



University of HUDDERSFIELD

University of Huddersfield Repository

Abdalla, Gaballa, Ball, Andrew and Gu, Fengshou

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

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/>

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

<http://eprints.hud.ac.uk/>

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

Gaballa M Abdalla, Professor Andrew D Ball, Dr Fengshou Gu
University of Huddersfield, Queensgate, Huddersfield, UK, HD1 3DH

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 groove 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.*