

April 8, 2021

SONOCO

Subject: April (Q2) 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
Senior Reliability Specialist
Hi-Speed Industrial Service
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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 still 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 (fan Speed) in the motor axial have come up slightly to 0.62 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. 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

Out of service.

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

Out of service.

Cooling tower pump 1

No issues.

Cooling tower pump 2

No issues.

P8 Oven Fan

Harmonics of fan speed indicate 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

Harmonics of fan speed indicate 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.**

P10 Oven Fan

The fan shaft bearing next to the sheave has a high axial vibration at shaft speed. Inspect the fan sheave and shaft for run out both axially and radially and check the alignment with the motor sheave. Inspect for wear that would cause eccentricity in the belt surface. Perform a lift check on the shaft to determine if there is looseness in the bearings. **Rated a Class II Defect.**

P19 Oven Fan

Motor speed vibration is in all measurements and is still at 0.9"/second velocity peak for the motor vertical. Inspect the drivetrain for wear and alignment. Check that all motor and fan bearing fasteners are tight. Fan bearing data was limited. Modify the bearing guards for better access for vibration transducers. **Rated a Class III Defect.**

A Line Blower

No issues.

B Line Blower

No issues.

C Line Blower

No issues.

D Line Blower

Unit still 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

Not running.

Abbreviated Last Measurement Summary

Database: sonoco.rbm

Station: SONOCO

Report Date: 08-Apr-21 14:53

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED
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MAINXHAUST - MAIN EXHAUST FAN		(08-Apr-21)	
	OVERALL LEVEL	1 - 20 KHz	
MOH	.179 In/Sec	.265 G-s	1800.0 RPM
MOV	.141 In/Sec	.409 G-s	
MIH	.130 In/Sec	.174 G-s	
MIV	.122 In/Sec	.311 G-s	
MIA	.107 In/Sec	.165 G-s	
EIH	.153 In/Sec	.683 G-s	
EIV	.081 In/Sec	1.122 G-s	
EOH	.139 In/Sec	.497 G-s	
EOV	.092 In/Sec	1.093 G-s	
ZONE1FAN - ZONE 1 SUPPLY FAN		(08-Apr-21)	
	OVERALL LEVEL	1 - 20 KHz	
MIH	.170 In/Sec	.359 G-s	1800.0 RPM
MIV	.139 In/Sec	.281 G-s	
MIA	.344 In/Sec	.046 G-s	
EIH	.132 In/Sec	.242 G-s	
EIV	.077 In/Sec	.469 G-s	
EIA	.197 In/Sec	.207 G-s	
EOH	.128 In/Sec	.116 G-s	
EOV	.118 In/Sec	.063 G-s	
ZONE2FAN - ZONE 2 SUPPLY FAN		(08-Apr-21)	
	OVERALL LEVEL	1 - 20 KHz	

MOH	.175 In/Sec	.229 G-s	1800.0 RPM
MOV	.130 In/Sec	.241 G-s	
MIH	.118 In/Sec	.212 G-s	
MIV	.155 In/Sec	.203 G-s	
MIA	.223 In/Sec	.126 G-s	
EIH	.216 In/Sec	1.112 G-s	
EIV	.170 In/Sec	1.102 G-s	
EIA	.399 In/Sec	.796 G-s	

ZONE3FAN - ZONE 3 SUPPLY FAN (08-Apr-21)

OVERALL LEVEL 1 - 20 KHz

MOH	.463 In/Sec	.222 G-s	1800.0 RPM
MOV	.233 In/Sec	.287 G-s	
MIH	.307 In/Sec	.430 G-s	
MIV	.261 In/Sec	.359 G-s	
MIA	.623 In/Sec	.107 G-s	
EIH	.159 In/Sec	.487 G-s	
EIV	.160 In/Sec	.989 G-s	
EIA	.322 In/Sec	.206 G-s	
EOH	.156 In/Sec	.135 G-s	
EOV	.121 In/Sec	.011 G-s	

ZONE4FAN - ZONE 4 SUPPLY FAN (08-Apr-21)

OVERALL LEVEL 1 - 20 KHz

MOH	.264 In/Sec	.080 G-s	1800.0 RPM
MOV	.222 In/Sec	.105 G-s	
MIH	.147 In/Sec	.205 G-s	
MIV	.294 In/Sec	.236 G-s	
MIA	.329 In/Sec	.126 G-s	
EIH	.273 In/Sec	.139 G-s	
EIV	.137 In/Sec	.177 G-s	
EIA	.288 In/Sec	.202 G-s	
EOH	.147 In/Sec	.149 G-s	
EOV	.180 In/Sec	.067 G-s	

ZONE5FAN - ZONE 5 SUPPLY FAN (08-Apr-21)

OVERALL LEVEL 1 - 20 KHz

MOH	.197 In/Sec	.047 G-s	1800.0 RPM
MOV	.165 In/Sec	.065 G-s	
MIH	.132 In/Sec	.072 G-s	
MIV	.163 In/Sec	.068 G-s	
MIA	.225 In/Sec	.095 G-s	
EIH	.138 In/Sec	.452 G-s	
EIV	.266 In/Sec	.623 G-s	
EIA	.163 In/Sec	.392 G-s	

ZONE6FAN - ZONE 6 SUPPLY FAN (08-Apr-21)

OVERALL LEVEL 1 - 20 KHz

MOH	.256 In/Sec	.067 G-s	1800.0 RPM
MOV	.381 In/Sec	.059 G-s	
MIH	.246 In/Sec	.056 G-s	
MIV	.354 In/Sec	.041 G-s	
MIA	.297 In/Sec	.016 G-s	
EIH	.236 In/Sec	.064 G-s	
EIV	.325 In/Sec	.218 G-s	
EIA	.189 In/Sec	.104 G-s	
EOH	.246 In/Sec	.100 G-s	

EOV	.129 In/Sec	.090 G-s	
COOLFAN B - COOLING FAN B (08-Apr-21)			
	OVERALL LEVEL	1 - 20 KHz	
MOH	.152 In/Sec	.722 G-s	1800.0 RPM
MOV	.214 In/Sec	.616 G-s	
MIH	.145 In/Sec	.646 G-s	
MIV	.150 In/Sec	.473 G-s	
MIA	.278 In/Sec	.184 G-s	
EIH	.155 In/Sec	.436 G-s	
EIV	.122 In/Sec	.696 G-s	
EIA	.322 In/Sec	.128 G-s	
EOH	.134 In/Sec	.113 G-s	
EOV	.122 In/Sec	.095 G-s	

EXHAUSTFAN - EXHAUST FAN (08-Apr-21)			
	OVERALL LEVEL	1 - 20 KHz	
MOH	.273 In/Sec	.116 G-s	1800.0 RPM
MOV	.179 In/Sec	.102 G-s	
MIH	.281 In/Sec	.175 G-s	
MIV	.232 In/Sec	.152 G-s	
MIA	.481 In/Sec	.019 G-s	

Clarification Of Vibration Units:

Acc	-->	G-s	RMS	
Vel	-->	In/Sec	PK	Abbreviated Last Measurement

Summary

Database: sonoco.rbm
Station: PRESS
Report Date: 08-Apr-21 14:53

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED
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P19OVENFAN - P 19 OVEN FAN (08-Apr-21)			
	OVERALL LEVEL	1 - 20 KHz	
MOH	.157 In/Sec	.598 G-s	1800.0 RPM
MOV	.237 In/Sec	.208 G-s	
MIH	.413 In/Sec	.669 G-s	
MIV	.942 In/Sec	.509 G-s	
MIA	.740 In/Sec	.084 G-s	
EOH	.136 In/Sec	.114 G-s	
EOV	.425 In/Sec	.215 G-s	
EOA	.520 In/Sec	.180 G-s	

Clarification Of Vibration Units:

Acc	-->	G-s	RMS	
Vel	-->	In/Sec	PK	Abbreviated Last Measurement

Summary

Database: sonoco.rbm
Station: ULTRASEAL

Report Date: 08-Apr-21 14:53

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED
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ALNESNCBLW - A LINE SPENCER BLOWER		(08-Apr-21)	
	OVERALL LEVEL	1 - 20 KHz	
MOH	.193 In/Sec	.196 G-s	1800.0 RPM
MOV	.159 In/Sec	.263 G-s	
BLNESNCBLW - B LINE SPENCER BLOWER		(08-Apr-21)	
	OVERALL LEVEL	1 - 20 KHz	
MOH	.089 In/Sec	.349 G-s	1800.0 RPM
MOV	.148 In/Sec	.448 G-s	
MIH	.147 In/Sec	.152 G-s	
MIV	.088 In/Sec	.203 G-s	
MIA	.096 In/Sec	.047 G-s	
CLNESNCBLW - C LINE SPENCER BLOWER		(08-Apr-21)	
	OVERALL LEVEL	1 - 20 KHz	
MOH	.125 In/Sec	.118 G-s	1800.0 RPM
MOV	.086 In/Sec	.161 G-s	
MIH	.085 In/Sec	.068 G-s	
MIV	.075 In/Sec	.082 G-s	
MIA	.194 In/Sec	.027 G-s	
DLNESNCBLW - D LINE SPENCER BLOWER		(08-Apr-21)	
	OVERALL LEVEL	1 - 20 KHz	
MOH	.328 In/Sec	.049 G-s	1800.0 RPM
MOV	.240 In/Sec	.053 G-s	
MIH	.234 In/Sec	.091 G-s	
MIV	.231 In/Sec	.154 G-s	
MIA	.157 In/Sec	.049 G-s	

Clarification Of Vibration Units:

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

Abbreviated Last Measurement

Summary

Database: sonoco.rbm
Station: UTILITIES AREA

Report Date: 08-Apr-21 14:53

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD	MACHINE SPEED
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VACPUMP1 - VACUUM PUMP 1		(08-Apr-21)	
	OVERALL LEVEL	1 - 20 KHz	
MOH	.194 In/Sec	.178 G-s	1800.0 RPM
MOV	.144 In/Sec	.386 G-s	
MIH	.155 In/Sec	.307 G-s	
MIV	.256 In/Sec	.234 G-s	
MIA	.417 In/Sec	.170 G-s	
EIH	.088 In/Sec	.259 G-s	
EIV	.077 In/Sec	.130 G-s	

EIA	.055 In/Sec	.137 G-s	
EOH	.073 In/Sec	.131 G-s	
EOV	.071 In/Sec	.143 G-s	
CTPUMP1 - COOLING TOWER PUMP 1 (08-Apr-21)			
	OVERALL LEVEL	1 - 20 KHz	
MOH	.143 In/Sec	.045 G-s	1800.0 RPM
MOV	.217 In/Sec	.115 G-s	
MIH	.095 In/Sec	.036 G-s	
MIV	.042 In/Sec	.162 G-s	
MIA	.242 In/Sec	.095 G-s	
CTPUMP2 - COOLING TOWER PUMP 2 (08-Apr-21)			
	OVERALL LEVEL	1 - 20 KHz	
MOH	.113 In/Sec	.308 G-s	1800.0 RPM
MOV	.116 In/Sec	.519 G-s	
MIH	.110 In/Sec	.306 G-s	
MIV	.064 In/Sec	.090 G-s	
MIA	.082 In/Sec	.120 G-s	
P8OVENFAN - P8 OVEN FAN (08-Apr-21)			
	OVERALL LEVEL	1 - 20 KHz	
MOH	.350 In/Sec	.065 G-s	1800.0 RPM
MOV	.215 In/Sec	.066 G-s	
MIH	.450 In/Sec	.092 G-s	
MIV	.258 In/Sec	.077 G-s	
MIA	.299 In/Sec	.017 G-s	
EIH	.813 In/Sec	.679 G-s	
EIV	.657 In/Sec	.919 G-s	
EIA	.746 In/Sec	.252 G-s	
EOH	.286 In/Sec	.635 G-s	
EOV	.391 In/Sec	.553 G-s	
P9OVENFAN - P 9 OVEN FAN (08-Apr-21)			
	OVERALL LEVEL	1 - 20 KHz	
MOH	.300 In/Sec	.057 G-s	1800.0 RPM
MOV	.285 In/Sec	.063 G-s	
MIH	.224 In/Sec	.044 G-s	
MIV	.392 In/Sec	.246 G-s	
MIA	.411 In/Sec	.046 G-s	
EIH	.407 In/Sec	.751 G-s	
EIV	.523 In/Sec	.913 G-s	
EIA	.512 In/Sec	.545 G-s	
EOH	.109 In/Sec	1.398 G-s	
EOV	.164 In/Sec	1.422 G-s	
P10OVENFAN - P10 OVEN FAN (08-Apr-21)			
	OVERALL LEVEL	1 - 20 KHz	
MOH	.220 In/Sec	.021 G-s	1800.0 RPM
MOV	.291 In/Sec	.031 G-s	
MIH	.227 In/Sec	.072 G-s	
MIV	.437 In/Sec	.025 G-s	
MIA	.296 In/Sec	.021 G-s	
EIH	.228 In/Sec	.337 G-s	
EIV	.488 In/Sec	.309 G-s	
EIA	.833 In/Sec	.226 G-s	
EOH	.426 In/Sec	.180 G-s	

EOV

.383 In/Sec

.317 G-s

Clarification Of Vibration Units:

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