ELECTRIC WHEELBARROW DESIGN EQUIPPED WITH LOA D CELL USING AUTODESK INVENTOR

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ABSTRACT

The process of transporting large quantities of agricultural products often experiences problems due to lack of labor, which can cause injuries and long operational times. This study aims to develop a smart Electric Wheelbarrow design with a Load Cell sensor to facilitate transportation and monitor the weight of the harvest. The research method includes a literature review, 3D modeling with Autodesk Inventor 2025 software, and capacity testing and chassis strength analysis. The chassis is designed from galvanized hollow iron measuring 40 x 40 x 2 mm to support loads up to 200 kg. Geometric testing shows a 218 Liter container capacity, ideal for agricultural products. Mechanical simulations show a maximum Von Mises stress of 76.52 MPa with a very safe Safety Factor, validated by manual analytical calculations of 57.92 MPa. Both stress values are below the material yield limit of 250 MPa, so this Electric Wheelbarrow design is safe and feasible as an efficient, economical, and ergonomic logistics transportation solution in agriculture.

Keywords : Electric Wheelbarrow, Autodesk Inventor, Load Cell, Stress Analysis, Galvanized Hollow Iron.