

Condition Monitoring of Rotating Machines Using Artificial Neural Networks and Wavelet Transform

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Abstract : This paper deals with the application of Artificial Neural Network (ANN) and Wavelet Transform (WT) for the prediction of the effect of unbalance fault on the frequency components of vibration signature of rotating machines. The suggested Technique is applied to real vibratory signals resulting from sensors placed on a test rig interfaced to a multi-channel data acquisition system OROS 25. The characteristic features of frequency domain vibration signals have been used as inputs to the ANN. The suggested ANN prediction model was implemented using Bayesian Evidence based training algorithm. It is found that the Bayesian Evidence based approach is much more efficient than other techniques, which results in an accurate detection of unbalance fault signals in the considered rotating machine.

Keywords : Condition monitoring, Fault Diagnosis, ANN, wavelet, Vibration analysis, unbalance.