

# **The Effects of Damage to the Outer Race Bearing on the Efficiency of the Induction Motor Using Fast Fourier Transform (FFT) Method**

## *Efek Kerusakan Outer Race Bearing Terhadap Efisiensi Motor Induksi Menggunakan Metode Fast Fourier Transform (FFT)*

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Bearing is an induction motor component that helps the rotor to move freely, in industrial applications it is important to maintain bearing performance in induction motors. In its use, bearing damage is one of the biggest types of damage that is often found in induction motors. Bearing damage can lead to increased vibration, increased noise, increased working temperature, and decreased efficiency. Efficiency reduction can be used as information on the condition of the motor so that this information can be used to detect damage before more serious damage occurs. This research discusses the stator current analysis method and the efficiency of damage to the motor through two harmonic amplitude ratios equipped with the fast Fourier transform (FFT) algorithm in detecting damage to the outer race bearing. It is hoped that this efficiency can be used as an evaluation of the extent to which motor energy waste occurs before more severe damage. The efficiency results on the damage to the outer race bearing using the FFT method get the highest efficiency value of 1.47 and the lowest value of 0.66.

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