



**QualiTest® Diagnostics**

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February 5, 2024

Nucor General Recycling

Subject: January vibration survey

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Most of the machines surveyed were found to be in good condition except for the following.

**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

**Hi-Speed Industrial Service** tests and inspects industrial machinery and equipment and makes recommendations concerning maintenance and repairs based on its experience in the field of industrial repair and maintenance. The information contained herein is provided as an opinion only, not as a guaranty or warranty of the matters discussed herein.

As always, it has been a pleasure to serve Nucor General Recycling. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

ISO Certified Vibration Analyst, Category III



**QualiTest® Diagnostics**

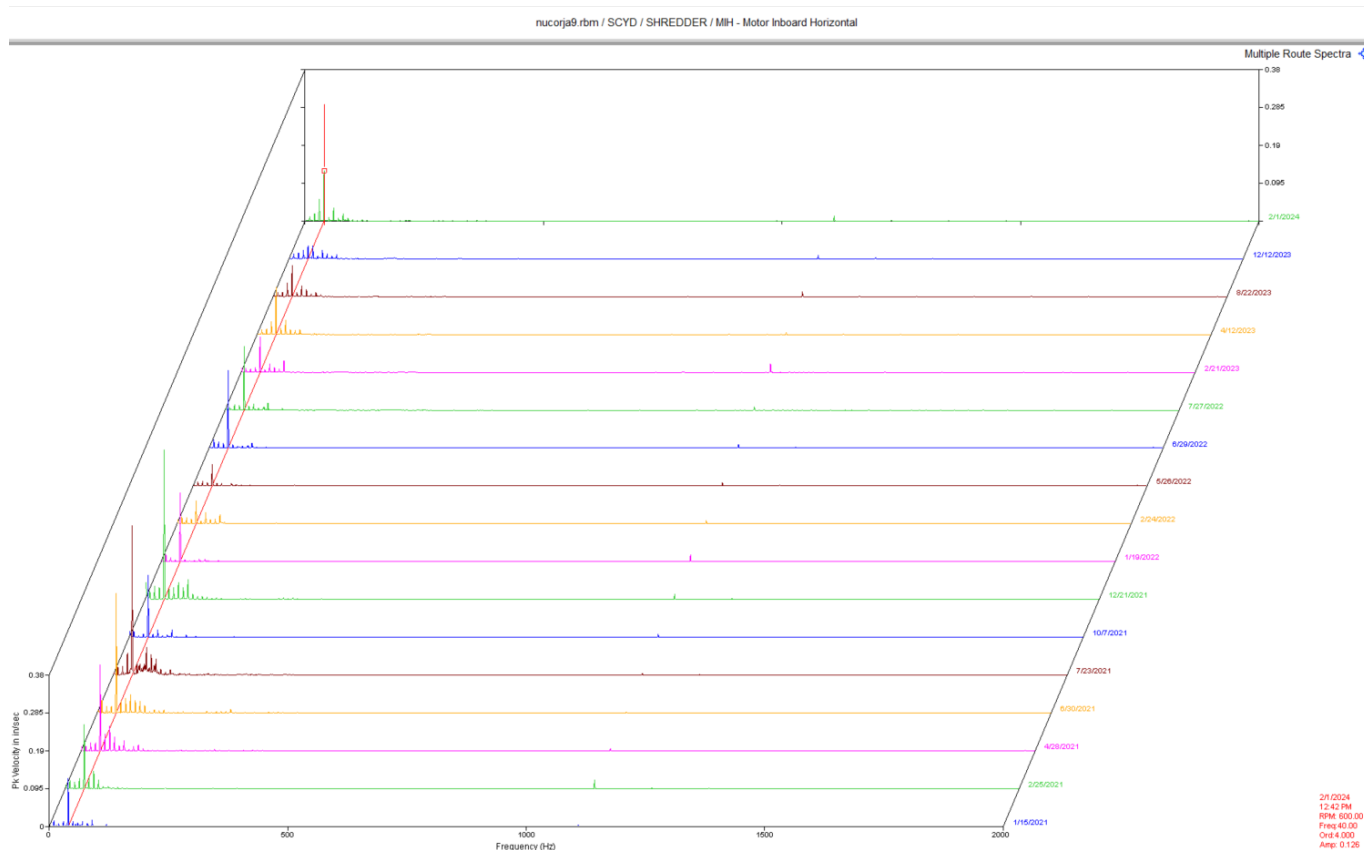
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## Defects

### Shredder (Information Only)

Overall, the shredder motor looks ok after installing the rotor indexer. There is a vibration at 40 Hz that fluctuates in amplitude. See spectral plot below.



This vibration is on the lower side compared to historical data. Amplitude is well below alarm level. .3 ips is where the first alarm level is set at. 1 x rpm vibration is very low. If there was imbalance in the motor or index gear, 1x rpm amplitude would be high. Recent data shows 1 x rpm vibration to be below .1 ips which is well within specifications of a 600 rpm motor. No issues to note at this time.

### Conveyor 11

Motor is still vibrating over **2.5 inches per second** which is **extremely** high. Inspect motor base/frame for looseness, cracks. Conveyor drum shaft should also be checked for run-out, looseness. **Repair/replace unit soon**. Rated as a **CLASS IV** defect.

### Cyclone Fan

Outboard (opposite drive end) fan bearing data is indicating some minor bearing defects. We will continue to monitor this closely. Rated as a **CLASS I** defect.

# Abbreviated Last Measurement Summary

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Database: nucorja9.rbm

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
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SHREDDER - SHREDDER	(01-Feb-24)	
	OVERALL LEVEL	1K-20KHz
MOH	.138 In/Sec	.069 G-s
MOV	.112 In/Sec	.046 G-s
MIV	.108 In/Sec	.112 G-s
MIH	.146 In/Sec	.167 G-s
MIA	.099 In/Sec	.389 G-s

CYCLONE - CYCLONE	(01-Feb-24)	
	OVERALL LEVEL	1K-20KHz
MOH	.157 In/Sec	1.985 G-s
MIH	.113 In/Sec	.716 G-s
MIA	.117 In/Sec	.173 G-s
EIH	.115 In/Sec	.219 G-s
EOH	.143 In/Sec	.454 G-s

M3 - MAG DRUM	(01-Feb-24)	
	OVERALL LEVEL	1K-20KHz
MOH	.057 In/Sec	.102 G-s
MIH	.043 In/Sec	.083 G-s
MIA	.055 In/Sec	.041 G-s
GIH	.035 In/Sec	.083 G-s
GOH	.030 In/Sec	.083 G-s
IDB	.025 In/Sec	.0081 G-s
ODB	.035 In/Sec	.0055 G-s

NUMBER 11 - NUMBER 11	(01-Feb-24)	
	OVERALL LEVEL	1K-20KHz
MOH	2.468 In/Sec	.677 G-s
MIH	2.417 In/Sec	.851 G-s
MIA	1.573 In/Sec	.235 G-s
EIH	.926 In/Sec	3.247 G-s
EIA	.544 In/Sec	2.278 G-s
EOH	.442 In/Sec	.495 G-s

NAIRCOMP - NEW SEPARATOR NORTH AIR COMP	(01-Feb-24)	
	OVERALL LEVEL	1K-20KHz
MOH	.170 In/Sec	.096 G-s
MIH	.114 In/Sec	.833 G-s
MIA	.060 In/Sec	1.123 G-s
EIH	.152 In/Sec	.659 G-s
EIA	.060 In/Sec	1.055 G-s
EOH	.105 In/Sec	.651 G-s

## Clarification Of Vibration Units:

Acc	-->	G-s	RMS
Vel	-->	In/Sec	PK