

ABSTRAK
ANALISIS PENURUNAN TAHANAN ISOLASI MOTOR 6200 JBM
AKIBAT KONDISI LINGKUNGAN OPERASIONAL DI PT PUPUK
SRIWIDJAJA PALEMBANG

(2026 : xvi + 61 halaman + Daftar Gambar + Daftar Tabel + Lampiran)

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Penelitian ini bertujuan menganalisis pengaruh kondisi lingkungan operasional terhadap penurunan tahanan isolasi Motor 6200 JBM serta mengevaluasi efektivitas perbaikan yang dilakukan. Pengukuran menggunakan metode Insulation Resistance IR(t) pada tegangan uji 500 V mengacu pada IEEE Std 43-2013. Hasil menunjukkan bahwa kelembaban lingkungan yang tinggi (70–80% RH) menyebabkan penyerapan uap air pada isolasi, korosi komponen, dan penurunan tahanan isolasi. Sebelum perbaikan, nilai tahanan isolasi sebesar 0 MΩ, sehingga tidak memenuhi standar minimum IEEE Std 43-2013 dan motor dinyatakan tidak layak operasi. Setelah dilakukan pembersihan, pengeringan, pengujian surge test, dan penggantian bearing, nilai tahanan isolasi meningkat menjadi 1,105 GΩ. Hasil ini menunjukkan bahwa kondisi isolasi motor kembali berada pada kategori sangat baik dan layak dioperasikan. Penelitian ini membuktikan bahwa kondisi lingkungan operasional berpengaruh terhadap kualitas isolasi motor dan bahwa tindakan perbaikan yang tepat dapat memulihkan kondisi isolasi secara signifikan.

Kata Kunci: Motor 6200 JBM, Tahanan Isolasi, *Insulation Resistance* IR(t),

ABSTRACT
ANALYSIS OF INSULATION RESISTANCE DEGRADATION OF 6200 JBM
MOTOR DUE TO OPERATIONAL ENVIRONMENTAL CONDITIONS AT
PT PUPUK SRIWIDJAJA PALEMBANG

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This study analyzes the effect of operational environmental conditions on the insulation resistance degradation of the 6200 JBM motor and evaluates the effectiveness of the corrective actions performed. Measurements were conducted using the Insulation Resistance (IR) method at a test voltage of 500 V based on IEEE Std 43-2013. The results indicate that high environmental humidity (70–80% RH) causes moisture absorption by insulation materials, component corrosion, and a decrease in insulation resistance. Before repair, the insulation resistance was 0 MΩ, which did not meet the minimum IEEE Std 43-2013 requirement and indicated that the motor was not suitable for operation. After cleaning, oven drying, surge testing, and bearing replacement, the insulation resistance increased to 1.105 GΩ. These results show that the motor insulation condition returned to a very good category and became suitable for operation. The study demonstrates that operational environmental conditions significantly affect motor insulation quality and that proper corrective maintenance can effectively restore insulation performance.

Keywords: 6200 JBM Motor, Insulation Resistance, Insulation Resistance IR(t).