

Invention Could Fire Up Illinois Coal

Cleaner burning may boost sales

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ClearStack Combustion Corp., a five-employee start-up with its product in testing and its first sale yet to be made, would seem an unlikely business to be touted in a political debate. But on Oct. 14, the Springfield-based clean coal technology company got a plug from then-gubernatorial contender Rod Blagojevich during a radio broadcast. He cited ClearStack as the kind of state-assisted research project that could help the beleaguered Illinois coal industry, which has windled as power generators have turned to cleaner burning low-sulfur coal to meet federal clean-air emissions standards.

"There is a company here in the Springfield area called ClearStack Combustion....," Blagojevich said. "We don't need to do any more research and development and waste taxpayer dollars on it. The technology already exists." ClearStack has raised \$4 million, including \$2.3 million from so-called angel investors--wealthy venture capitalists--and the rest from state and industry groups. The funds are to sustain the firm through a phase of independent testing conducted by Detroit Edison Co., a Michigan utility. Grants include \$1 million from the Illinois Clean Coal Review Board, a quasi-private industry group that supports development of clean coal projects; \$500,000 from the Department of Commerce and Community Affairs and a \$300,000 investment by the Illinois Development Finance Authority.

When Blagojevich mentioned ClearStack, no one was more surprised than Steven McClure, the firm's president and a director of the Department of Commerce and Community Affairs under former Gov. Jim Thompson. While McClure never spoke to Blagojevich, he did make a pitch to David Wilhelm, former chairman of the Democratic National Committee. Wilhelm now runs Chicago-based Hopewell Ventures, which specializes in investments in southern and rural Illinois. Wilhelm is not an investor in ClearStack.

After the federal Clean Air Act was passed in 1990, many coal-fired utilities turned to cleaner burning Western coal as a low-tech solution to meet the emissions requirements. In Illinois more than a dozen mines closed and 60 percent of the state's mining jobs were lost. Coal production, which stood at about 60 million tons annually over a 25-year period, declined about 50 percent. Still, some 4,000 miners continue to work the state's coal fields.

More Efficient Burning

"ClearStack technology could lead to the opening of one or more existing or new mines. It's one of the more promising technologies right now," said Taylor Pensoneau, president of the Illinois Coal Association and a member of the Illinois Clean Coal Review Board. More efficient burning ClearStack's process burns coal more efficiently, and in so doing reduces emissions. Traditional methods use scrubbers to clean emissions after the coal is burned.

ClearStack's product lost some steam, however, when President Bush introduced his Clear Skies Initiative, a plan that environmentalists charge will delay more stringent emissions requirements. "We see it as a roll-back," said Ron Burke, a consultant with the Chicago-based Environmental Law & Policy Center. Burke noted, however, that Illinois, like some Northeastern states, has the opportunity to create emissions standards that go beyond federal mandates, something that Blagojevich had endorsed on the campaign trail. McClure said state action, while helpful, is not necessary to create a market for ClearStack's technology.

Credits Diminishing

The company, he said, plans to license its technology to large power producers, many of whom have been using sulfur emissions credits to delay upgrading plants. Those emissions credits are diminishing over time, and that will force companies to take action. By year-end, McClure anticipates the company will reach its first agreement to license its technology to a power generator. The firm's three-year business plan calls for agreements with four generators, totaling 400 megawatts under license. ClearStack also intends to buy some plants built in the 1940s and 1950s that are struggling to meet emissions requirements, adapt the technology to those plants and sell the power back to the utilities. At that point, McClure projects that the company would have about \$25 million in cash.

ClearStack demonstrates its technology on the grounds of a former state-run home for developmentally disabled children in Lincoln, Ill. ClearStack retrofitted the facility's boiler with its combustor, which heats dozens of buildings and pipes on the sprawling campus. The combustor, named for its inventor, Bob Ashworth, is placed on the front of the boiler, the coal is gasified and the gasses go up into the boiler. The first stage of the burning occurs in the combustor; second and third stages take place inside the boiler. ClearStack's combustor is less expensive to install and operate than scrubber technology, and it takes up less space, an advantage for coal-fired plants in cramped urban surroundings, McClure said.

Working with the Electric Power Research Institute, ClearStack also is testing a biomass project in which sawdust is burned along with the coal to reduce carbon emissions. A distinctive feature of ClearStack technology is that it not only reduces sulfur and nitrogen oxide emissions, but also virtually eliminates mercury emissions, the Detroit Edison lab analysis showed, McClure said. Currently there is no low-cost technology on the market that eliminates mercury.

Pollutant Pantheon

"ClearStack provides an opportunity to eliminate a pantheon of pollutants," said Michael Murphy, chief of the Illinois Office of Coal Development. "Generally speaking, other technologies are individualized strategies for dealing with nitrogen oxide or particulates. ClearStack could be part of the second generation of new technologies that could help revive the coal industry." But Murphy was cautious about how far a technology like ClearStack could go to bring back the glory days of the coal industry. New mining technologies also have eliminated some jobs, he said. "It had to happen to keep us competitive," Murphy said. "There is not going to be a dramatic turnaround. But we can provide a lot of good jobs for the southern half of the state."