

DENVER BUSINESS JOURNAL

VOL. 61, NO. 47

APRIL 23-29, 2010

Plant fuels Rentech's future

Los Angeles company is banking on pilot plant in Commerce City to propel its synthetic fuel product.

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Rentech Inc. — a company that turns coal, biomass and natural gas into man-made jet and diesel fuel — is based in Los Angeles. But its future is rooted in Commerce City.

There, a gleaming, \$90 million pilot demonstration plant is tucked between railroad tracks and I-270 with the Suncor crude oil refinery as a neighbor. Rentech's scientists have spent years testing the company's proprietary process to make synthetic jet and diesel fuel from something other than crude oil at the plant.

Their work has gained the attention of the federal government, which in December announced a \$22.6 million grant — using federal economic stimulus money — to help expand the plant, and to start using up to 20 tons per day of either Colorado wood chips or Louisiana sugar-cane residue to make synthetic fuel.

Biofuels Digest named Rentech (AMEX: RTK) one of the top biofuels companies of 2009 for its work advancing the use of synthetic, renewable jet fuel. The digest is an online daily



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Phil Weathers, director of operations, and Harold Wright, senior vice president and chief technology officer, of Rentech Inc. in Commerce City.

a plant," Wright said. "There are no manuals for this. It's easy to do at 50 grams. It's not so easy when you're working with tons of material."

This summer, Rentech plans to break ground on a 60-foot silo at the plant, partially paid for with a \$22.6 million federal stimulus grant from the U.S. Department of Energy to Hawaii-based ClearFuels Technology Inc. Rentech has a 25 percent stake in ClearFuels.

URS Corp. (NYSE: URS), based in San Francisco, is Rentech's engineering and construction firm for the new silo, and Rentech expects the project will generate 100 construction jobs. The company expects to start operating the silo in late 2011.

The new silo will test turning wood chips and sugar-cane residue into gas, then send it through Rentech's reactor to make bio-based, renewable jet and diesel fuel, Wright said.

The first \$7.7 million of the grant was released April 15.

Technology from the Commerce City plant also forms the basis for Rentech's two commercial-scale biofuel plants producing fuel, chemicals and power.

• A \$430 million plant in Rialto, Calif., that will turn woody biomass, such as yard clippings, into about 640 barrels per day of synthetic fuel — and about 35 megawatts

RENTECH: Local plant testing 'greener' refining process

newsletter covering the nation's biofuels industry, and has 15,000 subscribers.

"They've developed some pretty good technology in the area of aviation biofuels," digest editor Jim Lane said of Rentech. "They have the first fuel that's actually approved for use. You can take their output and fly in it today. It's already certified."

Company officials say they're betting that Rentech's technology plans will be the future of fuel production worldwide. The company plans to create small, boutique refineries capable of churning out 30,000 barrels a day of man-made, synthetic fuel using coal, natural gas, wood chips and other biomass.

"Standard refineries [using crude oil] do 100,000 to 400,000 barrels per day, but those aren't being built today, or not for a number of years," CEO Hunt Ramsbottom said. "We're making a bet that the world is going to move to smaller and greener refineries."

To start those refineries, Rentech is relying on technology tested and proven in Commerce City. The 250-employee company has 90 people in Denver, with 70 of them working at the Commerce City plant — and wants to hire eight more people in the areas of operations, mechanics, process engineers and chemists, company officials said.

Rentech also runs a fertilizer plant in East Dubuque, Ill., which produces about 600,000 tons a year of nitrogen fertilizer for agricultural use and brings in revenue of about \$200 million a year. In 2009, Rentech also bought SilvaGas Corp., of Burlington, Vt., which had patented its

process for converting yard waste into a gas.

The Commerce City plant "means everything" to the company, Ramsbottom said. "This is where the technology is created and proven. This is where the customers come to see it. It's the only facility of its kind in the nation. It's the heartbeat."

Rentech's process at the Commerce City plant makes synthetic fuel by using a combination of the decades-old Fischer-Tropsch technology — which is a set of chemical reactions that break down carbon and hydrogen to form liquid fuel — in conjunction with the company's proprietary catalyst made of iron.

The Fischer-Tropsch technology dates to Germany in the 1920s, when scientists figured out how to turn coal into liquid fuel.

The synthetic fuel is a "drop-in" one, meaning it can be shipped in existing pipelines, stored in existing terminals and burned in existing engines. It doesn't require the construction of new, supporting infrastructure.

The Commerce City plant has made seven test runs, ranging from three to six weeks in duration, since it started operations in 2008. It's made up to 400 gallons per day during those runs, said Harold Wright, Rentech's Denver-based chief technology officer and senior vice president.

But most of the plant's production is used for testing purposes, according to the company.

"With this plant, we've been able to determine how much feedstock creates how much fuel, how to start and how to operate



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Here is a sample of Rentech's synthetic diesel fuel. Company officials are betting that Rentech's technology for a new refining process will be the future of fuel production worldwide.

of renewable power. Rentech expects to break ground on the project in 2011 and start operations in 2012.

Rentech has signed an agreement to supply up to 1.5 million gallons of synthetic diesel fuel from the plant to run ground service equipment at Los Angeles International Airport.

• A \$4 billion, fossil-fuels-to-liquid-fuel plant near Natchez, Miss., capable of producing 30,000 barrels per day of synthetic jet and diesel fuel, chemicals and 120 megawatts of power. In December 2009, Rentech and 13 major airlines — including United, Air Canada, American, Delta, Fed Ex, UPS and Lufthansa — signed a nonbinding agreement to have the airlines buy the plant's entire production of synthetic jet fuel.

Rentech also has an agreement with oil and gas company Denbury Resources Inc. (NYSE: DNR), based in Plano, Texas, to sell the plant's production of carbon dioxide — a byproduct of the fossil fuel feedstock — to inject into an old, underground oil field to stimulate additional oil production.

Rentech has applied for a federally guaranteed loan to cover 80 percent of the project, officials say.