

Detection of Coupling Misalignment in a Rotor System Using Wavelet Transforms

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Abstract : Vibration analysis of a misaligned rotor coupling bearing system has been carried out while decelerating through its critical speed. The finite element method (FEM) is used to model the rotor system and simulate flexural vibrations. A flexible coupling with a frictionless joint is considered in the present work. The continuous wavelet transform is used to extract the misalignment features from the simulated time response. Subcritical speeds at one-half, one-third, and one-fourth the critical speed have appeared in the wavelet transformed vibration response of a misaligned rotor coupling bearing system. These features are also verified through a parametric study.

Keywords : Continuous Wavelet Transform, Flexible Coupling, Rotor System, Sub Critical Speed

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