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DBSV FB – Density based separation of fine coal in a vibrated fluidized bed using Geldart B magnetite powder

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Dry beneficiation of fine coal needs to be upgraded because of the poor efficiency of separation technology. Under this condition, it is extremely urgent to develop an advanced process in the field of fine coal cleaning. The vibrated fluidized bed(VFB) that introduces an external vibration force to the conventional fluidized bed was applied as a successful clean dry coal preparation technology. The pressure fluctuation signals in the VFB were measured by the pressure transmitters and the hidden information in the pressure signals of the VFB was extracted with the mathematical tools in both time and frequency domains. The objective of this work was to investigate the changes of the pressure signal components in different operating factors and to evaluate the separation performance of fine coal in a Φ110 mm×800 mm VFB with the -0.3+0.074 mm magnetite powder under optimum operating condition. The experimental results indicated that the energy and power spectra of the pressure signals were obtained. The gas velocity, frequency and amplitude of the vibration have an significant effect on the pressure fluctuation of the VFB, the gangue of high ash could be removed by a VFB and got clean coal whose ash content reached 10.57% and reduced by about 24.00% compared with 34.57% of raw coal and gangue ash reached 55.00% above under the optimal technique.

Biography

Yadong Zhang is a first year PhD student at China University of Mining and Technology, and his Major is in Mineral Processing Engineering. He has published two articles in *Powder Technology and Journal of China Coal Society*, respectively.

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