ABSTRACT

Reburning NO_X control experiences by New York State Electric & Gas Corporation (NYSEG) include micronized coal reburning at NYSEG's Milliken Station and at Eastman Kodak Company's Boiler #15 and an advanced gas reburning technology demonstration at NYSEG's Greenidge Station.

The micronized coal reburn project at NYSEG's Milliken Station in Lansing, NY was selected for sponsorship by the US DOE in 1996 as Amendment #5 to a Cooperative Agreement between NYSEG and the US DOE under the Clean Coal Technology Demonstration program, and additional sponsorship from Empire State Electric Energy Research Corporation (ESEERCO). Several testing campaigns were completed, each with the intent to explore the various factors that could possibly affect NO_X reduction, such as coal fineness, load, pulverizing mill arrangement, primary, secondary and overfire air distribution. The last phase of testing was completed in October of 1998 in cooperation with CONSOL, Inc. The data gathered is being reduced by CONSOL, Inc. and should be available for review by NYSEG by the end of May 1999 with a final report issued approximately 90 days later. Early indications are that the micronized coal reburn technology was successful in the sense that it contributed to significant NO_X reduction (28%) by allowing increased overfire air staging while maintaining an LOI of approximately 4% when burning a 12,500 Btu bituminous coal with about 7% ash content. No further testing at NYSEG's Milliken Station is being considered at this time.

Micronized coal reburning was demonstrated on Eastman Kodak Company's Boiler #15 in Rochester, NY and was developed under the same US DOE sponsorship as the micronized coal reburn project at NYSEG's Milliken Station with additional sponsorship from the New York State Energy Research and Development Authority (NYSERDA). Because this application was associated with a cyclone-fired boiler, Fuller's MicroMill™ equipment rather than standard pulverizing mills were used to process and inject the reburn fuel. The basic concept was developed and engineered by Energy and Environmental Research Corporation (EER) and CONSOL. This project was very successful in reducing NO_X by as much as 57% but proved mechanically troublesome because of the extremely high wear experienced by the micronizing equipment and injector pipes. In addition, LOI increased from 11% to 37%.

Advanced gas reburn technology was demonstrated at NYSEG's Greenidge Station in Dresden, NY and was sponsored by Gas Research Institute (GRI), Electric Power Research Institute (EPRI), New York State Energy Research and Development Authority (NYSERDA), Empire State Electric Energy Research Corporation (ESEERCO) and Gaz de France (GDF). This project attempted to assess the increased NO_X reduction associated with gas reburn enhanced by simultaneous injection of a nitrogen containing agent such as ammonia or urea. Test results have shown that a significant improvement in NO_X reduction was

achievable with this technology. However, the mechanics, location, flow rate, controls, etc. are areas which require improvement before this technology can be made commercially available. The problem of ammonia slip fouling the air heaters, ammonia stack emissions and ash contamination are still unresolved and will remain so until a reliable, continuous, in-situ ammonia analyzer can be identified.