

ABSTRAK
SISTEM KENDALI MOTOR INDUKSI 3 FASA TIPE DAHLENDER
PADA MESIN BOR LISTRIK

(2026 : xvii + 65 Hal + 45 Gambar + 13 Tabel + Lampiran)

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Sistem kendali motor listrik berperan penting dalam menjaga kinerja mesin bor listrik agar beroperasi optimal, efisien, dan aman. Penelitian ini bertujuan mengetahui prinsip kerja sistem kendali motor induksi 3 fasa tipe dahlander pada mesin bor listrik, mengidentifikasi komponen rangkaian kendali, serta menganalisis hasil pengujian pada dua mode kecepatan. Metode meliputi perbaikan motor (penggulangan ulang lilitan stator dan penggantian bearing), perancangan rangkaian kendali menggunakan kontaktor, MCB, *Thermal Overload Relay* (TOR), dan *push button*, serta pengujian menggunakan *tachometer*, *clamp meter*, dan *cos phi meter* di bengkel Teknik Listrik Politeknik Negeri Sriwijaya. Hasil penelitian menunjukkan sistem kendali motor dahlander dua kecepatan bekerja sesuai perencanaan. Mode kecepatan rendah (delta, 8 kutub) menghasilkan kecepatan sinkron 750 RPM, kecepatan terukur 731,6 RPM, slip 2,45%, dan daya input 342,68 Watt. Mode kecepatan tinggi (*Double Star/YY*, 4 kutub) menghasilkan kecepatan sinkron 1500 RPM, kecepatan terukur 1.476 RPM, slip 1,60%, dan daya input 364,98 Watt. Semakin besar beban, nilai slip cenderung meningkat sesuai karakteristik motor induksi.

Kata kunci: Motor Induksi 3 Fasa, Dahlander, Sistem Kendali, Mesin Bor Listrik, Dua Kecepatan.

ABSTRACT
CONTROL SYSTEM OF 3-PHASE DAHLANDER INDUCTION
MOTOR ON ELECTRIC DRILLING MACHINE

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The electric motor control system plays an important role in maintaining the performance of an electric drill machine so that it can operate optimally, efficiently, and safely. This research aims to determine the working principle of the three-phase dahlander-type induction motor control system in an electric drill machine, to identify the components used in the control circuit, and to analyze the test results of the motor control system at two speed modes. The methods applied include motor repair through stator winding rewinding and bearing replacement, the design and assembly of a control circuit using contactors, a Miniature Circuit Breaker (MCB), a Thermal Overload Relay (TOR), and push buttons, as well as system testing using a tachometer, a clamp meter, and a cos phi meter, conducted at the Electrical Engineering Workshop of Politeknik Negeri Sriwijaya. The results show that the two-speed dahlander motor control system operates in accordance with the design. In the low-speed mode, the Delta (Δ) configuration with 8 poles produces a synchronous speed of 750 RPM, a measured speed of 731.6 RPM, a slip of 2.45%, and an input power of 342.68 Watts. In the high-speed mode, the Double Star (YY) configuration with 4 poles produces a synchronous speed of 1500 RPM, a measured speed of 1,476 RPM, a slip of 1.60%, and an input power of 364.98 Watts. As the load increases, the slip value tends to increase in accordance with the characteristics of the induction motor.

Keywords: 3-Phase Induction Motor, Dahlander, Control System, Electric Drilling Machine, Two-Speed.