

ABSTRACT

CV. XYZ is a company that produces animal feed using a hammer mill machine. There are often serious problems with the hammer blade parts due to damage caused by wear. The problems can reduce the production quantity produced by the blade may deteriorate in case of wear. The testing methods with concept development in this study uses a Finite Element Methods to determine the value of stress, strain, and deformation area of the hammer blade and determine the resulting particle size. This can be improved by good hammer blade quality in terms of shape, material and particles used by the hammer blade. The blade hammer mill in concept 1 becomes a concept recommendation, seen from the value of stress for coffee skin particles 217 Pa, coconut shell particles 336 Pa and particles of palm waste 514 Pa. Also seen from the value of the resulting stress ratio, 0.23% coffee skin particles, 0.23% coconut shell particles and 0.23% oil palm particles. The value of stress and tension is lower under other concepts. Then the resulting particle size results were 0.26 mm for coffee skin particles, 0.30 mm for coconut shell particles, and 0.30 for oil palm particles. The particle size value can pass through filtering through a filter with a hole diameter of 0.5 mm.

Keywords- Blade hammer, Hammer mill, wear, Concept development, Finite Element Methods, Stress, Strain, and Particle size.