Particle Size Distribution Estimation of a Mixture of Regular and Irregular Sized Particles Using Acoustic Emissions

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Abstract : This works investigates the possibility of using Acoustic Emissions (AE) to estimate the Particle Size Distribution (PSD) of a mixture of particles that comprise of particles of different densities and geometry. The experiments carried out involved the mixture of a set of glass and polyethylene particles that ranged from 150-212 microns and 150-250 microns respectively and an experimental rig that allowed the free fall of a continuous stream of particles on a target plate which the AE sensor was placed. By using a time domain based multiple threshold method, it was observed that the PSD of the particles in the mixture could be estimated.

Keywords : acoustic emissions, particle sizing, process monitoring, signal processing

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