

ABSTRAK

RANCANG BANGUN ALAT PENGERING DAN PEMBERSIH TANGAN OTOMATIS BERBASIS MIKROKONTROLER ARDUINO NANO

(2026: xiii + 52 halaman + 38 Gambar + 8 Tabel + Daftar Pustaka + Lampiran)

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Kebersihan tangan merupakan salah satu upaya penting dalam mencegah penyebaran penyakit. Pada perancangan ini dirancang sistem pengering tangan dan pembersih tangan otomatis berbasis Arduino Nano yang bekerja tanpa kontak langsung dengan pengguna. Sensor infrared digunakan untuk mendeteksi tangan dan mengaktifkan motor servo sebagai penggerak cairan sabun. Selanjutnya, sensor ultrasonik HC-SR04 mendeteksi keberadaan tangan untuk mengaktifkan blower dan heater pada sistem hand dryer. Sensor DS18B20 digunakan sebagai pengaman suhu heater, sedangkan sensor DHT22 digunakan untuk mendeteksi perubahan kelembaban udara di sekitar tangan setelah proses pengeringan. Informasi kondisi alat ditampilkan pada LCD 16×2 I2C.

Kata kunci : Pengering Tangan, Sensor Ultrasonik HCSR04, Sensor Infra merah, Sensor DS18B20, Sensor DHT22, Arduino Nano, Kipas Dc 12v

ABSTRACT

DESIGN AND DEVELOPMENT OF AN AUTOMATIC HAND DRYER AND HAND SANITIZER SYSTEM BASED ON AN ARDUINO NANO MICROCONTROLLER

(2026: xiii + 52 pages + 38 Figures + 8 Tables + References + Appendies)

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ELECTRICAL ENGINEERING

STUDY PROGRAM OF ELECTRONICS ENGINEERING

STATE POLYTECHNIC OF SRIWIJAYA

Hand hygiene is one of the most important measures to prevent the spread of diseases. This study designed and developed an automatic hand dryer system based on the Arduino Nano microcontroller that operates without direct physical contact with the user. An infrared sensor is used to detect the user's hand and activate a servo motor to dispense hand sanitizer. Subsequently, an HC-SR04 ultrasonic sensor detects the presence of the user's hand to activate the blower and heater of the hand dryer system. A DS18B20 temperature sensor is employed to monitor and protect the heater from excessive temperatures, while a DHT22 sensor is used to detect changes in the air humidity around the user's hands after the drying process. The system status is displayed on a 16×2 I2C LCD.

Keywords: Hand Dryer, HC-SR04 Ultrasonic Sensor, Infrared Sensor, DS18B20 Temperature Sensor, DHT22 Sensor, Arduino Nano, 12 V DC Blower Fan.