

ANALISIS PENGEMBANGAN METODE REWINDING MOTOR INDUKSI TIGA FASA 15 Kw TANPA DATA AWAL KUMPARAN

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ABSTRAK

Motor induksi tiga fasa 15 kW merupakan salah satu penggerak utama dalam industri karena memiliki konstruksi yang sederhana, efisien, dan andal. Namun, dalam proses perbaikan khususnya rewinding, sering ditemukan permasalahan berupa tidak tersedianya data awal kumparan seperti jumlah lilitan, diameter kawat, jenis hubungan belitan, serta konfigurasi slot stator. Kondisi ini menyulitkan proses penggulangan ulang dan berpotensi menurunkan performa motor apabila perhitungan tidak dilakukan secara tepat. Metode yang digunakan meliputi identifikasi spesifikasi nameplate motor, pengukuran dimensi stator dan slot, perhitungan ulang jumlah lilitan, penentuan luas penampang kawat berdasarkan arus nominal, serta penentuan jenis hubungan belitan (bintang/delta). Setelah proses rewinding selesai, dilakukan pengujian meliputi uji tahanan isolasi (megger), uji arus tanpa beban, uji daya input-output, dan pengamatan suhu menggunakan termometer inframerah untuk memastikan kesesuaian kinerja motor terhadap standar operasional. Hasil penelitian menunjukkan bahwa metode yang dikembangkan mampu menghasilkan performa motor yang mendekati spesifikasi nameplate, dengan nilai arus dan suhu kerja berada dalam batas aman serta efisiensi yang tidak mengalami penurunan signifikan. Dengan begitu, metode rewinding tanpa data awal kumparan dapat diterapkan secara efektif melalui pendekatan analisis teknis dan pengujian terukur, sehingga dapat menjadi solusi dalam perbaikan motor induksi di lapangan.

Kata Kunci: Motor induksi 3 fasa, Masalah, Metode, dan Hasil.

ANALYSIS OF THE DEVELOPMENT OF A 15 kW THREE-PHASE INDUCTION MOTOR REWINDING METHOD WITHOUT INITIAL COIL DATA

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ABSTRACT

The 15 kW three-phase induction motor is a key industrial drivetrain due to its simple, efficient, and reliable construction. However, during repairs, particularly during rewinding, problems often arise due to the lack of initial coil data, such as the number of turns, wire diameter, winding connection type, and stator slot configuration. This complicates the rewinding process and can potentially degrade motor performance if calculations are not performed accurately. The method used includes identifying the motor nameplate specifications, measuring the stator and slot dimensions, recalculating the number of turns, determining the wire cross-sectional area based on the rated current, and determining the winding connection type (star/delta). After the rewinding process is complete, tests are conducted, including insulation resistance testing (megger), no-load current testing, input-output power testing, and temperature monitoring using an infrared thermometer to ensure motor performance meets operational standards. The results show that the developed method is capable of producing motor performance close to nameplate specifications, with operating current and temperature values within safe limits and efficiency without significant degradation. In this way, the rewinding method without initial coil data can be applied effectively through a technical analysis approach and measurable testing, so that it can be a solution in repairing induction motors in the field.

Keywords: *3-phase induction motor, Problems, Methods, and Results.*