

ABSTRAK

RANCANG BANGUN ALAT PENGERING KERUPUK BERBASIS IoT MENGUNAKAN SOLAR CELL PADA RUMAH PRODUKSI KERUPUK ADE

(2025 : xvii + 51 Halaman + 43 Gambar + 7 Tabel + 27 Daftar Pustaka + 7
Lampiran)

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Penelitian ini bertujuan merancang dan membangun alat pengering kerupuk otomatis berbasis Internet of Things (IoT) dengan sumber energi terbarukan berupa solar cell. Alat ini dirancang untuk mengatasi kendala pengeringan tradisional yang bergantung pada cuaca, rentan terhadap debu dan polusi, serta membutuhkan pengawasan manual. Sistem menggunakan mikrokontroler ESP32 yang terhubung dengan aplikasi Blynk untuk memantau suhu dan kelembapan secara real-time melalui smartphone. Sensor MAX6675 digunakan untuk mengukur suhu tinggi, sedangkan DHT22 untuk kelembapan. Energi listrik disuplai dari panel surya, disimpan di aki, dan dikendalikan oleh solar charge controller. Hasil pengujian menunjukkan alat mampu mengeringkan kerupuk secara otomatis dalam waktu 3 jam dengan suhu maksimal 110°C dan penurunan kelembapan yang bertahap. Validasi sensor menunjukkan tingkat akurasi yang baik dengan error rendah. Sistem ini diharapkan dapat meningkatkan efisiensi produksi UMKM dan mengurangi ketergantungan terhadap sinar matahari langsung.

Kata kunci : IoT, kerupuk, ESP32, *solar cell*, *Blynk*, pengering otomatis, sensor suhu dan kelembapan.

ABSTRACT

DESIGN AND CONSTRUCTION OF AN IoT-BASED CRACKER DRYER USING SOLAR CELLS AT ADE'S CRACKER PRODUCTION HOUSE

(2025: xvii + 51 Pages + 43 Figure + 7 Tables + 27 References + 7 Appendices)

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This study aims to design and develop an automatic cracker drying device based on the Internet of Things (IoT) using renewable energy from solar cells. The device is designed to overcome the limitations of traditional drying methods, which rely heavily on weather conditions, are prone to dust and pollution, and require constant monitoring. The system utilizes an ESP32 microcontroller integrated with the Blynk application to monitor temperature and humidity in real-time via a smartphone. The MAX6675 sensor is used to measure high temperatures, while the DHT22 sensor is used for humidity detection. Electrical energy is supplied from solar panels, stored in a battery, and regulated by a solar charge controller. Testing results show that the device is capable of automatically drying crackers within approximately 3 hours, reaching a maximum temperature of 110°C with a gradual decrease in humidity. Sensor validation indicates a high level of accuracy with low error rates. This system is expected to enhance the efficiency of MSME production and reduce dependence on direct sunlight.

Keyword s: *IoT, crackers, ESP32, solar cell, Blynk, automatic dryer, temperature and humidity sensors.*