HI-SPEED INDUSTRIAL SERVICE QualiTest® Diagnostics

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June 29, 2023

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The following is a summary of findings from the quarterly vibration survey performed at your facility on 6/23/2022. Please let us know if there are any questions or comments.

QualiTest® uses a four step rating system for defects.

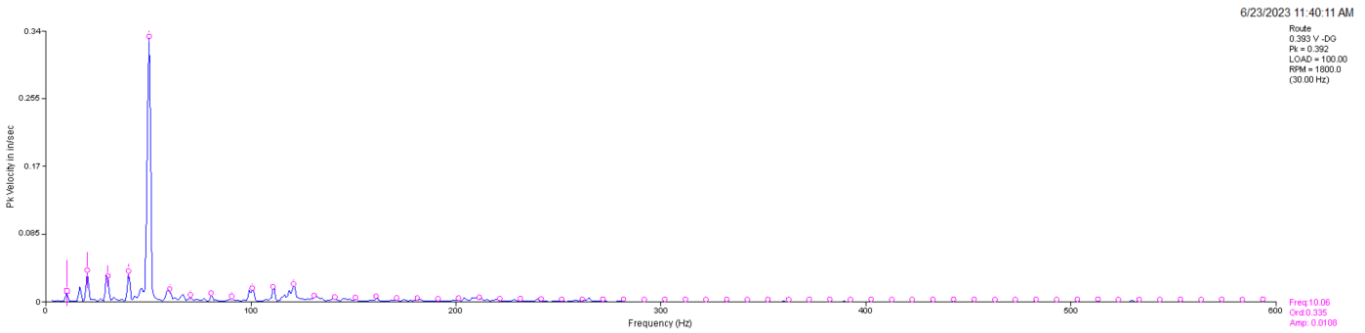
Class I: Defect is present, but effect on reliability is not clear; no immediate action is required. Continue to normally monitor.

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.

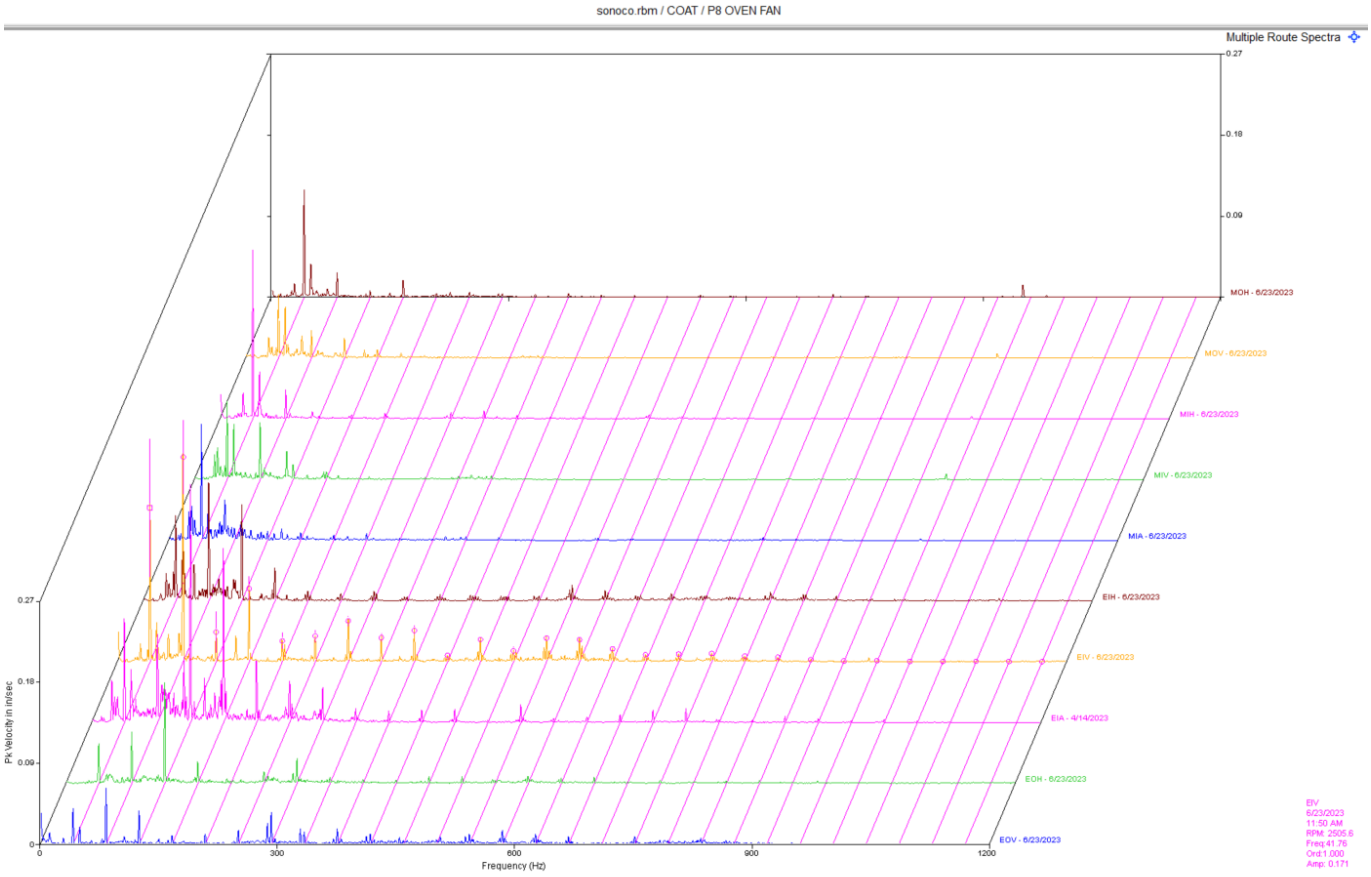
Class IV; Defect (s) present that makes continued reliability unpredictable, and possibility of secondary damage is high. Repairs should be made ASAP. An unscheduled shutdown should be considered for repairs

Defects



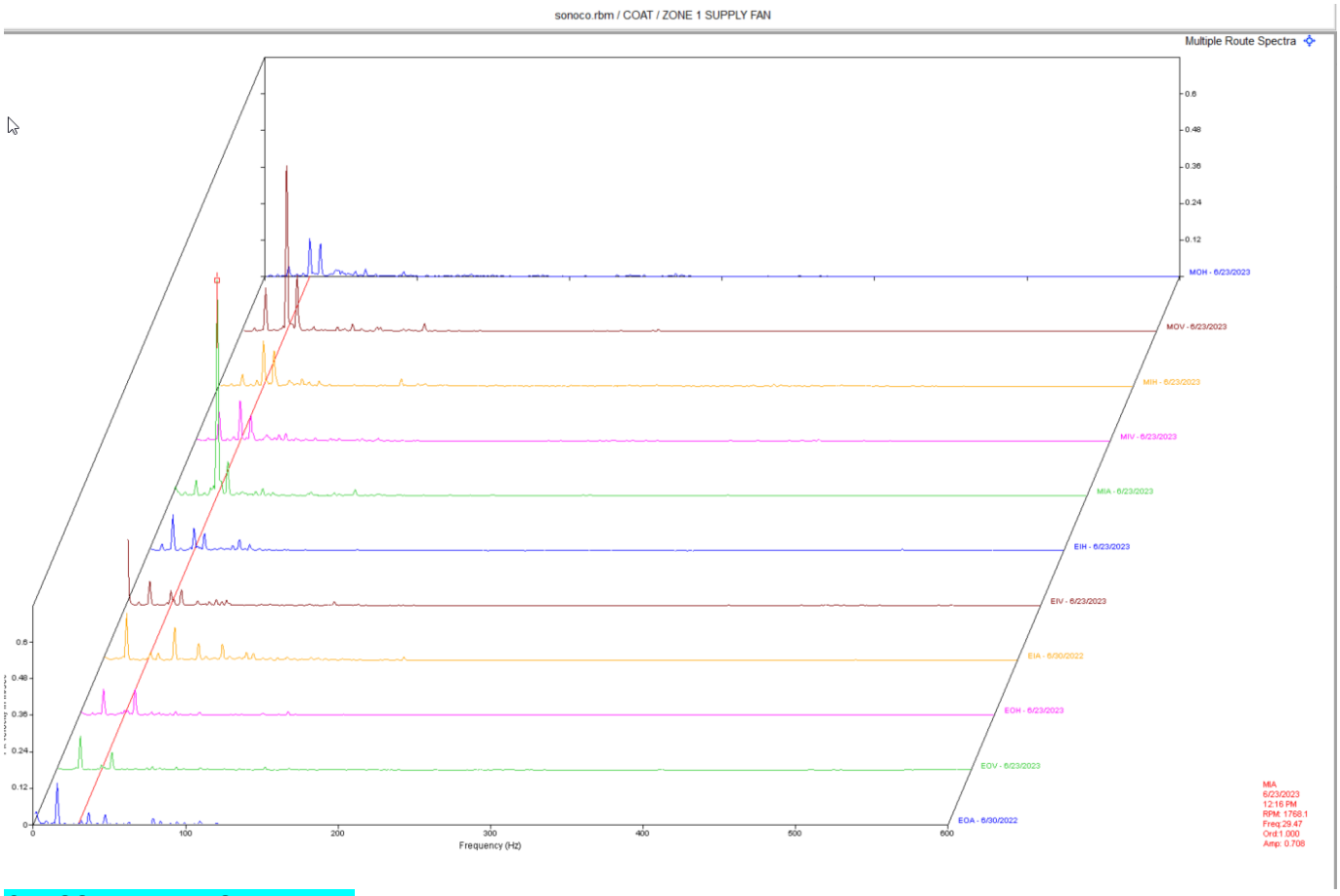
CLASS II Vacuum Pump #2

There is a low frequency non-synchronous vibration in the motor. There are also harmonics of this low frequency peak present in the spectrum. This is likely a belt harmonic vibration. For now, ensure belts are in good shape and properly tightened. Ensure sheaves are aligned properly.



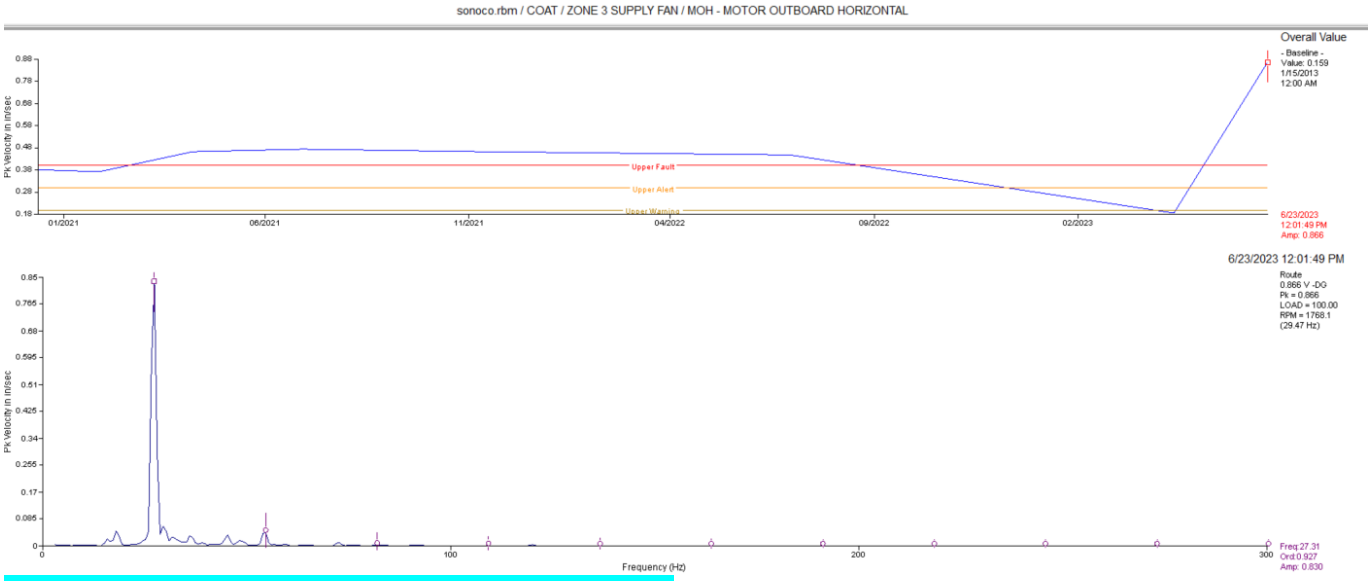
CLASS II P8 Oven Fan

Multi-point spectra of the motor and fan show several fan rpm harmonics present in the fan bearing data. This is an indication of mechanical fit looseness. Inspect fan bearings for looseness as time allows. Ensure fan shaft does not have excessive run out.



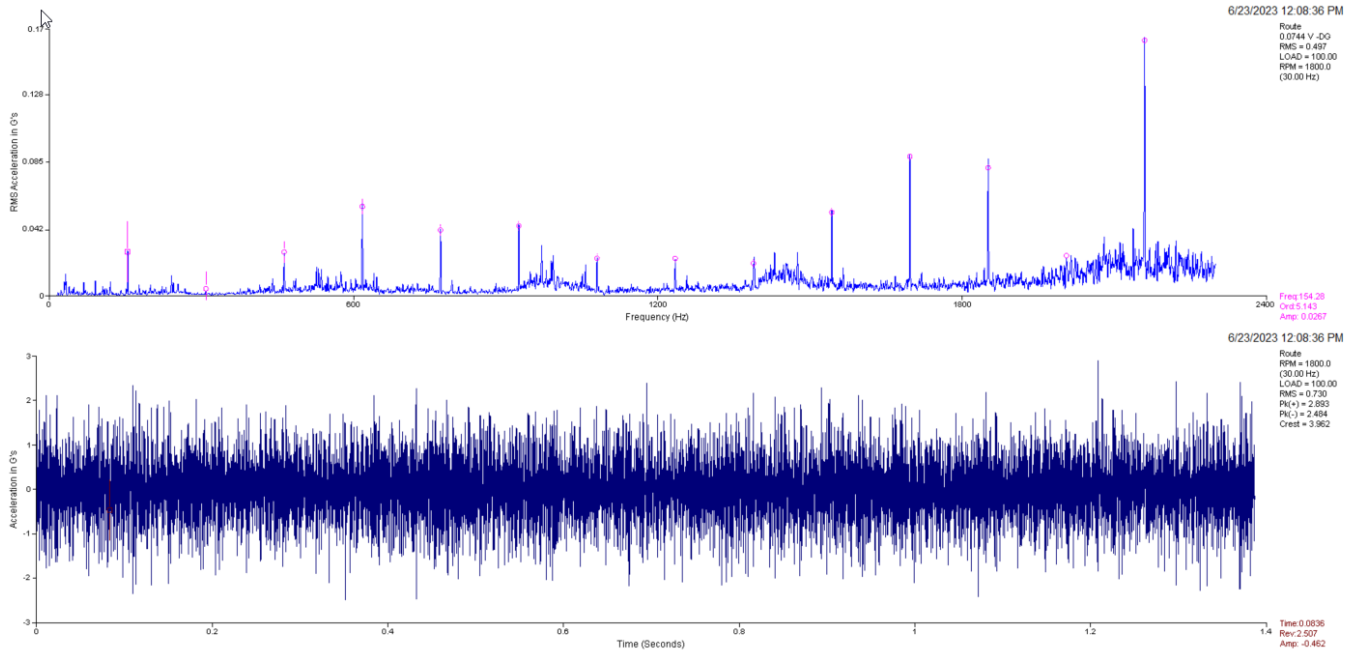
CLASS II Zone 1 Supply Fan

Motor vibration has increased some since last survey. Spectral data above shows the MIA and MOV are the highest in amplitude. Dominant vibration is 1 x motor rpm. For now, it is recommended to inspect all base/motor fasteners and ensure sheaves are in good shape.



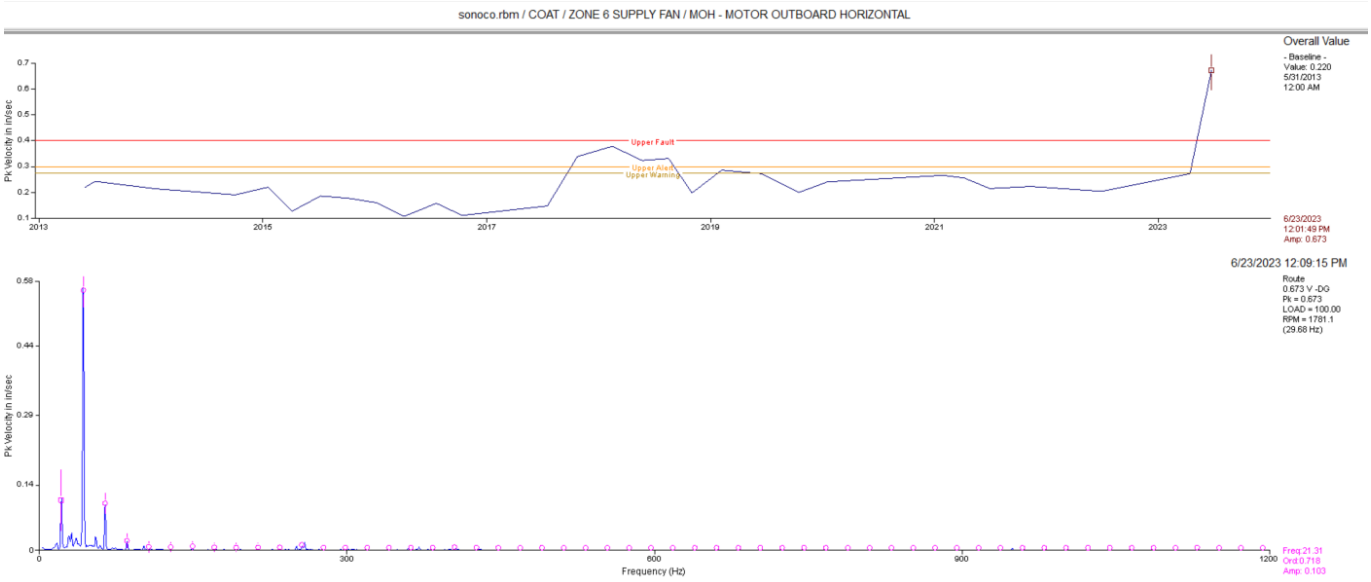
CLASS II Zone 3 Supply Fan (Fan Inboard Horizontal)

Motor has increased vibration. The peak in the spectrum above is very close to 1 x motor rpm. This may be a resonant peak and could be caused by a flexibly motor base/structure. For now, ensure all fasteners are tight and ensure sheaves do not have excessive face run out.



CLASS II Zone 5 Supply Fan

Fan inboard (DE) bearing data shows non-synchronous harmonics in the spectrum. This is anindication of bearing defects. Inspect fan bearings for defects and wear as scheduling allows.



CLASS II Zone 6 Supply Fan

Sub-synchronous vibrations are present in the motor. These peaks are likely harmonics of either fan speed or belts. For now, inspect sheaves for wear, face run-out, and misalignment. Ensure belts are in good order and properly tightened.

Abbreviated Last Measurement Summary
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Database: sonoco.rbm
Route No. 1: SONOCO

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
VACPUMP1 - VACUUM PUMP 1	**(23-Jun-23)**	
	OVERALL LEVEL	**1 - 20 KHz**
MOH	.180 In/Sec	.372 G-s
MOV	.159 In/Sec	.767 G-s
MIH	.153 In/Sec	1.200 G-s
MIV	.171 In/Sec	1.468 G-s
MIA	.262 In/Sec	.637 G-s
EIH	.080 In/Sec	.190 G-s
EIV	.076 In/Sec	.280 G-s
EIA	.044 In/Sec	.180 G-s
EOH	.071 In/Sec	.160 G-s
EOV	.073 In/Sec	.171 G-s
EOA	.044 In/Sec	.202 G-s
VACPUMP2 - VACUUM PUMP 2	**(23-Jun-23)**	
	OVERALL LEVEL	**1 - 20 KHz**
MOH	.393 In/Sec	.704 G-s
MOV	.272 In/Sec	.928 G-s
MIH	.307 In/Sec	1.062 G-s
MIV	.164 In/Sec	1.562 G-s
MIA	.307 In/Sec	.768 G-s
EIH	.184 In/Sec	.208 G-s
EIV	.136 In/Sec	.302 G-s

EIA	.100 In/Sec	.472 G-s
EOH	.101 In/Sec	.274 G-s
EOV	.108 In/Sec	.366 G-s
EOA	.061 In/Sec	.421 G-s

CTPUMP1 - COOLING TOWER PUMP 1 (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.343 In/Sec	.216 G-s
MOV	.288 In/Sec	.217 G-s
MIH	.118 In/Sec	.200 G-s
MIV	.067 In/Sec	.171 G-s
MIA	.245 In/Sec	.176 G-s

CTPUMP2 - COOLING TOWER PUMP 2 (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.103 In/Sec	.491 G-s
MOV	.129 In/Sec	.472 G-s
MIH	.160 In/Sec	.235 G-s
MIV	.107 In/Sec	.325 G-s
MIA	.089 In/Sec	.281 G-s

P8OVENFAN - P8 OVEN FAN (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.139 In/Sec	.076 G-s
MOV	.120 In/Sec	.059 G-s
MIH	.207 In/Sec	.088 G-s
MIV	.152 In/Sec	.123 G-s
MIA	.175 In/Sec	.029 G-s
EIH	.262 In/Sec	.822 G-s
EIV	.367 In/Sec	1.274 G-s
EOH	.166 In/Sec	.885 G-s
EOV	.138 In/Sec	1.275 G-s

MAINXHAUST - MAIN EXHAUST FAN (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.230 In/Sec	1.135 G-s
MOV	.241 In/Sec	.523 G-s
MIH	.198 In/Sec	.539 G-s
MIV	.119 In/Sec	.413 G-s
MIA	.087 In/Sec	.604 G-s
EIH	.138 In/Sec	.508 G-s
EIV	.269 In/Sec	1.294 G-s
EOH	.184 In/Sec	.609 G-s
EOV	.122 In/Sec	1.068 G-s

ZONE1FAN - ZONE 1 SUPPLY FAN (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.195 In/Sec	.364 G-s
MOV	.630 In/Sec	.339 G-s
MIH	.225 In/Sec	.948 G-s
MIV	.208 In/Sec	.578 G-s
MIA	.764 In/Sec	.153 G-s
EIH	.172 In/Sec	.338 G-s
EIV	.221 In/Sec	.258 G-s
EOH	.138 In/Sec	.225 G-s
EOV	.137 In/Sec	.256 G-s

ZONE2FAN - ZONE 2 SUPPLY FAN (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.296 In/Sec	.210 G-s
MOV	.246 In/Sec	.496 G-s
MIH	.152 In/Sec	.247 G-s
MIV	.252 In/Sec	.116 G-s
MIA	.316 In/Sec	.081 G-s
EIH	.219 In/Sec	.045 G-s
EIV	.129 In/Sec	.044 G-s

ZONE3FAN - ZONE 3 SUPPLY FAN (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.866 In/Sec	.254 G-s

MOV	.362 In/Sec	.184 G-s
MIH	.199 In/Sec	.234 G-s
MIV	.280 In/Sec	.474 G-s
MIA	.694 In/Sec	.146 G-s
EIH	.153 In/Sec	.335 G-s
EIV	.200 In/Sec	.273 G-s
EOH	.177 In/Sec	.307 G-s
EOV	.139 In/Sec	.664 G-s

ZONE4FAN - ZONE 4 SUPPLY FAN (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.271 In/Sec	.109 G-s
MOV	.244 In/Sec	.146 G-s
MIH	.221 In/Sec	.166 G-s
MIV	.339 In/Sec	.121 G-s
MIA	.324 In/Sec	.078 G-s
EIH	.275 In/Sec	.400 G-s
EIV	.104 In/Sec	.153 G-s
EOH	.134 In/Sec	.212 G-s
EOV	.171 In/Sec	.166 G-s

ZONE5FAN - ZONE 5 SUPPLY FAN (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.113 In/Sec	.126 G-s
MOV	.088 In/Sec	.182 G-s
MIH	.109 In/Sec	.324 G-s
MIV	.104 In/Sec	.232 G-s
MIA	.157 In/Sec	.242 G-s
EIH	.119 In/Sec	1.481 G-s
EIV	.074 In/Sec	2.024 G-s

ZONE6FAN - ZONE 6 SUPPLY FAN (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.673 In/Sec	.082 G-s
MOV	.552 In/Sec	.078 G-s
MIH	.213 In/Sec	.077 G-s
MIV	.423 In/Sec	.105 G-s
MIA	.260 In/Sec	.068 G-s
EIH	.200 In/Sec	.294 G-s
EIV	.300 In/Sec	.465 G-s
EOH	.211 In/Sec	.368 G-s
EOV	.272 In/Sec	.097 G-s

EXHAUSTFAN - EXHAUST FAN (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.214 In/Sec	.056 G-s
MOV	.167 In/Sec	.121 G-s
MIH	.240 In/Sec	.150 G-s
MIV	.263 In/Sec	.203 G-s
MIA	.346 In/Sec	.019 G-s

COOLFAN A - COOLING FAN A (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.128 In/Sec	.311 G-s
MOV	.379 In/Sec	.276 G-s
MIH	.134 In/Sec	.332 G-s
MIV	.324 In/Sec	.428 G-s
MIA	.173 In/Sec	.361 G-s
EIH	.139 In/Sec	.379 G-s
EIV	.103 In/Sec	.227 G-s
EOH	.132 In/Sec	.236 G-s
EOV	.164 In/Sec	.289 G-s

ALNESNCBLW - A LINE SPENCER BLOWER (23-Jun-23)

	OVERALL LEVEL	1 - 20 KHz
MOH	.134 In/Sec	.078 G-s
MOV	.057 In/Sec	.055 G-s
MIV	.162 In/Sec	.062 G-s
MIA	.087 In/Sec	.012 G-s

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      CLNESNCBLW - C LINE SPENCER BLOWER          (23-Jun-23)
                                    OVERALL LEVEL      1 - 20 KHz
            MOH                      .119 In/Sec        .074 G-s
            MOV                      .080 In/Sec       .0092 G-s
            MIV                      .046 In/Sec        .078 G-s

      DLNESNCBLW - D LINE SPENCER BLOWER          (23-Jun-23)
                                    OVERALL LEVEL      1 - 20 KHz
            MOH                      .225 In/Sec        .196 G-s
            MOV                      .218 In/Sec        .086 G-s
            MIH                      .232 In/Sec        .078 G-s
            MIV                      .233 In/Sec        .086 G-s
            MIA                      .125 In/Sec        .056 G-s

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   Clarification Of Vibration Units:
      Acc       -->  G-s      RMS
      Vel       -->  In/Sec   PK
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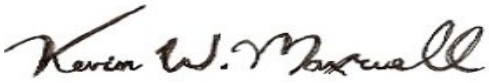
As always, it has been a pleasure to serve Sonoco. If there are any comments or questions, do not hesitate to contact us.

Sincerely,



ISO Certified Vibration Analyst, Category III

HI-SPEED INDUSTRIAL SERVICE

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