

ABSTRAK

“RANCANG BANGUN SISTEM PENYESUAIAN SUHU PENYIMPANAN PIE BUAH DENGAN MONITORING ANDROID BERBASIS INTERNET OF THINGS”

(Zakiatuz Zahrah, 2025:48)

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Perkembangan *Internet of Things* (IoT) memungkinkan otomatisasi penyimpanan makanan sensitif seperti pie buah. Pie buah mudah rusak karena kadar air yang tinggi, sehingga memerlukan kontrol suhu yang presisi. Penelitian ini merancang sistem penyimpanan berbasis IoT menggunakan ESP32, sensor DHT22 untuk suhu, MQ135 untuk kualitas udara, dan modul Peltier sebagai pendingin. Pemantauan dilakukan melalui aplikasi Blynk di perangkat Android. Metode *prototyping* digunakan dalam merancang, membangun, dan menguji sistem. Hasil menunjukkan bahwa alat mampu menurunkan suhu hingga $\pm 10^{\circ}\text{C}$ dalam waktu 40 menit dan menjaga kestabilannya. Dengan sistem ini, pie buah dapat bertahan hingga ± 12 jam, dua kali lebih lama dibanding penyimpanan di suhu ruang. Sistem ini dinilai efektif untuk mendukung pelaku UMKM dalam mempertahankan kualitas produk secara efisien dan *real-time*.

Kata Kunci: IoT, Pie Buah, Pendingin Otomatis, ESP32, DHT22, MQ135, Blynk.

ABSTRACT

“DESIGN AND DEVELOPMENT OF A FRUIT PIE STORAGE TEMPERATURE CONTROL SYSTEM WITH ANDROID-BASED IoT MONITORING”

(Zakiatuz Zahrah, 2025:48)

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The development of the Internet of Things (IoT) enables automation in storing sensitive foods such as fruit pies. Due to their high moisture content, fruit pies are highly perishable and require precise temperature control. This study designs an IoT-based storage system using an ESP32 microcontroller, DHT22 sensor for temperature, MQ135 sensor for air quality, and Peltier modules as cooling components. Monitoring is performed via the Blynk application on Android devices. The prototyping method was used to design, build, and test the system. The results show that the system can reduce the temperature to around $\pm 10^{\circ}\text{C}$ within 40 minutes and maintain it consistently. With this system, fruit pies can last up to ± 12 hours, twice as long as under normal room conditions. This solution is considered effective in helping small and medium enterprises (SMEs) maintain product quality efficiently and in real-time.

Keywords: IoT, Fruit Pie, Automatic Cooling, ESP32, DHT22, MQ135, Blynk.