DESIGN AND DEVELOPMENT OF A CAN PRESS MACHINE USING AN ELECTRIC MOTOR AND GEARBOX

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ABSTRACT

The increasing use of metal cans as packaging materials in various industries has led to a rise in aluminum waste, necessitating efficient waste management solutions. This study aims to design and develop an automatic can press machine powered by an electric motor and gearbox system. The machine is intended to replace the manual compaction process, which is time-consuming and labor-intensive, while achieving more optimal compression results. Based on testing, the machine successfully compressed cans from an initial volume of 417.33 cm³ to 145.19 cm³, resulting in an average volume reduction of 65.2%. Additionally, the machine demonstrated a time efficiency of 68.66% compared to the manual method, with an average pressing time of 0.92 seconds per can. These results indicate that the machine significantly accelerates the compaction process and reduces operator workload. The developed can press machine proves to be effective in improving the efficiency of metal waste management, supporting recycling efforts, and contributing to environmental sustainability. Further development is recommended, such as the addition of automation features and enhanced safety systems (K3), to optimize performance and ensure user safety.