

ABSTRAK

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Judul Laporan Akhir : Rancang Bangun Mesin Dengan Mekanisme *Adjustable Gap Holder* Sebagai Pemisah Cangkang Telur Rebus
(Proses Perawatan)

(2026: xi + 39 Halaman, 17 Gambar, 9 Tabel + 6 Lampiran)

Mesin dengan mekanisme *adjustable gap holder* sebagai pemisah cangkang telur rebus dirancang untuk meningkatkan produktivitas proses pengupasan telur pada usaha mikro, kecil, dan menengah. Proses pengupasan secara manual masih membutuhkan waktu lebih lama, tenaga kerja lebih banyak, sehingga produktivitas menjadi kurang optimal. Laporan akhir ini bertujuan menyusun panduan pengoperasian mesin berdasarkan *manual book*, menentukan metode perawatan setiap komponen, serta menyusun jadwal perawatan yang sesuai dengan karakteristik penggunaan mesin. Metode yang digunakan meliputi studi literatur, observasi, identifikasi komponen, penyusunan prosedur pengoperasian, serta penyusunan jadwal perawatan berdasarkan spesifikasi dan tingkat penggunaan. Mesin terdiri atas rangka, motor listrik AC, sistem transmisi *pulley* dan sabuk, *gearbox*, poros ulir, poros peretak, *adjustable gap holder*, pompa, *bearing*, serta sistem kelistrikan yang memerlukan perawatan berkala. Hasil penyusunan laporan menunjukkan bahwa penerapan prosedur pengoperasian sesuai *manual book* disertai perawatan preventif mingguan, bulanan, dan tahunan mampu menjaga kinerja mesin tetap optimal, mengurangi risiko kerusakan komponen, meningkatkan keandalan operasi, memperpanjang umur pakai mesin, serta mendukung proses produksi telur rebus yang lebih efektif, efisien, aman, dan berkelanjutan bagi pelaku UMKM melalui pemanfaatan mesin secara tepat, konsisten, serta sesuai prosedur perawatan yang telah disusun sehingga biaya pemeliharaan dapat ditekan umur komponen meningkat kualitas pengupasan tetap terjaga dan produktivitas UMKM semakin baik berkelanjutan.

Kata Kunci: *adjustable gap holder*, pemisah cangkang telur, perawatan mesin,

ABSTRACT

Design and Construction of a Boiled Egg Shell Separation Machine Using an Adjustable Gap Holder Mechanism (Maintenance Process)

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Boiled eggs are a widely consumed food product and are extensively used in various food industries, including catering services, restaurants, and ready-to-eat food production. The manual peeling process is still commonly applied, requiring considerable time, labor, and precision, particularly in large-scale production. This condition highlights the need for the development of a boiled egg peeling machine capable of increasing productivity while maintaining high peeling quality. This study aimed to design, manufacture, and evaluate the performance of a boiled egg peeling machine employing an adjustable gap holder mechanism and to analyze the effect of gap distance variations on peeling performance. The research method consisted of needs identification, solidwork design, component manufacturing, machine assembly, and performance testing. Performance tests were conducted using three gap distance variations of 12 mm, 14 mm, and 16 mm. The observed parameters included peeling time, shell removal efficiency, and the quality of the egg surface after the peeling process. The experimental results showed that the 12 mm gap produced the best performance, with an average peeling time of 14.95–15 seconds for four eggs in a single operating cycle and the cleanest peeling results. At a 14 mm gap, some shell fragments remained attached to the egg surface, whereas at a 16 mm gap only a small portion of the shell was successfully removed. The gap distance had no significant effect on the peeling time but greatly influenced the peeling quality. Compared with manual peeling, which required an average of 14.46 seconds per egg, the developed machine demonstrated higher productivity by peeling four eggs simultaneously in one operating cycle, making it more efficient for supporting production activities in small and medium-sized enterprises.

Keywords: adjustable gap holder, boiled egg shell separator, machine maintenance..