

July 9, 2019

# ARKEMA

Subject: July 5<sup>th</sup> weekly vibration service cover

# Weekly Survey

# Agitator, Hydrogenator C 7001-01

No legitimate vibrations were found to be above 0.154"/sec velocity peak. Spectrum appears normal for unit. No action required.

# A/B Concentrator Vacuum Pump 57

Unit still has a clean vibration peak at what looks like vane pass. The highest vibration is just over 0.30 "/sec velocity peak. These are expected; however, it is slightly stronger than normal. There is most likely some wear or process issue. **Rated a Class I Defect.** 

## Flash Vacuum Pump 2130-1

Vibration data show no peaks above 0.1"/sec velocity peak. No actions required.

## Air Compressor C-201

Vibrations in this unit appear normal. No actions required.

## Air Compressor C-202

Vibrations in this unit appear normal. No actions required.

## Air Compressor C-203

Vibrations continue to be lower this survey as last week. The trend clearly shows that the vibrations vary considerably over time. We believe the motor has bad rotor bar end connections that cause the vibrations to fluctuate due to loading and physical defects. We will continue to monitor this unit for changes and we will keep this unit rated higher than the current numbers suggest. **Rated a Class II Defect.** 

#### Air Compressor NASH 201-08

Vibrations in this unit appear normal. No actions required.

## D Hydrogenator Agitator 9002-10

We still see modulation at near 559 Hz. /4<sup>th</sup> harmonic in the data for the unit, and we see what appears to be multiple sidebands of 10.4 Hz that could indicate a possible issue in a gearbox shaft component. **Rated a Class I Defect** for now. We will need information on this gearbox as to specifications for better analysis.

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

#### Instrument Air Compressor new

Vibrations in this unit appear normal. No actions required.

#### C Concentrator Vacuum Pump 2130-1 old

Vibrations in this unit appear normal. No actions required.

An Abbreviated Last Measurement Summary follows below:

*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

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Database: Arkema.rbm Station: PEROXIDE Route No. 1: H202 WEEKLY Report Date: 09-Jul-19 10:12

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
7000-01 - AGITATOR, HYDROGENA	TOR C (05-Jul-	·19)
	OVERALL	LEVEL
01 - DRIVESHAFT BRG-NORTH-SOUTH	.042 Ir	I/Sec
02 - DRIVESHAFT BRG-EAST-WEST	.046 Ir	I/Sec
03 - DRIVESHAFT BRG-VERTICAL	.047 Ir	I/Sec
11 - C Hydro Agitator MOTOR OB	HORIZ .048 In	/Sec
11H - MOTOR OB HORIZ - HI FREQ	.046 Ir	I/Sec
12 - C Hydro Agitator MOTOR OB	VERT .040 Ir	I/Sec
12H - MOTOR OB VERT - HI FREQ	.049 Ir	I/Sec
13 - C Hydro Agitator Motor OB	Axial .046 In	I/Sec
13H - MOTOR OB AXIAL - HI FREQ	.048 Ir	I/Sec
21 - C Hydro Agitator MOTOR IB	HORIZ .054 In	I/Sec
21H - MOTOR IB HORIZ - HI FREQ	.042 In	ı/Sec
22 - C Hydro Agitator MOTOR IB	VERT .058 In	ı/Sec
22H - MOTOR IB VERT - HI FREQ	.051 Ir	ı/Sec
23 - C Hydro Agitator Motor IB	Axial .059 In	ı/Sec
23H - MOTOR IB AXIAL - HI FREQ	.058 In	1/Sec
31 - C Hydro Agitator GrBx In H	orizon .077 In	/Sec
32 - C Hydro Agitator GrBx In V	ERT .077 In	/Sec
33 - C Hydro Agitator GrBx In A	xial .050 Ir	1/Sec
41 - C Hydro Agitator GrBx Top	Horizo .050 Ir	1/Sec
42 - C Hydro Agitator GrBx Top	VERT .040 In	/Sec
53 - C Hydro Agitator GrBx Top	Axial .154 In	/Sec
53L - C Hydro Agitator GrBx Top	Axial .153 In	1/Sec
57 - A/B Concentr Vac P	mp-var RPM (05-Jul-	-19)
	OVERALL	LEVEL
11 - Motor OB HOR	.041 In	/Sec
	OVERALL LEVEL	1-20 KHz
LH - Motor OB HOR	.045 In/Sec	.378 G-s
12 - Motor OB VERT	.053 In	/Sec
2H - Motor OB VERT	.057 In/Sec	.228 G-s
13 - Motor OB AXIAL	.080 In	/Sec
21 - Motor IB HOR	.092 Ir	/Sec
23 - Motor IB AXIAL	.065 Ir	/Sec
71 - Compressor IB HOR	.133 Ir	/Sec
81 - Compressor OB Horiz	.331 Ir	/Sec
83 - Compressor OB Axial	.071 Ir	1/Sec
2130-1 - FLASH VAP VAC PUMP	-var speed (05-Jul-	-19)
	OVERALL	LEVEL
11 - Motor OB HOR	.084 Ir	/Sec
12 - Motor OB VERT	.036 Ir	/Sec
21 - Motor IB HOR	.037 Tr	/Sec
22 - Motor IB VERT	.045 Tr	/Sec
23 - Motor IB AXIAL	.053 Tr	/Sec

	<ul> <li>71 - Compressor IB HOR</li> <li>72 - Compressor IB VERT</li> <li>81 - Compressor OB Horiz</li> <li>82 - Compressor OB VERT</li> <li>83 - Compressor OB Axial</li> </ul>	.054 .074 .089 .084 .047	In/Sec In/Sec In/Sec In/Sec In/Sec
	C = 203 = C = 203 Comp (01d Tox)	(051	1-19)
		OVERALL LEVEL	ит 19) Г. 1-20 КНг
11	- MOTOR OB HOR	.032 In/Sec	1.062 G-s
12	- MOTOR OB VERT	.032 In/Sec	.258 G-s
13	- MOTOR OB AXIAL	.026 In/Sec	.844 G-s
21	- MOTOR IB HOR	.023 In/Sec	.812 G-s
22	- MOTOR IB VERT	.030 In/Sec	.023 G-s
23	- MOTOR IB AXIAL	.029 In/Sec	1.305 G-s
	71M - COMP MALE SHAFT IB HOR	. 029	In/Sec
	72M - COMP MALE SHAFT IB VERT	.031	In/Sec
	73M - COMP MALE SHAFT IB AXIAL	.038	In/Sec
	81M - COMP MALE SHAFT OB HOR	.039	In/Sec
	82M - COMP MALE SHAFT OB VERT	.043	In/Sec
	83M - COMP MALE SHAFT OB AXIAL	.026	In/Sec
	71F - COMP FEMALE SHAFT IB HOR	.032	In/Sec
	72F - COMP FEMALE SHAFT IB VERI	.037	In/Sec
	81F - COMP FEMALE SHAFT OF HOP	.043	In/Sec
	82F - COMP FEMALE SHAFT OB VERT	.055	In/Sec
	83F - COMP FEMALE SHAFT OB AXIAL	.086	In/Sec
11 12 13 21 22 23	<ul> <li>C-202 - C-202 Comp (New Locatian)</li> <li>MOTOR OB HOR</li> <li>MOTOR OB VERT</li> <li>MOTOR OB AXIAL</li> <li>MOTOR IB HOR</li> <li>MOTOR IB HOR</li> <li>MOTOR IB VERT</li> <li>MOTOR IB VERT</li> <li>MOTOR IB AXIAL</li> <li>71M - COMP MALE SHAFT IB HOR</li> <li>72M - COMP MALE SHAFT IB VERT</li> <li>73M - COMP MALE SHAFT IB VERT</li> <li>73M - COMP MALE SHAFT OB HOR</li> <li>82M - COMP MALE SHAFT OB HOR</li> <li>82M - COMP MALE SHAFT OB VERT</li> <li>83M - COMP MALE SHAFT OB VERT</li> <li>83M - COMP FEMALE SHAFT IB HOR</li> <li>72F - COMP FEMALE SHAFT IB VERT</li> <li>73F - COMP FEMALE SHAFT IB AXIAL</li> <li>81F - COMP FEMALE SHAFT OB HOR</li> <li>82F - COMP FEMALE SHAFT OB VERT</li> </ul>	on) (05-Ja OVERALL LEVEL .041 In/Sec .089 In/Sec .044 In/Sec .057 In/Sec .026 In/Sec .026 In/Sec .033 .043 .060 .045 .048 .062 .029 .048 .073 .035 .039	L1-19) L 1-20 KHz .111 G-s .462 G-s 1.467 G-s 1.379 G-s .130 G-s .762 G-s In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec In/Sec
	USE COM PARME SHAFT OF ANTAL	.005	
	C-201 - C-201 Comp (Old Centac	) (05–Jı	ul-19)
		OVERALL LEVE	L 1-20 KHz
11	- MOTOR OB HOR	.085 In/Sec	.418 G-s
⊥∠ 1 2	- MOTOR OB VERT	.055 IN/SeC	.489 G-S
21	- MOTOR TR HOR	092  Tn/Sec	.201 G-S 660 C-s
22	- MOTOR IB VERT	041  Tn/Sec	.000 G-S
23	- MOTOR IB AXIAL	.064 In/Sec	.433 G-s
	71M - COMP MALE SHAFT IB HOR	.045	In/Sec

72M - COMP	MALE SHAFT IB VERT		.055	In/Sec	
73M - COMP	MALE SHAFT IB AXIAL		.070	In/Sec	
81M - COMP	MALE SHAFT OB HOR		.022	In/Sec	
82M - COMP	MALE SHAFT OB VERT		.052	In/Sec	
83M - COMP	MALE SHAFT OB AXIAL		.058	In/Sec	
71F - COMP	FEMALE SHAFT TE HOP		038	In/Sec	
72E - COMP	FEMALE SHAFT ID HOR		.050	In/Sec	
72F - COMP	FEMALE SHAFT ID VERI		.052	In/Sec	
73F - COMP	FEMALE SHAFT IB ANIAL		.086	In/Sec	
81F - COMP	FEMALE SHAFT OB HOR		.046	In/Sec	
82F - COMP	FEMALE SHAFT OB VERT		.045	In/Sec	
83F - COMP	FEMALE SHAFT OB AXIAL		.069	In/Sec	
201-08A	- COMPRESSOR, NASH A	201-08A	(05–Ji OVERAL	11-19) L LEVEL	
11 - Nash	Compr A Motor OB Hori	z	.053	In/Sec	
12 - Nash	Compr A Motor OB Vert	ical	.062	In/Sec	
12H - Nash	Compr A Motor OB Vert	ical	.078	In/Sec	
13 - Nash	Compr A Motor OB Axia	1	050	In/Sec	
21 - Nash	Compr A Motor IB Hori	-	057	In/Sec	
22 - Nash	Compr A Motor IB VERT	-	090	In/Sec	
22 Nash 23 - Nach	Compr A Motor IB AXIA	т	.050	In/Sec	
ZJ – Nash	Compr A GOND TB HODIZ		.030	In/Sec	
71 - Mash	Compl A COMP IB HORIZ	Manti	.127	In/Sec	
72 - Nash	Compr A Compressor IB	verti	.100	In/Sec	
72H - Nash	Compr A COMP IB Verti	Cal	.1//	In/Sec	
73 - Nash	Compr A COMP IB AXIAL		.158	In/Sec	
81 - Nash	Compr A COMP OB HORIZ		.135	In/Sec	
82 - Nash	Compr A Compressor OB	Verti	.233	In/Sec	
82H - Nash	Compr A COMP OB Verti	cal	.238	In/Sec	
83 - Nash	Compr A Compressor OB	Axial	.142	In/Sec	
83H - Nash	Compr A COMP OB AXIAL		.140	In/Sec	
9002-10	- D-HYDROGENATOR AGT	ሞልሞለው	(057)	1_10)	
9002-10	- D-HIDROGENATOR AGI	INION		11-19) T TEXET	
11 MOTOT			OVERAL	Tr/Coc	
	C OUTBOARD HORIZONIAL		.052	In/Sec	
21 - MOTOR	CINBOARD HORIZONTAL		.105	In/Sec	
23 - motor	: inboard axial		.088	In/Sec	
31 - GEARE	30X INPUT SHAFT -HORIZ	ONTAL	.199	In/Sec	
31H - GEARE	30X INPUT SHAFT -HORIZ	ONTAL	.213	In/Sec	
31L – GEARE	30X INPUT SHAFT-N-S-LO	W FRQ	.179	In/Sec	
51 – GEARE	<b>3OX TOP PLATE- E-W</b>		.177	In/Sec	
51L – GEARE	BOX OUTPUT SHAFT-E-W-L	OW FRQ	.209	In/Sec	
52 – GEARE	30X TOP PLATE- N-S		. 335	In/Sec	
52L – GEARE	30X OUTPUT SHAFT-E-W-L	OW FRQ	.202	In/Sec	
81 - AGIT	INTERMED BRG @ SEAL-	N-S	.048	In/Sec	
82 - AGIT	INTERMED BRG @ SEAL-	E-W	.047	In/Sec	
new AC	- INSTRUMENT AIR COM	PRESSOR	(05–Jı	11-19)	
		OVERA	LL LEVEI	L 1-20 P	KHz
- MOTOR OB HOR		.113	In/Sec	.886	G−s
- MOTOR OB VER	T	.093	In/Sec	.814	G-s
- MOTOR OB AXI	AL	.070	In/Sec	. 796	G-s
- MOTOR IB HOR		.107	In/Sec	1.206	G-s
- MOTOR IB VER	Т	.081	In/Sec	. 494	G-s
- MOTOR IB AXI	AL	.064	In/Sec	.267	G-s
71M - COMP	MALE SHAFT IB HOR		.151	In/Sec	
72M - COMP	MALE SHAFT IB VERT		.212	In/Sec	
73M - COMP	MALE SHAFT IB AXIAL		.148	In/Sec	

81M - COMP MALE SHAFT OB HOR	.172 In/Sec
82M - COMP MALE SHAFT OB VERT	.209 In/Sec
83M - COMP MALE SHAFT OB AXIAL	.273 In/Sec
71F - COMP FEMALE SHAFT IB HOR	.150 In/Sec
72F - COMP FEMALE SHAFT IB VERT	.193 In/Sec
73F - COMP FEMALE SHAFT IB AXIAL	.137 In/Sec
81F - COMP FEMALE SHAFT OB HOR	.129 In/Sec
82F - COMP FEMALE SHAFT OB VERT	.273 In/Sec
83F - COMP FEMALE SHAFT OB AXIAL	.179 In/Sec
2130-1old - C Concentrator Vacuum Pump	(05-Jul-19)
2130-1old - C Concentrator Vacuum Pump	(05-Jul-19) OVERALL LEVEL
2130-1old - C Concentrator Vacuum Pump 11 - Motor OB HOR	(05-Jul-19) OVERALL LEVEL .077 In/Sec
2130-1old - C Concentrator Vacuum Pump 11 - Motor OB HOR 21 - Motor IB HOR	(05-Jul-19) OVERALL LEVEL .077 In/Sec .058 In/Sec
2130-1old - C Concentrator Vacuum Pump 11 - Motor OB HOR 21 - Motor IB HOR 23 - Motor IB AXIAL	(05-Jul-19) OVERALL LEVEL .077 In/Sec .058 In/Sec .129 In/Sec
2130-1old - C Concentrator Vacuum Pump 11 - Motor OB HOR 21 - Motor IB HOR 23 - Motor IB AXIAL 71 - Compressor IB HOR	(05-Jul-19) OVERALL LEVEL .077 In/Sec .058 In/Sec .129 In/Sec .135 In/Sec
2130-1old - C Concentrator Vacuum Pump 11 - Motor OB HOR 21 - Motor IB HOR 23 - Motor IB AXIAL 71 - Compressor IB HOR 81 - Compressor OB Horiz	(05-Jul-19) OVERALL LEVEL .077 In/Sec .058 In/Sec .129 In/Sec .135 In/Sec .149 In/Sec
2130-1old - C Concentrator Vacuum Pump 11 - Motor OB HOR 21 - Motor IB HOR 23 - Motor IB AXIAL 71 - Compressor IB HOR 81 - Compressor OB Horiz 83 - Compressor OB Axial	(05-Jul-19) OVERALL LEVEL .077 In/Sec .058 In/Sec .129 In/Sec .135 In/Sec .149 In/Sec .090 In/Sec

Clarification Of Vibration Units:

LTTTCGCTON	0± 1	TOTACTON	OUTEC
Acc	>	G-s	PK
Vel	>	In/Sec	PK