

ABSTRAK

SISTEM PEMANTAUAN DAYA PADA OVEN LISTRIK BERBASIS PANEL SURYA UNTUK PRODUKSI KERIPIK UBI UNGU DI DESA SIGAM KABUPATEN MUARA ENIM

(Poppy Yuliarisa Andini, 2025)

Usaha Mikro, Kecil, dan Menengah (UMKM) berperan penting dalam perekonomian Indonesia, salah satunya melalui produksi keripik ubi ungu (*Ipomoea batatas L.*). Namun, metode tradisional yang menggunakan kayu bakar dan minyak goreng berlebih menyebabkan biaya produksi tinggi, kualitas produk kurang optimal, serta berdampak negatif pada lingkungan. Penelitian ini bertujuan merancang oven listrik berbasis panel surya sebagai alternatif ramah lingkungan dan efisien untuk produksi keripik ubi ungu di Desa Sigam, Kecamatan Gelumbang, Kabupaten Muara Enim. Alat dirancang menggunakan panel surya berukuran 760 mm × 680 mm × 30 mm, baterai LiFePO₄ 12V 100Ah, dan oven listrik berkapasitas 35 liter dengan daya 900 W. Hasil pengujian menunjukkan panel surya menghasilkan daya maksimum 89,3 W pada cuaca cerah, sedangkan baterai mampu menyuplai oven selama 1,5 jam dengan sisa kapasitas sekitar 93%. Suhu optimal oven tercapai pada 170°C selama 16 menit dan mampu memanggang 100 gram ubi ungu menjadi ±65 gram keripik dengan tekstur renyah dan kematangan merata. Penelitian ini membuktikan bahwa oven listrik tenaga surya cukup efisien untuk produksi skala kecil hingga menengah, mengurangi ketergantungan pada kayu bakar, dan mendukung penerapan energi terbarukan di sektor UMKM.

Kata Kunci: Oven Listrik, Panel Surya, Keripik Ubi Ungu, UMKM, Energi Terbarukan

ABSTRACT

POWER MONITORING SYSTEM ON A SOLAR PANEL-BASED ELECTRIC OVEN FOR PURPLE SWEET POTATO CHIP PRODUCTION IN SIGAM VILLAGE, MUARA ENIM DISTRICT

(Poppy Yuliarisa Andini, 2025)

*Micro, small, and medium enterprises play an important role in the Indonesian economy, one of which is through the production of purple sweet potato chips (*Ipomoea batatas* L.). However, traditional methods that use firewood and excessive cooking oil result in high production costs, suboptimal product quality, and a negative impact on the environment. This study aims to design a solar panel-based electric oven as an environmentally friendly and efficient alternative for purple sweet potato chip production in Sigam Village, Gelumbang Subdistrict, Muara Enim Regency. The device was designed using a 760 mm × 680 mm × 30 mm, a 12V 100Ah LiFePO4 battery, and a 35-liter electric oven with a power of 900 W. Test results showed that the solar panel generated a maximum power of 89.3 W under sunny conditions, while the battery could supply the oven for 1.5 hours with a remaining capacity of approximately 93%. The oven's optimal temperature is reached at 170°C within 16 minutes and can bake 100 grams of purple sweet potatoes into approximately 65 grams of chips with a crispy texture and even doneness. This study demonstrates that the solar-powered electric oven is sufficiently efficient for small to medium-scale production, reducing dependence on firewood, and supporting the adoption of renewable energy in the Micro, Small, and Medium Enterprise sector.*

Keywords: *Electric Oven, Solar Panel, Purple Sweet Potato Chips, MSMEs, Renewable Energy*