Summer Internship Leads to Commercial Coal Cleaning Technology

In 1980, a summer faculty appointee from Virginia Polytechnic Institute and State University began experimenting at DOE's Federal Energy Technology Center on the use of microbubbles to separate clean coal from its impurities. The initial results showed promise, and the professor subsequently won a federal University Coal Research grant to develop the technology.

Today, the summer experiment has become a commercial success story. The technology, microbubble coal cleaning, is now marketed under the name *Microcel*. *Microcel* fine coal cleaning technology can produce cleaner coals for electricity generation and can recover coal from refuse ponds which in the U.S. are estimated to contain more than 2 billion tons of fine coal. If *Microcel* reaches its full potential in the market of producing coal-water fuels from coal waste, it would create an estimated 29,400 jobs in the United States. Currently, the technology is being sold worldwide for use at coal preparation and minerals processing plants, with applications in the United States (in eight states), Korea, China and Australia. A major coal company in Australia, which selected Microcel over a competing domestic technology, has bought 16 *Microcel* columns for use at its largest mine. The technology is also being used in various non-coal mineral processing applications around the world.

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Applying Tomorrow's Technology To Today's Gas Turbines

The combined cycle power plant is the primary technology of choice for generating electricity today. At the heart of the combined cycle plant is the gas turbine. U.S. turbine manufacturers have dominated the market for gas turbines worldwide since its inception, but foreign technology has recently dominated technological advancements. A major technological leap is needed for U.S. manufacturers to regain their edge in this vital technology.

In 1992, DOE initiated a program, in cooperation with major turbine manufacturers and a university consortium, to develop a "quantum leap" gas turbine. This advanced gas turbine will include features vastly superior to any gas turbine developed to date. The research and development