HI-SPEED INDUSTRIAL SERVICE

MILLINGTON, TN

December 31, 2020

Plaskolite

Subject: December vibration report

Most of the machines surveyed were found to be in good condition, with exception of 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.

This completes our assessment of your equipment for this survey. Thank you for your business and don't hesitate to call if you have any comments or questions.

Sincerely,

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Data

Blower Slow Cooling (Lower)
The acceleration overall has climbed to 15 g's RMS respectively for the drive end bearing. Speed affects vibrations. It appears fluting is still the issue; however, there is a slight possibility of rotor bar issues. We believe the bearing damage needs to be addressed in the near future. Replace the bearings or complete motor as time allows. Take steps to reduce bearing fluting going forward. **Rated a Class III Defect.**

Blower Slow Cooling (Upper)
The acceleration overall shows over 5 g's RMS for the drive end bearing. Speed affects vibration amplitude. We will keep an eye on this one. No Immediate action required. **Rated a Class I Defect for now.**

Blower rapid Cooling (Upper)
The acceleration overall shows over 16 g's RMS for the drive end bearing. That is quite a large jump for this unit. Make sure these motor bearings are lubricated on a schedule they are equipped with grease fittings. Speed affects vibration amplitude. We will keep an eye on this one. No Immediate action required. **Rated a Class II Defect.**

Blower rapid Cooling (Lower)
The acceleration overall shows over 6 g's RMS for the drive end bearing. Speed affects vibration amplitude. We will keep an eye on this one. No Immediate action required. **Rated a Class I Defect.**

West Syrup Cool Pump
A dominant 35 Hz vibration in the inboard end of the pump suggests vane pass If the unit has 11. The vibration peak has 3 Hz sidebands which suggests there is looseness on the output shaft, possibly the impeller or coupling. Overall amplitude is over 0.384"/sec velocity peak. The vibration has dropped slightly again. Flow restrictions or other process issues could exacerbate the defect. **Rated a Class II Defect.**

Vertical Hot water pumps
Pumps 1, 4, have overall vibrations between0.3 and 0.7 "/sec velocity peak. Vibrations seem to be a combination of mostly resonance and some shaft 1xRPM. Check flow and fasteners. **Rated Class I Defects.**

Vertical Hot water pump 5
This unit has overall vibrations at almost 1"/sec velocity peak for the top bearing measurements. The vibration consists mostly of a 22 Hz vibration (resonance) and lower amplitude shaft speed vibration. Check flow and fasteners. Check trim balance as time allows. **Rated Class II Defects.**

Overall vibrations follow:

Abbreviated Last Measurement Summary
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Database: mmaold.rbm
Station: PLASKOLITE MEMPHIS
Route No. 3: PLASKOLITE NEW
Report Date: 31-Dec-20 07:40

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
5285-12 - FAN,COOLING TWR EAST	(29-Dec-20)	
	OVERALL LEVEL	1-20 KHz
E1 - CELL FRAME -EAST END E-W DIR	.011 In/Sec	.0054 G-s
	OVERALL LEVEL	HFD (>5 kHz)
E2 - CELL FRAME -EAST END N-S DIR	.0079 In/Sec	.0010 G-s
5285-21 - RETURN AIR FAN 100 AREA	(29-Dec-20)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OUTBD HORIZ	.075 In/Sec	.057 G-s
21 - MOTOR INBD HORIZ	.071 In/Sec	.037 G-s
23 - MOTOR INBD AXIAL	.060 In/Sec	.030 G-s
71 - FAN INBD (ON FRAME UNDER BRG)	.061 In/Sec	.046 G-s
81 - FAN OUTBD (ON FRAME UNDER BRG)	.075 In/Sec	.022 G-s
S1100 - FLARE BLOWER	(29-Dec-20)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR FLARE STACK END HORIZ	.012 In/Sec	.015 G-s
12 - MOTOR FLARE STACK END VERT	.012 In/Sec	.013 G-s
13 - MOTOR FLARE STACK END AXIAL	.012 In/Sec	.014 G-s
21 - MOTOR DAMPER END HORIZ	.013 In/Sec	.014 G-s
22 - MOTOR DAMPER END VERT	.013 In/Sec	.015 G-s
23 - MOTOR DAMPER END AXIAL	.011 In/Sec	.018 G-s
5214-04 - EAST SYRUP COOL PUMP	(29-Dec-20)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OUTBOARD HORIZONTAL	.035 In/Sec	.069 G-s
21 - MOTOR INBOARD HORIZONTAL	.030 In/Sec	.107 G-s
23 - MOTOR INBOARD AXIAL	.021 In/Sec	.155 G-s
31 - GEARBOX INPUT HORIZONTAL	.050 In/Sec	
61 - GEARBOX OUTPUT SHAFT HORIZ	.054 In/Sec	
71 - PUMP COUPLING END HORIZ	.102 In/Sec	.013 G-s
81 - PUMPIMPELLER END HORIZ	.039 In/Sec	.017 G-s
5214-03 - MIDDLE SYRUP COOL PUMP	(29-Dec-20)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OUTBOARD HORIZONTAL	.087 In/Sec	.084 G-s
21 - MOTOR INBOARD HORIZONTAL	.078 In/Sec	.099 G-s
23 - MOTOR INBOARD AXIAL	.075 In/Sec	.099 G-s
31 - GEARBOX INPUT HORIZONTAL	.221 In/Sec	
61 - GEARBOX OUTPUT SHAFT HORIZ	.125 In/Sec	
71 - PUMP COUPLING END HORIZ	.114 In/Sec	.011 G-s
81 - PUMP IMPELLER END HORIZ	.102 In/Sec	.022 G-s

5214-01	- WEST SYRUP COOL PUMP	(29-Dec-20)	
		OVERALL LEVEL	1-20 KHz
11	- MOTOR OUTBOARD HORIZONTAL	.103 In/Sec	.096 G-s
21	- MOTOR INBOARD HORIZONTAL	.093 In/Sec	.120 G-s
23	- MOTOR INBOARD AXIAL	.083 In/Sec	.072 G-s
31	- GEARBOX INPUT HORIZONTAL	.161 In/Sec	
61	- GEARBOX OUTPUT HORIZ	.137 In/Sec	
71	- PUMP CPLG END HORIZ	.384 In/Sec	.050 G-s
81	- PUMP IMPELLER END HORIZ	.327 In/Sec	.165 G-s
5282-02	- PUMP #1 HOT WATER 5282-02	(29-Dec-20)	
		OVERALL LEVEL	1-20 KHz
11	- #1 Hot Water Pump Mtr Top N-S	.370 In/Sec	1.263 G-s
12	- #1 Hot Water Pump Mtr Top E-W	.299 In/Sec	.579 G-s
5282-05	- PUMP #4 HOT WATER 5282-05	(29-Dec-20)	
		OVERALL LEVEL	1-20 KHz
11	- #4 Hot Water Pump Mtr Top N-S	.631 In/Sec	.456 G-s
12	- #4 Hot Water Pump Mtr Top E-W	.381 In/Sec	.931 G-s
5282-06	- PUMP #5 HOT WATER 5282-06	(29-Dec-20)	
		OVERALL LEVEL	1-20 KHz
11	- #5 Hot Water Pump Mtr Top N-S	.912 In/Sec	.684 G-s
12	- #5 Hot Water Pump Mtr Top E-W	.700 In/Sec	.677 G-s
5283-01	- BLOWER, EDGE WATER REMOVAL	(29-Dec-20)	
		OVERALL LEVEL	1-20 KHz
11	- MOTOR OUTBOARD HORIZONTAL	.096 In/Sec	.164 G-s
21	- MOTOR INBOARD HORIZONTAL	.101 In/Sec	.127 G-s
23	- MOTOR AXIAL	.062 In/Sec	.131 G-s
71	- BLOWER COUPLING END HORIZONTAL	.051 In/Sec	.417 G-s
81	- BLOWER WHEEL END HORIZONTAL	.097 In/Sec	.646 G-s
5281-12	- BLOWER,SLOW COOLING (UPPER)	(29-Dec-20)	
		OVERALL LEVEL	1-20 KHz
11	- MOTOR OUTBD HORIZ	.075 In/Sec	2.273 G-s
21	- MOTOR INBD HORIZ	.070 In/Sec	5.525 G-s
23	- MOTOR INBD AXIAL	.046 In/Sec	.852 G-s
71	- FAN INBD (ON PILLOWBLOCK FOOT)	.058 In/Sec	.227 G-s
81	- FAN OUTBD (ON PILLOWBLOCK FOOT)	.063 In/Sec	.311 G-s
5281-13	- BLOWER,SLOW COOLING (LOWER)	(29-Dec-20)	
		OVERALL LEVEL	1-20 KHz
11	- MOTOR OUTBD HORIZ	.062 In/Sec	7.366 G-s
21	- MOTOR INBD HORIZ	.141 In/Sec	15.17 G-s
21H	- MOTOR INBD HORIZ	.577 In/Sec	
23	- MOTOR INBD AXIAL	.075 In/Sec	3.827 G-s
71	- FAN INBD (ON PILLOWBLOCK FOOT)	.048 In/Sec	.296 G-s
81	- FAN OUTBD (ON PILLOWBLOCK FOOT)	.056 In/Sec	.245 G-s
5281-14	- BLOWER,RAPID COOLING (UPPER)	(29-Dec-20)	
		OVERALL LEVEL	1-20 KHz
11	- MOTOR OUTBD HORIZ	.070 In/Sec	2.485 G-s
21	- MOTOR INBD HORIZ	.085 In/Sec	16.34 G-s
23	- MOTOR INBD AXIAL	.061 In/Sec	1.855 G-s
71	- FAN INBD (ON PILLOWBLOCK FOOT)	.047 In/Sec	.466 G-s

81 - FAN OUTBD (ON PILLOWBLOCK FOOT)	.041 In/Sec	.423 G-s

5281-08 - BLOWER,RAPID COOLING (LOWER)	(29-Dec-20)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OUTBD HORIZ	.038 In/Sec	2.163 G-s
21 - MOTOR INBD HORIZ	.068 In/Sec	6.913 G-s
23 - MOTOR INBD AXIAL	.037 In/Sec	2.309 G-s
71 - FAN INBD (ON PILLOWBLOCK FOOT)	.043 In/Sec	.377 G-s
81 - FAN OUTBD (ON PILLOWBLOCK FOOT)	.037 In/Sec	.408 G-s

5281-10 - 200 BELT DRIVE, POLYMERIZER	(29-Dec-20)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OUTBOARD HORIZ	.026 In/Sec	.580 G-s
21 - MOTOR INBD HORIZ	.032 In/Sec	.219 G-s
33 - GEARBOX INPUT AXIAL	.021 In/Sec	.059 G-s
31 - GEARBOX INPUT HORIZ	.019 In/Sec	.220 G-s
61 - GEARBOX OUTPUT HORIZ	.0044 In/Sec	.078 G-s
71 - INBOARD PILLOWBLOCK	.0034 In/Sec	.0026 G-s
81 - OUTBOARD PILLOWBLOCK	.0035 In/Sec	.0032 G-s

Clarification Of Vibration Units:

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