FuelCell Reduces Cost to Scrub Greenhouse Gases From Coal Plants

by Christopher Martin

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Here's a way to reduce the cost of removing greenhouse gases from coal-fired power plants: use the fumes to make electricity.

That's the basic idea that FuelCell Energy Inc. is testing, and the company said Wednesday its fuel cell systems can absorb as much as 90 percent of the carbon dioxide from smoke stacks for less than \$40 a ton.

That's a bit more than half the cost of existing carbon-capture and storage technologies. Coal plants are the biggest source of greenhouse gases that are blamed for driving climate change. While there's widespread agreement emissions from power plants need to be reduced, the cost has been a deterrent.

"We've known for years that this could work," Chip Bottone, FuelCell's chief executive officer, said in an interview Thursday. "Now we know it's a cost-effective solution."

FuelCell's systems produce electricity through a chemical reaction that combines natural gas and air.

The Danbury, Connecticut-based company has been testing a fuel cell that uses natural gas and simulated flue gases. That can reduce the emissions from a coal plant, while offsetting some of the costs by selling the electricity.

For example, at a 500-megawatt coal plant that produces power at about 6 cents a kilowatt-hour, adding 400 megawatts of fuel cells would capture 90 percent of emissions and increase the cost to about 8 cents a kilowatt-hour, Bottone said. Including a federal investment tax credit that applies to power from fuel cells and other clean technologies, would lower that to about 7.5 cents.

Government Funding

The \$40-a-ton cost is lower than a target set by the U.S. Energy Department when it agreed to back FuelCell's research. The company received more than \$3.8 million in government funding for the research that began in 2011. The chemical process also can eliminate 70 percent of smog-forming nitrogen oxides.

Scientists have developed liquid amine technology to strip carbon dioxide from coal-plant smokestacks at a cost of about \$70 per ton when spread over 30 years of operation, according to the Energy Department.

The Energy Department last month pulled its support for a carbon-capture project, FutureGen Industrial Alliance Inc., that was initially proposed more than a decade ago. The agency had spent \$202 million on the Illinois plant, but backed out after determining that its sponsors would miss a September deadline to get the plans finalized.

FuelCell is talking with U.S. power producers and regulators in coal producing states like Wyoming and West Virginia and may set up a pilot test within two years, Bottone said.

Capturing emissions from 1 percent of existing U.S. coal plants would require about 120 megawatts of fuel cells, representing a \$1 billion near-term market opportunity, Bottone said.

"There's a lot of money on the sidelines now wanting to test this," he said. "It can be done incrementally. Implementation doesn't have to be painful."

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