EXPERIMENTAL ANALYSIS OF GREASE CONTAMINANTION IN VIBRATION SIGNATURES OF BALL BEARINGS

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ABSTRACT

Rolling element bearings are very common in rotating machineries. Therefore they have received a great deal of attention in the field of condition monitoring. For rolling element bearings, lubricant contamination due to solid particles is one of the several reasons for early bearing failure. The effect of solid contaminant in lubricant on the behavior of rolling contact bearings by using vibration analysis method is discussed in this paper. Three different materials (metal-burr, dolomite-powder, and iron-ore) with different sizes and different concentration levels as are used to contaminate the lubricant. Experimental tests are conducted and trends in the amount of vibration affected by grease contamination are determined. Vibration signatures are analyzed with respect to RMS values of amplitude in terms of acceleration and acceleration values at defect frequencies. Results show significant variation in overall RMS acceleration value and on acceleration value at every defect frequency on varying contaminant material, size, concentration and running parameters like speed and load.

OPTIMIZATION OF FORKLIFT FRAME

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ABSTRACT

Frame is one of the important parts of the forklift truck. It supports almost all important parts and it decides the overall strength of the truck. So it is called the backbone of the truck. Frame design is critical as it is non-replaceable part. Rather its design should be strong enough to function properly throughout the life of the truck. Industries are focusing more on material saving to increase margins and cost saving. Cost reduction is effective method to get more advantage over competitors. Frame provides enclosure for engine, transmission, etc. Proposed frame model is design with the aim of material saving. The proposed frame model is designed for the same lifting capacity as that of the existing model. Proposed frame model is analyzed using finite element analysis for finding out deflection and stresses in different load cases. Prototype is built and physically tested to validate the FEA results. All the results are discussed in this work.



