

ABSTRAK

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Judul Laporan Akhir : Rekondisi *Clutch* Mesin Bubut *Celtic 14* (Perbaikan dan Pengujian)

(2026: xii + 76 Halaman, 35 Gambar, 26 Tabel + 5 Lampiran)

Mesin Bubut *Celtic 14* dengan nomor seri 480-1006 merupakan salah satu fasilitas utama di Bengkel Produksi Jurusan Teknik Mesin Politeknik Negeri Sriwijaya yang digunakan mahasiswa dalam kegiatan praktikum. Seiring waktu, mesin ini mengalami berbagai kerusakan pada komponen vital, khususnya pada sistem *clutch* (kopling), yang berdampak pada menurunnya kinerja operasional dan efektivitas pembelajaran. Penelitian ini bertujuan untuk mengidentifikasi penyebab kerusakan *clutch*, melakukan proses rekondisi, serta mengevaluasi efektivitas hasil perbaikan terhadap kinerja mesin. Metode yang digunakan meliputi inspeksi menyeluruh, pembongkaran komponen, analisis kondisi, perbaikan atau penggantian bagian yang rusak, perakitan kembali, serta pengujian performa. Proses rekondisi dilakukan secara sistematis dengan memperhatikan standar teknis pabrikan agar fungsi mesin dapat dikembalikan mendekati kondisi awal. Pengujian meliputi slip *clutch*, transmisi daya, torsi yang ditransmisikan, serta putaran mesin. Data hasil pengujian dibandingkan antara kondisi sebelum dan sesudah rekondisi untuk menilai peningkatan efisiensi dan keandalan. Hasil penelitian menunjukkan bahwa kerusakan *clutch* disebabkan oleh keausan material, kurangnya pelumasan, serta beban operasional yang berlebihan. Setelah dilakukan rekondisi, mesin bubut *Celtic 14* kembali berfungsi optimal dengan peningkatan efisiensi transmisi daya, kestabilan putaran, dan pengurangan slip pada *clutch*. Selain itu, rekondisi ini menghasilkan jadwal perawatan preventif yang lebih terstruktur sehingga dapat mencegah kerusakan berulang. Dengan demikian, rekondisi tidak hanya memperpanjang umur pakai mesin, tetapi juga meningkatkan kualitas pembelajaran mahasiswa di bengkel produksi. Kesimpulannya, rekondisi *clutch* pada Mesin Bubut *Celtic 14* terbukti efektif dalam mengembalikan performa mesin mendekati standar pabrikan, sekaligus memberikan manfaat jangka panjang bagi keberlanjutan operasional dan proses pendidikan.

Kata Kunci: Rekondisi, Mesin Bubut *Celtic 14*, *Clutch*, Efisiensi Transmisi, Preventive Maintenance.

ABSTRACT

Reconditioning of the Celtic 14 Lathe Machine Clutch (Repair and Testing

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The Celtic 14 lathe machine, serial number 480-1006, is one of the primary facilities at the Mechanical Engineering Production Workshop, State Polytechnic of Sriwijaya, used by students for practical learning activities. Over time, the machine experienced several failures in critical components, particularly in the clutch system, which significantly reduced operational performance and hindered the effectiveness of student training. This study aims to identify the causes of clutch damage, carry out the reconditioning process, and evaluate the effectiveness of the repair in restoring machine performance. The methodology includes comprehensive inspection, disassembly of components, condition analysis, repair or replacement of damaged parts, reassembly, and performance testing. The reconditioning process was conducted systematically, following manufacturer standards to restore the machine's function close to its original condition. Testing involved clutch slip, power transmission efficiency, transmitted torque, and spindle speed. The results before and after reconditioning were compared to assess improvements in efficiency and reliability. Findings indicate that clutch damage was caused by material wear, insufficient lubrication, and excessive operational loads. After reconditioning, the Celtic 14 lathe machine regained optimal functionality, with improved transmission efficiency, stable spindle rotation, and reduced clutch slip. Furthermore, the reconditioning process produced a structured preventive maintenance schedule, minimizing the risk of recurring failures. Thus, reconditioning not only extended the machine's service life but also enhanced the quality of student learning in the production workshop. In conclusion, clutch reconditioning on the Celtic 14 lathe machine proved effective in restoring performance close to factory standards, while providing long-term benefits for operational sustainability and educational processes.

Keywords: *Reconditioning, Celtic 14 Lathe, Clutch, Transmission Efficiency, Preventive Maintenance*