

ABSTRACT

CV. XYZ is a company engaged in the production of animal feed and uses a hammermill machine to help speed up the production process. The hammermill machine is a milling machine that serves to reduce the particle size, especially the coffee bean husk, which is about 20 mm in size to a diameter of 0.5 mm. Hammermill has an upper case installed with secondary blade that has a function to avoid blocking. This study aims to prove that the secondary blade has an impact on reducing the blocking that occurs in the hammermill machine in the milling process by simulating the milling process into software. The software used is Solidworks flow simulation and Altair EDEM. The simulation results in the Solidworks flow simulation simulation show that the air that is flowed can only pass through a small filter area, while the simulation results using Altair EDEM using a secondary blade can remove as many as 336 particles while without a secondary blade it can only remove as many as 141 particles at the same time which proves an increase in production as much as 138 percent. In addition, because the hammermill machine is used for milling, there will be vibrations in the grinding process so an analysis using modal and free vibration using the ANSYS 18.1 software is also carried out to test the material on the rotor components. The materials tested include VCN 150, carbon steel, and titanium. The results obtained indicate that carbon steel is the best material based on natural frequency and deformation value.

Keywords: hammermill, particle, vibration, animal feed