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'Clean Coal' Claims Spark Controversy

Silverado Green Fuel is building a \$26-million 'clean coal' demonstration facility; environmentalists say coal is not clean.

By Jennifer Kho

Silverado Green Fuel CEO Garry Anselmo said Wednesday the company has signed a deal to build a "clean coal" demonstration plant in Mississippi.

Mr. Anselmo claims the plant will be the first in the U.S.—and maybe the world—to turn low-grade coal into a liquid fuel, although others convert high-grade coal into liquid, such as in China.

"This is an environmentally friendly, low-cost energy," he said.

But some environmentalists and industry watchers disputed the claim, arguing that "clean coal" is an oxymoron. While technologies that reduce the environmental impact of coal have been making strides, and many consider them to be an important step, others say coal can't ever be considered clean.

Take Robert Wilder, CEO of WilderShares, who manages three energy indices, including one tracking technologies to reduce the impact of fossil fuels.

"I would not use the word 'clean' anywhere near the word 'coal,'" he said. "It's a misnomer; coal is inherently dirty. You cannot say 'clean coal' for the basic reason that mining coal is dirty work, so you can't get clean coal unless you ignore the fact of getting coal, which is ridiculous."

Coal-to-liquids technologies are getting plenty of attention lately because of energy security, he said. While oil must be bought from countries that "don't necessarily love us," the United States has been called the Saudi Arabia of coal because we have so much of it, he said.

"If your only concern was energy security, and there was no such thing as climate change, we would probably have a lot more coal-to-liquids

technology," he said.

While so-called clean coal might be cleaner than regular coal, it is probably not cleaner than some of the other fossil fuels it might replace—such as oil and natural gas, he said.

Still, such technologies could well have a place, Mr. Wilder said.

"This doesn't mean it's not interesting, exciting, and innovative," he said. "I think technologies that can make use of the waste streams should be looked at. They are trying to come up with a substitute liquid fuel in the near- to mid-term, but the real problems are ecological and immensely serious, and it doesn't help anybody to use terms like 'clean coal.'"

But as worldwide demand for energy grows, there's no doubt coal will continue to play a role. Whether or not they are aptly named, projects categorizing themselves as "clean coal" are being developed around the world.

Last month, U.S. Energy Secretary Samuel Bodman said the United States would distribute \$1 billion in tax credits for clean coal projects this year, with \$650 million credits slated for 2007.

Also last month, a group of companies said it would build a \$700-million coal-fired plant in Norway using technology developed by Oslo-based Sargas, and the Victoria, Australia state government granted HRL, an Australian-owned energy company, \$50 million to help build a \$750-million pilot plant with China's Harbin Power.

And earlier this month, one U.K. energy company, E.ON UK, submitted plans to build the first new coal-fired power plant in the U.K. in 20 years using "clean coal" technology.

Joel Makower, a principal at Clean Edge, said clean coal technologies' greenness depends on what they are replacing.

"Is this compared to dirty coal or compared to solar?" he said. "It has a lot of potential, but it really depends on what the alternative is."

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Silverado's technology grinds down a low-grade coal, which is 35 percent water, and "pressure cooks" it to drive out all the water. ("It sweats," Mr. Anselmo said.) The process seals the pores of the coal particles, so water isn't allowed back in. The particles are removed, the water is treated to take out the remaining hydrocarbons—along with the carbon dioxide and heavy metals—and the cleaned water is mixed back in with the particles to get the fuel to shipping grade.

"It looks and acts like oil," Mr. Anselmo said, with the exception that it takes 2.5 barrels of Green Fuel to make a barrel of oil equivalent.

Unlike coal gasification technologies, which turn coal into gas, Silverado's method doesn't release carbon dioxide when converting the coal, he said.

Silverado's process happens in small batches, in a contained area with only oxygen (and no regular air), he said. It produces hydrogen, which can be used for fuel cells; a small amount of fly ash, which can be used as an industrial material; and sulfur dioxide, which can be converted into sulfuric acid, he said.

The Green Fuel can be produced for about \$15 per barrel of oil equivalent, he said. While Silverado hasn't decided on pricing, it should be able to set them lower than current oil prices, he said.

Potential Impact

While Silverado doesn't gasify the fuel, and therefore avoids releasing carbon dioxide, Mr. Wilder said it's unclear how useful the technology is. It is still "pretty nasty coal" in a liquid, goopy form, he said.

"Potentially, this is interesting as a way to convert coal from a solid to a thick, viscous liquid," he said. "My problem is, then what?"

There aren't many oil-fired power plants in the United States, Mr. Wilder said.

Mr. Anselmo said the fuel could be used in industrial heat and electricity applications, such as in industrial boilers and in integrated gasification combined cycle power (IGCCP) facilities, and also said the fuel could be further refined into rocket fuel, diesel, plastics, explosives, and everything

else oil becomes.

Those products can be made with no particulates, and the “downstream,” refined fuels would give off no carbon dioxide when they’re being used, he said.

Mr. Anselmo also claims that no carbon dioxide would be emitted while refining the Green Fuel into lighter fuels or other products. “There is no CO₂ in the refining process,” he said.

But Mr. Makower said carbon dioxide generally is emitted somewhere in the process.

“No CO₂ at all would be hard to believe,” he said. “It’s not just when you burn it, but when you refine it and transport it; you can’t just talk about the tailpipe part of it.”

Mr. Wilder agreed.

“I’m fairly confident that anything that takes that liquid and converts it into something that’s not viscous—that can be used in cars, etc.—will have CO₂,” he said. “What they’re saying is fantastic, if they’re saying there’s no CO₂. I don’t know how that could be.”

In any case, Mr. Makower said coal technologies have potential, as well as hurdles, and more innovation, R&D, and investment are needed. Among the dozen—or even dozens—of technologies that will be successful, there could well be a place for technology like Silverado’s, he said.