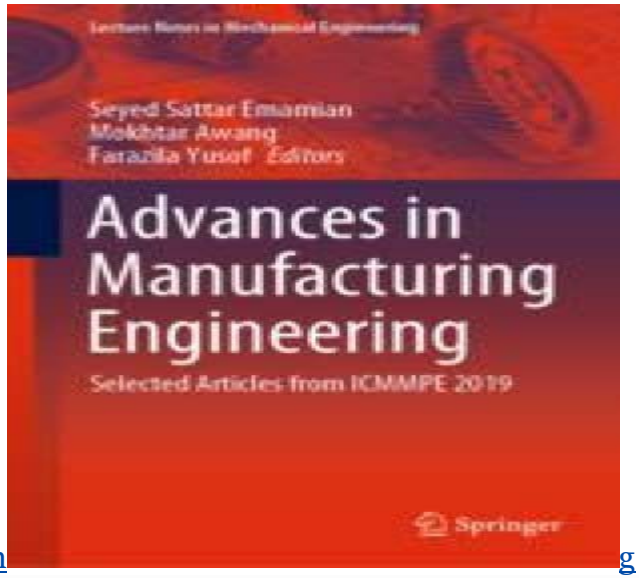

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Structural Fabrication and Dynamic Simulation of Stress of a Vibrosieve for Efficient Industrial Applications

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Abstract

A reliable and accurate size determination of powder particles or solid particles, in general, depends on the vibrating efficiency of a vibrosieve. Thus, the study employed the inexpensive design concept of vibration mechanics and mass balance to improve the quality production of powder. Stress simulation of a vibrosieve was proposed. The

result of the stress simulation using carbon steel materials showed that there is variation in both yield stress and shear stress. For a 7 N load, a yield stress of 2.817–2.835 N/m^2 and a corresponding shear stress of 2.817–2.821 N/m^2 were observed. Subsequently, simulation result using alloy steel revealed a yield stress ranging from 6.204 to 6.212 and a corresponding shear stress of 4.549–4.555 N/m^2. The variation in the stress depicts the fatigue life of the machine overtime. Thus, the result of increased yield stress showed that the material might likely fail overtime. This will enable designers to carefully select their material and operating stress which will be safe for the machine, thereby increasing machine, reliability and efficiency.

Keywords

Stress Vibration Powder Production Vibrosieve

Notes

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