Coal cleaning technology to be used to recover coal from waste

Blacksburg, Va., Va., December 8, 2004 -- Billions of tons of coal that have been considered waste for decades can now become an energy source, thanks to the advanced separation technologies developed at Virginia Tech.

Patented Microcel™ technology, developed in the mid-1980s by Roe-Hoan Yoon, Gerald Luttrell, and Gregory Adel, professors of mining and mineral engineering in the College of Engineering, and their group at Virginia Tech, has been in use worldwide for many years to separate coal and other minerals from impurities. Two large equipment manufacturers, Metso Minerals and Eriez, are marketing the technology to the minerals and coal industries. In recent years, Yoon has developed new chemicals that can be used to separate water from the clean coal that is produced with the Microcel technology. The new chemicals have been licensed to Nalco, a large chemical company, by MCT, a company Yoon started at the Cooperate Research Center of Virginia Tech to help industries adopt the technology.

Yoon has said for years that combining the two advanced separation technologies will allow waste coal to be recovered economically.

Now, the Beard Company of Oklahoma City has announced that its subsidiary, Beard Technologies, Inc. (BTI) of Pittsburgh has signed an agreement with Pinnacle Mining Company, LLC. (PMC) to recover waste coal from a fine coal impoundment at the Pinnacle Preparation Plant near Pineville, W. Va. The advanced separation technologies developed at Virginia Tech will play the key role in making the project feasible.

"It will be the first major commercial use of our dewatering technology for remining applications," said Yoon, who is overjoyed at the development that will provide an energy resource from a waste product.

"I've been talking to Dr. Yoon since 1990," said BTI President C. David Henry. "At first, it was regarding recovery of fine coal through Microcel; then it was about dewatering. Now we are putting them together as a package."

In addition to the advanced coal-cleaning technologies, BTI has developed its own dredge system that is specifically designed for waste coal recovery. "Now everything is in place for BTI to move forward with this project. We expect to be running by late spring," Henry said.

BTI expects to produce 240,000 tons of clean coal a year for PMC from the pond, Henry said. "We will be recovering an energy resource that in most cases is being discarded and lost at a time when the United States is concerned with new supplies and the high costs of energy."
"There are many slurry ponds across the world and many companies are waiting to see how we do. This will end up being a show case operation," Henry said.

Yoon said that there are 713 fine coal ponds and impoundments in the United States, mostly in the Appalachian coalfields. More than two billion tons of coal have been discarded into these ponds due to the lack of appropriate separation technologies.

"Despite the promising laboratory results, it has been a challenge to demonstrate the new dewatering process in large-scale operation," Yoon said. "But The Beard Company is sufficiently convinced of the value of our technology to invest more than $7 million of private funds in the pond recovery project."

Yoon said the fine coal containing large amounts of impurities will be pumped from the pond to a newly constructed plant on the site, where the advanced separation technologies will be used to produce clean coal containing low moisture. "We can recover practically all of the coal from the material that is pumped from the pond," Yoon said. "Past attempts were only able to recover the easy-to-clean and easy-to-dewater coals and the rest was discarded. But with the new technologies, we now have the ability to capture almost all of the coal from the waste material remined from slurry ponds and impoundments. This will substantially increase profit margins and minimize financial risk for future fine coal projects."

BTI does testing, analysis, planning, development, and "ultimately, fine coal recovery," Henry said. "We are creating a more saleable coal because of our ability to clean it better and reduce moisture, thanks to Dr. Yoon's technologies."

Henry said he would like Yoon and Luttrell to set up test units in the new plant to continue to test newer technologies that are currently under development at Virginia Tech. "I have found it refreshing working with Drs. Yoon and Luttrell. They have always been willing to address the needs of industry – to consider the commercial impact of their research," Henry said.

The U.S. Department of Energy through the National Energy Technology Laboratory has been the major sponsor of the research at Virginia Tech to develop the separation science into technologies that make coal cleaner and recovery of waste coal possible. "We appreciated the support of Southwest Virginia Representative Rick Boucher and Northern Virginia Representative Jim Moran and of Virginia Senators John Warner and George Allen in supporting the development of these critical technologies," Yoon said.

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