ABSTRACT

This research focuses on the design of a pellet mill with a capacity of 30 kg/Hour aimed at increasing the efficiency and independence of small and medium-scale farmers in producing animal feed independently. The design process was carried out using SolidWorks 2023 software to produce accurate 3D models and 2D working drawings. The tool's drive system is designed using a 1/2 HP alternating current (AC) electric motor with a speed of 1400 rpm, which transmits power through an A52-type V-belt transmission and pulley system. Based on the calculation results, a pulley ratio of 1:5 was obtained, namely from a motor pulley with a diameter of 2 inches to a grinding pulley with a diameter of 10 inches, resulting in a rotation of the grinding shaft of 280 rpm. The main structure of the tool is made using an angle iron material measuring 3 × 3 cm with a thickness of 2 mm, and has overall dimensions of 60 cm × 30 cm × 62.5 cm. The frame is designed to provide optimum strength and stability against loads and vibrations during the molding process. The design results show that this tool has a strong structure, is efficient in transferring power, and is suitable as a reference for the fabrication process and testing prototypes in the later stages.

Keywords: designing, pellet molding equipment, AC electric motor, pulley transmission, capacity 30 kg/Hour.