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Detection of broken bars in three-phase motors by using curve fits and classification algorithms

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Abstract

Since they transform electrical energy into mechanical energy, three-phase induction motors are one of the main assets that companies have. Therefore, good monitoring of their conditions and diagnosing their faults is essential. In this article, we propose a curve fitting technique and classification algorithms for a current motor phase to detect broken bars inside the motor . The data set is in the IEEE database, where the data was acquired, simulating the conditions of healthy and broken bars by varying the load condition. The curve fitting technique gives me essential attributes such as the signal's amplitude, frequency, and phase shift, supported by the Fourier transform, which informs how the signal power is a function of frequency. Furthermore, we extracted attributes to train the classifiers, achieving 85% accuracy in classifying the number of broken bars within the engine. © 2022 IEEE.