Control System for Automatic Oil Drain Based on Arduino Using Thermocouple Sensor and Timer

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ABSTRACT

In the food processing industry, especially for micro, small, and medium enterprises (MSMEs) producing chips, the oil-draining process after frying is a crucial stage to ensure product quality. Excess oil content can degrade taste, cause rancid odors, and accelerate spoilage. This study aims to design and implement an Arduino Nano-based Automatic Drain Oil system equipped with a thermocouple sensor and timer. The method used is research and development (R&D) focusing on process efficiency and ease of implementation. The system consists of key components such as the Arduino Nano as the main controller, thermocouple sensor for temperature monitoring, relay for motor actuation, and a push button as manual input. The design results show that the system can effectively and consistently reduce oil content in chips, potentially lowering operational costs and improving production efficiency for MSMEs.

Keywords*: Automatic Drain Oil, Arduino Nano, MSMEs, thermocouple sensor, oil draining system*