

June 25, 2019

SONOCO

Subject: July vibration report

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

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,

David W. Shook Senior Reliability Specialist *Hi-Speed* Industrial Service dshook@gohispeed.com

> 7030 Ryburn Drive Millington, TN 38053 P. 901-873-5300 F. 901-873-5301

None of the route machines had any vibrations at or above the 0.25"/sec Velocity peak threshold. Please find the vibration summary below:

Abbreviated Last Measurement Summarv *********************************** Database: mmaold.rbm Station: MEMPHIS ACRYLIC SHEETING Route No. 3: PLASKOLITE NEW Report Date: 25-Jul-19 09:46 MEASUREMENT POINT OVERALL LEVEL HFD / VHFD ------_____ _____ - FAN, COOLING TWR WEST 5285-09 (22-Jul-19) OVERALL LEVEL 1-20 KHz .032 In/Sec .037 In/Sec .014 G-s W1 - CELL FRAME -WEST END N-S DIR W2 - CELL FRAME -WEST END E-W DIR .045 G-s 5285-11 - FAN, COOLING TWR MIDDLE (22-Jul-19) OVERALL LEVEL 1-20 KHz M1 - CELL FRAME -MIDDLE N-S DIR M2 - CELL FRAME -MIDDLE E-W DIR .045 G-s .0075 In/Sec M2 - CELL FRAME -MIDDLE E-W DIR .011 In/Sec .031 G-s - FAN, COOLING TWR EAST (22-Jul-19) 5285-12

 OVERALL LEVEL
 1-20 KHz

 .010 In/Sec
 .0058 G-s

 OVERALL LEVEL
 HFD (>5 kHz)

 .037 In/Sec
 .0007 G-s

 E1 - CELL FRAME -EAST END E-W DIR E2 - CELL FRAME -EAST END N-S DIR 5285-21 - RETURN AIR FAN 100 AREA (22-Jul-19)
 OVERALL LEVEL
 1-20 KHz

 .163 In/Sec
 .024 G-s

 .084 In/Sec
 .018 G-s
 11 - MOTOR OUTBD HORIZ 21 - MOTOR INBD HORIZ S1100 - FLARE BLOWER (22-Jul-19) OVERALL LEVEL 1-20 KHz

 11
 - MOTOR FLARE STACK END HORIZ
 .022 In/Sec

 12
 - MOTOR FLARE STACK END VERT
 .020 In/Sec

 13
 - MOTOR FLARE STACK END AXIAL
 .039 In/Sec

 21
 - MOTOR DAMPER END HORIZ
 .150 In/Sec

 22
 - MOTOR DAMPER END VERT
 .046 In/Sec

 23
 - MOTOR DAMPER END AXIAL
 .037 In/Sec

 .135 G-s .108 G-s .057 G-s .131 G**-s** .117 G-s .037 In/Sec 23 - MOTOR DAMPER END AXIAL .055 G-s 5214-03 - MIDDLE SYRUP COOL PUMP (22-Jul-19) OVERALL LEVEL 1-20 KHz 11- MOTOR OUTBOARD HORIZONTAL.042 In/Sec.054 G-s21- MOTOR INBOARD HORIZONTAL.043 In/Sec.101 G-s23- MOTOR INBOARD AXIAL.092 In/Sec.066 G-s31- GEARBOX INPUT HORIZONTAL.197 In/Sec61- GEARBOX OUTPUT SHAFT HORIZ.126 In/Sec71- PUMP COUPLING END HORIZ.060 In/Sec.013 G-s81- PUMP IMPELLER END HORIZ.069 In/Sec.015 G-s

5214-01 - WEST SYRUP COOL PUMP	(22-Jul-19)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OUTBOARD HORIZONTAL	.055 In/Sec	.100 G-s
21 - MOTOR INBOARD HORIZONTAL	.057 In/Sec	.075 G-s
23 - MOTOR INBOARD AXIAL	.065 In/Sec	.039 G-s
31 – GEARBOX INPUT HORIZONTAL	.150 In/Sec	
61 – GEARBOX OUTPUT HORIZ	138 Tn/Sec	
71 - PIIMP CPLG END HORTZ	177 In/Sec	122 G-s
91 - DIMD IMDELLED END HORIZ	144 Tr/Sec	051 C-s
SI - FOME IMPELLIEK END HORIZ	.144 11/360	.051 G-S
5282-02 - DIMD #1 HOT WATER 5282-02	(22Tul-19)	
JZDZ DZ TOME #1 HOI WAIEK JZDZ DZ	OVERALL LEVEL	1_20 847
11 - #1 Hot Water Dump Mtr Top N-S		327 C-6
12 - #1 Hot Water Fump Mtr Top E-W	222 In/Sec	.527 G-S
12 - #1 HOC Water Fump Mcr Top E-W	.255 11/5ec	.109 G-S
5282-04 - PUMP #3 HOT WATER 5282-04	(22 - 311) - 19)	
	OVERALL LEVEL	1-20 KHz
11 - #3 Hot Water Dump Mtr Top N-S	128 Tr/Soc	371 C-6
12 - #2 Hot Water Pump Mtr Top E-W	120 IN/Sec	.371 G-S
12 - #5 Hot water Pump Mtr Top E-W	.101 11/500	.307 G-S
5282-06 - DIMD #5 HOT WATER 5282-06	$(22 - T_{11} - 19)$	
SZOZ CO FOME #5 HOI WAIEK SZOZ CO	OVEDALL LEVEL	1_20 KH-
11 #F Hot Woton Dump Mtn Hon N C		1-20 KHZ
11 - #5 Hot water Pump Mtr Top N-S	.149 In/Sec	.490 G-S
12 - #5 Hot water Pump Mtr Top E-W	.200 In/Sec	.4/5 G-S
	(22 - 1 + 1 - 1 + 0)	
5265 VI BIOWER, EDGE WRIER REMOVAL	OVEDALL LEVEL	1_20 KH-
	OVERALL LEVEL	1-20 KHZ
11 - MOTOR OUTBOARD HORIZONTAL	.08/ In/Sec	.120 G-S
21 - MOTOR INBOARD HORIZONTAL	.10/ In/Sec	.080 G-s
23 - MOTOR AXIAL	.081 In/Sec	.104 G-s
71 - BLOWER COUPLING END HORIZONTAL	.090 In/Sec	.207 G-s
81 - BLOWER WHEEL END HORIZONTAL	.151 In/Sec	.158 G-s
	(00 T-1 10)	
5281-12 - BLOWER, SLOW COOLING (UPPER)	(22-Jul-19)	1 00 227-
	OVERALL LEVEL	1-20 KHZ
II - MOTOR OUTBD HORIZ	.024 In/Sec	.429 G-s
21 - MOTOR INBD HORIZ	.025 In/Sec	.741 G-s
23 - MOTOR INBD AXIAL	.058 In/Sec	.553 G-s
81 - FAN OUTBD (ON PILLOWBLOCK FOOT)	.017 In/Sec	.095 G-s
	(00 T-1 10)	
5261-15 - BLOWER, SLOW COOLING (LOWER)		1 00 201-
	OVERALL LEVEL	1-20 KHZ
II - MOTOR OUTBD HORIZ	.013 In/Sec	.544 G-s
21 - MOTOR INBD HORIZ	.017 In/Sec	1.133 G-s
21H - MOTOR INBD HORIZ	.087 In/Sec	
23 - MOTOR INBD AXIAL	.029 In/Sec	.387 G-s
71 - FAN INBD (ON PILLOWBLOCK FOOT)	.013 In/Sec	.073 G-s
81 - FAN OUTBD (ON PILLOWBLOCK FOOT)	.013 In/Sec	.093 G-s
	(00 - 1 - 0)	
5281-14 - BLOWER, RAPID COOLING (UPPER)	(22-Jul-19)	1 00
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OUTBD HORIZ	.032 In/Sec	2.139 G-s
21 - MOTOR INBD HORIZ	.044 In/Sec	3.016 G-s
23 - MOTOR INBD AXIAL	.028 In/Sec	.996 G-s
71 - FAN INBD (ON PILLOWBLOCK FOOT)	.031 In/Sec	.153 G-s
81 - FAN OUTBD (ON PILLOWBLOCK FOOT)	.026 In/Sec	.125 G-s

5281-08	 BLOWER, RAPID COOLING (LOWER) 	(22-Jul-19)	
		OVERALL LEVEL	1-20 KHz
11 - MOT	OR OUTBD HORIZ	.021 In/Sec	.476 G-s
21 – МОТ	OR INBD HORIZ	.023 In/Sec	1.255 G-s
23 – МОТ	OR INBD AXIAL	.017 In/Sec	.727 G-s
71 - FAN	INBD (ON PILLOWBLOCK FOOT)	.016 In/Sec	.150 G-s
81 - FAN	OUTBD (ON PILLOWBLOCK FOOT)	.018 In/Sec	.133 G -s
5281-10	- 200 BELT DRIVE, POLYMERIZER	(22-Jul-19)	
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	,	OVERALL LEVEL	1-20 KHz
11 - MOT	OR OUTBOARD HORIZ	OVERALL LEVEL .027 In/Sec	1-20 KHz .544 G-s
11 - MOT 21 - MOT	OR OUTBOARD HORIZ OR INBD HORIZ	OVERALL LEVEL .027 In/Sec .034 In/Sec	1-20 KHz .544 G-s .445 G-s
11 - MOT 21 - MOT 33 - GEA	OR OUTBOARD HORIZ OR INBD HORIZ RBOX INPUT AXIAL	OVERALL LEVEL .027 In/Sec .034 In/Sec .037 In/Sec	1-20 KHz .544 G-s .445 G-s .034 G-s
11 - MOT 21 - MOT 33 - GEA 31 - GEA	OR OUTBOARD HORIZ OR INBD HORIZ RBOX INPUT AXIAL RBOX INPUT HORIZ	OVERALL LEVEL .027 In/Sec .034 In/Sec .037 In/Sec .014 In/Sec	1-20 KHz .544 G-s .445 G-s .034 G-s .125 G-s
11 - MOT 21 - MOT 33 - GEA 31 - GEA 61 - GEA	OR OUTBOARD HORIZ OR INBD HORIZ RBOX INPUT AXIAL RBOX INPUT HORIZ RBOX OUTPUT HORIZ	OVERALL LEVEL .027 In/Sec .034 In/Sec .037 In/Sec .014 In/Sec .0089 In/Sec	1-20 KHz .544 G-s .445 G-s .034 G-s .125 G-s .022 G-s
11 - MOT 21 - MOT 33 - GEA 31 - GEA 61 - GEA 71 - INB	OR OUTBOARD HORIZ OR INBD HORIZ RBOX INPUT AXIAL RBOX INPUT HORIZ RBOX OUTPUT HORIZ OARD PILLOWBLOCK	OVERALL LEVEL .027 In/Sec .034 In/Sec .037 In/Sec .014 In/Sec .0089 In/Sec .0042 In/Sec	1-20 KHz .544 G-s .445 G-s .034 G-s .125 G-s .022 G-s .0016 G-s
11 - MOT 21 - MOT 33 - GEA 31 - GEA 61 - GEA 71 - INB 81 - OUT	OR OUTBOARD HORIZ OR INBD HORIZ RBOX INPUT AXIAL RBOX INPUT HORIZ RBOX OUTPUT HORIZ OARD PILLOWBLOCK BOARD PILLOWBLOCK	OVERALL LEVEL .027 In/Sec .034 In/Sec .037 In/Sec .014 In/Sec .0089 In/Sec .0042 In/Sec .0070 In/Sec	1-20 KHz .544 G-s .445 G-s .034 G-s .125 G-s .022 G-s .0016 G-s .0019 G-s

Clarification Of Vibration Units:

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

HFD --> G-s PK