HI-SPEED INDUSTRIAL SERVICE

MILLINGTON, TN

January 28, 2021

SONOCO

Subject: January 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.

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,

David W. Shook
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Observations

Coater Main Exhaust Fan
No issues

Coater Zone 1 Fan Unit
Check belts, sheaves for wear and alignment. Look for loose fasteners or structural defects **Rated a Class I Defect.**

Coater Zone 2 Fan Unit
Fan shaft data shows a non-synchronous peak at 6.3 orders of fan speed with multiple harmonics in both bearings. We believe this to be early bearing defects. The unit was also generating noise. The outboard bearing guard prevented quality data for that bearing. Inspect the bearing internals if possible, otherwise expect to change out later this year. **Rated a Class II Defect.**

Coater Zone 3 Fan Unit
Vibrations at 27 HZ in the motor axial have come back up to 0.56 in/sec peak. Ensure all foot bolts on the motor and fan bearing housings are torqued. Inspect sheaves for wear/loose hardware. Ensure belts are at appropriate tension. Check sheave alignment. The inboard bearing is showing defect frequencies and noise in the acceleration upper range. Ensure good lubrication. **Rated a Class II Defect.**

Coater Zone 4 Fan Unit
No issues.

Coater Zone 5 Fan Unit
No issues.

Coater Zone 6 Fan Unit
No issues.

Coater Cooling Zone A Fan Unit
The belts were squealing. Motor axial 1x vibrations have increased this month to around .44 in/sec peak. Check belts and sheaves for wear. Ensure the belt tension is correct and that the sheaves are not cocked causing it to be out of alignment. Inspect all foot bolts to ensure that they are properly torqued. **Rated as a CLASS II Defect.**

Coater Cooling Zone B Fan Unit
No issues.

Vacuum pump 1
Motor has slight axial vibration at 2x belt and pump speed. Inspect belts and sheaves for wear and alignment as time allows. **Rated a Class I Defect.**

Vacuum Pump 2
The motor is vibration at almost 1"/sec velocity peak for the outboard vertical measurement at what looks to be pump speed or possibly 2x belt speed. Inspect the drive train components for eccentricity, wear and alignment. The motor base and fasteners were reported last survey as being in distress. Inspect and repair soon. Still **Rated a Class III Defect.**

Cooling tower pump 1
No issues.

Cooling tower pump 2
No issues.

P8 Oven Fan
Fan speed vibrations dominate the data for this unit; however there also seems to be looseness in the bearing or fits. The bearings will need to be lift checked with a dial indicator. They will probably need to be replaced soon. Ensure that sheaves are aligned and all bearing housings are torqued. Inspect belts and sheaves for wear. Check the shaft runout to ensure the shaft is not bent. Clean fan of any buildup. Have fan balanced if necessary. **Rated a Class III Defect.**

P9 Oven Fan
Not running this survey.

P10 Oven Fan
Not running this survey.

A Line Blower
No issues.

B Line Blower
Not running for survey.

C Line Blower
No issues.

D Line Blower

Unit has a slightly elevated 1x RPM vibration. Ensure that motor feet are bolted down properly, and that blower shroud is secured properly as well Clean and inspect the fan wheel. **Rated as a Class I Defect.**

502 Spencer Blower

No issues.

Abbreviated Last Measurement Summary

Database: sonoco.rbm
Station: SONOCO
Report Date: 28-Jan-21 12:50

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED
VACPUMP1 - VACUUM PUMP 1		(28-Jan-21)	
	OVERALL LEVEL	1 - 20 KHz	
MOH	.142 In/Sec	.428 G-s	1800.0 RPM
MOV	.098 In/Sec	.192 G-s	
MIH	.168 In/Sec	.362 G-s	
MIV	.266 In/Sec	.235 G-s	
MIA	.353 In/Sec	.188 G-s	
EIH	.111 In/Sec	.145 G-s	
EIV	.071 In/Sec	.126 G-s	
EIA	.079 In/Sec	.079 G-s	
EOH	.075 In/Sec	.159 G-s	
EOV	.069 In/Sec	.170 G-s	
EOA	.048 In/Sec	.277 G-s	
VACPUMP2 - VACUUM PUMP 2		(28-Jan-21)	
	OVERALL LEVEL	1 - 20 KHz	
MOH	.595 In/Sec	.335 G-s	1800.0 RPM
MOV	.963 In/Sec	.643 G-s	
MIH	.583 In/Sec	.467 G-s	
MIV	.287 In/Sec	.666 G-s	
MIA	.886 In/Sec	.313 G-s	
EIH	.113 In/Sec	.189 G-s	
EIV	.129 In/Sec	.190 G-s	
EIA	.121 In/Sec	.128 G-s	
EOH	.078 In/Sec	.209 G-s	
EOV	.077 In/Sec	.249 G-s	
EOA	.066 In/Sec	.505 G-s	
CTPUMP1 - COOLING TOWER PUMP 1		(28-Jan-21)	
	OVERALL LEVEL	1 - 20 KHz	
MOH	.114 In/Sec	.028 G-s	1800.0 RPM
MOV	.206 In/Sec	.126 G-s	
MIH	.098 In/Sec	.031 G-s	
MIV	.076 In/Sec	.096 G-s	
MIA	.221 In/Sec	.071 G-s	

CTPUMP2 - COOLING TOWER PUMP 2 (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.176 In/Sec	.482 G-s	1800.0 RPM
MOV	.137 In/Sec	.450 G-s	
MIH	.191 In/Sec	.268 G-s	
MIV	.141 In/Sec	.249 G-s	
MIA	.130 In/Sec	.340 G-s	

P8OVENFAN - P8 OVEN FAN (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.318 In/Sec	.065 G-s	1800.0 RPM
MOV	.255 In/Sec	.063 G-s	
MIH	.390 In/Sec	.099 G-s	
MIV	.318 In/Sec	.085 G-s	
MIA	.501 In/Sec	.145 G-s	
EIH	.808 In/Sec	.783 G-s	
EIV	.636 In/Sec	.774 G-s	
EIA	.770 In/Sec	.239 G-s	
EOH	.302 In/Sec	.629 G-s	
EOV	.426 In/Sec	.374 G-s	
EOA	.889 In/Sec	.326 G-s	

MAINXHAUST - MAIN EXHAUST FAN (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.348 In/Sec	.743 G-s	1800.0 RPM
MOV	.283 In/Sec	.365 G-s	
MIH	.285 In/Sec	.382 G-s	
MIV	.222 In/Sec	.363 G-s	
MIA	.140 In/Sec	.166 G-s	
EIH	.322 In/Sec	1.105 G-s	
EIV	.123 In/Sec	1.558 G-s	
EIA	.217 In/Sec	.398 G-s	
EOH	.280 In/Sec	1.001 G-s	
EOV	.165 In/Sec	1.763 G-s	

ZONE1FAN - ZONE 1 SUPPLY FAN (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.110 In/Sec	.492 G-s	1800.0 RPM
MOV	.221 In/Sec	.126 G-s	
MIH	.093 In/Sec	.468 G-s	
MIV	.136 In/Sec	.444 G-s	
MIA	.423 In/Sec	.305 G-s	
EIH	.136 In/Sec	.435 G-s	
EIV	.097 In/Sec	.462 G-s	
EIA	.127 In/Sec	.069 G-s	
EOH	.104 In/Sec	.172 G-s	
EOV	.120 In/Sec	.108 G-s	

ZONE2FAN - ZONE 2 SUPPLY FAN (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.154 In/Sec	.240 G-s	1800.0 RPM
MOV	.115 In/Sec	.347 G-s	
MIH	.120 In/Sec	.226 G-s	
MIV	.166 In/Sec	.211 G-s	
MIA	.193 In/Sec	.126 G-s	
EIH	.180 In/Sec	.998 G-s	

EIV	.174 In/Sec	1.101 G-s	
EIA	.421 In/Sec	.343 G-s	
EOH	.109 In/Sec	.587 G-s	

ZONE3FAN - ZONE 3 SUPPLY FAN (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.372 In/Sec	.336 G-s	1800.0 RPM
MOV	.265 In/Sec	.384 G-s	
MIH	.272 In/Sec	.431 G-s	
MIV	.296 In/Sec	.511 G-s	
MIA	.557 In/Sec	.303 G-s	
EIH	.162 In/Sec	1.356 G-s	
EIV	.170 In/Sec	.272 G-s	
EIA	.272 In/Sec	.698 G-s	
EOH	.144 In/Sec	.235 G-s	
EOV	.115 In/Sec	.049 G-s	

ZONE4FAN - ZONE 4 SUPPLY FAN (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.241 In/Sec	.028 G-s	1800.0 RPM
MOV	.263 In/Sec	.078 G-s	
MIH	.189 In/Sec	.034 G-s	
MIV	.296 In/Sec	.060 G-s	
MIA	.333 In/Sec	.047 G-s	
EIH	.250 In/Sec	.475 G-s	
EIV	.099 In/Sec	.029 G-s	
EIA	.246 In/Sec	.496 G-s	
EOH	.167 In/Sec	.178 G-s	
EOV	.174 In/Sec	.209 G-s	

ZONE5FAN - ZONE 5 SUPPLY FAN (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.196 In/Sec	.025 G-s	1800.0 RPM
MOV	.107 In/Sec	.099 G-s	
MIH	.121 In/Sec	.012 G-s	
MIV	.112 In/Sec	.082 G-s	
MIA	.184 In/Sec	.255 G-s	
EIH	.129 In/Sec	.474 G-s	
EIV	.069 In/Sec	.712 G-s	
EIA	.190 In/Sec	.319 G-s	
EOH	.090 In/Sec	.084 G-s	

ZONE6FAN - ZONE 6 SUPPLY FAN (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.266 In/Sec	.066 G-s	1800.0 RPM
MOV	.371 In/Sec	.063 G-s	
MIH	.208 In/Sec	.070 G-s	
MIV	.281 In/Sec	.048 G-s	
MIA	.182 In/Sec	.024 G-s	
EIH	.234 In/Sec	.125 G-s	
EIV	.212 In/Sec	.127 G-s	
EIA	.238 In/Sec	.068 G-s	
EOH	.244 In/Sec	.206 G-s	
EOV	.214 In/Sec	.139 G-s	

COOLFAN B - COOLING FAN B (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz

MOH	.125 In/Sec	.205 G-s	1800.0 RPM
MOV	.152 In/Sec	.734 G-s	
MIH	.150 In/Sec	.600 G-s	
MIV	.205 In/Sec	.472 G-s	
MIA	.284 In/Sec	.516 G-s	
EIH	.149 In/Sec	.396 G-s	
EIV	.124 In/Sec	.263 G-s	
EIA	.294 In/Sec	.083 G-s	
EOH	.121 In/Sec	.200 G-s	
EOV	.105 In/Sec	.153 G-s	

EXHAUSTFAN - EXHAUST FAN (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.196 In/Sec	.120 G-s	1800.0 RPM
MOV	.149 In/Sec	.048 G-s	
MIH	.212 In/Sec	.167 G-s	
MIV	.217 In/Sec	.068 G-s	
MIA	.440 In/Sec	.038 G-s	

COOLFAN A - COOLING FAN A (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.263 In/Sec	.102 G-s	1800.0 RPM
MOV	.274 In/Sec	.137 G-s	
MIH	.227 In/Sec	.157 G-s	
MIV	.283 In/Sec	.341 G-s	
MIA	.447 In/Sec	.040 G-s	
EIH	.178 In/Sec	.143 G-s	
EIV	.121 In/Sec	.192 G-s	
EIA	.192 In/Sec	.177 G-s	
EOH	.112 In/Sec	.163 G-s	
EOV	.106 In/Sec	.165 G-s	
EOA	.213 In/Sec	.055 G-s	

P19OVENFAN - P 19 OVEN FAN (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.196 In/Sec	.471 G-s	1800.0 RPM
MOV	.272 In/Sec	.376 G-s	
MIH	.457 In/Sec	.292 G-s	
MIV	.797 In/Sec	.672 G-s	
MIA	.558 In/Sec	.059 G-s	
EOH	.141 In/Sec	.237 G-s	
EOV	.403 In/Sec	.326 G-s	

502SPNBLWR - 502 SPENCER BLOWER (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.165 In/Sec	.266 G-s	1800.0 RPM
MOV	.131 In/Sec	.388 G-s	
MIH	.253 In/Sec	.179 G-s	
MIV	.114 In/Sec	.180 G-s	
MIA	.102 In/Sec	.109 G-s	

ALNESNCBLW - A LINE SPENCER BLOWER (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.283 In/Sec	.207 G-s	1800.0 RPM
MOV	.099 In/Sec	.107 G-s	

CLNESNCBLW - C LINE SPENCER BLOWER (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.240 In/Sec	.337 G-s	1800.0 RPM
MOV	.071 In/Sec	.221 G-s	
MIH	.146 In/Sec	.106 G-s	
MIV	.074 In/Sec	.083 G-s	
MIA	.043 In/Sec	.196 G-s	

DLNESNCBLW - D LINE SPENCER BLOWER (28-Jan-21)

	OVERALL LEVEL	1 - 20 KHz	
MOH	.320 In/Sec	.178 G-s	1800.0 RPM
MOV	.248 In/Sec	.104 G-s	
MIH	.265 In/Sec	.089 G-s	
MIV	.215 In/Sec	.132 G-s	
MIA	.158 In/Sec	.094 G-s	

Clarification Of Vibration Units:

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