Design of an Automatic Drain Oil Using Autodesk Inventor

Ahmad Rofi'I, S.Pd., M.Pd. (*Thesis Supervisor*)

Canaretito Denny Firmansyah

Study Program of Mechatronic Engineering Technology Majoring in Engineering

Jember State Polytechnic

ABSTRACT

In response to the increasing need for efficiency and product quality in chip production among Micro, Small, and Medium Enterprises (MSMEs), technological innovation is required to replace the traditional manual oil-draining process. This study aims to design and test an automatic drain oil device controlled by an Arduino Nano microcontroller, with its mechanical components modeled using Autodesk Inventor 2024. The system comprises key components including a single-phase AC motor, thermocouple sensor, and a 20x4 LCD integrated through a control panel. The research applies a Research and Development (R&D) method, using Likert*scale-based expert validation and stress analysis to evaluate material feasibility and structural strength. The results indicate that the device effectively reduces residual oil in chips, with an expert-assessed design feasibility score of 85%, and a Safety Factor of 15 ul, confirming the system's structural reliability. This device is expected to significantly enhance production efficiency and product quality in MSME-scale food processing.*

Keywords*: automatic oil drainer, Autodesk Inventor, Arduino Nano, stress analysis, MSMEs.*