NED UNIVERSITY JOURNAL OF RESEARCH

ROLLER-TYPE THRUST BEARING RELIABILITY ANALYSIS WITH MINITAB

Author(s): **Michael Ebitamaehi Odigie, Joseph Albert Cantrell, Mohammad Affan Badar**

Volume: **XI**

No: **4**

Pages: **1-14**

Date: **September 2014**

Abstract:
This study analyses bearing failures that occur in rolling mill applications and determine the associated reliability of the bearings. Specifically, the failures associated with the roller (thrust) bearing portion of a work roll chock and bearing assembly was studied. The relevant data was recorded from 2009-2012. Reliability mathematical computations and techniques were applied to determine mean time between failure (MTBF) using the details of recurrent failures. Weibull parameters and Kolmogorov-Smirnov (KS) tests for goodness of fit were also carried out. The recorded data were analysed using a computer programme. Tests for normality and goodness of fit (based upon Anderson-Darling tests) and the Weibull distribution for shape and scale parameters were analysed from the data. Based on the four years of data presented, MTBF was estimated as 715 hrs on a 95% confidence interval and lower to upper limits of 460 to 1114 hrs. Success rate method analysis for future failure prediction was used to estimate parts requirement. The initial assumption that the failures can be modelled with a Weibull distribution was validated while the assumption of a normal distribution was not supported by the results of the analytical calculations using the KS test for goodness of fit and further computer simulation.

For full paper, contact:
Prof Muhammad Masood Rafi
Editor-in-Chief, NED University Journal of Research
Ph: +92 (21) 99261261-8 Ext:2413; Fax: +92 (21) 99261255
Email: NED-Journal@neduet.edu.pk
Website: http://www.neduet.edu.pk/NED-Journal