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April 21, 2025

Nucor Roll Mill Jackson-Flowood, MS

Subject: March vibration survey

Below is a summary report for the monthly Roll Mill vibration survey that was performed on 4/16/25. 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. Maguell

ISO Certified Vibration Analyst, Category III



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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.

Defects

Roll Stand 1A

Planetary gearbox data still shows 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 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 much higher 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 higher 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

Motor was not in operation this survey; however, the following likely still applies: 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

Motor was not in operation this survey; however, the following likely still applies: 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.

West Quincy Air Compressor (New)

The compressor had much higher amplitudes this survey. This is only our second data collection of this unit, so it could have been under heavy load. Data shows multiple lobe harmonics of the driven rotor and high frequency vibration. We will monitor this closely in the upcoming surveys. 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

Motor axial vibration was higher this survey. Data shows a 1 and 2 x rpm vibration. It is recommended to check couplings during next down day. Rated as a **CLASS II** defect.

Ejector Air Fan

ODE fan bearing data shows some impacting and noise floor. This may be an internal issue with the fan, change in process flow, or internally in the fan bearing. Also, fan rpm fluctuated quite a bit during data collection and may have had some influence. We will monitor this closely next survey. Rated as a **CLASS I** defect.

Database: nucorja9.rbm Station: Roll Mill Rolls

MEASUREM	IENT POINT	OVERALL LEVEL	HFD / VHFD	
STD12	- Stand 1A	(1)	5-Apr-25)	
010111	otana m	OVERALL LEVEL	1K-20KHz	
M	ЮН	.081 In/Sec	.014 G-s	
M	ITH	.058 In/Sec	.059 G-s	
M	ITA	.085 In/Sec	.105 G-s	
C	:OH	.153 In/Sec	.094 G-s	
G	IA	.093 In/Sec	.115 G-s	
G	IH	.186 In/Sec	.590 G-s	
G	12	.165 In/Sec	.165 G-s	
G	13	.116 In/Sec	.218 G-s	
G	I 4	.088 In/Sec	.219 G-s	
G	15	.054 In/Sec	.011 G-s	
G	16	.069 In/Sec	.229 G-s	
G	ЮН	.065 In/Sec	.085 G-s	
STD2A	- Stand 2A	(16	6-Apr-25)	
		OVERALL LEVEL	1K-20KHz	
M	IOH	.076 In/Sec	.012 G-s	
M	IIH	.081 In/Sec	.031 G-s	
M	IIA	.100 In/Sec	.128 G-s	
C	ЮН	.151 In/Sec	.045 G-s	
STD1	- Stand 1	(16	6-Apr-25)	
		OVERALL LEVEL	1K-20KHz	
M	ЮH	.070 In/Sec	.018 G-s	
M	IIH	.120 In/Sec	.080 G-s	
M	IIA	.532 In/Sec	.106 G-s	
G	IA	.045 In/Sec	.029 G-s	
G	IH	.043 In/Sec	.027 G-s	
C	ЮН	.135 In/Sec	.049 G-s	
STD2	- Stand 2	(16	6-Apr-25)	
		OVERALL LEVEL	1K-20KHz	
M	IOH	.049 In/Sec	.047 G-s	
M	IIH	.064 In/Sec	.078 G-s	
M	IIA	.127 In/Sec	.039 G-s	
G	IA	.026 In/Sec	.123 G-s	
G	:0H	.114 In/Sec .253 In/Sec	.146 G-s .020 G-s	
_				
STD3	- Stand 3	(16	-Apr-25)	
		OVERALL LEVEL	1K-20KHz	
M	IOH	.071 In/Sec	.088 G-s	
M		.091 In/Sec	.032 G-s	
M		.159 In/Sec	.073 G-s	
G		.U2/ IN/Sec	.0/0 G-S	
G	1 I I I I I I	.USI IN/Sec	.UI6 G-S	
C	Он	.228 In/Sec	.003 G-S	

STD4		- Stand	4	(16-Apr-2		(16-Apr-25)				
				OVERA	LL LEVEL	1K-20KHz				
	MOH			.092	In/Sec	.013 G-s				
	MIH			.097	In/Sec	.051 G-s				
	MIA			.119	In/Sec	.301 G-s				
	GIA			.099	In/Sec	.039 G-s				
	GIH			.103	In/Sec	.066 G-s				
	СОН			.429	In/Sec	.022 G-s				
STD5		- Stand	5			(16-Apr-25)				
				OVERA	LL LEVEL	1K-20KHz				
	MOH			.055	In/Sec	.043 G-s				
	MIH			.056	In/Sec	.059 G-s				
	MIA			.108	In/Sec	.072 G-s				
	GIA			.122	In/Sec	.034 G-s				
	GIH			.097	In/Sec	.159 G-s				
	GOH			. 379	In/Sec	.605 G-s				
	СОН			.344	In/Sec	.054 G-s				
STD6		- Stand	6			(16 - Apr - 25)				
		0 00000	•	OVERA	LL LEVEL	1K-20KHz				
	мон			.069	In/Sec	.034 G-s				
	MIH			.082	In/Sec	.063 G-s				
	MIA			.247	In/Sec	.057 G-s				
	GIA			.138	In/Sec	.012 G-s				
	GIH			.142	In/Sec	.023 G-s				
	GOH			. 922	In/Sec	.744 G-s				
	COH			.319	In/Sec	.087 G-s				
ടന്ന7						(16 - 3nr - 25)				
5107		bcana	,	OVERA	T.T. T.EVET.	1K-20KHz				
	мон			. 0.54	In/Sec	.050 G-s				
	мтн			.057	In/Sec	.122 G-s				
	MIA			.145	In/Sec	.178 G-s				
	GIA			.165	In/Sec	.103 G-s				
	GIH			.083	In/Sec	.033 G-s				
	GOH			.777	In/Sec	1.317 G-s				
	COH			.460	In/Sec	.052 G-s				
S TT D		- Stand	٩			(16 - 3nn - 25)				
3109		- Stanu	9	OVERA	T.T. T.EVET.	1к-20кн ₇				
	мон			061	In/Sec	051 G-s				
	мтн			.132	In/Sec	.055 G-s				
	MIA			.141	In/Sec	.085 G-s				
	GIA			.065	In/Sec	.023 G-s				
	GIH			.058	In/Sec	.072 G-s				
	СОН			.204	In/Sec	.027 G-s				
00010		Oton d	10			(16 3 05)				
STDIU		- stand	10	OVERA	LI. LEVET.	(10-Apr-25) 1K-20KH7				
	мон			072	In/Sec	011 G-s				
	MIH			.066	In/Sec	.024 G-s				
	MIA			.075	In/Sec	.041 G-s				
	GIA			.077	In/Sec	.329 G-s				
	GIH			.107	In/Sec	.451 G-s				
	COH			.209	In/Sec	.151 G-s				
2 P. T. T		_ 0+2	12			(16-30-25)				
SIDIS		- Stallu	13	OVERA	LL LEVEL	1K-20KHz				
	мон			.083	In/Sec	.031 G-s				
	MIH			.100	In/Sec	.059 G-s				
	MIA			.192	In/Sec	.406 G-s				
	GIA			.034	In/Sec	.021 G-s				
	GIH			.030	In/Sec	.034 G-s				
	GOH			.031	In/Sec	.032 G-s				
	СОН			.125	In/Sec	.030 G-s				
STD14		- Stand	14			(16 - Apr - 25)				
21217		Jeana		OVERA	LL LEVEL	1K-20KHz				

.150	In/Sec	.134	G-s
.167	In/Sec	.117	G-s
.107	In/Sec	.154	G-s
.035	In/Sec	.0048	G-s
.067	In/Sec	.061	G-s
.034	In/Sec	.080	G-s
.197	In/Sec	.257	G-s
	.150 .167 .107 .035 .067 .034 .197	.150 In/Sec .167 In/Sec .107 In/Sec .035 In/Sec .067 In/Sec .034 In/Sec .197 In/Sec	.150 In/Sec .134 .167 In/Sec .117 .107 In/Sec .154 .035 In/Sec .0048 .067 In/Sec .061 .034 In/Sec .080 .197 In/Sec .257

NORTH AC	-	NORTH	AIR	COMPRESSOR Q	UINCY	(16-Apr-25)		
				OVERA	LL LEVEL	1 - 20 KH	İz	
MO	I			.125	In/Sec	.289 G-s	:	
MI	I			.096	In/Sec	.459 G-s	:	
MIZ	4			.098	In/Sec	.503 G-s	5	
				OVERA	LL LEVEL	1K-20KHz		
CI	7			.283	In/Sec	.600 G-s	5	
CII	ł			.174	In/Sec	.663 G-s	5	
COL	ł			.245	In/Sec	.409 G-s	5	
SOUTH AC - SOUTH AIR COMPRESSOR QUINCY (16-Apr-25)								
				OVERA	LL LEVEL	1 - 20 KH	ĺz	
MOI	ł			.129	In/Sec	.564 G-s	5	
MIH	ł			.100	In/Sec	.505 G-s	5	
MIZ	7			.100	In/Sec	.617 G-s	5	
				OVERA	LL LEVEL	1K-20KHz		
CI	7			.197	In/Sec	.509 G-s	5	
CII	I			.112	In/Sec	.405 G-s	5	
COL	ł			.197	In/Sec	.244 G-s	5	
NEW W-AC	-	WEST A	AIR C	COMPRESSOR QU	INCY	(16-Apr-25)		
				OVERA	LL LEVEL	1 - 20 KH	ĺz	
MOI	I			.076	In/Sec	.535 G-s	5	
MOV	7			.109	In/Sec	1.199 G-s	5	
MOZ	7			.096	In/Sec	.389 G-s	5	
MI	I			.214	In/Sec	3.513 G-s	5	
MIV	7			.116	In/Sec	1.175 G-s	5	
MIZ	7			.140	In/Sec	1.816 G-s	5	
				OVERA	LL LEVEL	1K-20KHz		
111	I			. 312	In/Sec	4.917 G-s	5	
11	7			.215	In/Sec	2.977 G-s	5	
112	7			.290	In/Sec	4.311 G-s	6	
10	I			.292	In/Sec	3.488 G-s	6	
10	7			.288	In/Sec	3.830 G-s	6	
10/	7			. 339	In/Sec	4.911 G-s	5	
211	ł			.183	In/Sec	2.699 G-s	5	
21	7			.142	In/Sec	1.549 G-s	5	
21/	7			.156	In/Sec	1.736 G-s	5	
201	I			.147	In/Sec	1.214 G-s	5	
201	7			.188	In/Sec	1.862 G-s	5	
202	7			.229	In/Sec	3.633 G-s	5	

Station: Roll Mill Utilities

HYDPMP2 - Hydraulic Pump Center (16-Apr-25) OVERALL LEVEL 1K-20KHz MOH .082 In/Sec .253 G-s MIH .189 In/Sec .515 G-s PIV .259 In/Sec 1.558 G-s
OVERALL LEVEL 1K-20KHz MOH .082 In/Sec .253 G-s MIH .189 In/Sec .515 G-s PIV .259 In/Sec 1.558 G-s
MOH .082 In/Sec .253 G-s MIH .189 In/Sec .515 G-s PIV .259 In/Sec 1.558 G-s
MIH .189 In/Sec .515 G-s PIV .259 In/Sec 1.558 G-s
PIV .259 In/Sec 1.558 G-s
HYDPMP3 - Hydraulic Pump West (16-Apr-25)
OVERALL LEVEL 1K-20KHz
MOH .122 In/Sec .668 G-s
MIH .379 In/Sec .417 G-s
PIV .278 In/Sec 1.603 G-s

SPAN -	Desolution Fan		(16-Apr-25)	
		OVERALL LEVEL	1к-20кн	z
MOH		.028 In/Sec	.038 G	-s
MIH		.026 In/Sec	.040 G	-s
MIA		.031 In/Sec	.044 G	-s
MFAN -	Combustion Air Fa	n	(16-Apr-25)	
		OVERALL LEVEL	1К-20КН	z
MOH		.243 In/Sec	.127 G	-s
MIH		.227 In/Sec	.215 G	-s
MIA		.309 In/Sec	.125 G	-s
FIH		.133 In/Sec	.059 G	-s
FOH		.147 In/Sec	.284 G	-s
CFAN -	Ejector Air Fan		(16 - Apr - 25)	
		OVERALL LEVEL	1К-20КН	z
MOH		.043 In/Sec	.276 G	-s
MIH		.046 In/Sec	.312 G	-s
MIA		.073 In/Sec	.131 G	-s
FIA		.026 In/Sec	.134 G	-s
FIH		.028 In/Sec	.169 G	-s
FOH		.223 In/Sec	.353 G	-s
LPMP2 -	Furnace Cooling P	ump center	(16-Apr-25)	
	- armade couring P	OVERALL LEVEL	1K-20KH	z
MOH		.227 In/Sec	.332 G	-s
MIH		.075 In/Sec	.325 G	-s
MIA		.078 In/Sec	.225 G	-s
m 00117711		Gauth	(16 3	
TSOUTH -	Furnace CT Drive	South	(16-Apr-25)	_
		OVERALL LEVEL		z
MOH		.309 IN/Sec	.070 G	-5
MIH		.230 IN/SeC	. 5/8 G	- 5
MIA		.599 III/SeC	.210 G	3
TNORTH -	Furnace CT Drive	North	(16-Apr-25)	
		OVERALL LEVEL	1К-20КН	z
MOH		.284 In/Sec	.084 G	-s
MIH		.171 In/Sec	.100 G	-s
MIA		.143 In/Sec	.051 G	-s
LPMP2 -	Scale Pit Pump No	rth	(16-Apr-25)	
	-	OVERALL LEVEL	1к-20кн	z
MOH		.745 In/Sec	.446 G	-s
MIH		.156 In/Sec	.424 G	-s
MIA		.465 In/Sec	.197 G	-s
PIH		.292 In/Sec	.271 G	-s
WTTR2 -	CT Dumo West		(16-205-25)	
	or ramp neor	OVERALL LEVEL	(<u>10 дрг-2</u> 3) 1К-20КН	z
MOH		.091 In/Sec	.243 G	-s
MTH		.080 In/Sec	.184 G	-s
MIA		.056 In/Sec	.077 G	-s
	will w ·	•	(1.6	
LWIR3 -	MIII Water Pump W	est Overatt tevet	(16-Apr-25)	7
MOH		087 Tr/Sec	, IN-2000 210 C	- 9
MTH		.060 In/Sec	.191 0	-s
MIA		.044 In/Sec	.144 G	-s
LWTR2 -	Mill Water Pump C	enter	(16-Apr-25)	
		OVERALL LEVEL	1K-20KH	z
MOH		.064 In/Sec	.400 G	-s
MIH		.030 IN/Sec	.935 G	-5
MIA		.042 IN/Sec	./12 G	-3
fication C	f Vibration Units:			
c>	G-s RMS			
c> 1>	G-s RMS In/Sec PK			