ABSTRACT

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Thesis Title : *Three Phase Induction Motor Performance Monitoring System on Energy, Vibration, Temperature, and Rotation Aspects*

System monitoring is the process of collecting data and monitoring the activity and performance of a system to ensure optimal operation and detect problems early. A three-phase induction motor, which is commonly used in the industrial sector, is the object of this study to observe its performance in terms of energy, vibration, temperature, and rotation. Two braking methods were applied, the first method and the second method, to determine the efficiency of the motor. The test results showed some important conclusions. Energy load data was collected using PZEM004T sensors for voltage (0.15% error) and current (4.14% error), DFR0027 sensor for vibration (4.89% error), MLX90614 sensor for temperature (2.32% error), and NJK5002C sensor for rotation (0.49% error). The first braking method significantly affected the energy consumption, vibration, temperature, and rotation of the motor, with a 26% increase in current, 0.10% decrease in voltage, 26% increase in power usage, 0.02% increase in temperature, and 10% decrease in rotation. The resulting vibration varied between 0.24 m/s² to 0.46 m/s². The second method of braking affected energy consumption, temperature, and rotation without generating vibration, with a 52% increase in current, 0.31% decrease in voltage, and 52% increase in power usage. The motor efficiency was 57.28% in the first braking method and 57.73% in the second braking method.

KEYWORDS: *Three-phase induction motor, Performance, Energy, Vibration, Temperature, Rotation.*