HI-SPEED INDUSTRIAL SERVICE

MILLINGTON, TN

August 17, 2020

Plaskolite

Subject: August 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 shows over 25 g's RMS for the drive end bearing. Speed affects vibration amplitude. It appears fluting is the issue; however, there is a slight possibility of rotor bar issues. needs to be addressed soon. Replace the bearings or complete motor. Now would be a good time to consult our sales staff on reducing bearing fluting going forward. **Rated a Class III Defect.**

Blower Slow Cooling (Upper)
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 II Defect.**

West Syrup Cool Pump
A single 32 Hz vibration in the outboard end of the pimp suggests vane pass is the vibration. Overall amplitude is over 0.45"/sec velocity. Flow restrictions or other process issues could be the cause. **Rated a Class II Defect.**

Vertical Hot water pumps
Pump 5 (East) has vibrations at almost 0.30"/sec velocity peak respectfully. Try to trim balance if time allows. **Rated a Class I Defect.**

Please note the following:
The tower roof fans on the vibration route could use some modifications. The return air fan (RAF-100) guards need to be modified so better data can be acquired directly from the motor and fan bearing housings. Currently it is fully enclosed. The flare blower mounted on the platform above should have a remote accelerometer installed for data collection to prevent analyst from getting stung by wasps during climbing and data collection.

Overall vibrations follow:

Abbreviated Last Measurement Summary

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Database: mmaold.rbm
Station: PLASKOLITE MEMPHIS
Route No. 3: PLASKOLITE NEW
Report Date: 17-Aug-20 14:40

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
5285-09 - FAN,COOLING TWR WEST	(17-Aug-20)	
	OVERALL LEVEL	1-20 KHz
W1 - CELL FRAME -WEST END N-S DIR	.010 In/Sec	.052 G-s
W2 - CELL FRAME -WEST END E-W DIR	.039 In/Sec	.056 G-s
5285-11 - FAN,COOLING TWR MIDDLE	(17-Aug-20)	
	OVERALL LEVEL	1-20 KHz
M1 - CELL FRAME -MIDDLE N-S DIR	.0088 In/Sec	.047 G-s
M2 - CELL FRAME -MIDDLE E-W DIR	.011 In/Sec	.104 G-s
5285-12 - FAN,COOLING TWR EAST	(17-Aug-20)	
	OVERALL LEVEL	1-20 KHz
E1 - CELL FRAME -EAST END E-W DIR	.0081 In/Sec	.0065 G-s
	OVERALL LEVEL	HFD (>5 kHz)
E2 - CELL FRAME -EAST END N-S DIR	.0078 In/Sec	.0010 G-s
5285-21 - RETURN AIR FAN 100 AREA	(17-Aug-20)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OUTBD HORIZ	.055 In/Sec	.042 G-s
21 - MOTOR INBD HORIZ	.090 In/Sec	.034 G-s
23 - MOTOR INBD AXIAL	.076 In/Sec	.012 G-s
71 - FAN INBD (ON FRAME UNDER BRG)	.063 In/Sec	.046 G-s
81 - FAN OUTBD (ON FRAME UNDER BRG)	.067 In/Sec	.028 G-s
S1100 - FLARE BLOWER	(17-Aug-20)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR FLARE STACK END HORIZ	.071 In/Sec	.021 G-s
12 - MOTOR FLARE STACK END VERT	.011 In/Sec	.023 G-s
13 - MOTOR FLARE STACK END AXIAL	.0098 In/Sec	.025 G-s
21 - MOTOR DAMPER END HORIZ	.0094 In/Sec	.021 G-s
22 - MOTOR DAMPER END VERT	.012 In/Sec	.023 G-s
23 - MOTOR DAMPER END AXIAL	.012 In/Sec	.023 G-s
5214-04 - EAST SYRUP COOL PUMP	(17-Aug-20)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OUTBOARD HORIZONTAL	.044 In/Sec	.024 G-s
21 - MOTOR INBOARD HORIZONTAL	.038 In/Sec	.078 G-s
23 - MOTOR INBOARD AXIAL	.019 In/Sec	.151 G-s
31 - GEARBOX INPUT HORIZONTAL	.058 In/Sec	
61 - GEARBOX OUTPUT SHAFT HORIZ	.068 In/Sec	
71 - PUMP COUPLING END HORIZ	.158 In/Sec	.306 G-s
81 - PUMPIMPELLER END HORIZ	.061 In/Sec	.225 G-s
5214-03 - MIDDLE SYRUP COOL PUMP	(17-Aug-20)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OUTBOARD HORIZONTAL	.092 In/Sec	.055 G-s

21	- MOTOR INBOARD HORIZONTAL	.080 In/Sec	.079 G-s
23	- MOTOR INBOARD AXIAL	.069 In/Sec	.073 G-s
31	- GEARBOX INPUT HORIZONTAL	.221 In/Sec	
61	- GEARBOX OUTPUT SHAFT HORIZ	.238 In/Sec	
71	- PUMP COUPLING END HORIZ	.116 In/Sec	.022 G-s
81	- PUMP IMPELLER END HORIZ	.096 In/Sec	.052 G-s

5214-01	- WEST SYRUP COOL PUMP	(17-Aug-20)	
		OVERALL LEVEL	1-20 KHz
11	- MOTOR OUTBOARD HORIZONTAL	.093 In/Sec	.107 G-s
21	- MOTOR INBOARD HORIZONTAL	.097 In/Sec	.135 G-s
23	- MOTOR INBOARD AXIAL	.101 In/Sec	.077 G-s
31	- GEARBOX INPUT HORIZONTAL	.138 In/Sec	
61	- GEARBOX OUTPUT HORIZ	.181 In/Sec	
71	- PUMP CPLG END HORIZ	.414 In/Sec	.169 G-s
81	- PUMP IMPELLER END HORIZ	.451 In/Sec	.157 G-s

5282-03	- PUMP #2 HOT WATER 5282-03	(17-Aug-20)	
		OVERALL LEVEL	1-20 KHz
11	- #2 Hot Water Pump Mtr Top N-S	.051 In/Sec	.407 G-s
12	- #2 Hot Water Pump Mtr Top E-W	.081 In/Sec	.526 G-s

5282-04	- PUMP #3 HOT WATER 5282-04	(17-Aug-20)	
		OVERALL LEVEL	1-20 KHz
11	- #3 Hot Water Pump Mtr Top N-S	.186 In/Sec	.359 G-s
12	- #3 Hot Water Pump Mtr Top E-W	.202 In/Sec	.342 G-s

5282-06	- PUMP #5 HOT WATER 5282-06	(17-Aug-20)	
		OVERALL LEVEL	1-20 KHz
11	- #5 Hot Water Pump Mtr Top N-S	.298 In/Sec	.604 G-s
12	- #5 Hot Water Pump Mtr Top E-W	.215 In/Sec	.809 G-s

5283-01	- BLOWER, EDGE WATER REMOVAL	(17-Aug-20)	
		OVERALL LEVEL	1-20 KHz
11	- MOTOR OUTBOARD HORIZONTAL	.106 In/Sec	.148 G-s
21	- MOTOR INBOARD HORIZONTAL	.103 In/Sec	.140 G-s
23	- MOTOR AXIAL	.060 In/Sec	.145 G-s
71	- BLOWER COUPLING END HORIZONTAL	.044 In/Sec	.673 G-s
81	- BLOWER WHEEL END HORIZONTAL	.105 In/Sec	.599 G-s

5281-12	- BLOWER,SLOW COOLING (UPPER)	(17-Aug-20)	
		OVERALL LEVEL	1-20 KHz
11	- MOTOR OUTBD HORIZ	.064 In/Sec	3.141 G-s
21	- MOTOR INBD HORIZ	.082 In/Sec	6.218 G-s
23	- MOTOR INBD AXIAL	.090 In/Sec	.171 G-s
71	- FAN INBD (ON PILLOWBLOCK FOOT)	.099 In/Sec	.084 G-s
81	- FAN OUTBD (ON PILLOWBLOCK FOOT)	.055 In/Sec	.133 G-s

5281-13	- BLOWER,SLOW COOLING (LOWER)	(17-Aug-20)	
		OVERALL LEVEL	1-20 KHz
11	- MOTOR OUTBD HORIZ	.116 In/Sec	1.666 G-s
21	- MOTOR INBD HORIZ	.115 In/Sec	25.82 G-s
21H	- MOTOR INBD HORIZ	.805 In/Sec	
23	- MOTOR INBD AXIAL	.063 In/Sec	5.516 G-s
71	- FAN INBD (ON PILLOWBLOCK FOOT)	.117 In/Sec	.531 G-s
81	- FAN OUTBD (ON PILLOWBLOCK FOOT)	.158 In/Sec	.435 G-s

5281-14 - BLOWER,RAPID COOLING (UPPER)	(17-Aug-20)		
	OVERALL LEVEL	1-20 KHz	
11 - MOTOR OUTBD HORIZ	.060 In/Sec	1.072 G-s	
21 - MOTOR INBD HORIZ	.227 In/Sec	2.458 G-s	
23 - MOTOR INBD AXIAL	.063 In/Sec	2.076 G-s	
71 - FAN INBD (ON PILLOWBLOCK FOOT)	.036 In/Sec	.294 G-s	
81 - FAN OUTBD (ON PILLOWBLOCK FOOT)	.027 In/Sec	.250 G-s	
5281-08 - BLOWER,RAPID COOLING (LOWER)	(17-Aug-20)		
	OVERALL LEVEL	1-20 KHz	
11 - MOTOR OUTBD HORIZ	.041 In/Sec	.953 G-s	
21 - MOTOR INBD HORIZ	.085 In/Sec	1.784 G-s	
23 - MOTOR INBD AXIAL	.048 In/Sec	.793 G-s	
71 - FAN INBD (ON PILLOWBLOCK FOOT)	.026 In/Sec	.187 G-s	
81 - FAN OUTBD (ON PILLOWBLOCK FOOT)	.024 In/Sec	.284 G-s	
5281-10 - 200 BELT DRIVE, POLYMERIZER	(17-Aug-20)		
	OVERALL LEVEL	1-20 KHz	
11 - MOTOR OUTBOARD HORIZ	.043 In/Sec	.567 G-s	
21 - MOTOR INBD HORIZ	.072 In/Sec	.323 G-s	
33 - GEARBOX INPUT AXIAL	.0087 In/Sec	.032 G-s	
31 - GEARBOX INPUT HORIZ	.011 In/Sec	.146 G-s	
61 - GEARBOX OUTPUT HORIZ	.0043 In/Sec	.044 G-s	
71 - INBOARD PILLOWBLOCK	.0032 In/Sec	.0022 G-s	
81 - OUTBOARD PILLOWBLOCK	.0050 In/Sec	.0015 G-s	

Clarification Of Vibration Units:

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