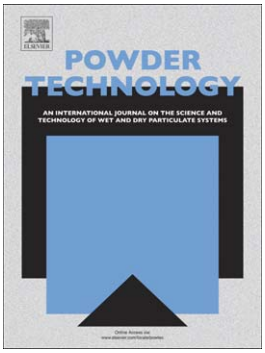

Fine Coal Recovery from Washery Tailings in Turkey by Oil Agglomeration

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Abstract

In Turkey, coal washeries discharge huge amount of fine coal containing tailings. Loss of economically valuable energy source and negative environmental effects of accumulated tailings necessitate the recovery of fine coals from these tailings. In the present study, the tailings sample from Tunçbilek Coal Washery of Turkish Coal Enterprise was subjected to oil agglomeration process in order to investigate the possibility of fine coal recovery. Free available waste sunflower oil was extensively used as bridging liquid. Effects of various parameters including solid ratio, oil dosage, agitation rate and time, slurry pH, amount of washing water, particle size, and oil type on deashing and desulphurization were investigated. Optimally, 84.1% of ash and 57.6% of the sulphur was removed from the tailings by combustible recovery of 46.8%. A clean coal with 29.9% ash and 1.3% sulphur was produced from the tailings containing 54.6% ash and 3.0% sulphur. In addition to ash and sulphur analyses, SEM-EDS analysis and polished section examination were also undertaken to reveal the performance of the process.

Key words: Coal recovery, coal cleaning, fine coal tailings, oil agglomeration, deashing, desulphurization