ABSTRAK

ANALISA EFISIENSI MOTOR INDUKSI 3 FASA 6905-V SEBAGAI PENGGERAK *BELT CONVEYOR* DI PT. PUPUK SRIWIDJAJA

(2025: xvi + 59 Halaman + 43 Gambar + 3 Tabel + 8 Daftar Pustaka)

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Efisiensi motor *belt conveyor* sangat penting dalam operasi normal, karena memengaruhi konsumsi energi dan kinerja produksi di PT. Pupuk Sriwidjaja. Penelitian ini bertujuan untuk menghitung efisiensi motor induksi tiga fasa yang digunakan sebagai penggerak *belt conveyor*, melalui analisis daya input, rugi-rugi daya (tembaga stator, celah udara, tembaga rotor, dan total), serta daya output motor. Perhitungan efisiensi dilakukan dengan secara berurutan menentukan daya input, menghitung tiap komponen rugi-rugi, menghitung daya output actual motor, dan membandingkan nilai daya output dengan input untuk mendapatkan nilai efisiensi. Nilai efisiensi motor yang digunakan berada dalam rentang 78,64 % – 82,79 %. Efisiensi ini dipengaruhi secara signifikan oleh besarnya rugi-rugi total semakin tinggi rugi-rugi, semakin rendah efisiensi yang dihasilkan.Efisiensi motor dikatakan baik ketika daya output mendekati daya input. Hasil penelitian menunjukkan bahwa rugi-rugi perlu diminimalkan agar efisiensi mendekati ideal oleh karena itu, penting untuk meninjau dan mengurangi komponen rugi-rugi motor guna meningkatkan efisiensi dan performa operasional belt conveyor.

Kata Kunci : Efisiensi, Slip, Daya Input, Rugi Daya, Daya Output.

ABSTRACT

EFFICIENCY ANALYSIS OF 3 PHASE 6905-V INDUCTION MOTOR AS BELT *CONVEYOR DRIVE* AT PT. FERTILIZER SRIWIDJAJA

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The efficiency of *the belt conveyor* motor is very important in normal operation, as it affects energy consumption and production performance at PT. Fertilizer Sriwidjaja. This study aims to calculate the efficiency of the three-phase induction motor used as a *belt conveyor drive*, through the analysis of input power, power losses (stator copper, air gap, rotor copper, and total), and motor output power. Efficiency calculation is carried out by sequentially determining the input power, calculating each component loss, calculating the actual output power of the motor, and comparing the output power value with the input to obtain the efficiency value. The efficiency value of the motor used is in the range of 78.64 % – 82.79 %. This efficiency is significantly affected by the magnitude of the total loss, the higher the loss, the lower the efficiency produced. The efficiency of the motor is said to be good when the output power is close to the input power. The results of the study show that losses need to be minimized so that efficiency is close to ideal, therefore, it is important to review and reduce motor loss components to improve the efficiency and operational performance of belt conveyors.

Keywords: efficiency, slip, input power, power loss, output power.