HI-SPEED INDUSTRIAL SERVICE

MILLINGTON, TN

October 29, 2020

SONOCO

Subject: October 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,

Jess White

Reliability Specialist
***Hi-Speed*** **Industrial Service**
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## Observations

**Coater Main Exhaust Fan**
This fan has gone from a .07 in/sec 1x in July to a 1.1 in/sec 1x vibration this month. This appears to be a carbon buildup imbalance. This needs to be addressed as soon as possible due to the amplitude of the vibration. Vibrations of this amplitude cause monitoring to be very unpredictable and will cause severe stress on all other components of this unit. After cleaning is complete we would recommend having us come back and taking another data set on this unit to ensure that the issue is resolved. **Rated as a CLASS IV Defect.**

**Coater Zone 1 Fan Unit**
No issues

**Coater Zone 2 Fan Unit**
No issues.

**Coater Zone 3 Fan Unit**
Vibrations at 27 HZ in the motor axial have come back up to .44 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. **Rated a Class II Defect.**

**Coater Zone 4 Fan Unit**
Fan speed dominates the vibration data for the unit. If the belts and sheaves have been replaced then the base and base bolts need to be inspected. Once this is ruled out consider cleaning the fan itself to remove any material buildup. If this does not resolve the issue consider having the fan balanced. Inspect the unit at the next downtime. **Rated a Class II Defect.**

**Coater Zone 5 Fan Unit**
No issues.

**Coater Zone 6 Fan Unit**
Fan speed dominates the vibration data for the unit. The unit could have worn belts and sheaves, a flimsy structure or possibly, imbalance or loose or missing fasteners. Inspect the unit at the next downtime. **Rated a Class II Defect.**

**Coater Cooling Zone A Fan Unit**
No issues.

**Coater Cooling Zone B Fan Unit**
Motor axial 1x vibrations have increased this month to around .4 in/sec peak. Insure proper belt tension is being used 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.**

**Vacuum pump 1**
No issues

**Vacuum Pump 2**
The motor base on this unit has loose hardware. This needs to be addressed as soon as possible. The motor feet are also loose on the base. Inspect the motor base plate and consider changing it out to ensure no defects are present. Also ensure the entire unit's base is securely fastened to the floor. **Rated as 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. 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 as a CLASS II Defect.**

**P9 Oven Fan**
Not running this survey.

**P10 Oven Fan**
Not running this survey.

**A Blower**
No issues.

**B Blower**
Not running for survey.

**C Blower**
Not running this survey.

**D Blower**
High 60Hz vibration. Ensure that motor feet are bolted down properly and that blower shroud is secured properly as well. **Rated as a Class I Defect.**

**502 Spencer Blower**
No issues.

# Abbreviated Last Measurement Summary

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Database: sonoco.rbm
Station: COATER
Report Date: 03-Nov-20 09:11

| MEASUREMENT POINT | OVERALL LEVEL | HFD / VHFD |
|---|---|---|
| **MAINXHAUST - MAIN EXHAUST FAN** | (29-Oct-20) | |
| | OVERALL LEVEL | 1 - 20 KHz |
| MOH | .807 In/Sec | .483 G-s |
| MOV | 1.040 In/Sec | .370 G-s |
| MIH | .633 In/Sec | .322 G-s |
| MIV | .549 In/Sec | .446 G-s |
| MIA | .376 In/Sec | .306 G-s |
| EIH | .515 In/Sec | .824 G-s |
| EIV | .252 In/Sec | 2.686 G-s |
| EOH | .507 In/Sec | 1.081 G-s |
| EOV | .292 In/Sec | 2.881 G-s |
| **ZONE1FAN - ZONE 1 SUPPLY FAN** | (29-Oct-20) | |
| | OVERALL LEVEL | 1 - 20 KHz |
| MOV | .154 In/Sec | .491 G-s |
| MIH | .172 In/Sec | .590 G-s |
| EIH | .121 In/Sec | .157 G-s |
| EOH | .130 In/Sec | .207 G-s |
| **ZONE2FAN - ZONE 2 SUPPLY FAN** | (29-Oct-20) | |
| | OVERALL LEVEL | 1 - 20 KHz |
| MOH | .164 In/Sec | .368 G-s |
| MOV | .119 In/Sec | .216 G-s |
| MIH | .153 In/Sec | .377 G-s |
| MIV | .137 In/Sec | .313 G-s |
| MIA | .177 In/Sec | .130 G-s |
| EIH | .174 In/Sec | 1.048 G-s |
| EIV | .156 In/Sec | 1.205 G-s |
| EOH | .135 In/Sec | .849 G-s |
| **ZONE3FAN - ZONE 3 SUPPLY FAN** | (29-Oct-20) | |
| | OVERALL LEVEL | 1 - 20 KHz |
| MOH | .460 In/Sec | .257 G-s |
| MOV | .183 In/Sec | .115 G-s |
| MIH | .235 In/Sec | .287 G-s |
| MIV | .264 In/Sec | .458 G-s |
| MIA | .435 In/Sec | .166 G-s |
| EIH | .162 In/Sec | .859 G-s |
| EIV | .155 In/Sec | .422 G-s |
| EOH | .122 In/Sec | .151 G-s |
| EOV | .104 In/Sec | .123 G-s |
| **ZONE4FAN - ZONE 4 SUPPLY FAN** | (29-Oct-20) | |
| | OVERALL LEVEL | 1 - 20 KHz |
| MOH | .268 In/Sec | .103 G-s |
| MOV | .215 In/Sec | .103 G-s |

| | | | |
|---|---|---|---|
| MIH | .199 In/Sec | .175 G-s |
| MIV | .271 In/Sec | .240 G-s |
| MIA | .297 In/Sec | .226 G-s |
| EIH | .253 In/Sec | .269 G-s |
| EIV | .111 In/Sec | .053 G-s |
| EOH | .193 In/Sec | .113 G-s |
| EOV | .165 In/Sec | .067 G-s |

ZONE5FAN - ZONE 5 SUPPLY FAN (29-Oct-20)

| | OVERALL LEVEL | 1 - 20 KHz |
|---|---|---|
| MOH | .158 In/Sec | .102 G-s |
| MOV | .074 In/Sec | .243 G-s |
| MIH | .128 In/Sec | .108 G-s |
| MIV | .111 In/Sec | .160 G-s |
| MIA | .209 In/Sec | .206 G-s |
| EIH | .114 In/Sec | .560 G-s |
| EIV | .066 In/Sec | .863 G-s |
| EOH | .074 In/Sec | .084 G-s |

ZONE6FAN - ZONE 6 SUPPLY FAN (29-Oct-20)

| | OVERALL LEVEL | 1 - 20 KHz |
|---|---|---|
| MOH | .282 In/Sec | .068 G-s |
| MOV | .343 In/Sec | .080 G-s |
| MIH | .193 In/Sec | .117 G-s |
| MIV | .226 In/Sec | .124 G-s |
| MIA | .247 In/Sec | .056 G-s |
| EIH | .229 In/Sec | .174 G-s |
| EIV | .190 In/Sec | .469 G-s |
| EOH | .220 In/Sec | .183 G-s |
| EOV | .249 In/Sec | .134 G-s |

COOLFAN B - COOLING FAN B (29-Oct-20)

| | OVERALL LEVEL | 1 - 20 KHz |
|---|---|---|
| MOH | .160 In/Sec | .956 G-s |
| MOV | .176 In/Sec | .544 G-s |
| MIH | .158 In/Sec | .626 G-s |
| MIV | .197 In/Sec | .340 G-s |
| MIA | .327 In/Sec | .228 G-s |
| EIH | .173 In/Sec | .289 G-s |
| EIV | .105 In/Sec | .239 G-s |
| EOH | .114 In/Sec | .220 G-s |
| EOV | .135 In/Sec | .041 G-s |

COOLFAN A - COOLING FAN A (29-Oct-20)

| | OVERALL LEVEL | 1 - 20 KHz |
|---|---|---|
| MOH | .224 In/Sec | .039 G-s |
| MOV | .337 In/Sec | .112 G-s |
| MIH | .262 In/Sec | .279 G-s |
| MIV | .323 In/Sec | .328 G-s |
| MIA | .413 In/Sec | .087 G-s |
| EIH | .242 In/Sec | .231 G-s |
| EIV | .096 In/Sec | .049 G-s |
| EIA | .195 In/Sec | .110 G-s |
| EOH | .228 In/Sec | .169 G-s |
| EOV | .126 In/Sec | .199 G-s |
| EOA | .133 In/Sec | .075 G-s |

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Clarification Of Vibration Units:
Acc --> G-s RMS
Vel --> In/Sec PK

Abbreviated Last Measurement Summary

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Database: sonoco.rbm
Station: PRESS
Report Date: 03-Nov-20 09:12

| MEASUREMENT POINT | OVERALL LEVEL | HFD / VHFD |
|---|---|---|

*** NO DATA Was Found That Meets the Report Specification ***

Abbreviated Last Measurement Summary

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Database: sonoco.rbm
Station: ULTRASEAL
Report Date: 03-Nov-20 09:12

| MEASUREMENT POINT | OVERALL LEVEL | HFD / VHFD |
|---|---|---|
| 502SPNBLWR - 502 SPENCER BLOWER | (29-Oct-20) | |
| | OVERALL LEVEL | 1 - 20 KHz |
| MOH | .085 In/Sec | .732 G-s |
| MOV | .147 In/Sec | .749 G-s |
| MIH | .102 In/Sec | .239 G-s |
| ALNESNCBLW - A LINE SPENCER BLOWER | (29-Oct-20) | |
| | OVERALL LEVEL | 1 - 20 KHz |
| MOH | .101 In/Sec | .108 G-s |
| MOV | .136 In/Sec | .084 G-s |
| MIV | .068 In/Sec | .095 G-s |
| DLNESNCBLW - D LINE SPENCER BLOWER | (29-Oct-20) | |
| | OVERALL LEVEL | 1 - 20 KHz |
| MOH | .266 In/Sec | .091 G-s |
| MOV | .215 In/Sec | .053 G-s |
| MIH | .233 In/Sec | .063 G-s |

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Clarification Of Vibration Units:
Acc --> G-s RMS
Vel --> In/Sec PK

Abbreviated Last Measurement Summary

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Database: sonoco.rbm
Station: UTILITIES
Report Date: 03-Nov-20 09:12

| MEASUREMENT POINT | OVERALL LEVEL | HFD / VHFD |
|---|---|---|

**VACPUMP1 - VACUUM PUMP 1 (29-Oct-20)**

| | OVERALL LEVEL | 1 - 20 KHz |
|---|---|---|
| MOH | .158 In/Sec | .155 G-s |
| MOV | .117 In/Sec | .599 G-s |
| MIH | .136 In/Sec | .821 G-s |
| MIV | .259 In/Sec | .471 G-s |
| MIA | .454 In/Sec | 1.231 G-s |
| EIH | .089 In/Sec | .188 G-s |
| EIV | .061 In/Sec | .124 G-s |
| EIA | .050 In/Sec | .076 G-s |
| EOH | .080 In/Sec | .306 G-s |
| EOV | .079 In/Sec | .215 G-s |
| EOA | .036 In/Sec | .195 G-s |

**VACPUMP2 - VACUUM PUMP 2 (29-Oct-20)**

| | OVERALL LEVEL | 1 - 20 KHz |
|---|---|---|
| MOH | .463 In/Sec | .531 G-s |
| MOV | .458 In/Sec | .690 G-s |
| MIH | .568 In/Sec | 1.055 G-s |
| MIV | .305 In/Sec | .912 G-s |
| MIA | .263 In/Sec | .110 G-s |
| EIH | .124 In/Sec | .100 G-s |
| EIV | .156 In/Sec | .219 G-s |
| EIA | .093 In/Sec | .267 G-s |
| EOH | .111 In/Sec | .146 G-s |
| EOV | .085 In/Sec | .161 G-s |
| EOA | .073 In/Sec | .257 G-s |

**CTPUMP1 - COOLING TOWER PUMP 1 (29-Oct-20)**

| | OVERALL LEVEL | 1 - 20 KHz |
|---|---|---|
| MOH | .124 In/Sec | .362 G-s |
| MOV | .143 In/Sec | .357 G-s |
| MIH | .095 In/Sec | .380 G-s |
| MIV | .030 In/Sec | .373 G-s |
| MIA | .200 In/Sec | .078 G-s |

**CTPUMP2 - COOLING TOWER PUMP 2 (29-Oct-20)**

| | OVERALL LEVEL | 1 - 20 KHz |
|---|---|---|
| MOH | .092 In/Sec | .396 G-s |
| MOV | .097 In/Sec | .393 G-s |
| MIH | .118 In/Sec | .265 G-s |
| MIV | .110 In/Sec | .124 G-s |
| MIA | .104 In/Sec | .117 G-s |

**P8 - P8 OVEN FAN (29-Oct-20)**

| | OVERALL LEVEL | 1 - 20 KHz |
|---|---|---|
| MOH | .208 In/Sec | .067 G-s |
| MOV | .329 In/Sec | .091 G-s |
| MIH | .256 In/Sec | .122 G-s |
| MIV | .344 In/Sec | .098 G-s |
| MIA | .270 In/Sec | .052 G-s |
| EIH | .855 In/Sec | .630 G-s |
| EIV | .308 In/Sec | .793 G-s |
| EIA | .200 In/Sec | .214 G-s |
| EOH | .324 In/Sec | .700 G-s |
| EOV | .446 In/Sec | .632 G-s |
| EOA | .182 In/Sec | .265 G-s |