

## The Effectiveness of Energy Index Technique in Bearing Condition Monitoring

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**Abstract :** The application of acoustic emission techniques is gaining popularity, as it can monitor the condition of gears and bearings and detect early symptoms of a defect in the form of pitting, wear, and flaking of surfaces. Early detection of these defects is essential as it helps to avoid major failures and the associated catastrophic consequences. Signal processing techniques are required for early defect detection - in this article, a time domain technique called the Energy Index (EI) is used. This article presents an investigation into the Energy Index's effectiveness to detect early-stage defect initiation and deterioration, and compares it with the common r.m.s. index, Kurtosis, and the Kolmogorov-Smirnov statistical test. It is concluded that EI is a more effective technique for monitoring defect initiation and development than other statistical parameters.

**Keywords :** acoustic emission, signal processing, kurtosis, Kolmogorov-Smirnov test

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