

December 23, 2019

ARKEMA

Subject: December week 3 vibration service report

Weekly Equipment**Agitator, Hydrogenator C 7001-01**

No legitimate vibrations were found to be above 0.148"/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 slightly for the outboard pump bearing and is at 0.222"/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 in this unit appear normal. No actions required.

Air Compressor C-201

Rotor bar vibrations dropped two points to just over 4 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. We will continue to monitor this unit for changes. No actions required.

Air Compressor C-202

Vibrations in this unit appear normal. No actions required.

Air Compressor C-203

Rotor bar vibrations dropped to less than 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. We will continue to monitor this unit for changes. No actions required.

Air Compressor NASH 201-08

Vibration data shows a decrease in the compressor inboard bearing measurement. The overall amplitude is at 0.25"/sec velocity peak. Spectrum shows two dominant peaks; shaft speed and near 8 orders. We will keep a close eye on this unit. Ensure the unit gets proper lubrication in the near future. **Rated a Class I Defect.**

D Hydrogenator Agitator 9002-10

Vibration data shows a slight decrease in vibrations this survey. Highest amplitude is at 0.227"/sec velocity peak for the gearbox top E/W measurement. Process variables are suspected for the change.

Still rated a Class I Defect Though.

C Concentrator Vacuum Pump 2130-1 old

The motor axial vibration is at 0.18"/sec velocity Peak. Check the shaft alignment only as time allows.

Rated a Class I 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

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Hi-Speed Industrial Service

Abbreviated Last Measurement Summary

Database: Arkema.rbm
Station: PEROXIDE
Route No. 5: ARK WK 3
Report Date: 23-Dec-19 14:19

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
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7000-01 - AGITATOR, HYDROGENATOR C	(20-Dec-19)	
	OVERALL LEVEL	
01 - DRIVESHAFT BRG-NORTH-SOUTH	.043 In/Sec	
02 - DRIVESHAFT BRG-EAST-WEST	.044 In/Sec	
03 - DRIVESHAFT BRG-VERTICAL	.042 In/Sec	
11 - C Hydro Agitator MOTOR OB HORIZ	.050 In/Sec	
11H - MOTOR OB HORIZ - HI FREQ	.042 In/Sec	
12 - C Hydro Agitator MOTOR OB VERT	.047 In/Sec	
12H - MOTOR OB VERT - HI FREQ	.044 In/Sec	
13 - C Hydro Agitator Motor OB Axial	.046 In/Sec	
13H - MOTOR OB AXIAL - HI FREQ	.042 In/Sec	
21 - C Hydro Agitator MOTOR IB HORIZ	.045 In/Sec	
21H - MOTOR IB HORIZ - HI FREQ	.045 In/Sec	
22 - C Hydro Agitator MOTOR IB VERT	.050 In/Sec	
22H - MOTOR IB VERT - HI FREQ	.051 In/Sec	
23 - C Hydro Agitator Motor IB Axial	.054 In/Sec	
23H - MOTOR IB AXIAL - HI FREQ	.051 In/Sec	
31 - C Hydro Agitator GrBx In Horizon	.076 In/Sec	
32 - C Hydro Agitator GrBx In VERT	.079 In/Sec	
33 - C Hydro Agitator GrBx In Axial	.047 In/Sec	
41 - C Hydro Agitator GrBx Top Horizo	.057 In/Sec	
42 - C Hydro Agitator GrBx Top VERT	.066 In/Sec	
53 - C Hydro Agitator GrBx Top Axial	.148 In/Sec	
53L - C Hydro Agitator GrBx Top Axial	.140 In/Sec	
57 - A/B Concentr Vac Pmp-var RPM	(20-Dec-19)	
	OVERALL LEVEL	
11 - Motor OB HOR	.056 In/Sec	
	OVERALL LEVEL	1-20 KHz
11H - Motor OB HOR	.060 In/Sec	.343 G-s
12 - Motor OB VERT	.060 In/Sec	
12H - Motor OB VERT	.061 In/Sec	.339 G-s
13 - Motor OB AXIAL	.070 In/Sec	
21 - Motor IB HOR	.152 In/Sec	
23 - Motor IB AXIAL	.056 In/Sec	
71 - Compressor IB HOR	.146 In/Sec	
81 - Compressor OB Horiz	.222 In/Sec	
83 - Compressor OB Axial	.045 In/Sec	
2130-1 - FLASH VAP VAC PUMP-var speed	(20-Dec-19)	
	OVERALL LEVEL	
11 - Motor OB HOR	.042 In/Sec	
12 - Motor OB VERT	.027 In/Sec	
21 - Motor IB HOR	.081 In/Sec	
22 - Motor IB VERT	.040 In/Sec	

23	- Motor IB AXIAL	.044 In/Sec
71	- Compressor IB HOR	.074 In/Sec
72	- Compressor IB VERT	.062 In/Sec
81	- Compressor OB Horiz	.078 In/Sec
82	- Compressor OB VERT	.081 In/Sec
83	- Compressor OB Axial	.037 In/Sec

C-203 - C-203 Comp (Old Joy)

(20-Dec-19)

	OVERALL LEVEL	1-20 KHz
11 - MOTOR OB HOR	.048 In/Sec	1.759 G-s
12 - MOTOR OB VERT	.040 In/Sec	1.367 G-s
13 - MOTOR OB AXIAL	.049 In/Sec	1.732 G-s
21 - MOTOR IB HOR	.019 In/Sec	.431 G-s
22 - MOTOR IB VERT	.043 In/Sec	1.369 G-s
23 - MOTOR IB AXIAL	.033 In/Sec	.507 G-s
71M - COMP MALE SHAFT IB HOR	.032 In/Sec	
72M - COMP MALE SHAFT IB VERT	.033 In/Sec	
73M - COMP MALE SHAFT IB AXIAL	.051 In/Sec	
81M - COMP MALE SHAFT OB HOR	.079 In/Sec	
82M - COMP MALE SHAFT OB VERT	.057 In/Sec	
83M - COMP MALE SHAFT OB AXIAL	.036 In/Sec	
71F - COMP FEMALE SHAFT IB HOR	.040 In/Sec	
72F - COMP FEMALE SHAFT IB VERT	.044 In/Sec	
73F - COMP FEMALE SHAFT IB AXIAL	.085 In/Sec	
81F - COMP FEMALE SHAFT OB HOR	.048 In/Sec	
82F - COMP FEMALE SHAFT OB VERT	.036 In/Sec	

C-202 - C-202 Comp (New Location)

(20-Dec-19)

	OVERALL LEVEL	1-20 KHz
11 - MOTOR OB HOR	.053 In/Sec	1.555 G-s
12 - MOTOR OB VERT	.098 In/Sec	1.448 G-s
13 - MOTOR OB AXIAL	.065 In/Sec	.507 G-s
21 - MOTOR IB HOR	.054 In/Sec	.594 G-s
22 - MOTOR IB VERT	.048 In/Sec	.146 G-s
23 - MOTOR IB AXIAL	.050 In/Sec	.600 G-s
71M - COMP MALE SHAFT IB HOR	.036 In/Sec	
72M - COMP MALE SHAFT IB VERT	.045 In/Sec	
73M - COMP MALE SHAFT IB AXIAL	.074 In/Sec	
81M - COMP MALE SHAFT OB HOR	.057 In/Sec	
82M - COMP MALE SHAFT OB VERT	.061 In/Sec	
83M - COMP MALE SHAFT OB AXIAL	.077 In/Sec	
71F - COMP FEMALE SHAFT IB HOR	.031 In/Sec	
72F - COMP FEMALE SHAFT IB VERT	.047 In/Sec	
73F - COMP FEMALE SHAFT IB AXIAL	.055 In/Sec	
81F - COMP FEMALE SHAFT OB HOR	.052 In/Sec	
82F - COMP FEMALE SHAFT OB VERT	.044 In/Sec	

C-201 - C-201 Comp (Old Centac)

(20-Dec-19)

	OVERALL LEVEL	1-20 KHz
11 - MOTOR OB HOR	.083 In/Sec	2.222 G-s
12 - MOTOR OB VERT	.140 In/Sec	4.558 G-s
13 - MOTOR OB AXIAL	.078 In/Sec	2.596 G-s
21 - MOTOR IB HOR	.085 In/Sec	.979 G-s
22 - MOTOR IB VERT	.032 In/Sec	.069 G-s
23 - MOTOR IB AXIAL	.054 In/Sec	.799 G-s
71M - COMP MALE SHAFT IB HOR	.044 In/Sec	
72M - COMP MALE SHAFT IB VERT	.046 In/Sec	

73M - COMP MALE SHAFT IB AXIAL	.078 In/Sec
81M - COMP MALE SHAFT OB HOR	.045 In/Sec
82M - COMP MALE SHAFT OB VERT	.054 In/Sec
83M - COMP MALE SHAFT OB AXIAL	.083 In/Sec
71F - COMP FEMALE SHAFT IB HOR	.047 In/Sec
72F - COMP FEMALE SHAFT IB VERT	.039 In/Sec
73F - COMP FEMALE SHAFT IB AXIAL	.062 In/Sec
81F - COMP FEMALE SHAFT OB HOR	.054 In/Sec
82F - COMP FEMALE SHAFT OB VERT	.050 In/Sec

9002-10 - D-HYDROGENATOR AGITATOR	(20-Dec-19)
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZONTAL	.082 In/Sec
21 - MOTOR INBOARD HORIZONTAL	.061 In/Sec
23 - motor inboard axial	.035 In/Sec
31 - GEARBOX INPUT SHAFT -HORIZONTAL	.191 In/Sec
31H - GEARBOX INPUT SHAFT -HORIZONTAL	.201 In/Sec
31L - GEARBOX INPUT SHAFT-N-S-LOW FRQ	.173 In/Sec
51 - GEARBOX TOP PLATE- E-W	.183 In/Sec
51L - GEARBOX OUTPUT SHAFT-E-W-LOW FRQ	.218 In/Sec
52 - GEARBOX TOP PLATE- N-S	.094 In/Sec
52L - GEARBOX OUTPUT SHAFT-E-W-LOW FRQ	.227 In/Sec
53 - GEARBOX OUTPUT SHAFT -VERTICAL	.094 In/Sec
61 - GEARBOX OUTPUT SHAFT-HORIZONTAL	.180 In/Sec
61L - GEARBOX OUTPUT SHAFT-E-W-LOW FRQ	.165 In/Sec
81 - AGIT INTERMED BRG @ SEAL- N-S	.037 In/Sec
82 - AGIT INTERMED BRG @ SEAL- E-W	.056 In/Sec
83 - AGIT INTERMED BRG @ SEAL- VERT	.038 In/Sec

201-08A - COMPRESSOR,NASH A 201-08A	(20-Dec-19)
	OVERALL LEVEL
11 - Nash Compr A Motor OB Horiz	.067 In/Sec
12 - Nash Compr A Motor OB Vertical	.088 In/Sec
12H - Nash Compr A Motor OB Vertical	.082 In/Sec
13 - Nash Compr A Motor OB Axial	.137 In/Sec
21 - Nash Compr A Motor IB Horiz	.113 In/Sec
22 - Nash Compr A Motor IB VERT	.107 In/Sec
23 - Nash Compr A Motor IB AXIAL	.175 In/Sec
71 - Nash Compr A COMP IB HORIZ	.201 In/Sec
72 - Nash Compr A Compressor IB Verti	.250 In/Sec
72H - Nash Compr A COMP IB Vertical	.248 In/Sec
73 - Nash Compr A COMP IB AXIAL	.205 In/Sec
81 - Nash Compr A COMP OB HORIZ	.150 In/Sec
82 - Nash Compr A Compressor OB Verti	.258 In/Sec
82H - Nash Compr A COMP OB Vertical	.268 In/Sec
83 - Nash Compr A Compressor OB Axial	.148 In/Sec
83H - Nash Compr A COMP OB AXIAL	.158 In/Sec

new AC - INSTRUMENT AIR COMPRESSOR	(20-Dec-19)	
	OVERALL LEVEL	1-20 KHz
11 - MOTOR OB HOR	.133 In/Sec	.569 G-s
12 - MOTOR OB VERT	.098 In/Sec	1.125 G-s
13 - MOTOR OB AXIAL	.082 In/Sec	.415 G-s
21 - MOTOR IB HOR	.148 In/Sec	1.322 G-s
22 - MOTOR IB VERT	.093 In/Sec	.685 G-s
23 - MOTOR IB AXIAL	.088 In/Sec	.447 G-s
71M - COMP MALE SHAFT IB HOR	.194 In/Sec	

72M - COMP MALE SHAFT IB VERT	.170 In/Sec
73M - COMP MALE SHAFT IB AXIAL	.141 In/Sec
81M - COMP MALE SHAFT OB HOR	.171 In/Sec
82M - COMP MALE SHAFT OB VERT	.311 In/Sec
83M - COMP MALE SHAFT OB AXIAL	.215 In/Sec
71F - COMP FEMALE SHAFT IB HOR	.243 In/Sec
72F - COMP FEMALE SHAFT IB VERT	.161 In/Sec
73F - COMP FEMALE SHAFT IB AXIAL	.147 In/Sec
81F - COMP FEMALE SHAFT OB HOR	.145 In/Sec
82F - COMP FEMALE SHAFT OB VERT	.181 In/Sec
83F - COMP FEMALE SHAFT OB AXIAL	.209 In/Sec

2130-1old - C Concentrator Vacuum Pump	(20-Dec-19)
	OVERALL LEVEL
11 - Motor OB HOR	.053 In/Sec
21 - Motor IB HOR	.062 In/Sec
23 - Motor IB AXIAL	.183 In/Sec
71 - Compressor IB HOR	.101 In/Sec
81 - Compressor OB Horiz	.107 In/Sec
83 - Compressor OB Axial	.091 In/Sec

Clarification Of Vibration Units:

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