

B&W'S Experience on the Application of Reburn Technology on Cyclone Boilers

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Abstract

During 1980s and 1990s, B&W developed reburn technology as a low-cost combustion modification technology for cyclone boilers capable of reducing NO_x by a nominal 50%. After successful development work at B&W's cyclone-equipped pilot located at Alliance, Ohio, B&W, under DOE sponsorship, successfully demonstrated the first coal reburn technology at Wisconsin Power and Light's Nelson Dewey station. Additionally, B&W installed gas reburn systems on three of Kodak's cyclone boilers to help Kodak's NO_x compliance strategy under Title I. B&W has concluded that reburning is a technically feasible technology for reducing NO_x from cyclone boilers, and commercial offers can be provided.

The economic viability of reburn technology for cyclone NO_x control has been challenged by the application of SCR and air staging technologies. Cyclones were regulated by Title I and Title IV. Title IV requires NO_x levels of 0.8 lb/MBtu for bituminous coals that easily can be achieved with air staging. The 0.15 lb/MBtu NO_x required by Title I can be achieved by the application of SCR. Since the majority of cyclones are large, base-loaded units, when required to meet Title I requirements, the utilities have chosen to apply overfire air and SCR technologies to reduce the NO_x levels to 0.05-0.06 lb/MBtu, and applied any credits for the extra NO_x reduction to smaller units.

Even so, reburn technology could have a future in the industry. B&W recently applied reburn technology to a boiler firing orimulsion where capital costs were low. In addition, reburn could potentially be applied to boilers for reducing NO_x whenever SCR is not a good candidate, such as when there is a lack of space for installation of SCR.