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REVIEWER'S REPORT

Manuscript No.: IJAR- 57694

Title: Detection of bearing fault by scalar indicator X

Recommendation:
Accept

Rating	Excel.	Good	Fair	Poor
Originality	Yes			
Techn. Quality	Yes			
Clarity	Yes			
Significance		Yes		

Reviewer Name: Dr. Ashish Yadav

Detailed Reviewer's Report

Reviewer's Comment for Publication.
Acceptance Comment are mentioned below suitable for the paper titled "Detection of bearing fault by scalar indicator X"

Reviewer Comments: Accept

Reviewer Comments –

Introduction:

The manuscript addresses an important topic in predictive maintenance and industrial reliability through the development of an improved scalar indicator for bearing fault detection. The introduction clearly explains the significance of vibration monitoring in identifying bearing degradation and preventing unexpected machine failures. The limitations of conventional scalar indicators such as RMS and kurtosis are appropriately highlighted, establishing the need for a more reliable diagnostic parameter. The motivation behind introducing the new scalar indicator X is scientifically justified and practically relevant. Overall, the introduction provides a strong foundation for the research and demonstrates its industrial applicability.

Literature Review:

The literature review adequately discusses existing vibration analysis techniques and commonly used scalar indicators for bearing fault diagnosis. The manuscript effectively explains the advantages and shortcomings of RMS and kurtosis in detecting different defect conditions. Previous research related to time-domain signal analysis and predictive maintenance strategies is appropriately considered. The review successfully identifies the research gap regarding robust fault discrimination under varying

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operational frequencies. The presented background supports the novelty and importance of the proposed scalar indicator X for enhanced bearing condition monitoring.

Solution Approach:

The methodology adopted in the study is systematic and technically appropriate for vibration-based fault detection. The authors developed a new scalar indicator X by combining RMS and kurtosis with the number of signal peaks exceeding the RMS threshold. Experimental evaluation was conducted using two datasets with multiple operating frequencies, demonstrating a comprehensive validation strategy. The approach is simple, computationally efficient, and suitable for integration into industrial analyzers for stationary signal analysis. The proposed methodology offers practical value for real-time predictive maintenance applications.

Results and Discussion:

The results demonstrate that the newly proposed scalar indicator X provides improved discrimination of bearing conditions compared to conventional RMS and kurtosis indicators. The experimental analysis across different frequencies confirms the robustness and reliability of the indicator in identifying defect presence and characterizing fault types. The discussion clearly explains how incorporating peak information enhances sensitivity to abnormal vibration behavior. The comparative evaluation highlights the limitations of traditional indicators and validates the effectiveness of the proposed approach. The findings contribute meaningful advancements to vibration analysis and bearing fault diagnostics.

Conclusion:

The conclusion effectively summarizes the major outcomes of the study and confirms the superiority of the scalar indicator X for bearing fault detection. The manuscript demonstrates that the proposed indicator improves defect discrimination capability while maintaining simplicity in implementation. The work provides a valuable contribution to predictive maintenance and vibration monitoring research by introducing a more robust and reliable diagnostic parameter. The recommendation for future full-scale industrial validation further strengthens the practical relevance of the study. Overall, the manuscript is technically sound, well organized, and suitable for publication.