With focus turning from corn, Wyo plant could be biofuel model

Dennis Harstad, vice president of plant operations for KL Energy Corp., scoops a handful of wood chips outside the company's test plant that processes the chips into ethanol for automobiles in Upton. (Bob Moen/AP file)

By BOB MOEN
Associated Press writer Monday, July 6, 2009 6:51 AM MDT

UPTON -- In this tiny town on Wyoming's northern plains, workers feed large piles of aromatic pine chips into a labyrinth of pipes and tanks that process the wood into 200-proof liquid ethanol.

KL Energy Corp.'s test plant is among those at the forefront of a concerted research effort to turn trees, waste wood and other plants into automobile fuel.

The Rapid City, S.D.-based company hopes to capitalize on doubts about corn ethanol and the federal government's embrace of biofuels as a way to create jobs, help replace imported oil and protect the environment.

The market for corn grain ethanol is shifting to other ethanol sources, said Cole Gustafson, a biofuels economist at North Dakota State University in Fargo. Projects like KL Energy's are "clearly the future of the industry," he said.

"Across the country, people are looking at many different opportunities and crops and feedstock supplies," Gustafson said.

The Obama administration recently announced that $49 million in federal stimulus money was being directed toward projects to turn wood into fuel. The government has also touted wood biofuel as a way to create markets for small wood and low-value trees on federal forest lands.

Most ethanol now found at the gas pump is made from corn grain, but the industry is increasingly beset by environmental concerns over the amount of land and energy required to produce the corn.

"One thing the president has said is that we need to move to the next generation of ethanol, to fuels that

are more sustainable," said Lisa Jackson, administrator of the U.S. Environmental Protection Agency, during a recent trip to Wyoming.

"We have corn-based ethanol now, and that was a good start and actually got a lot of industry and infrastructure going," she said. "But the next round needs to move toward cellulosic and other forms of biofuels that have feedstocks that show that they are energy efficient and that they take carbon into account."

In 2007, Congress required a huge increase in ethanol -- to as much as 36 billion gallons a year by 2022, including 16 billion gallons of cellulosic ethanol. Ethanol blended with gasoline burns cleaner in car engines than regular gasoline.

Ethanol can be produced from just about any plant. Most ethanol these days is produced from starch-based plants, such as corn, or from sugar-based plants, such as sugarcane. Cellulosic ethanol can be produced from trees, grasses and other plants that are easier to grow than corn.

A handful of companies are testing ways to produce cellulosic ethanol from wood. Gustafson said some use processes involving heat, like gasification or combustion, while others use chemical processes.

All are seeking to find the most efficient and economical way to make ethanol from cellulose that can be competitive with gasoline. But it remains uncertain when such fuels will reach gas stations in meaningful and affordable quantities.

"The economy and the technology isn't quite there yet," Gustafson said.

KL Energy's plant has been operating for a year, said Steve Corcoran, chief executive of the company. It makes small batches of cellulosic ethanol at a time, and has plans to expand to 24/7 production in the coming months. That would be a milestone in its goal of bringing its product to the commercial fuel market.

The company is testing a "thermal mechanical process" to produce ethanol from fallen and dead trees, brush and forest debris from the Black Hills National Forest in northeast Wyoming and southwest South Dakota. Much of the wood otherwise would be burned if it wasn't shipped to the Upton plant.

At full capacity, the pilot plant is capable of producing up to 1.5 million gallons a year.

The only nonuseable waste produced by the plant is some discharged water that eventually will be cleaned for reuse in the process. Corcoran wouldn't release details of the company's technology, for proprietary reasons. But he said the process is environmentally clean because it doesn't use chemicals or acids.

Gustafston said there are relatively few potential investors in cellulosic ethanol because there's not as much certainty yet in production as with corn ethanol.

"And that creates a bit of a problem, in that in the past everybody was focusing on corn ethanol ... and consequently we made gigantic leaps in technology development," Gustafson said. "Where here we don't have that concentrated effort. The efforts are much more spread out. So we're making smaller, incremental changes, but over a wider range of activities."

The business plan of KL Energy, which has been funded mostly through private investment, is to build plants based on its Upton model near forests around the country. The plants would produce up to 5 million gallons a year.

Corcoran acknowledged the plants' individual production would be small compared to the 100-million-gallon-per-year plants that large companies are looking to build.

But the plants would be cheaper to build and would save on transportation costs by taking wood from nearby forests and delivering ethanol to nearby communities, he said.

"It's multiple 5-million-gallon-a-year plants as opposed to just one big, 100-million-gallon-a-year plant," he said.