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New way to test ethanol

Pioneer Hi-Bred International has helped develop a method to test corn's ethanol potential. Ethanol producers will be able to tell how much alcohol they can get from each farmer's load of corn using the technology, Johnston-based Pioneer announced last week.

The company is working with FOSS North America, which makes infrared grain analyzers. Ethanol yields can vary by as much as 7 percent, depending on the variety of corn, said Russ Sanders, marketing director for Pioneer.

Increasing the ethanol output of a 100 million-gallon-a-year plant by 1 percent would increase revenue by \$2 million at today's prices, said Sanders.

Learn more

More information on the new technologies can be found at:

www.zeachem.com

www.catilin.com

and www.e3biofuels.com.

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Biofuels pursuit: Cheaper, faster, better

ISU professor endeavors to make plants more efficient and profitable to attract investors.

By PAULA LAVIGNE REGISTER STAFF WRITER

July 1, 2007

STORYCHAT: 11 Comments

Using what they call a "giant tea bag," inventors say they have devised a way to make biodiesel cheaper, faster and better without the support of government subsidies.

The method is the brainchild of an Iowa State University professor who developed his idea with backing from a California venture capital firm.

The biodiesel invention is just one example of new technology designed to make ethanol and biodiesel plants more efficient, flexible and environmentally friendly. Renewable energy analysts say technology is now vital in biofuels as profit margins narrow and investors and lenders get more selective about the companies they decide to finance.

Plants will be more attractive if they can use "first-generation technology" that boosts output - more fuel or new byproduct - and cuts operating costs, said Paul McGarvey, a founding member of Cybus Capital Markets in Des Moines.

Proposals for building plants with existing technology "are finding it much more difficult to get an audience at the table" when seeking investments or favorable financing, he said. "The market today is much more disciplined with the allocation of capital than it was 12 or 18 months ago."

But some analysts are skeptical of so-called breakthroughs. Improvements that boost production or otherwise add a few cents per gallon to profit margins are incremental benefits and don't address the fundamental challenges in the industry, said Daniel Welt, associate with Standard & Poor's rating service. Corn prices and federal legislation are more important factors, he said.

"If (technology) benefits everybody, it kind of benefits nobody. You're still subjected to the same commodity risks. I expect commodity volatility could be so extreme that improvements in yield could not offset the magnitude of huge

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increases in corn prices."

New ideas have found support through venture capital firms such as Mohr Davidow Ventures in Menlo Park, Calif. MDV licensed the biodiesel technology of ISU professor Victor Lin and created Catalin, a company that will build its pilot plant at the university's Biomass Energy Conversion Facility in Nevada.

Erik Straser of MDV said Catalin's new method can use cheap waste grease from restaurants and animal-processing plants as well as, or instead of, more expensive virgin plant oils. And it reduces the amount of water each plant has to use, he said.

The secret is in the "giant tea bag," which is a solid reusable catalyst - something that triggers a chemical reaction.

The catalyst replaces two traditional steps in biodiesel manufacturing.

The first is mixing sodium and methanol into sodium methoxide, a corrosive and toxic substance, to break down the oil or grease, and the second is using water to wash the sodium methoxide out of the biodiesel.

"If you want to wash one gallon of biodiesel, you would need about four gallons of water. That's a lot," Lin said. He said adapting the catalyst to existing biodiesel plants should be a reasonably affordable option.

"Not only can they save money and cost in water washing, but the catalyst itself is cheaper than sodium methoxide," he said. Allowing a variety of feedstocks also gives plants more opportunity to price shop for oils.

Larry Lenhart, chief executive officer of Catalin, said the new process can knock "10 to 20 cents off" the per-gallon cost of making biodiesel and make the fuel profitable without the government subsidy, which is 50 cents to \$1 per gallon depending on the feedstock used.

MDV plans to announce today the creation of ZeaChem, a company that will make ethanol out of cellulose, which includes plant fibers such as cornstalks and grasses.

No plant is making cellulosic ethanol on a commercial scale, but competition has begun.

CEO Dan Verser said ZeaChem's technology can yield 50 percent more ethanol than other developing cellulose methods. Basically, it separates the biomass into two parts. A fermentation process converts the sugars into acetic acid, and in the second part a thermochemical process turns the rest of the biomass into hydrogen. The two parts are rejoined to create ethanol.

The system also uses less water and releases fewer greenhouse gases, the company said.

Many new technologies include some environmental component, which, while good for the industry's image, also helps the bottom line.

On June 28, E3 Biofuels in Mead, Neb., about 35 miles west of Omaha, debuted a plant that makes ethanol without relying on fossil fuels. The 25 million-gallon plant began production about a month ago.

Its "closed-loop" system is this: Corn is turned into ethanol and the soggy leftover kernels are fed to 28,000 cattle at a nearby feedlot. Manure from those cattle falls through slats in the floor, where it is collected and pumped directly to a processing station at the plant. The waste is mixed with thin stillage, another ethanol byproduct, and turned into a methane biogas that powers the plant's boilers. Any leftover waste material is sold as fertilizer to local farms.

Burning manure for energy eliminates the need for natural gas or coal - commonly used to power ethanol plants. That reduces both air pollution from the plant and water runoff from the adjacent feedlot, said David Tuft, campaign director of the climate center at the Natural Resources Defense Council, an environmental advocacy organization in New York.

CEO Dennis Langley said a traditional ethanol plant might use one unit of energy to make 2.5 units of energy; his plant uses one unit of energy to make 46 units of energy. He said the company, based in Shawnee, Kan., near Kansas City, plans to build 15 plants in the next five years in "several states," though he would name only Nebraska.

He also wouldn't say how much money the plant saved in operating costs, but he said that the closed-loop ethanol plants would deliver higher profit margins than today's plants.

"We are the example of the second generation of ethanol," he said.

Matt Hartwig, spokesman for the Renewable Fuels Association, named several biofuel plants nationwide turning to technology to increase profits and reduce its economic impact.

"People who enjoy criticizing the industry are really missing the big picture. The amount of time it takes them to look for fault in the industry, by the time they look up again, the industry has passed them by," he said. "The industry that you see today in 2007 will be unrecognizable from the industry we see in 2012."

Reporter Paula Lavigne can be reached at (515) 745-3428 or plavigne@dmreg.com

STORYCHAT 

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Reader Comment Posted by: **captain morgan**
on Sun Jul 08, 2007 12:17 pm

Ethanol and biofuels are not sustainable and will not even come close to providing a little more than a fraction of our total liquid fuel needs!! The current biofuel craze is nothing more than a pie in sky approach because most people are being misinformed by biofuel shills!!

Its not a silver bullet that's for sure and not even a BB in the whole scheme of things..

I'm will to say that most people falsely believe that renewables will be a drop-in solution as fossil fuels depleted.. That is why we are facing a liquid fuel crisis with most people having their heads buried in the sand..

Biofuels Posted by: **thefacts**
on Sun Jul 08, 2007 9:45 am

Wait until we have a drought and a poor corn and soybean crop. Watch the prices go up then - not only fuel, but food. Why do we use natural gas to power these ethanol plants? - this raises our home heating costs.

What is the true cost of the biofuels made from corn and soybeans using natural gas?

I'd like to see the plan that's been laid out for making it through a drought year - no one cares - it's the foreign oil scare.

Reader Comment Posted by: `
on Fri Jul 06, 2007 3:45 pm

Ethanol cost me 2 sets of fuel injectors.

Reader Comment Posted by: **Ely Marc**
on Thu Jul 05, 2007 4:50 pm

We need both.

Use less liquid fuels (less driving, more efficiency) and... alternative fuels. Ethanol and biodiesel are only a small part of what we need to do. Significant, but small on the big scale of things.

To Captain Morgan Posted by: **Mr. Biofuel**
on Mon Jul 02, 2007 10:23 pm

As I have said repeatedly biofuels are not the "silver bullet", and I don't know anyone who says they are. But they might be part of the answer, or just an interim solution on the road to something better. If you're pushing conservation only, that's not the complete answer either.

Of course raising the price of gasoline to \$6.00/gal by 2012, as a recently defeated provision of the energy bill would have done will definitely promote conservation.

chuck@biofuelnetwork.net
www.mrbiofuel.net

Reader Comment Posted by: **captain morgan**
on Mon Jul 02, 2007 11:57 am

Mr Biofuels, I am for a realistic approach to our coming energy crisis, not one that makes false promises like biofuels.. And Biofuels are being tauted as the silver bullet because nobody is talking about anything else..

Our future is one in which we will have to use less

oil, alot less oil yet nobody cares or wants to talk about that.. Why don't we want to have a discussion about a real topic that will effect us all instead of putting all our collective eggs into one biofuel basket??

To Captain Morgan Posted by: **Mr. Biofuel**
on Mon Jul 02, 2007 8:01
am

Captain Morgan, we know what you're AGAINST, is there anything that you're FOR? It's really quite easy to tear down, not so easy to build, just ask Kubla Khan.
Biofuels are NOT "the answer" to our problems, but they could be a significant part of it. I really do not want to wait for the "silver bullet" that will solve all our problems. If you think the infrastructure changes required to incorporate biofuels into our economy are too costly, try switching to hydrogen from scratch.

Reader Comment Posted by: **captain morgan**
on Mon Jul 02, 2007 6:40
am

What GOAL Mr Biofuel?? Energy security?? Energy independence?? Which biofuels propaganda scheme are you selling today??

Reader Comment Posted by: **Mr. Biofuel**
on Sun Jul 01, 2007 11:34
am

It will be a while before the ethanol and biodiesel industries can stand on their own without subsidies, but it is coming soon. Look how far we've come in just the last five years! Subsidies are a way of getting started now, before the price of oil rises so high it brings the American way of life to grinding halt. Advances in technology take time, and subsidies buy that time. Trust American innovation and the "profit motive" to drive this process forward. It may not be straightest path to the "goal" but it has been proven repeatedly to be the best path!

chuck@biofuelnetwork.net
www.mrbiofuel.net

This has my attention. Posted by: **Sayeth Rothbard**
on Sun Jul 01, 2007 10:14
am

No subsidy? Way to go! Anything subsidized isn't worth doing. If an idea can't attract investors...it's a loser.

Hope this works!

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