

Coal Ash Beneficiation and Utilization in Coal Separation Process

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ABSTRACT

In recent years, coal production and consumption increased dramatically in China. So, more and more attentions have been paid to coal preparation and coal ash utilization with the growing concern about the pollution by fly ash. The unburned carbon in fly ash significantly affects its utilization in many fields, especially in concrete production industry. Technologies such as flotation, triboelectrostatic separation and carbon burnout have been developed to remove carbon from fly ash. This paper introduces a new coal ash dry beneficiation technology with fluidization method to remove the unburned carbon from the fly ash. The test results show that good stratification in a fluidized bed can be achieved by utilizing a suitable air velocity due to the density difference between unburned carbon and other compositions in fly ash. For some kinds of fly ash, magnetically stabilized fluidized was studied to recover magnetic beads from fly ash. The magnetic beads are mainly composed of Fe_3O_2 and Fe_3O_4 and are mostly hollow spheres. The size distributions of three kinds of magnetic beads are from 300 to 25 μm . In China, some coal preparation plants have used the magnetic beads recovered from coal-fired power plant cinder as separation media. A kind of magnetic beads fluidized bed for coal dry separation is introduced in the paper.

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