

NEWS



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LOW NO_x BURNER PROJECT AT HOLCOMB CONTINUES

HAYS, KS—A unique combination of high-tech combustion modifications and sophisticated control systems will be tested on a western Kansas power plant as part of the federal government's efforts to show how new technology can reduce air emissions and save costs for ratepayers.

The United States Department of Energy (DOE) and Sunflower Electric Power Corporation signed an agreement to use the utility's Holcomb Station power plant to field test an "integrated combustion optimization system" - an array of state-of-the-art sensors, controls, and clean-burning combustion modifications, all linked by sophisticated "neural network" software.

Sunflower's proposal for a low NO_x burner project was selected by the Department of Energy through its National Energy Technology Laboratory (NETL) in September 2001. The project, as proposed by Sunflower, seeks to demonstrate that coal-fired power plants firing sub-bituminous coals can use low-NO_x burners and other combustion-stage controls to reduce NO_x emissions to 0.15–0.22 lb/106 Btu and simultaneously increase power output by 7 MW.

Ron Hammerschmidt, Director of Environment for KDHE, said that the potential for retrofitting others like the 1983 plant is substantial if it works. "If you can make something used work like new, you're that much farther ahead," he said.

Tom Sarkus, Director of the NETL's Coal Power Project Division, agreed, adding that the cost is one-fourth to one-sixth the price of traditional anti- NO_x methods. "This project has the potential to increase efficiency and lower emissions at a much lower cost than competing technologies," he said. "The plant is already a low emitting power plant."

This technology, if proven, will help Sunflower avoid the future need to install a selective catalytic reduction (SCR) system for Holcomb 1 (H1). SCR in a coal plant works similar to a catalytic converter used to reduce automobile emissions. Prior to exhaust gases going up the smokestack, they will pass through the SCR where anhydrous ammonia reacts with nitrogen oxide and converts it to nitrogen and water.

Chris Hauck, Sunflower's president and chief executive officer remarked, "When completed, this project will result in Holcomb Station being among the cleanest non-SCR-equipped coal-fired units in the United States."

Under agreements with the U.S. Department of Energy's National Energy Technology Laboratory, the plant has been installing a collection of modifications designed with the help of General Electric's Energy and Environmental Research Corporation to increase power production from coal supplies while lowering production of nitrous oxides (NOx).

The DOE is providing \$2.8 million for the \$5.88 million project, with Sunflower providing the rest and paying the DOE money back if the estimated seven-megawatt increase in production earns revenue.

At dedication ceremonies held April 22, 2003, Congressman Jerry Moran said, "This is a great day in Holcomb, in Finney County." In addition, Moran said, the cooperation between Sunflower and agencies like the Environmental Protection Agency and Kansas Department of Health and Environment are the model of performance. "This is the way government should be operating," he said.

Sunflower is installing this integrated system in three distinct phases to demonstrate the synergistic effect of layering NOx control technologies. Phase I is demonstrating the effectiveness of control upgrades with respect to NOx control and thermal efficiency. During this phase, instruments capable of measuring coal flow within individual coal conduits were installed. Only limited changes were made to the plants' computing and control systems.

Phase II is demonstrating the effectiveness of low-cost modifications to the existing, first-generation low- NOx burners for the reduction of NOx emissions. The installation of new burner tips will result in a better means of controlling air flow on individual burners.

When the project completes Phase III, an overfire air system will be coupled with the existing Phase I and II modifications to optimize system performance. Final combustion control integration with a new combustion control system will maximize NOx reductions.

There are as many as 30 units for which this technology can be deployed and 60 additional units that will be able to establish significant NOx reductions. This choice of equipment, if enabled in a timely fashion, will allow a reduction in the number of SCRs being installed nationwide and will reduce the future cost of power to Sunflower's Member Systems.

Sunflower Electric Power Corporation is a regional wholesale power supplier that owns and operates a 595 MW system of gas and coal-fired generating plants and a 1,200-mile transmission system for the needs of its six member cooperatives who serve 120,000 people spread throughout a 21,000 square mile area in western Kansas. Sunflower also provides power to regional utilities in western Kansas and in ten states.