Condition Monitoring and Diagnosis of Rotating Machinery by Gram-Charlier Expansion of Vibration Signal

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ABSTRACT

Here we present the new robust condition monitoring and diagnosis method based on the statistical hypothesis on the vibration characteristics of the rotating machines in good condition. The hypothesis is that if the machine is in good condition, its probability density function of the vibration signal follows the normal distribution in time domain. This method can lead to the robust failure diagnosis without any prior knowledge concerning to vibration characteristics corresponding to specific failure to be detected.

Keywords: Condition monitoring, Condition diagnostics, Vibration signal, Gram-Charlier expansion, Normal distribution