



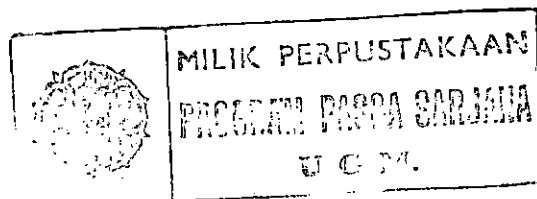
INTISARI

Tujuan penelitian ini untuk melihat karakteristik motor induksi jenis rotor sangkar tupai merek AEG tipe AL 90 LA-4 daya 1,5 kW, tegangan Δ/Y 220/380 V, arus 6,3/3,6 A, $\cos \phi$ 0,82 putaran 1415 rpm, jika dioperasikan sebagai generator induksi satu fase.

Pengujian awal dilakukan dengan mengoperasikan motor induksi tiga fase berbeban mesin DC untuk memperoleh data yang diperlukan dalam penentuan nilai kapasitor eksitasi. Kemudian dilakukan pengujian motor sebagai generator satu fase pada beban nol, berbeban resistif dan berbeban induktif. Pada beban resistif dilaksanakan dua pengujian yaitu dengan frekuensi awal 50 Hz kemudian beban ditambah, dan frekuensi dijaga konstan 50 Hz setiap perubahan beban. Semua pengujian pada motor induksi menggunakan UPA PM 3000A

Hasil pengujian beban resistif dengan frekuensi awal 50 Hz dan kapasitor eksitasi 34 μF dan 68 μF menghasilkan penurunan karakteristik tegangan generator sebesar 40 % dan penurunan frekuensi 11 % pada daya output 241 watt dan daya input 390 watt dengan efisiensi 62 %. Pada pengujian dengan frekuensi konstan 50 Hz, penurunan tegangan sebesar 17 % pada daya output 698 watt dengan daya input 923 watt dan efisiensi 76 %. Pengujian beban induktif dengan frekuensi konstan 50 Hz, penurunan tegangan yang terjadi sebesar 13 % pada daya output 103 watt dan efisiensi generator sebesar 33 %. Efisiensi maksimal terdapat pada beban resistif 660 watt sebesar 76 % pada tegangan 197 V, kecepatan rotor 1540 rpm, dan daya mekanik yang dibutuhkan sebesar 873 watt.

Kata kunci : karakteristik, rotor sangkar tupai, motor induksi tiga fase, generator satu fase dan efisiensi.





ABSTRACT

This research was aimed for knowing how of the three-phase squirrel-cage induction motor of which brand is AEG with AL 90 LA-4 type and of which power is 1,5 kW. showed its characteristics when it was operated as a single-phase generator.

The instrument was calibrated to obtain valid data. A preliminary test was conducted by operating a three-phase induction motor with DC machine loading to have the data of excitation capacitors. Subsequently, a test was conducted for the motor as a single-phase generator with no load, resistive and inductive loadings. For the resistive loading, two tests were carried out under initial frequency of 50 Hz. Such a constant frequency was given to every increasing loading in this treatment. All the tests subjected to the induction motor employed the UPA PM3000A.

The test on the resistive loading with 50 Hz in frequency and the excitation capacitors of 34 mF and 68 mF, resulted a decrease of generator voltage characteristics of 40 % and a decrease of 11 % in frequency on the output power of 241 watt and input power of 390 watt with 62 % efficiency. The test with constant frequency of 50 Hz resulted a decrease of 17 % voltage under output power of 698 watt with input power of 923 watt and 76 % efficiency. The test on the inductive loading under a constant frequency of 50 Hz resulted a decrease of 13 % voltage under the output power of 103 watt and 33 % generator efficiency. The maximum efficiency was indicated on the 660 watt-resistive loading. It was 76 % under 197 V in voltage, 1540 rpm in rotor speed, and required mechanical power of 873 watt.

Key words: characteristics, squirrel-cage rotor, three-phase induction motor, single-phase generator and efficiency.