

## Abstrak

**Falifah Chairunisya, 5163230010.** Analisa Kinerja Motor Induksi 3 *Phasa* Rotor Sangkar *Bending Machine* Pada Bengkel Teknologi Medan.

Motor induksi merupakan salah satu jenis motor listrik banyak digunakan dalam dunia industri yang berfungsi sebagai penggerak bermacam-macam peralatan industri. Penelitian ini bertujuan untuk menganalisa kinerja pada motor induksi tiga *phasa* pada *bending machine* yang berada di Bengkel Teknologi Medan dan mengetahui pengaruh perubahan torsi terhadap arus motor dan putaran motor induksi tiga *phasa* pada *bending machine*, faktor apa saja yang menyebabkan *bending machine* mengalami panas dan untuk mengetahui cara penggunaan alat *bending machine* yang baik dan tepat saat digunakan.

Penelitian yang digunakan terdiri dari mesin bending dan hidrolis motor induksi dan beban listrik yang digunakan. Hasil analisa kinerja motor induksi 3 *phasa* rotor sangkar *bending machine* pada bengkel teknologi medan menunjukkan bahwa putaran maksimum yang dihasilkan motor induksi dari penelitian yaitu sebesar 1440 Rpm diperoleh ketika motor induksi sedang tidak di bebani, dengan torsi sebesar 0,4 Nm. Hasil pengukuran dari penelitian diperoleh yang di hasilkan motor induksi dari penelitian yaitu torsi 0.4 Nm dengan konsumsi arus nya 2,8 A diperoleh putaran 1440 Rpm dengan efisiensi 95%; torsi 0,6 Nm dengan konsumsi arus nya 3,5 A diperoleh putaran 1023 Rpm dengan efisiensi 88,15%; torsi 0,8 Nm dengan konsumsi arusnya 4,9 A diperoleh putaran 756 Rpm dengan efisiensi 80,25%; dan torsi 1,0 Nm dengan konsumsi arus nya 5 A diperoleh putaran 620 Rpm dengan efisiensi 77,875%. Kenaikan arus terjadi ketika motor menghasilkan torsi yang semakin besar. Penyebab kenaikan temperature pada motor induksi yang digunakan perangkat *bending machine* disebabkan oleh pembebanan yang mengakibatkan kenaikan torsi. Kenaikan torsi mengakibatkan rugi-rugi daya semakin besar, rugi -rugi daya inilah yang menyebabkan motor induksi semakin panas

**Kata Kunci:** Motor Induksi 3 *Phasa*, , *Bending Machine*, Torsi Motor

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## Abstract

An induction motor is one type of electric motor widely used in the industrial world which functions as a driving force for various industrial equipment. It is because induction motors have high efficiency, easy maintenance, relatively low prices, and reliability. This research was conducted at the Technology Workshop of Medan by going through an experimental process by a series of experiments. Then, the data were analyzed at the next stage to obtain the results of the effect of changes in torque on motor speed, torque, and rotation and how the resulting efficiency was based on the required calculations in analyzing the performance of a 3-phase induction motor, namely the Bending Machine. Meanwhile, the tools used in this study are divided into. Meanwhile, the research materials used consisted of bending machines, hydraulic induction motors, and electric loads. The analysis of the performance analysis of the 3 phase rotor winding bending machine synchronous motor performance at the Medan Technology Workshop show that the maximum rotation produced by the induction motor from the experiment is 1440 Rpm is obtained when the induction motor is not loaded, with a torque of 0.4 Nm. The measurement results from the study were obtained which resulted in an induction motor from the research, namely a torque of 0.4 Nm with a current consumption of 2.8 A, it obtained a rotation of 1440 Rpm with an efficiency of 95%; a torque of 0.6 Nm with a current consumption of 3.5 A obtained a rotation of 1023 Rpm with an efficiency of 88.15%; torque of 0.8 Nm with current consumption of 4.9 A obtained 756 Rpm of rotation with an efficiency of 80.25%; and a torque of 1.0 Nm with a current consumption of 5 A obtained a rotation of 620 Rpm with an efficiency of 77.875%. The increase in current occurs when the motor produces greater torque. The cause of the temperature increase in the induction motor used by the bending machine is caused by loading which results in an increase in torque. The increase in torque results in greater power losses, this power loss causes the induction motor to heat up

**Keywords:** *3-Phasa Induction Motor, Bending Machine, Motor Torque.*

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