

Parametric Study of Column Selective Agglomeration of Fly Ash

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ABSTRACT

The proper utilization of coal combustion by-products, such as fly ash, has an important impact on the coal industry. The rising cost of disposal and the environmental concerns associated with fly ash has caused the coal industry to search for alternative uses for this combustion by-product. The overall quality of fly ash is changing due to the increase use of low-NO_x burners. The fly ash produced under these conditions have an higher carbon content (5-10 %) and will not meet the required specifications (< 4 %) for preparation of Portland cement. Currently, there is a demand for methods to separate the unburned carbon component from the inorganic components of fly ash and for the development of new applications and markets for these components. This paper describes a novel column selective agglomeration process for the separation of unburned carbon from fly ash.

A promising selective agglomeration method has been developed for the beneficiation of fly ash using a six-foot agglomeration column. Carbon concentrates have been recovered in yields greater than 60 % at purities of 55-70 %. The parameters studied include agitation speed, air flow rate, slurry feed rates, solvent/ash ratios and the use of various solvents as agglomerating agents. The effects of these variables on the quality of separation will be discussed.