DESIGN AND DEVELOPMENT OF A ROOM HEATING DEVICE, WATER DRAINER, AND AUTOMATIC DRINKING WATER FILLER FOR POULTRY BASED ON ARDUINO MEGA

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ABSTRACT

This research aims to design and develop an automatic system for poultry room heating, water draining, and drinking water refilling based on Arduino Mega to assist farmers in maintaining coop temperature, drinking water quality, and water availability automatically. The system consists of Arduino Mega as the main controller, a DHT11 sensor to measure temperature, a turbidity sensor to detect water cloudiness, and a water level sensor to monitor water height. A 75 W incandescent lamp is used as a heater, a 12 V DC water pump for refilling, and a solenoid valve for draining. Test results show that the system operates according to the programmed logic, where the heating lamp turns on when the temperature falls below the minimum threshold and turns off when the setpoint is reached, the water pump activates when the level sensor detects low water, and the solenoid valve drains water when the turbidity sensor detects cloudiness above the threshold. Energy consumption analysis indicates that the heating lamp has the highest power usage, with a total of 274.78 Wh/day under the duty-cycle test scenario or 47.86 Wh/day under the assumption of three cycles. The system effectively improves maintenance efficiency, reduces farmer workload, and maintains coop environmental conditions according to poultry needs.

Keywords*: Arduino Mega, room heater, water draining, automatic refilling.*