

## Clean Electric Power Generation and Industrial Coal Technology

The U.S. electric power industry, for most of its history, has had only a limited number of technology choices for generating electricity and reducing emissions.

The pulverized coal boiler has historically been the most prominent means for burning coal to produce electricity. The conventional "wet scrubber" has been the traditional choice for cleaning sulfur dioxide from coal combustion flue gases for the last 15 years. Few technological options have existed for controlling smog-causing nitrogen oxides affordably. Significant reductions in carbon dioxide, a greenhouse gas, were beyond the capabilities of conventional technology.

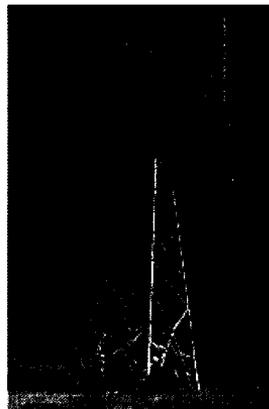
In the last decade, this situation has changed dramatically because of the Federal investment in advanced electric power generating technologies, fueled by coal and by natural gas.

New power generating concepts, such as fluidized bed combustion, gasification-combined cycle, and fuel cells, are now moving toward the commercial threshold. Innovative technologies for reducing acid rain emissions that existed only on drawing boards 10 years ago are now available because of Federal/private R&D partnerships. For the 21st century, new coal concepts are advancing that reduce CO<sub>2</sub> through efficiency improvements. Some examples are:

### Fluidized Bed Coal Combustors - "The Commercial Success Story of the Last Decade"

Power magazine called the development of fluidized bed coal combustors "the commercial success story of the last decade in the power generation business." This success, perhaps the most significant advance in coal-fired boiler technology in more than half a century, was achieved largely through research, development and demonstration sponsored by the Department of Energy and its predecessors.

The Federal government, in cost-shared programs with the U.S. boiler industry, demonstrated the first industrial-scale atmospheric fluidized bed units, including one that is still operating nearly 18 years later on the campus of Georgetown



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