

Comparisons of Ash Chemistry from a CFBC Boiler

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Abstract

Two fly ash samples were obtained from the 165 MW CFBC boiler at Point Aconi, Nova Scotia. The current fuel is petroleum coke and coal blend, but previously the boiler used Devco Prince coal. The two ashes, designated FA #1 and #2, were sampled in June 1995 and January 30, 2002, respectively, and represent operation with the original boiler fuel and the new blend. The samples were subjected to chemical analyses and scanning electron microscopy (SEM) tests. Most of the oxides in the two samples are of similar magnitude. The most significant difference between the two samples is their Fe content. The particles from both samples typically consist of a shell of CaSO₄ and a core of almost pure CaO, while there are obvious Fe-containing shell fragments in the particles from sample FA #1. The presence of Calcium ferrite has also been detected in significant quantities in the bed ash from the Devco Prince coal work. The implications of these chemical differences will be discussed in terms of the hydration chemistry of these ashes, and the overall behavior for sorbent reactivation or disposal.