ABSTRAK

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Judul Laporan Akhir	:	Rekondisi Kompresor *Reciprocating* Tiga Silinder Di Gedung *Maintenance & Repair* Politeknik Negeri Sriwijaya

(2025: xiii + 37 Halaman, 23 Gambar, 4 Tabel + 8 Lampiran)

Kompresor Reciprocating tiga silinder merupakan salah satu peralatan yang sangat penting dalam berbagai sektor industri, termasuk di lingkungan pendidikan dan pelatihan teknis seperti yang ada di Politeknik Negeri Sriwijaya. Kompresor ini digunakan untuk proses kompresi udara yang diperlukan dalam berbagai aplikasi, mulai dari sistem pendingin hingga industri manufaktur. Namun, penggunaan yang intensif tanpa perawatan yang tepat dapat menyebabkan kerusakan komponen-komponen utama dalam sistem, sehingga menurunkan efisiensi dan kinerja alat. Tujuan dari penelitian ini ialah mengembalikan fungsi semula kompresor serta melakukan beberapa pengujian pada kompresor reciprocating tiga silinder. Kompresor tersebut awalnya tidak dapat beroperasi akibat kerusakan pada beberapa komponen utama, seperti motor listrik, kepala kompresor, pressure switch, serta kerangka pendukung. Rekondisi dilakukan dengan mengganti beberapa komponen menggunakan spesifikasi yang lebih rendah, yaitu kepala kompresor 7,5 HP dan motor listrik 7,5 HP, dengan mempertimbangkan aspek keselamatan dan ketersediaan komponen. Metode yang digunakan dalam proses pengujian ini, yaitu running test dan performance test. Running test bertujuan memastikan bahwa sistem dapat beroperasi tanpa suara abnormal, getaran berlebihan, atau kebocoran udara. Sementara itu, performance test difokuskan pada pengukuran tekanan maksimum, debit aliran udara, arus listrik, serta efisiensi daya. Hasil pengujian menunjukkan bahwa kompresor yang telah direkondisi mampu mencapai tekanan maksimum sebesar 8 bar dengan debit aliran udara sebesar 800 liter per menit. Waktu yang dibutuhkan untuk mencapai tekanan tersebut adalah rata-rata 3 menit 18 detik, dengan efisiensi listrik mencapai sekitar 85%. Tidak ditemukan gangguan mekanis maupun kelainan operasional selama pengujian berlangsung. Berdasarkan hasil tersebut, dapat disimpulkan bahwa proses rekondisi telah berhasil dan kompresor layak digunakan kembali sebagai alat bantu praktikum di lingkungan pendidikan vokasi.

Kata Kunci : Kompresor *Reciprocating*, pengujian, *running test*, *performance test*.

ABSTRACT

Reconditioning of a Three-Cylinder Reciprocating Compressor in the Maintenance & Repair Building of Sriwijaya State Polytechnic (Testing Process)

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Three-cylinder Reciprocating compressors are one of the most important equipment in various industrial sectors, including in the education and technical training environment such as the one at the Sriwijaya State Polytechnic. This compressor is used for the air compression process required in various applications, from cooling systems to the manufacturing industry. However, intensive use without proper maintenance can cause damage to the main components in the system, thereby reducing the efficiency and performance of the tool. The purpose of this study is to restore the original function of the compressor and conduct several tests on the three-cylinder reciprocating compressor. The compressor was initially non-operational due to damage to several critical components, including the electric motor, compressor head, pressure switch, and supporting frame. Reconditioning process involved replacing some components with lower-specification parts, specifically a 7.5 HP compressor head and a 7.5 HP electric motor, while considering safety aspects and component availability. Testing methods used in this study include the running test and the performance test**.** The running test aims to ensure that the system operates without abnormal noise, excessive vibration, or air leakage. Meanwhile, the performance test focuses on measuring maximum pressure, airflow rate, electrical current, and power efficiency. The test results show that the reconditioned compressor was capable of reaching a maximum pressure of 8 bar with an airflow rate of 800 liters per minute. The average time required to reach this pressure was 3 minutes and 18 seconds, with an electrical efficiency of approximately 85%. No mechanical faults or operational issues were detected during the testing process. Based on these findings, it can be concluded that the reconditioning process was successfully implemented, and the compressor is now suitable for reuse as a practical learning tool in vocational education environments.

Keywords : Reciprocating compressor, running test, performance test.