.-based joint venture of DuPont and BP, announced last week the first stage of retrofitting the Highwater Ethanol plant in Lamberton to produce isobutanol.

Like ethanol, biobutanol starts with corn. But, unlike ethanol, which ends up at a gasoline pump, butanol also is used to make products ranging from paint to plastic, from food additives to cosmetics.

Most butanol is made from petroleum, but Nexant’s Slome said a key ingredient in that process, propylene, is in short supply. That’s driving interest in biobutanol, he said, along with environmental issues, renewable fuel standards and a need for renewable materials in green buildings.

‘‘This all is helping to push it forward,” Slome said.

One potentially game-changing shift is envisioned in 2015 at the Little Falls plant. Instead of fermenting corn with yeast — the way beer, vodka and ethanol are made — Green Biologics would use a proprietary bacteria. The result is normal butanol, also called n-butanol, and acetone.

The technology is an advancement on one developed early in the 20th century by chemist Chaim Weizmann, who later was Israel’s first president. That process lost favor in the 1950s when petrochemical makers found a cheap way to produce butanol.

‘‘We have taken known and proven [bacteria] strains from the 1950s and made them function even better,” said Joel Stone, president of the U.S. unit of Green Biologics since it merged last year with his Ohio-based biotech company.

Stone said a pilot biobutanol plant in Emmetsburg, Iowa, is honing the process. Little Falls would be the first commercial deployment of Green Biologics’ technology outside of China, he said.

Green Biologics aims mainly to sell biobutanol for paint and adhesives. The world market could reach $9.4 billion in five years, says Dallas-based consultant MarketsandMarkets.

Two other biotech companies are taking a different biobutanol road in Minnesota.

Butamax says it wants to deploy the first commercial-scale version of its isobutanol technology at Highwater Ethanol in Lamberton in 2015. Highwater and Butamax said they hope to finalize a deal. As a first step, Butamax said it is installing a corn oil separator needed in the retrofit.

Although isobutanol is being produced in the retrofitted ethanol plant in Luverne that Gevo purchased in 2011, it hasn’t been easy. The Englewood, Colo.-based company has burned through cash — $10 million on operations in the last quarter — as it struggled to ramp up production. The company has said it hopes to break even next year.

Gevo’s initial public offering in 2011 at $15 per share raised $115 million. But the stock has been hammered by bad news, and has traded below $2.50 per share for months.

That company’s experience illustrates a key risk of shifting from ethanol: getting rid of bugs that hamper production. Gevo now says contamination by unwanted microorganisms that forced a temporary production halt is under control.

Patents are issue in lawsuits

Yet another risk is litigation over proprietary butanol technology. Rivals Gevo and Butamax remain locked in federal court battles over patent rights.

Gevo, like Green Biologics, initially hopes to make money selling biobutanol in the chemical market. Yet the market for isobutanol as a chemical building block is a fraction of the market for n-butanol, Slome said.

Isobutanol is approved as a motor fuel, and can be blended into gasoline at higher levels than ethanol without damaging engines. The fuel market is huge, and Butamax says that's where it's mainly focused.

‘‘In the long term, once you get to the economies of scale and you get all the bugs out of the process — once you solve all those problems — you probably can compete in the fuel market," said Ronald Cascone, principal for energy and chemicals consulting at Nexant.

Larry Johnson, an industry consultant based in Cologne, Minn., who helped raise capital for early ethanol companies, said the shift to butanol could be a lifesaver for small, less-efficient 1990s-era plants.

‘‘If we can keep them operating on a different product, that is better than having them shut down," Johnson said.

In Little Falls, plant size is a concern for CEO Dana Persson of Central MN Ethanol Co-op. Its 21-million-gallon annual output is one-fifth that of today's largest ethanol plants.

‘‘It becomes more difficult to compete as a small plant — you don't have the volume," he said.

Minnesota's government was deeply involved in supporting the ethanol industry in the 1990s. The state once offered grants to producers, and was the first in the nation to require a 10 percent blend at the gas pump. Butanol makers aren't getting similar state incentives, but the Legislature this year amended the ethanol law to include biobutanol as a legal gasoline blend.

Minnesota's agriculture commissioner, Dave Frederickson, was an ethanol supporter when he served as a state senator in the early 1990s. He said the state welcomes innovation in the ethanol industry.

‘‘You have got to keep trying and moving the ball," Frederickson said. Even so, he predicted that the vast majority of Minnesota's ethanol plants will continue to make ethanol. "I don't see a mass exodus from the ethanol industry," he said.

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