

Condition Monitoring of Rotating Machines Using Bayesian Trained Artificial Neural Networks

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Abstract : The paper deals with the application of Artificial Neural Network (ANN) 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. Several statistical 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 knowing for its established efficiency comparatively to other learning techniques. The performance of the suggested condition monitoring scheme was confirmed by the accurate results of detection of unbalance fault signals in the considered rotating machine.

Keywords : Condition monitoring, Fault Diagnosis, Artificial Neural Networks, Bayesian learning, Vibration analysis, unbalance, Rotating machines