HI-SPEED INDUSTRIAL SERVICE

MILLINGTON, TN

March 16, 2020

ARKEMA

Subject: March week 2 vibration service report

Weekly Equipment

C Concentrator Vacuum Pump 2130-1
The pump axial vibration has dropped considerably; however, the outboard radial is up at 0.177"/sec velocity. No action is required.

Agitator, Hydrogenator C 7001-01
No legitimate vibrations were found to be above 0.140"/sec velocity peak overall for the gearbox output axial. Spectrum appears normal for unit. No action required.

A/B Concentrator Vacuum Pump 57
Overall vibrations have dropped for the outboard pump bearing and is at 0.273"/sec velocity peak, at what looks to be mostly vane pass. We must note; however, that the vibration changes constantly as the vacuum breaks, so the overall reading and the data could change significantly during a short period of time. No immediate action is required at this time. **Rated a Class I Defect**.

Flash Vacuum Pump 2130-1
Vibrations appear to be normal this survey. No actions required.

Air Compressor C-201
Rotor bar vibrations are at 4.7 g's RMS. The 1x RPM vibration is at 0.14"/second velocity peak. The trend clearly shows that the vibrations vary considerably over time. We still believe these motors have possible weak rotor bar end connections that cause the vibrations to fluctuate higher due to loading. We will continue to monitor this unit for changes No actions required.

Air Compressor C-202
Rotor bar vibrations are under 1.4 g RMS. The trend clearly shows that the vibrations vary considerably over time. No actions required.

Air Compressor C-203
Rotor bar vibrations are at 1.2 g's RMS. The trend clearly shows that the vibrations vary considerably over time. We still believe these motors have possible weak rotor bar end connections that cause the vibrations to fluctuate higher due to loading. No actions required.

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

Instrument Air Compressor new

Vibration appeared to be about normal at near 0.3”/sec velocity peak. **Rated a Class I Defect.**

Air Compressor NASH A 201-08A
Vibrations are still down in the motor after the foot bolts were tightened. We recommend a complete cleaning and relubrication of all the foot bolts for the motor and vacuum pump. Pump vibrations are mixed. Check the pump bearing large flange bolts also. Check both shafts for excessive clearance with a lift check and finish with a shaft alignment. The pump is at 0.278”/sec velocity peak, so the unit is still **Rated a Class II Defect.**

D Hydrogenator Agitator 9002-10
Vibration data shows a slight change in vibrations this survey. Highest amplitude is at 0.269”/sec velocity peak for the gearbox top E/W measurement. **Still rated a Class I Defect.**

Monthly Equipment

Middle Mix Bed Water Pump 191-07
The pump continues to have a strong harmonic vibration at 0.345”/second velocity peak that we believe to be vane pass. We suspect either wear in the pump or there is the possibility of the pump not operating in the efficient part of the curve. Check and inspect. **Rated a Class II Defect.**

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
dshook@gohispeed.com
Hi-Speed **Industrial Service**

Abbreviated Last Measurement Summary

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Database: Arkema.rbm
Station: PEROXIDE
Route No. 4: ARK WK 2
Report Date: 16-Mar-20 07:53

MEASUREMENT POINT		OVERALL LEVEL	HFD / VHFD
2130-1old	- C Concentrator Vacuum Pump	(13-Mar-20)	
		OVERALL LEVEL	
11		.056 In/Sec	
21		.066 In/Sec	
23		.116 In/Sec	
71		.138 In/Sec	
81		.177 In/Sec	
83		.097 In/Sec	
7000-01	- AGITATOR,HYDROGENATOR C	(13-Mar-20)	
		OVERALL LEVEL	
01		.042 In/Sec	
02		.041 In/Sec	
03		.047 In/Sec	
11		.053 In/Sec	
12		.080 In/Sec	
13		.077 In/Sec	
21		.050 In/Sec	
22		.075 In/Sec	
23		.087 In/Sec	
31		.076 In/Sec	
32		.075 In/Sec	
33		.055 In/Sec	
41		.054 In/Sec	
42		.053 In/Sec	
53		.140 In/Sec	
53L		.140 In/Sec	
57	- A/B Concentr Vac Pmp-var RPM	(13-Mar-20)	
		OVERALL LEVEL	
11		.047 In/Sec	
12		.055 In/Sec	
21		.069 In/Sec	
23		.068 In/Sec	
71		.134 In/Sec	
81		.273 In/Sec	
83		.095 In/Sec	
2130-1	- FLASH VAP VAC PUMP-var speed	(13-Mar-20)	
		OVERALL LEVEL	
11		.062 In/Sec	
12		.032 In/Sec	
21		.040 In/Sec	
22		.044 In/Sec	
23		.052 In/Sec	

	71	.071 In/Sec	
	72	.077 In/Sec	
	81	.075 In/Sec	
	82	.090 In/Sec	
	83	.040 In/Sec	

C-203	- C-203 Comp		(13-Mar-20)
		OVERALL LEVEL	1-20 KHz
	11	.044 In/Sec	1.251 G-s
	12	.035 In/Sec	.434 G-s
	21	.025 In/Sec	.701 G-s
	22	.035 In/Sec	.539 G-s
	23	.024 In/Sec	.177 G-s
	71M	.034 In/Sec	
	72M	.033 In/Sec	
	73M	.064 In/Sec	
	81M	.052 In/Sec	
	82M	.064 In/Sec	
	71F	.053 In/Sec	
	72F	.070 In/Sec	
	73F	.045 In/Sec	
	81F	.044 In/Sec	
	82F	.042 In/Sec	

C-202	- C-202 Comp		(13-Mar-20)
		OVERALL LEVEL	1-20 KHz
	11	.044 In/Sec	.964 G-s
	12	.106 In/Sec	1.480 G-s
	21	.060 In/Sec	.535 G-s
	22	.045 In/Sec	.853 G-s
	23	.062 In/Sec	.532 G-s
	71M	.040 In/Sec	
	72M	.037 In/Sec	
	73M	.068 In/Sec	
	81M	.047 In/Sec	
	82M	.059 In/Sec	
	71F	.049 In/Sec	
	72F	.056 In/Sec	
	73F	.062 In/Sec	
	81F	.062 In/Sec	
	82F	.056 In/Sec	

C-201	- C-201 Comp		(13-Mar-20)
		OVERALL LEVEL	1-20 KHz
	11	.128 In/Sec	4.294 G-s
	12	.140 In/Sec	4.725 G-s
	21	.101 In/Sec	1.121 G-s
	22	.060 In/Sec	.089 G-s
	23	.061 In/Sec	.919 G-s
	71M	.049 In/Sec	
	72M	.047 In/Sec	
	73M	.081 In/Sec	
	81M	.062 In/Sec	
	82M	.070 In/Sec	
	71F	.060 In/Sec	
	72F	.047 In/Sec	
	73F	.057 In/Sec	

	81F	.066 In/Sec	
	82F	.058 In/Sec	

new AC - INSTRUMENT AIR COMPRESSOR (13-Mar-20)

	OVERALL LEVEL	1-20 KHz
11	.176 In/Sec	1.889 G-s
12	.106 In/Sec	.978 G-s
13	.055 In/Sec	.504 G-s
21	.185 In/Sec	1.533 G-s
22	.107 In/Sec	1.783 G-s
23	.095 In/Sec	.501 G-s
71F	.197 In/Sec	
72F	.159 In/Sec	
73F	.154 In/Sec	
81F	.170 In/Sec	
82F	.309 In/Sec	
83F	.190 In/Sec	
71M	.124 In/Sec	
72M	.160 In/Sec	
73M	.174 In/Sec	
81M	.220 In/Sec	
82M	.236 In/Sec	
83M	.238 In/Sec	

201-08A - COMPRESSOR,NASH A 201-08A (13-Mar-20)

	OVERALL LEVEL
11	.071 In/Sec
12	.079 In/Sec
13	.159 In/Sec
21	.094 In/Sec
22	.101 In/Sec
23	.156 In/Sec
71	.157 In/Sec
72	.255 In/Sec
73	.187 In/Sec
81	.165 In/Sec
82	.278 In/Sec
83	.175 In/Sec

202-05 - NASH SEAL LIQUID PUMP-A (13-Mar-20)

	OVERALL LEVEL
11	.046 In/Sec
21	.058 In/Sec
23	.022 In/Sec
71	.030 In/Sec
72	.020 In/Sec

9002-10 - D-HYDROGENATOR AGITATOR (13-Mar-20)

	OVERALL LEVEL
11	.077 In/Sec
21	.071 In/Sec
23	.053 In/Sec
31	.226 In/Sec
31L	.178 In/Sec
51	.274 In/Sec
51L	.266 In/Sec
52	.144 In/Sec

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            52L                      .269 In/Sec
            53                       .118 In/Sec
            61                       .140 In/Sec
            61L                      .205 In/Sec
            81                       .038 In/Sec
            82                       .039 In/Sec
            83                       .042 In/Sec

      9003-01    - D-HYDRO PRIMARY FILT FD PUMP  (13-Mar-20)
                                    OVERALL LEVEL
            11                       .044 In/Sec
            21                       .046 In/Sec
            23                       .029 In/Sec
            71                       .118 In/Sec
            72                       .144 In/Sec

      9001-01    - D-HYDRO SECOND. FILT FD PUMP  (13-Mar-20)
                                    OVERALL LEVEL
            11                       .055 In/Sec
            21                       .059 In/Sec
            23                       .029 In/Sec
            71                       .071 In/Sec
            72                       .075 In/Sec

      192-03     - Two Stage Water Pump A-WEST   (13-Mar-20)
                                    OVERALL LEVEL
            11                       .063 In/Sec
            21                       .068 In/Sec
            23                       .049 In/Sec

      191-07     - M MIX BED WATER PUMP 191-07   (13-Mar-20)
                                    OVERALL LEVEL
            11                       .162 In/Sec
            21                       .122 In/Sec
            23                       .059 In/Sec
            71                       .345 In/Sec
            72                       .105 In/Sec

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