Thermal Analysis of High Carbon Products Obtained from the Beneficiation of Ponded Fly Ash

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ABSTRACT

This work focuses on the combustion reactivity of high-carbon fly ash recovered from utility ash ponds and landfills. The material was obtained using a wet beneficiation technology currently under development for the production of high quality utility fuel from fly ash. It is anticipated that this fuel would be added to the feed coal stream, before pulverization, for combustion in the boiler. In order to study the high temperature reactivity of the fly ash carbon, thermogravimetric analysis (TGA) was conducted on the high-carbon ash products. This technique was used to measure the carbon burn-off rate during heating from 400° to 900°C (non-isothermal testing) and at a single temperature (~800°C; isothermal testing). The observed carbon burn-off rates were compared with those of a bituminous coal (obtained from an electric utility) in order to determine if the fly ash carbon reactivity, and thus the expected degree of burn-out in the boiler, is significantly less than that of the coal.