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# UPDATE:Blackstone Sees Rive As Catalyst For More Efficient Oil Refining

(Updates with background on Grace's partnership with Rive.)

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OF DOW JONES NEWSWIRES

Blackstone Group LP's (BX) clean-technology fund is betting that Rive Technology Inc., a start-up technology firm, can help refiners squeeze more gasoline and diesel out of a barrel of oil, thus improving profits while reducing the effect on the environment.

Rive re-engineered conventional catalysts used by refineries so they can "crack" bigger molecules of crude oil into more valuable transportation fuels instead of selling it off as low quality, coke, bunker fuel or asphalt. The company accomplished this by essentially blasting bigger holes into the crystalline structures that absorb oil.

The new catalyst particles are a drop-in replacement for existing catalysts, requiring refineries to make only modest tweaks to operations. It is also a relatively easy way to increase refining capacity without spending hundreds of millions of dollars on new equipment. These factors are critical because refineries devote significant resources to improve yield and cut costs any way they can. Such efforts have become even more important since the economic downturn caused demand -- and prices -- for petroleum products to drop sharply as competition grew.

With Rive's catalyst "you are improving the efficiency of the refining process" in a way that no other catalyst on the market can do right now, said Jamie Kiggen, chief investment officer at Blackstone Clean Technology Partners, in an interview with Dow Jones Newswires. "This type of technology is going to wind up being adopted regardless" of whether the industry is going through a bull or bear cycle, he added.

Last week, Blackstone led a group of investors that raised \$25 million in exchange for an equity stake to help Rive launch trials at independent refiners early next year before making its catalysts commercially available around mid-2011. Kiggen also joined Rive's board.

Rive's catalysts, originally developed at an MIT lab, can increase the yield of gasoline and distillates by "several percentage points" and shave 60-90 cents off the cost of processing a barrel of oil, Chief Executive Officer Larry Evans said. That adds up to savings of up to \$50 million a year for a modest-sized U.S. refinery that can process 150,000 barrels a day.

Rive is in talks to figure out which independent refiners will conduct two-to-three month trials with its catalyst, with the aim to complete the testing by the end of the second quarter. Refiners can slowly add the new catalysts to their processing unit to replace older catalysts on a daily basis so they can see the effect immediately without needing to shut down process units, Evans said.

Catalysts are used throughout the refinery, but the one developed by Rive is meant for the fluid catalytic cracker, a key gasoline-production unit. "That's the workhorse of a refinery" and roughly a third of all the oil processed in the world goes through such a unit, Evans said.

The annual global market for catalysts used in this particular refining unit is \$1.8 billion to \$2 billion, according to W.R. Grace & CO. (GRA), which supplies about one-third of catalysts sold to global refiners. And Rive's break-out technology "has a lot of potential for us," based on testing done so far, said Shawn Abrams, general manager at Grace's refining technology division. The company, which introduces about six to 12 new catalysts year, has a partnership with Rive to produce and distribute its catalyst.

Altogether, Rive has raised \$47 million, with the initial investments coming from a trio of venture capital firms that participated in the most recent -- and final -- round of financing needed to go commercial. Its initial investors are Charles River Ventures, Advanced Technology Ventures and Nth Power. The Cambridge, Mass.-based company, with 25 employees, expects to become cash flow positive in mid-2012.

Rive and its partners all declined to disclose their financial arrangements. However, Blackstone typically invests \$10-\$30 million in a company in exchange for a 30%-to-40% equity stake, Kiggen said. The clean-tech fund's investments typically span three-to-five years.

Blackstone has been following Rive's progress for years and then began a serious due diligence process on whether to invest in the company that lasted about 8-9 months that involved speaking to refining, technology and intellectual property experts.

"The fact that we have such a deep understanding of the refining process certainly gives us the ability to judge any given technology's potential usefulness and how easily it can be adopted." Kiggen said, referring to the private-equity firm's stake in PBF Energy, a venture formed in 2008 to buy U.S. refineries.

But Kiggen declined to say whether PBF would test or use Rive's catalysts.

PBF, jointly owned by private-equity firm First Reserve Corp., bought its first three U.S. refineries this year. The company believes it can generate strong profits from its plants that operate in the highly competitive East Coast markets by improving the production process itself. PBF plans to purchase all of its fuel from one supplier, Statoil ASA (STO), and sell it all through a single firm, Morgan Stanley (MS).

"I think there are a synergies between the broader Blackstone platform and the energy investments" the firm is making, Kiggen said. He declined to disclose the size of the clean-tech fund as it is in the process of raising money for it.

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