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December 31, 2024

NUCOR Melt Shop Subject: December 2024 vibration survey

Below is a summary report for the Melt Shop monthly vibration survey that was performed on 12/18/24. 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.

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

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

<u>Class III</u>: 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.

<u>Class IV</u>; 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 Steel Flowood-Jackson, MS. If there are any comments or questions, do not hesitate to contact us.

Sincerely,

1. Maruell

ISO Certified Vibration Analyst, Category III



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Defects

Middle Caster Mold Water Pump

Pump was down this survey; however, the following still applies: Vibration data shows issues in the pump. Data suggests looseness/wear of the pump bearings/fits. Impeller and other pump internals may also have wear. The pump will likely need attention soon. Rated as a **CLASS II** defect.

East Booster Pump

*Pump was down this survey; however, the following still applies if no actions have been taken :*Motor vibration data indicates defects are present in the motor bearings. Inspect motor as scheduling allows. Rated as a **CLASS II** defect.

Cooling Tower #4 Supply Pump

Pump data shows some signs of bearing defects/wear in the ODE pump bearing. Inspect pump as scheduling allows. Rated as a **CLASS III** defect.

Cooling Tower #5 Supply Pump

Pump was down this survey; however, the following still applies: Pump has some elevated 1 x rpm axial vibration. For now, it is recommended to inspect couplings, alignment, and all pump fasteners as scheduling allows. Rated as a **CLASS II** defect.

Cooling Tower #6 Supply Pump

The pump vibration data still indicates that there is bearing wear, and possibly cavitation in the pump. Inspect ODE pump bearing. Ensure the pump has no inlet restrictions and is operating in the correct part of the curve. Impeller may have excessive wear. Rated as a **CLASS II** defect.

West Furnace Baghouse Fan

Data still shows a 2 x rpm vibration in the motor. This usually is an indication of an alignment and or coupling issue. Vibration is not at an alarm level yet, so this is a **CLASS I** defect.

Spray Chamber Exhaust Fan

Motor and fan both have high vibration again this survey. Belts could be slipping which is allowing the fan to operate at speeds near a resonance which causing high 1 x fan rpm vibration in the unit. High 1 x rpm vibration could also be structural issue and or fan imbalance. Inspect all motor base mounts/fasteners. Inspect fan for build-up and inspect belt tension soon. Rated as a **CLASS III** defect.

Database: nucorja9.rbm Station: Melt Shop

MEASUREMENT	POINT	c	OVERAL	L LEVEL	hfd /	VHFD
		-				
WCMWP	- WEST	CASTER MOLD	WATER	PUMP	(18-Dec-24)	
			OVERA	LL LEVEL	1K-20KI	lz
MOH			.065	In/Sec	.195 (3-s
MIH			.076	In/Sec	.263 (3-s
MIA			.092	In/Sec	.351 (3-s
PIA			.305	In/Sec	.626 (3-s
PIH			.186	In/Sec	.673 (3-s
POH			.213	In/Sec	.595 (3-s
ECMWP	- EAST	CASTER MOLD	WATER	PUMP	(18-Dec-24)	
			OVERA	LL LEVEL	1K-20KI	Iz
MOH			.140	In/Sec	.323 (3-s
MIH			.127	In/Sec	.312 (3-s
MIA			.123	In/Sec	.210 (G−s
PIA			.249	In/Sec	2.010 0	G−s
PIH			.118	In/Sec	1.475 (G−s
POH			.156	In/Sec	1.715 (3−s
WBOSTRP	- WEST	Booster PUM	2		(18-Dec-24)	
			OVERA	LL LEVEL	1K-20KI	Ηz
MOH			.056	In/Sec	.518 (3-s
мтн			049	In/Sec	382 (3-s
мта			037	In/Sec	330 (3-8 3-8
DTA			145	In/Sec	1 079 (
			107	In/Sec	1 007 (3-5 7-9
POH			.291	In/Sec	3.520 (3-5 3-5
			7 WD 1		(10 Dec 24)	
ECSWP ILET	- EAST	CASTER SPRA	C WP I	LEFT	(18-Dec-24)	-
NOU			OVERA	сс сеvес	215	1Z
MOH			.088	In/Sec	.215 (3-S
MIH			.079	In/Sec	.285 (3-8 0
MIA			.049	In/Sec	.153 (j-S
MCSWP 2LFT	- MID C	CASTER SPRAY	WP 2 1	LEFT	(18-Dec-24)	
			OVERA	LL LEVEL	1K-20KI	lz
MOH			.117	In/Sec	.399 (3-s
MIH			.109	In/Sec	.739 (3-s
MIA			.081	In/Sec	.387 (3-s
MCSWP 3RT	- MID C	CASTER SPRAY	WP 31	RIGHT	(18-Dec-24)	
			OVERA	LL LEVEL	1K-20K	Ξz
MOH			.152	In/Sec	.746 (3-s
MIH			.154	In/Sec	2.611 (3-s
MIA			.083	In/Sec	.516 (3−s
MSERVOHYDP	- MIDDI	LE SERVO Hvd	PUMP		(18-Dec-24)	
			OVERA	LL LEVEL	1K-20KI	Iz
мон			241	In/Sec	282 (3-s
мтн			060	In/Sec	396 (2-e
PIV			.176	In/Sec	.402 (G-s
WORDWORD		CEDUO Hard DI	IMD		(19-Dec 24)	
WSERVOHIDP	- west	SERVO HYA PI	OVEDA	ד ד דייידי	(10-DeC-24)	
MOL			10F	тр/ссс Тр/ссс	126 4	12 2-2
MOH			100	Th/Sec	.130 (3-5 7-6
MIH ST-			.109	III/Sed	.291 (3-8 7 -
PTA PTA			.087	IN/Sec	1.1/3 (3-8
SERVOHRECP	- SERVO	Hyd RECIRC	PUMP		(18-Dec-24)	

		OVERALL LEVEL	1K-20KHz
MOH		.061 In/Sec	.123 G-s
MIH		.088 In/Sec	.721 G-s
PIV		.187 In/Sec	.995 G-s
N2DECKHYDP	- North 2ND DECK H	Iyd PUMP	(18-Dec-24)
		OVERALL LEVEL	1K-20KHz
MOH		.127 In/Sec	1.172 G-s
мтн		131 Tn/Sec	558 G-s
DTV		212 In/Sec	2 784 C-S
FIV		.212 11/360	2.704 6-5
2DEKBECTD	- 2ND DECK ISS H	DECTRC DIM	(19-Doc-24)
ZDERRECIP	- 2ND DECK Les Hyd	OWEDNIL LEVEL	(10-Dec-24)
		OVERALL LEVEL	IK-20KHZ
MOH		.099 In/Sec	.128 G-s
MIH		.084 In/Sec	.221 G-s
PIV		.226 In/Sec	.728 G-s
S2DECKHYDP	- SOUTH 2ND DECK H	Iyd PUMP	(18-Dec-24)
		OVERALL LEVEL	1K-20KHz
MOH		.095 In/Sec	.333 G-s
MIH		.103 In/Sec	.772 G-s
PIV		.524 In/Sec	2.712 G-s
1SUPLYP	- #1 Supply Pump		(18-Dec-24)
		OVERALL LEVEL	1K-20KHz
MOH		.084 In/Sec	.178 G-s
мтн		120 In/Sec	.141 G-s
мта		138 Tn/Sec	114 G-s
DTA		515 In/Sec	593 C-e
		254 Tr/Sec	.333 G 3
PIR		.354 IN/Sec	.637 G-8
POH		.221 In/Sec	.536 G-S
	#2 Group 1 Drome		(10 Dec 24)
SOPLIP	- #3 Supply Pump		(18-Dec-24)
		OVERALL LEVEL	IK-20KHZ
MOH		.068 In/Sec	.863 G-s
MIH		.070 In/Sec	.921 G-s
MIA		.071 In/Sec	.382 G-s
PIA		.182 In/Sec	.236 G-s
PIH		.134 In/Sec	.409 G-s
POH		.196 In/Sec	.994 G-s
4SUPLYP	- #4 Supply Pump		(18-Dec-24)
		OVERALL LEVEL	1K-20KHz
MOH		.054 In/Sec	.743 G-s
MIH		.067 In/Sec	.932 G-s
MIA		.085 In/Sec	.209 G-s
PIA		.226 In/Sec	.840 G-s
PIH		.183 In/Sec	.858 G-s
POH		.390 In/Sec	3.445 G-s
		,	
6SUPLYP	- #6 Supply Pump		(18-Dec-24)
		OVERALL LEVEL	1K-20KHz
М ОН		073 Tn/Sec	167 C-e
MOII		.075 IN/Sec	.107 G-S
MIH		.033 III/SEC	.192 G-S
MIA		.096 In/Sec	.104 G-s
PIA		.1/0 In/Sec	.156 G-S
PIH		.191 In/Sec	.704 G-s
POH		.221 In/Sec	1.178 G-s
CBRA	- CASTER BAGHOUSE	REVERSE AIR	(18-Dec-24)
		OVERALL LEVEL	1K-20KHz
MOH		.024 In/Sec	.320 G-s
MIH		.028 In/Sec	.126 G-s
MIA		.021 In/Sec	.085 G-s
FIH		.019 In/Sec	.228 G-s
FOH		.035 In/Sec	.274 G-s
CBID	- CASTER BAGHOUSE	ID FAN	(18-Dec-24)
		OVERALL LEVEL	1K-20KHz
		038 Tp/Sec	087 G-s
MOH		.050 11/560	.007 0 5

MOV		.018	In/Sec	.079	G-s	
MIH		.038	In/Sec	.128	G-s	
MIV		.029	In/Sec	.224	G-s	
MIA		.018	In/Sec	.188	G-s	
FIA		.075	In/Sec	.807	G-s	
FIH		.074	In/Sec	.846	G-s	
FIV		.047	In/Sec	. 585	G-s	
FOH		.074	In/Sec	.305	G-s	
FOV		.023	In/Sec	. 222	G-s	
FOA		.063	In/Sec	.144	G-s	
FRAF ·	- Furnace REVERSE AI	IR Fan	L	(18-Dec-24)		
	C	VERAL	L LEVEL	1K-20F	Hz	
MOH		.027	In/Sec	.151	G-s	
MIH		.037	In/Sec	. 537	G-s	
MIA		.043	In/Sec	. 659	G-s	
FIA		.033	In/Sec	.241	G-s	
FIH		.021	In/Sec	. 607	G-s	
FOH		.034	In/Sec	.303	G-s	
		_	_			
EFBHF ·	- East Furnace Bag H	louse	Fan	(18-Dec-24)		
	C	VERAL	L LEVEL	1K-20F	HZ	
мон		.080	In/Sec	.449	G-s	
MIH		.0//	In/Sec	1.020	G-S	
MIA		. 1 1 1	In/Sec	. 684	G-S	
FIA		.091	In/Sec	1.012	G-s	
FIH		.125	In/Sec	1.289	G-s	
FOH		.110	In/Sec	.830	G-S	
WEBUE .	- WEST Furnado Bag H	Iouso	Fan	(18-Dog-24)		
WEBHE	- WEST FULLACE BAS I	WEDAT	T TEVET	(10-Dec-24)	.u	
мон	0	106		208	G-S	
мтн		146	In/Sec	300	G-s	
мта		047	In/Sec	236	G 5 G-8	
FIA		105	In/Sec	.230	G-s	
E III FTH		146	In/Sec	1 311	G-8	
FOH		108	In/Sec	1 014	G-s	
1011		.100	111/ 000	1.014	0.5	
MIDCHYDP ·	- MIDDLE CASTER Hvd	PUMP		(18-Dec-24)		
	C	VERAL	L LEVEL	1K-20F	Hz	
МОН		.055	In/Sec	.300	G-s	
MIH		.063	In/Sec	. 609	G-s	
PIH		.122	In/Sec	.827	G-s	
SCHYDP -	- SOUTH CASTER Hyd F	PUMP		(18-Dec-24)		
	c	VERAL	L LEVEL	1K-20F	Hz	
MOH		.120	In/Sec	.348	G-s	
MIH		.076	In/Sec	.402	G-s	
PIH		.110	In/Sec	.753	G-s	
Clarification (Of Vibration Units:					
Acc>	>G-s RMS					
Vel:	> In/Sec PK					