ABSTRACT

Thesis Title	:	**DESIGN AND BUILD AN AUTOMATION SYSTEM FOR GALLON WATER FILLING AND STERILIZATION USING 2560 BASED ON IOT (INTERNET OF THINKS)**
Student Name	:	**Zil Fiqri Ahmaddi Chandra**
Student Number	:	**19101152620047**
Study Program	:	**Computer Engineering**
Degree Granted	:	**Strata 1 (S1)**
Advisors	:	**1. Yogi Wiyandra, S.Kom, M.Kom**
		2. Nanda Tommy Wirawan, S.Kom, M.Kom

This research presents the design and development of an innovative automation system for gallon water filling and sterilization using the ATmega2560 microcontroller as its core, incorporating IoT technology. The system integrates a diverse set of input-output components, including an ultrasonic sensor, push button, load cell, pH sensor, LCD display, RGB LED, buzzer, water pump, and water pump. The ultrasonic sensor detects the water level in the gallon, while the push button enables user interaction. The load cell measures the weight of the gallon during filling. The pH sensor continuously monitors the acidity of the water. IoT technology allows users to monitor and control the system through connected smart devices. System testing demonstrates the successful automation of the gallon water filling and sterilization processes with high accuracy and efficiency. This design aims to streamline and enhance the quality of gallon water filling while ensuring its cleanliness through advanced integration with IoT technology.

Keywords : ATmega2560 microcontroller, IoT, ultrasonic sensor, push button, load cell, pH sensor, LCD display, RGB LED, buzzer, water pump.

ABSTRAK

Thesis Title	:	**RANCANG BANGUN SISTEM OTOMATISASI PENGISIAN AIR GALON DAN STERILISASI MENGGUNAKAN ARDUINO MEGA 2560 BERBASIS IOT (INTERNET OF THINKS)**
Student Name	:	**Zil Fiqri Ahmaddi Chandra**
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Penelitian ini menguraikan rancang bangun sebuah sistem otomatisasi inovatif untuk pengisian air galon dan sterilisasi yang menggunakan mikrokontroler ATmega2560 sebagai inti, dengan penerapan teknologi IoT. Sistem ini memanfaatkan beragam komponen input-output termasuk sensor ultrasonik, tombol push, load cell, sensor pH, layar LCD, lampu LED RGB, buzzer, pompa air, dan pompa air. Sensor ultrasonik digunakan untuk mendeteksi tingkat air dalam galon, sementara tombol push memungkinkan interaksi pengguna. Load cell digunakan untuk mengukur berat galon saat diisi. Sensor pH digunakan untuk memantau keasaman air secara kontinu. Teknologi IoT memungkinkan pengguna untuk memonitor dan mengendalikan sistem melalui perangkat pintar yang terhubung. Pengujian sistem menunjukkan keberhasilan dalam mengotomatisasi proses pengisian dan sterilisasi air galon dengan akurasi dan efisiensi yang tinggi. Diharapkan bahwa rancangan ini akan mempermudah dan meningkatkan kualitas pengisian air galon sekaligus menjaga kebersihannya melalui integrasi canggih dengan teknologi IoT.

Keywords : sensor ultrasonik, *push button, load cell*, sensor pH, ATmega2560, IoT, LCD, RGB LED, buzzer, *water pump*.