World Academy of Science, Engineering and Technology
International Journal of Mechanical and Industrial Engineering
Vol:13, No:10, 2019

Rolling Contact Fatigue Failure Analysis of Ball Bearing in Gear Box

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Abstract : Bearing is an important machinery part in the industry. When bearings fail to meet their expected life the consequences are increased downtime, loss of revenue and missed the delivery. This article describes the failure of a gearbox bearing in rolling contact fatigue. The investigation consists of visual observation, chemical analysis, characterization of microstructures using optical microscopes and hardness test. The present study also considers bearing life as well as the operational condition of bearings. Surface-initiated rolling contact fatigue, leading to a surface failure known as pitting, is a life-limiting failure mode in many modern machine elements, particularly rolling element bearings. Metallography analysis of crack propagation, crack morphology was also described. Indication of fatigue spalling in the ferrography test was also discussed. The analysis suggested the probable reasons for such kind of failure in operation. This type of spalling occurred due to (1) heavier external loading condition or (2) exceeds its service life.

Keywords : bearing, rolling contact fatigue, bearing life
Conference Title : ICEFA 2019 : International Conference on Engineering Failure Analysis
Conference Location : Paris, France
Conference Dates : October 29-30, 2019