

RANCANG BANGUN MESIN PERAJANG PISANG VERTIKAL MENGGUNAKAN MOTOR LISTRIK

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ABSTRAK

Proses perajangan pisang pada usaha pengolahan keripik pisang masih dilakukan secara manual sehingga membutuhkan waktu lama, kapasitas produksi rendah, dan bergantung pada tenaga operator. Untuk mengatasi hal tersebut, dilakukan rancang bangun mesin perajang pisang vertikal menggunakan motor listrik dengan tujuan menghasilkan irisan pisang yang seragam dari segi ketebalan dan bentuk, serta meningkatkan efisiensi waktu dan tenaga kerja. Metode penelitian meliputi observasi, studi literatur, perancangan, pembuatan, dan pengujian mesin. Pengujian dilakukan dengan membandingkan perajangan manual, mesin satu mata pisau, dan mesin dua mata pisau berdasarkan ketebalan irisan, waktu perajangan, dan kapasitas produksi. Hasil pengujian menunjukkan mesin mampu menghasilkan irisan dengan ketebalan sekitar 1 mm. Kapasitas produksi meningkat dari 6 kg/jam pada metode manual menjadi 15 kg/jam dengan satu mata pisau dan 30 kg/jam dengan dua mata pisau. Penggunaan dua mata pisau meningkatkan produktivitas sebesar 400% dan menghemat waktu proses sebesar 80% dibandingkan metode manual. Dengan demikian, mesin ini layak diterapkan sebagai teknologi tepat guna bagi UMKM pengolahan keripik pisang.

Kata Kunci: Pisang, Mesin Perajang, Sistem Vertikal, Motor Listrik 0,5 HP, UMKM

DESIGN AND DEVELOPMENT OF A VERTICAL BANANA SLICING MACHINE USING AN ELECTRIC MOTOR

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ABSTRACT

The banana slicing process in banana chip processing businesses is still commonly performed manually, resulting in longer processing times, lower production capacity, and a high dependence on operator labor. To address these issues, a vertical banana slicing machine driven by an electric motor was designed and developed with the objective of producing banana slices with uniform thickness and shape while improving time efficiency and reducing labor requirements. The research method consisted of observation, literature review, machine design, fabrication, and performance testing. The machine was evaluated by comparing manual slicing, a single-blade configuration, and a double-blade configuration based on slice thickness, slicing time, and production capacity. The test results showed that the machine was capable of producing banana slices with an average thickness of approximately 1 mm. Production capacity increased from 6 kg/h using the manual method to 15 kg/h with the single-blade configuration and 30 kg/h with the double-blade configuration. The use of two blades improved productivity by 400% and reduced processing time by 80% compared with the manual method. Therefore, the developed machine is suitable as an appropriate technology solution for small and medium-sized enterprises (SMEs) engaged in banana chip production.

Keywords: Banana, Banana Slicing Machine, Vertical System, 0.5 HP Electric Motor, Small and Medium-Sized Enterprises (SMEs)