HI-SPEED INDUSTRIAL SERVICE QualiTest® Diagnostics

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January 20, 2022

Carl Singleton
Big River Steel
Osceola, AR

Carl,

The following is a summary of findings from the vibration analysis performed on 1/20/2022 on the Fumes Extraction DFF Exhaust Fan and the Final Pot Cooling Section Zone 2 Fan. Both Units were checked at 100 % speed and 50-75 % speed. No significant vibration was found during our testing.

QualiTest® uses a four step rating system for defects.

Class I: Defect is present, but effect on reliability is not clear; no immediate action is required. Continue to normally monitor.

Class II: Defect (s) present that may cause problem in long term (2-6 months). Repair during normal maintenance scheduling. Continue to monitor.

Class III; Defect (s) present that may cause failure in short term (less than 2 months). This should be addressed as soon as practical, with a high maintenance priority. Increase monitoring frequency.

Class IV; Defect (s) present that makes continued reliability unpredictable, and possibility of secondary damage is high. Repairs should be made ASAP. An unscheduled shutdown should be considered for repairs

Summary

Fumes Extraction DFF Exhaust Fan

Spectral data of the motor and fan showed no significant issues to note. There does appear to be a dominant vibration at 1 x rpm in the vertical direction on the motor and fan with slightly higher amplitude in the fan bearing section. This vibration was present at both 75 and 100 % speed. This is likely a structural issue and may be caused by rigid dampeners. Ensure that this unit has the correct rubber dampeners installed under base frame. Rated as a **CLASS I** defect.

Final Pot Cooling Section Zone 2 Fan

This unit had very little vibration at 50, 75, and 100% speed. No issues to note here.

Please note that the following amplitudes were with each unit at 100% speed.

Abbreviated Last Measurement Summary
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MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
FEXDFFEXHF - FUMES EXTRACTION DFF EXH FAN	**(20-Jan-22)**	
	OVERALL LEVEL	**1K-20KHz**
MOH - MOTOR OUTBOARD HORIZONTAL	.098 In/Sec	.382 G-s
MOV - MOTOR OUTBOARD VERTICAL	.116 In/Sec	.347 G-s
MIH - MOTOR INBOARD HORIZONTAL	.071 In/Sec	.315 G-s
MIV - MOTOR INBOARD VERTICAL	.153 In/Sec	.519 G-s
MIA - MOTOR INBOARD AXIAL	.138 In/Sec	.460 G-s
EIA - EQUIPMENT INBOARD AXIAL	.123 In/Sec	.184 G-s
EIH - EQUIPMENT INBOARD HORIZONTAL	.144 In/Sec	.186 G-s
EIV - EQUIPMENT INBOARD VERTICAL	.159 In/Sec	.215 G-s
EOH - EQUIPMENT OUTBOARD HORIZONTAL	.107 In/Sec	.214 G-s
EOV - EQUIPMENT OUTBOARD VERTICAL	.191 In/Sec	.182 G-s

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
FNLPTCLSZ2 - FINAL POT COOL SECT. ZONE 2	**(20-Jan-22)**	
	OVERALL LEVEL	**1K-20KHz**
MOH - MOTOR OUTBOARD HORIZONTAL	.080 In/Sec	1.412 G-s
MOV - MOTOR OUTBOARD VERTICAL	.086 In/Sec	1.705 G-s
MIH - MOTOR INBOARD HORIZONTAL	.062 In/Sec	.777 G-s
MIV - MOTOR INBOARD VERTICAL	.052 In/Sec	.917 G-s
MIA - MOTOR INBOARD AXIAL	.079 In/Sec	.593 G-s

Clarification Of Vibration Units:
Acc --> G-s RMS
Vel --> In/Sec PK

As always, it has been a pleasure to serve Big River Steel. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

ISO Certified Vibration Analyst, Category III

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