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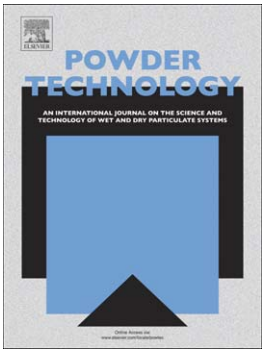

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Discrete Element Method as an Approach to Model the Wheat Milling Process

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Abstract

It is a well-known phenomenon that break-release, particle size, and size distribution of wheat milling are functions of machine operational parameters and grain properties. Due to the non-uniform characteristics and properties of wheat kernels, the kernel physical and mechanical properties affect the size reduction process. This research was the first to test the functionality of the discrete element method (DEM) to simulate the 1st break wheat roller milling process. DEM models of 1st break wheat milling were developed by incorporating the bonded particle model along with the spherical-shaped and kernel-shaped particle models. The models simulated hard red winter (HRW) wheat milling at 12%, 14%, and 16% moisture

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