

عنوان مقاله:

A WAVELET BASED TECHNIQUE FOR MACHINE DIAGNOSTIC

محل انتشار:

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نویسنده:

Mir Saeed Safizadeh - Assistant Professor, Iran University of Science & Technology, Tehran, Iran

خلاصه مقاله:

Time-frequency analysis has been found to be effective in monitoring the transient or time-varying characteristics of machinery vibration signals, and therefore its use in machine condition monitoring is increasing. While the short-time Fourier transform and the Wigner-Ville distributions are generally considered satisfactory in the field of time-frequency analysis, the development of such new techniques as wavelet analysis, by which it is possible to compensate for weaknesses in other time-frequency methods, may lead to new solutions to unsolved problems. Wavelet analysis has the special characteristic of time-frequency localization, which is very effective in the analysis of transient or time-varying signals. In this paper, we present a brief study of the wavelet transform, the wavelet packet transform and adaptive wavelet transforms. Examples are given to show the advantages and disadvantages of different wavelet transforms. Finally, the effectiveness of wavelet analysis in condition monitoring and diagnostics of machines is illustrated by experimental results from a defective bearing, followed by the application of this technique to the detection of a broken tooth in a gearbox.

کلمات کلیدی:

Diagnostics in rotating machinery, Wavelet transform, Mechanical fault detection, Gear damage detection, Bearing fault detection

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