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Original Citation

Abdalla, Gaballa, Ball, Andrew and Gu, Fengshou (2013) Fault Detection and Diagnosis of Ball Bearing Using Advanced Vibration Analysis Techniques. In: Proceedings of Computing and Engineering Annual Researchers' Conference 2013 : CEARC'13. University of Huddersfield, Huddersfield, p. 224. ISBN 9781862181212

This version is available at http://eprints.hud.ac.uk/id/eprint/19395/

Fault Detection and Diagnosis of Ball Bearing Using Advanced Vibration Analysis Techniques

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ABSTRACT

This poster summarises the progress which has been made from 1st April 2012 to 1st Mar 2013 in fulfilling the PhD research project of condition monitoring of bearing condition monitoring based on advanced vibration data analysis For improve production efficiency fault detection and diagnosis of the critical components such as bearings in the rotating machinery including compressors, pumps, power turbines and aircrafts engines are becoming very important area of research, which helps to avoid unexpected shutdowns due to a faulty process.

This poster presents data analysis techniques for rotating machinery, bearing types, failure and the performance of methods for failure detection in ball bearings.

Different kinds of faults have been created in the ball bearing such as (Inner race fault and Outer race fault), and a raw signal of the healthy and faulty has been acquired and recorded. The vibration signals were taken at different loads such as (0%, 25%, 50%, and 75%).

Monitored vibration of motor-generator system supported by deep grove ball bearings to predict bearing failures. It successfully identified failures of the ball bearing for both outer and inner races. The interim result shows that the envelope analysis spectrum gives more diagnostic information than analysis of the time domain or frequency domain.

Keywords: Condition Monitoring, Ball Bearings failure, Vibration analysis, Envelop analysis.