7030 Ryburn Dr. Millington, TN Phone: (901) 873-5300 Fax: (901) 873-5301 www.gohispeed.com

March 4, 2025

Nucor Roll Mill
Jackson-Flowood, MS

Subject: January vibration survey

Below is a summary report for the monthly Roll Mill vibration survey that was performed on 2/24/25. Most of the machines surveyed were found to be in good condition except for the following.

HI-SPEED 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

As always, it has been a pleasure to NUCOR Steel Flowood, MS. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

Kevin W. Maxwell

ISO Certified Vibration Analyst, Category III

Cell: 901-486-4565
Email: kwilliam@gohispeed.com

Defects

Roll Stand 1A
Planetary gearbox still has some vibration and noise floor that comes and goes in spectral data at the input end of the gearbox. The amplitudes and gear mesh frequencies in spectral data may be influenced some due to load and speed; however, they may also indicate low level internal wear or defects in internal components. We are continuing to monitor this closely. Rated as a **CLASS I** defect.

Roll Stand 1
Drive motor continues to have elevated DE axial vibration associated with line frequency 60 Hz and 360 HZ. (6 x line freq.). The amplitudes tend to go up and down depending on motor load and speed. This may be an SCR issue or electrical resonance. It is recommended to inspect drive components for issues. Rated as a **CLASS I** defect.

Roll Stand 2
Inboard gearbox (Int.) is showing some gear mesh vibration with sidebands of input rpm. This issue appears to come and go based on load and speed. This type of vibration is an indication of heavy tooth load or possible gear wear. Rated as a **CLASS I** defect.

Roll Stand 3
Drive motor continues to have elevated DE axial vibration associated with line frequency 60 Hz and 360 HZ. (6 x line freq.). The amplitudes tend to go up and down depending on motor load and speed. This may be an SCR issue or electrical resonance. It is recommended to inspect drive components for issues. Rated as a **CLASS I** defect.

Roll Stand 6
A dominant gear mesh vibration is sometimes present towards the output of the gearbox. The up and down amplitude of this peak is likely due to changes in tooth load and speed. This vibration was slightly lower this survey. We will continue to monitor this very closely. This is rated as a **CLASS I** defect.

Roll Stand 7
Gearbox vibration was slightly lower in amplitude this survey. Vibration data shows dominant gear mesh harmonics on outboard end of the gear casing. The up and down amplitude of this peak from month to month is likely due to changes in tooth load and machine speed. We suspect this to be possibly due to a resonant gear mesh frequency vibration and we will continue to monitor this very closely. Rated as a **CLASS I** defect.

Roll Stand 11
Drive motor spectral data is showing some non-synchronous peaks that may be associated with bearing race defects. Typically, this issue is caused by fluting of the bearing races. This is low level at this time, and we are monitoring this closely. Ensure grounding brush is functioning properly. Rated as a **CLASS I** defect.

Roll Stand 12
Drive motor spectral data is showing some non-synchronous peaks that may be associated with bearing race defects. Typically, this issue is caused by fluting of the bearing races. This is low level at this time, and we are monitoring this closely. Ensure grounding brush is functioning properly. Rated as a **CLASS I** defect.

Furnace Cooling Tower Drive South
Motor data shows axial and radial vibration that appears to be occurring at or near 1 x motor rpm and may indicate a structural issue such as loose fasteners, weak flexible motor base. This could also be caused by a resonance or air flow turbulence in this unit. We will continue to monitor this issue closely. Rated as a **CLASS II** defect.

Combustion Air Fan

ODE fan bearing data suggests a possible lubrication issue. Ensure fan bearing s have adequate lubrication. Rated as a **CLASS I** defect.

```
                Abbreviated Last Measurement Summary
                ************************************

          Database:  nucorja9.rbm
          Station:   Roll Mill Rolls

MEASUREMENT POINT             OVERALL LEVEL       HFD / VHFD
-----------------             -------------       ----------

STD1A      - Stand 1A                        (24-Feb-25)
                               OVERALL LEVEL     1K-20KHz
       MOH                      .061 In/Sec       .011 G-s
       MIH                      .060 In/Sec       .062 G-s
       MIA                      .094 In/Sec       .089 G-s
       COH                      .159 In/Sec       .060 G-s
       GIA                      .066 In/Sec       .153 G-s
       GIH                      .112 In/Sec       .504 G-s
       GI2                      .091 In/Sec       .072 G-s
       GI3                      .086 In/Sec       .329 G-s
       GI4                      .068 In/Sec       .206 G-s
       GI5                      .051 In/Sec       .311 G-s
       GI6                      .036 In/Sec       .060 G-s
       GOH                      .030 In/Sec       .019 G-s

STD2A      - Stand 2A                        (24-Feb-25)
                               OVERALL LEVEL     1K-20KHz
       MOH                      .094 In/Sec       .013 G-s
       MIH                      .059 In/Sec       .017 G-s
       MIA                      .066 In/Sec       .063 G-s
       COH                      .194 In/Sec       .101 G-s

STD1       - Stand 1                         (24-Feb-25)
                               OVERALL LEVEL     1K-20KHz
       MOH                      .105 In/Sec       .100 G-s
       MIH                      .131 In/Sec       .087 G-s
       MIA                      .220 In/Sec       .205 G-s
       GIA                      .047 In/Sec       .014 G-s
       GIH                      .068 In/Sec       .020 G-s
       COH                      .076 In/Sec       .036 G-s

STD2       - Stand 2                         (24-Feb-25)
                               OVERALL LEVEL     1K-20KHz
       MOH                      .128 In/Sec       .085 G-s
       MIH                      .097 In/Sec       .104 G-s
       MIA                      .309 In/Sec       .205 G-s
       GIA                      .085 In/Sec       .214 G-s
       GIH                      .105 In/Sec       .209 G-s
       COH                      .279 In/Sec       .102 G-s

STD3       - Stand 3                         (24-Feb-25)
                               OVERALL LEVEL     1K-20KHz
       MOH                      .049 In/Sec       .022 G-s
       MIH                      .079 In/Sec       .076 G-s
       MIA                      .248 In/Sec       .081 G-s
       GIA                      .028 In/Sec      .0077 G-s
       GIH                      .038 In/Sec       .035 G-s
       COH                      .152 In/Sec       .026 G-s

STD4       - Stand 4                         (24-Feb-25)
                               OVERALL LEVEL     1K-20KHz
       MOH                      .058 In/Sec       .029 G-s
```

	MIH	.071 In/Sec	.068 G-s
	MIA	.118 In/Sec	.344 G-s
	GIA	.040 In/Sec	.029 G-s
	GIH	.053 In/Sec	.023 G-s
	COH	.128 In/Sec	.015 G-s

STD5 - Stand 5 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.045 In/Sec	.017 G-s
MIH	.054 In/Sec	.047 G-s
MIA	.110 In/Sec	.061 G-s
GIA	.153 In/Sec	.017 G-s
GIH	.083 In/Sec	.058 G-s
GOH	.290 In/Sec	.154 G-s
COH	.341 In/Sec	.046 G-s

STD6 - Stand 6 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.059 In/Sec	.015 G-s
MIH	.092 In/Sec	.013 G-s
MIA	.106 In/Sec	.034 G-s
GIA	.130 In/Sec	.022 G-s
GIH	.030 In/Sec	.046 G-s
GOH	.225 In/Sec	.162 G-s
COH	.269 In/Sec	.029 G-s

STD7 - Stand 7 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.045 In/Sec	.032 G-s
MIH	.065 In/Sec	.056 G-s
MIA	.103 In/Sec	.263 G-s
GIA	.049 In/Sec	.016 G-s
GIH	.040 In/Sec	.072 G-s
GOH	.387 In/Sec	.276 G-s
COH	.498 In/Sec	.079 G-s

STD8 - Stand 8 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.049 In/Sec	.028 G-s
MIH	.068 In/Sec	.053 G-s
MIA	.072 In/Sec	.113 G-s
GIA	.052 In/Sec	.027 G-s
GIH	.049 In/Sec	.038 G-s
COH	.313 In/Sec	.209 G-s

STD9 - Stand 9 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.077 In/Sec	.038 G-s
MIH	.086 In/Sec	.269 G-s
MIA	.089 In/Sec	.123 G-s
GIA	.076 In/Sec	.018 G-s
GIH	.087 In/Sec	.011 G-s
COH	.218 In/Sec	.041 G-s

STD10 - Stand 10 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.035 In/Sec	.022 G-s
MIH	.043 In/Sec	.042 G-s
MIA	.085 In/Sec	.060 G-s
GIA	.033 In/Sec	.065 G-s
GIH	.039 In/Sec	.235 G-s
COH	.222 In/Sec	.104 G-s

STD11 - Stand 11 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.023 In/Sec	.036 G-s
MIH	.028 In/Sec	.116 G-s
MIA	.032 In/Sec	.186 G-s
GIA	.069 In/Sec	.028 G-s
GIH	.065 In/Sec	.126 G-s

	GOH	.060 In/Sec	.032 G-s
	COH	.162 In/Sec	.090 G-s

STD12 - Stand 12 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.032 In/Sec	.019 G-s
MIH	.028 In/Sec	.070 G-s
MIA	.031 In/Sec	.241 G-s
COH	.127 In/Sec	.041 G-s

STD13 - Stand 13 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.062 In/Sec	.109 G-s
MIH	.063 In/Sec	.337 G-s
MIA	.139 In/Sec	1.464 G-s
GIA	.060 In/Sec	.030 G-s
GIH	.046 In/Sec	.039 G-s
GOH	.024 In/Sec	.156 G-s
COH	.134 In/Sec	.076 G-s

STD14 - Stand 14 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.080 In/Sec	.608 G-s
MIH	.066 In/Sec	.163 G-s
MIA	.046 In/Sec	.239 G-s
GIA	.090 In/Sec	.041 G-s
GIH	.051 In/Sec	.0081 G-s
GOH	.031 In/Sec	.030 G-s
COH	.200 In/Sec	.113 G-s

STD15 - Stand 15 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.049 In/Sec	.146 G-s
MIH	.043 In/Sec	.097 G-s
COH	.061 In/Sec	.156 G-s

STD16 - Stand 16 (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
COH	.254 In/Sec	.082 G-s

NORTH AC - NORTH AIR COMPRESSOR QUINCY (24-Feb-25)

	OVERALL LEVEL	1 - 20 KHz
MOH	.137 In/Sec	.502 G-s
MIH	.095 In/Sec	.414 G-s
MIA	.127 In/Sec	.130 G-s
	OVERALL LEVEL	1K-20KHz
CIA	.273 In/Sec	.252 G-s
CIH	.159 In/Sec	.596 G-s
COH	.240 In/Sec	.742 G-s

SOUTH AC - SOUTH AIR COMPRESSOR QUINCY (24-Feb-25)

	OVERALL LEVEL	1 - 20 KHz
MOH	.185 In/Sec	.645 G-s
MIH	.224 In/Sec	.653 G-s
MIA	.333 In/Sec	.094 G-s
	OVERALL LEVEL	1K-20KHz
CIA	.252 In/Sec	.312 G-s
CIH	.342 In/Sec	.627 G-s
COH	.293 In/Sec	.897 G-s

EAST AC - EAST AIR COMPRESSOR QUINCY (24-Feb-25)

	OVERALL LEVEL	1 - 20 KHz
MOH	.235 In/Sec	.250 G-s
MIH	.193 In/Sec	.223 G-s
MIA	.255 In/Sec	.037 G-s
	OVERALL LEVEL	1K-20KHz
CIA	.359 In/Sec	.318 G-s
CIH	.271 In/Sec	.677 G-s
COH	.180 In/Sec	.724 G-s

NEW W-AC - WEST AIR COMPRESSOR QUINCY (24-Feb-25)

	OVERALL LEVEL	1 - 20 KHz
MOH	.096 In/Sec	.386 G-s
MOV	.137 In/Sec	.140 G-s
MOA	.132 In/Sec	.104 G-s
MIH	.115 In/Sec	.765 G-s
MIV	.118 In/Sec	.172 G-s
MIA	.108 In/Sec	.165 G-s
	OVERALL LEVEL	1K-20KHz
1IH	.127 In/Sec	2.281 G-s
1IV	.248 In/Sec	.825 G-s
1IA	.148 In/Sec	.924 G-s
1OH	.200 In/Sec	2.002 G-s
1OV	.252 In/Sec	1.127 G-s
1OA	.197 In/Sec	1.173 G-s
2IH	.098 In/Sec	2.131 G-s
2IV	.189 In/Sec	.646 G-s
2IA	.162 In/Sec	.782 G-s
2OH	.166 In/Sec	2.552 G-s
2OV	.165 In/Sec	.800 G-s
2OA	.130 In/Sec	.667 G-s

Station: Roll Mill Utilities

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD

HYDPMP2 - Hydraulic Pump Center (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.119 In/Sec	.019 G-s
MIH	.309 In/Sec	.045 G-s
PIV	.333 In/Sec	.180 G-s

HYDPMP3 - Hydraulic Pump West (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.145 In/Sec	.248 G-s
MIH	.478 In/Sec	.104 G-s
PIV	.317 In/Sec	.844 G-s

DESFAN - Desolution Fan (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.047 In/Sec	.014 G-s
MIH	.052 In/Sec	.0075 G-s
MIA	.060 In/Sec	.013 G-s

COMFAN - Combustion Air Fan (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.122 In/Sec	.101 G-s
MIH	.117 In/Sec	.082 G-s
MIA	.091 In/Sec	.030 G-s
FIH	.066 In/Sec	.201 G-s
FOH	.102 In/Sec	.598 G-s

EJCFAN - Ejector Air Fan (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.100 In/Sec	.178 G-s
MIH	.077 In/Sec	.139 G-s
MIA	.040 In/Sec	.067 G-s
FIA	.042 In/Sec	.079 G-s
FIH	.051 In/Sec	.143 G-s
FOH	.098 In/Sec	.108 G-s

COLPMP2 - Furnace Cooling Pump center (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.203 In/Sec	.085 G-s
MIH	.092 In/Sec	.041 G-s
MIA	.165 In/Sec	.060 G-s

FCTSOUTH - Furnace CT Drive South (24-Feb-25)

		OVERALL LEVEL	1K-20KHz
	MOH	.207 In/Sec	.073 G-s
	MIH	.179 In/Sec	1.076 G-s
	MIA	.327 In/Sec	.346 G-s

FCTNORTH - Furnace CT Drive North (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.295 In/Sec	.012 G-s
MIH	.167 In/Sec	.041 G-s
MIA	.171 In/Sec	.0056 G-s

SCLPMP2 - Scale Pit Pump North (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.323 In/Sec	.212 G-s
MIH	.088 In/Sec	.313 G-s
MIA	.143 In/Sec	.218 G-s
PIH	.096 In/Sec	.426 G-s

CTWTR1 - CT Pump East/Middle Pump (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.064 In/Sec	.0095 G-s
MIH	.048 In/Sec	.0095 G-s
MIA	.050 In/Sec	.0046 G-s

CTWTR2 - CT Pump West (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.117 In/Sec	.296 G-s
MIH	.085 In/Sec	.207 G-s
MIA	.091 In/Sec	.237 G-s

MILWTR2 - Mill Water Pump Center (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.061 In/Sec	.588 G-s
MIH	.046 In/Sec	.660 G-s
MIA	.038 In/Sec	.715 G-s

MILWTR1 - Mill Water Pump East (24-Feb-25)

	OVERALL LEVEL	1K-20KHz
MOH	.072 In/Sec	.191 G-s
MIH	.053 In/Sec	.262 G-s
MIA	.030 In/Sec	.150 G-s

Clarification Of Vibration Units:

Acc --> G-s RMS

Vel --> In/Sec PK