



Single Equipment Full Report

For: **BC-1 Distillate Pump**

Measurements from 2017-12-14 to 2018-04-07

Generated On **2018-05-08**

Generated By **Petar Spaseski**

Prepared By _____

Checked By _____

Introduction

Generating more power from turbo-alternators is of increasing importance in today's competitive generation market. Some of the ways this can be achieved are by plant modifications or enabling each unit to generate for longer periods between maintenance. Plant maintenance based on need, rather than preventative maintenance can prove effective at keeping the plant operational, whilst saving significant sums of money. In order to adopt this strategy, it is necessary to be able to determine the condition of the plant in a cost-effective and non-invasive manner. There are a number of ways of doing this, but one of the most effective for rotating plant is vibration analysis.

Equipment Identification

Barcode	GPS Coordinates	
AH818103	Latitude	41.16264970
1 x Freq (Hz)	Longitude	20.74400730
	Altitude	

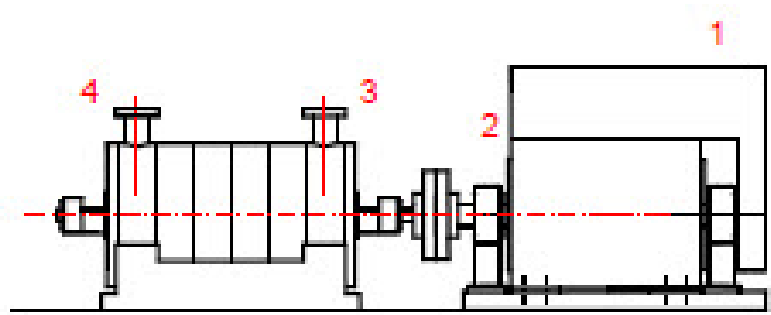
Nameplate



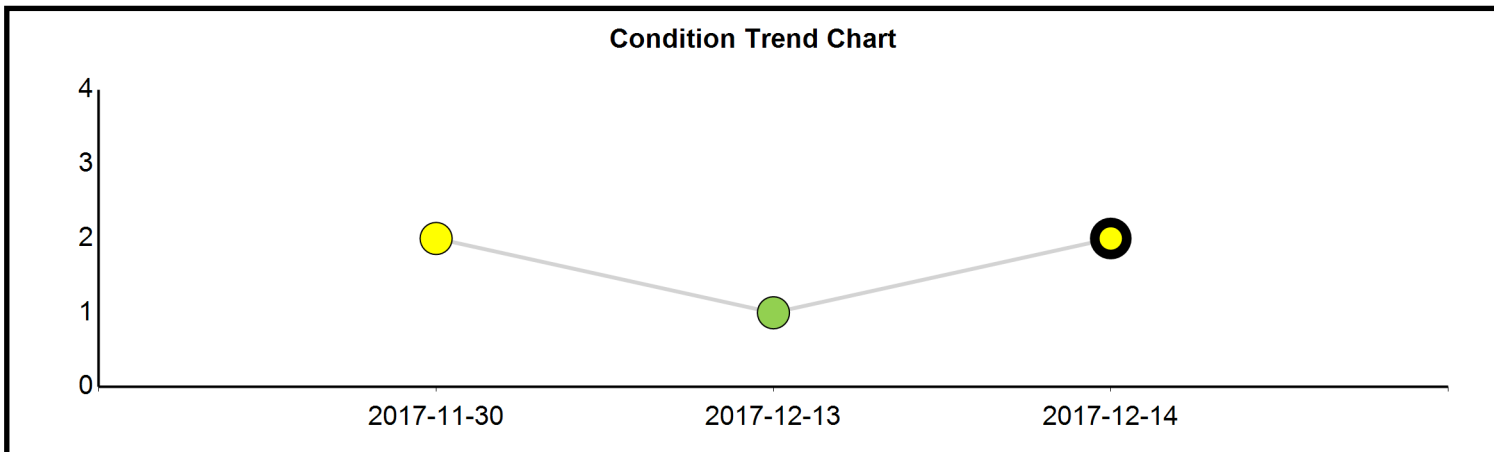
Photo



Sketch (Diagram)



Condition and Recommendations



For Measurements done	Condition
From 2017-12-14 to 2018-04-07	(2) Initial Fault detected (P)

Analysis Summary

Overall velocity levels were acceptable this survey (5.7mm/s RMS at NDE), with the dominant vibration primarily at shaft rotation speed. Rotational vibration levels have remained relatively stable since the last survey (22 Dec 2015). Very low level vibration at 231Hz was evident, which may indicate an initial defect on the NDE bearing inner race. This has remained stable since last survey. The sensor at the drive end was giving a faulty signal.

Proposed Actions

Action	Failure Type	Failure Mode	Severity	Action Type	Urgency
Monitor for any further deterioration in balance or bearing condition.	SPO	BRF		FA	ANO
Inspect sensor on DE bearing and repair/replace as required.	SYS	BRRRD		LE	AWC

Feedback

Analysis Date: 2018-03-16

Analyst: Petar Spaseski

Overall Value Summary Table

Parameter	Data Collected	Acceleration	Velocity	Demodulation
1H- Motor NDE Horizontal (AVDT)	2018-04-07 02:26:45	22.7715 (m/s ²)	23.6056 (mm/s)	0.2466 (du_g)
2H-Motor DE Horizontal (AVDT)	2018-04-07 02:27:59	24.114 (m/s ²)	19 (mm/s)	0.2412 (du_g)
2V-Motor DE Vertical (V)	2017-12-14 01:56:58		0.6544 (mm/s)	
2A-Motor DE Axial (V)	2017-12-14 01:57:10		1.3983 (mm/s)	
3H-Pump DE Bearing Horizontal (AVDT)	2018-04-07 02:27:21	28.8856 (m/s ²)	5.9525 (mm/s)	0.2506 (du_g)
3V-Pump DE Bearing Vertical (V)	2017-12-14 01:57:30		1.0571 (mm/s)	
3A-Pump DE Bearing Axial (V)	2017-12-14 01:57:39		1.3059 (mm/s)	
4H-Pump NDE Bearing Horizontal (AVDT)	2018-04-07 02:27:41	28.3199 (m/s ²)	6.1535 (mm/s)	0.2411 (du_g)
5H-Pump Housing Horizontal (A)	2017-12-14 01:57:55	1.343 (m/s ²)		

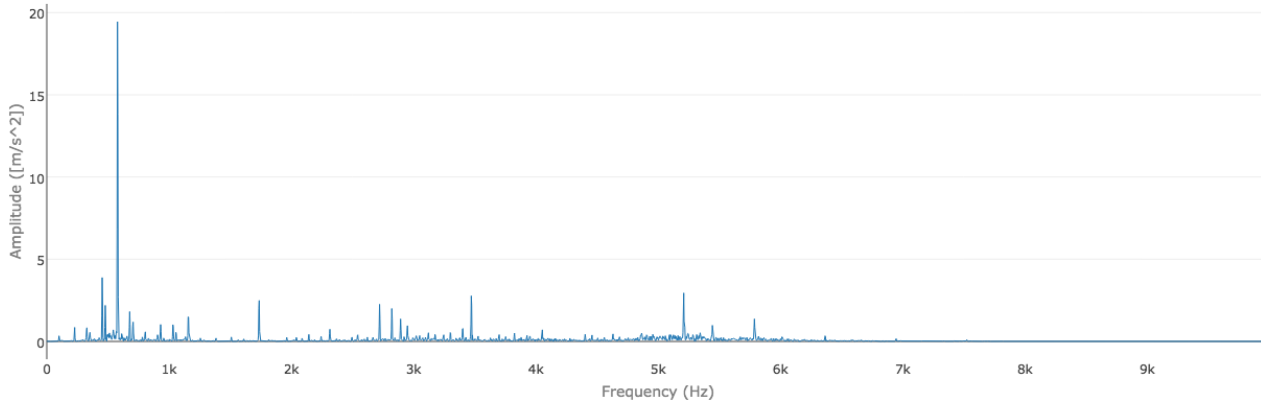
Spectras

1H- Motor NDE Horizontal (AVDT)

Acceleration Spectrum

Date Collected

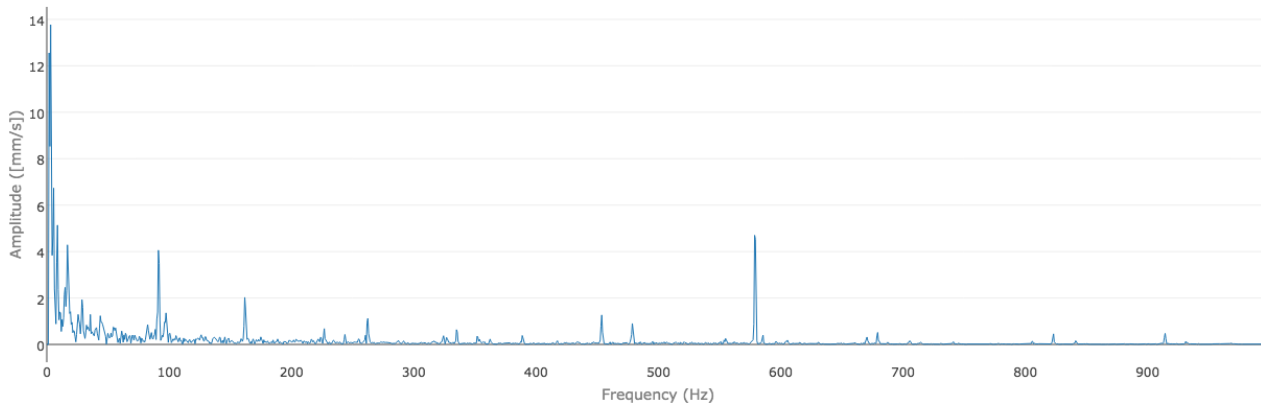
2018-04-07 02:26:45



Velocity Spectrum

Date Collected

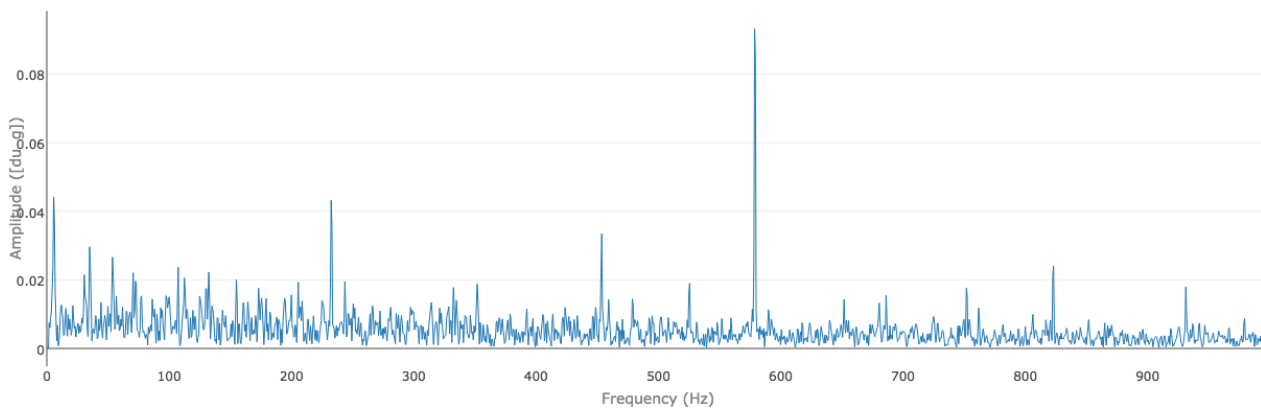
2018-04-07 02:26:45



Demodulation Spectrum

Date Collected

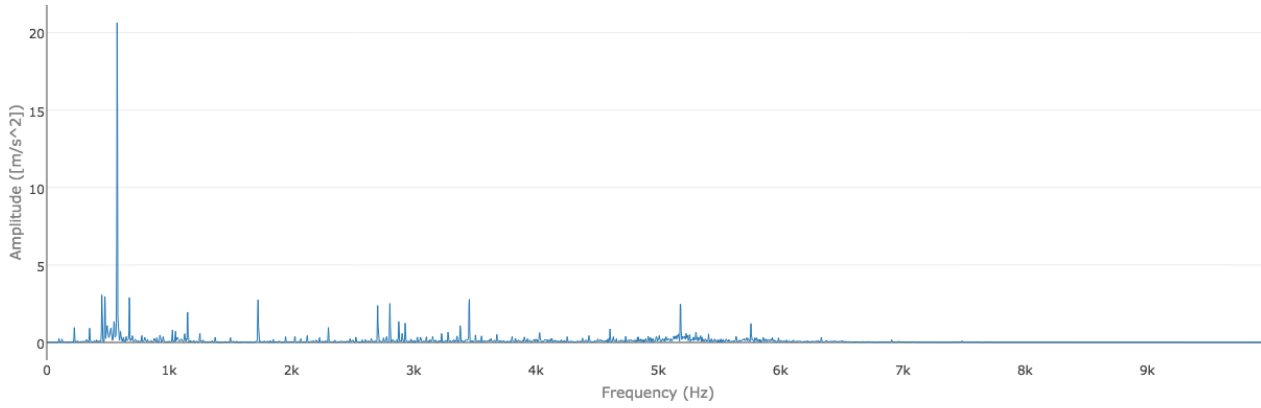
2018-04-07 02:26:45



2H-Motor DE Horizontal (AVDT)

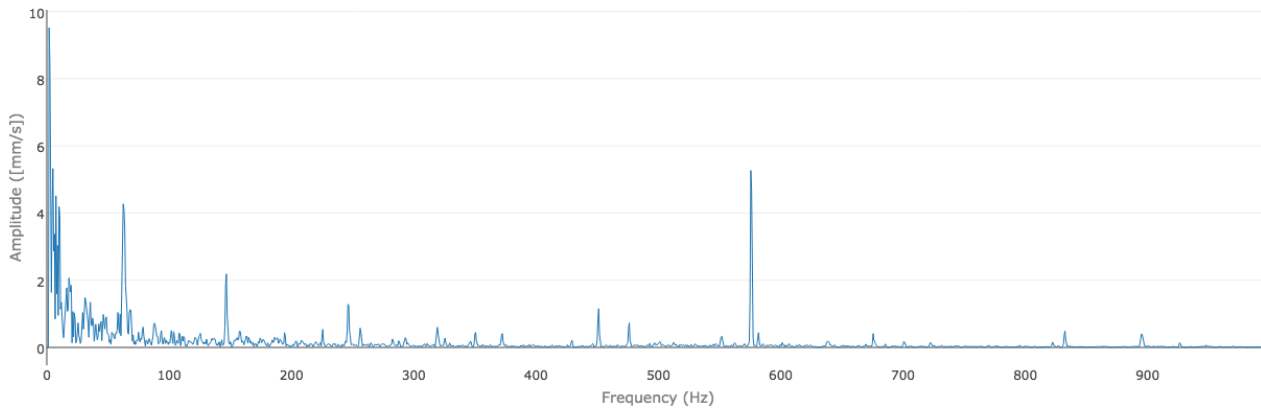
Acceleration Spectrum

Date Collected 2018-04-07 02:27:59



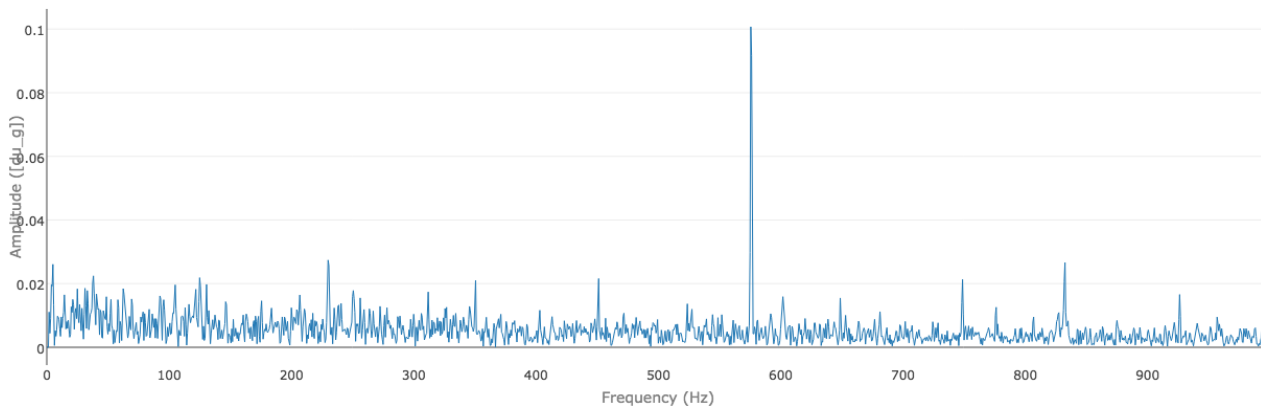
Velocity Spectrum

Date Collected 2018-04-07 02:27:59



Demodulation Spectrum

Date Collected 2018-04-07 02:27:59

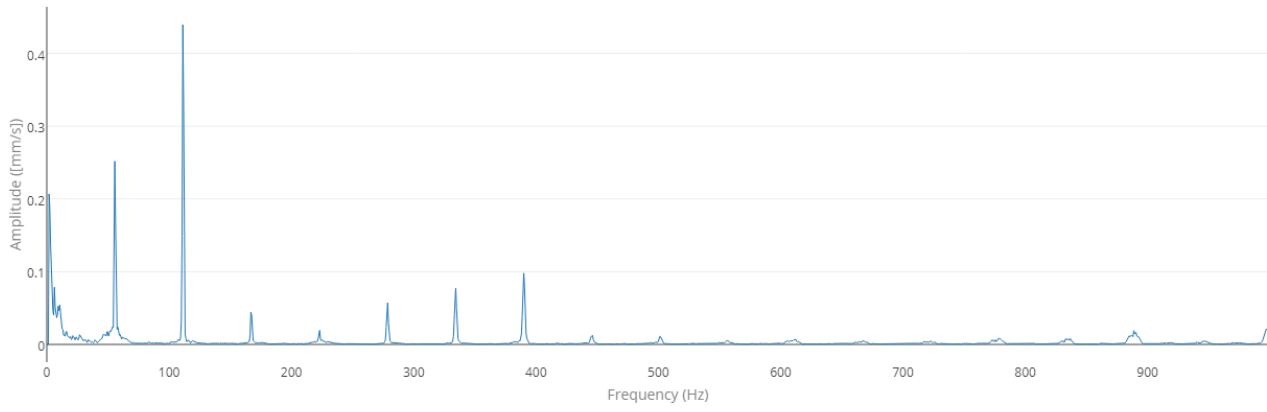


2V-Motor DE Vertical (V)

Velocity Spectrum

Date Collected

2017-12-14 01:56:58

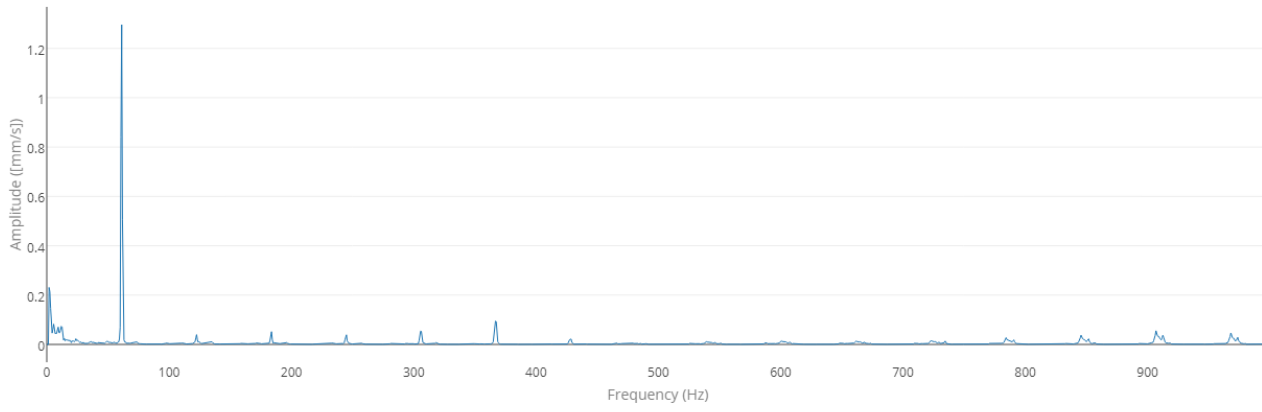


2A-Motor DE Axial (V)

Velocity Spectrum

Date Collected

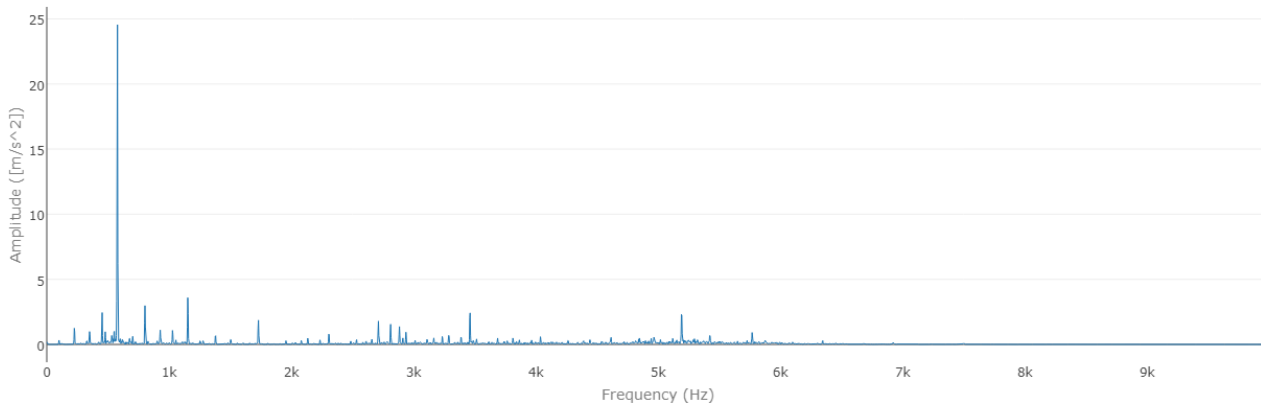
2017-12-14 01:57:10



3H-Pump DE Bearing Horizontal (AVDT)

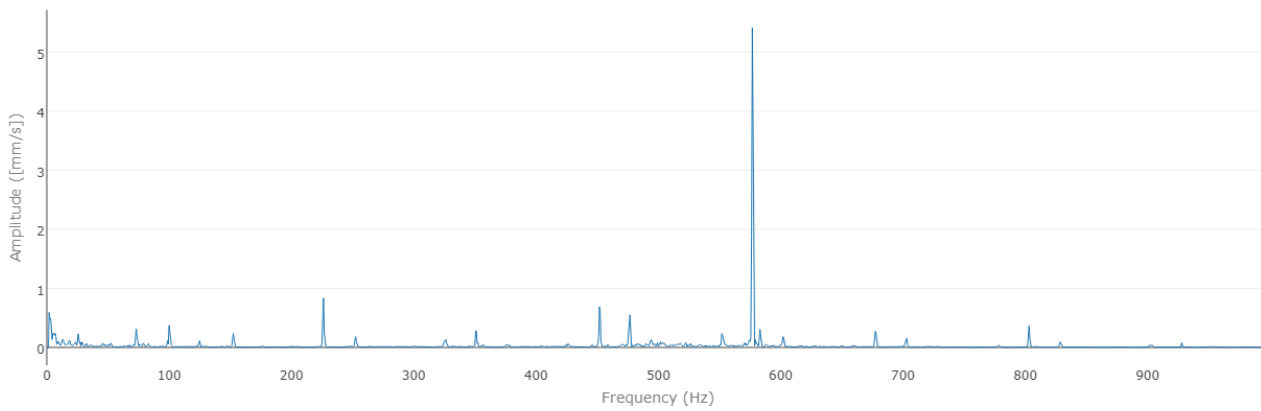
Acceleration Spectrum

Date Collected 2018-04-07 02:27:21



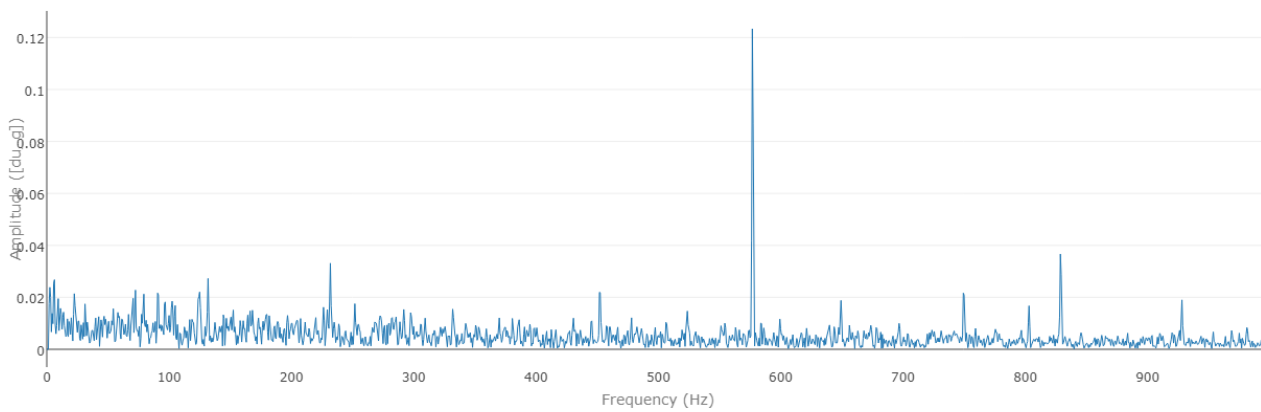
Velocity Spectrum

Date Collected 2018-04-07 02:27:21



Demodulation Spectrum

Date Collected 2018-04-07 02:27:21

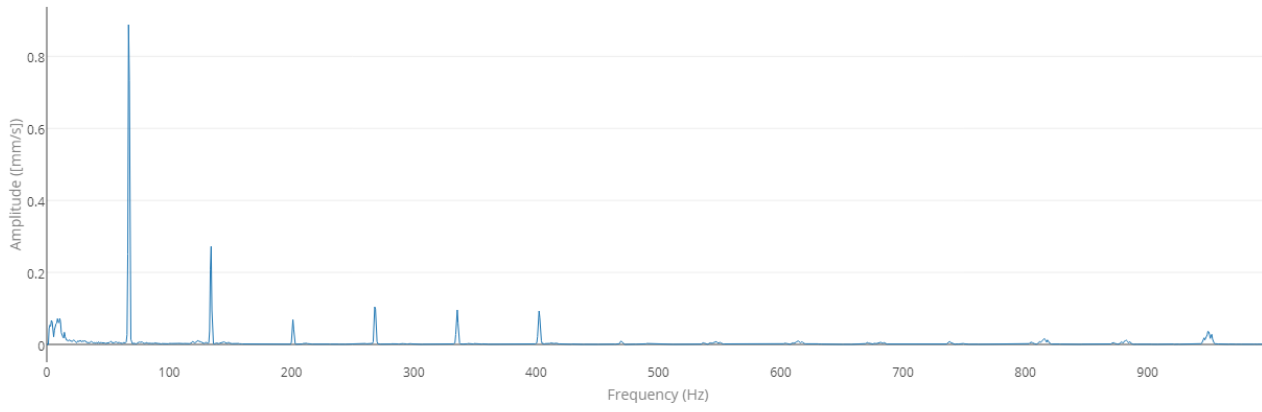


3V-Pump DE Bearing Vertical (V)

Velocity Spectrum

Date Collected

2017-12-14 01:57:30

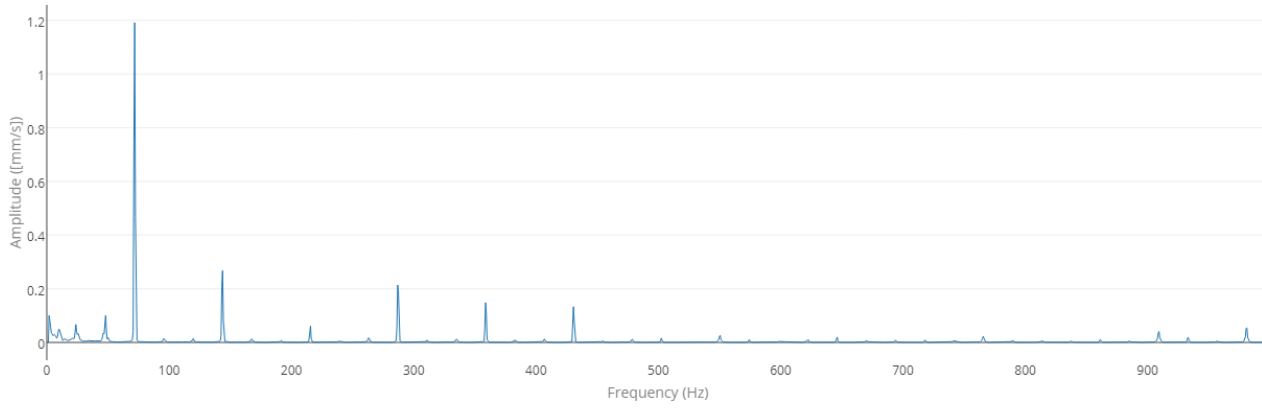


3A-Pump DE Bearing Axial (V)

Velocity Spectrum

Date Collected

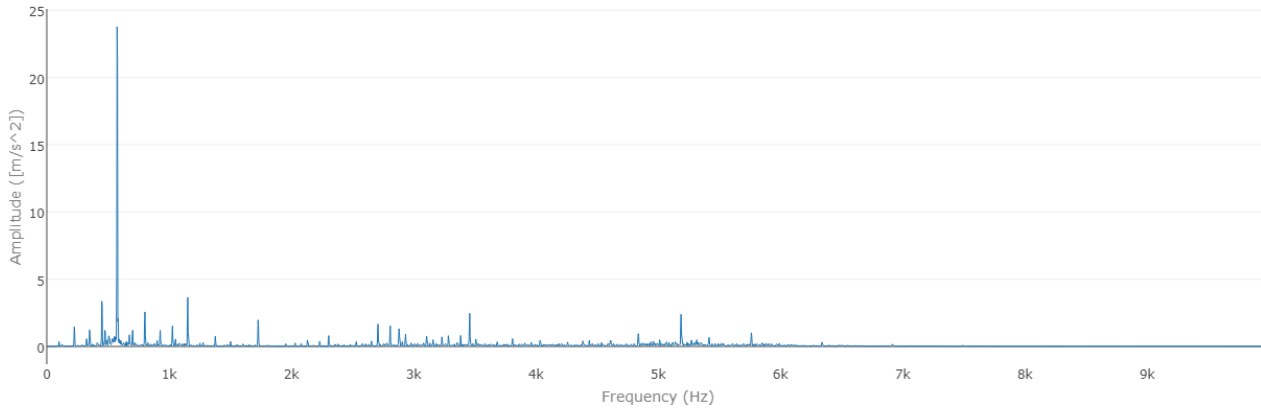
2017-12-14 01:57:39



4H-Pump NDE Bearing Horizontal (AVDT)

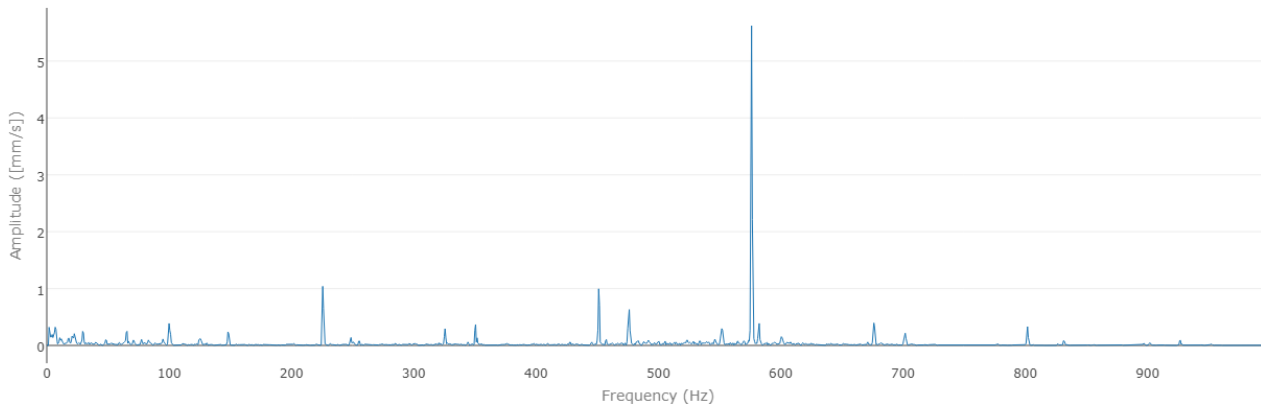
Acceleration Spectrum

Date Collected 2018-04-07 02:27:41



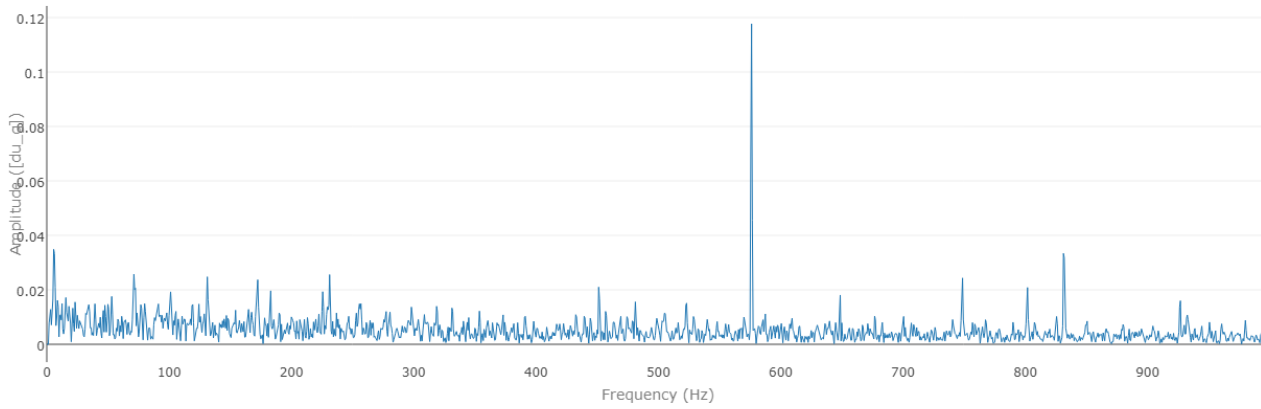
Velocity Spectrum

Date Collected 2018-04-07 02:27:41



Demodulation Spectrum

Date Collected 2018-04-07 02:27:41

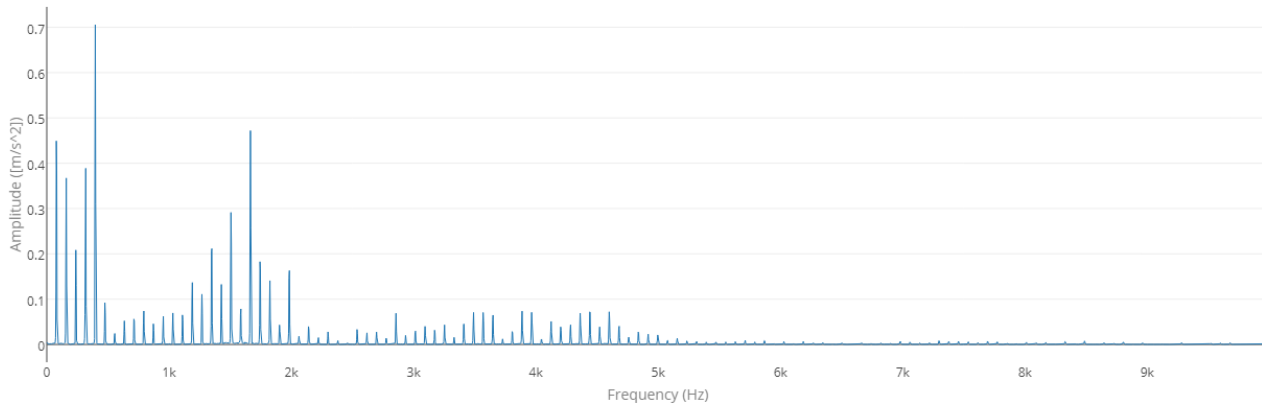


5H-Pump Housing Horizontal (A)

Acceleration Spectrum

Date Collected

2017-12-14 01:57:55



Evidence

054ac798-0778-4b7e-8699-9002c46f339e_1-22-14.jpeg

Date 2018-03-16



bearing-failure-3-e1395089166302.jpg

Date 2018-03-16

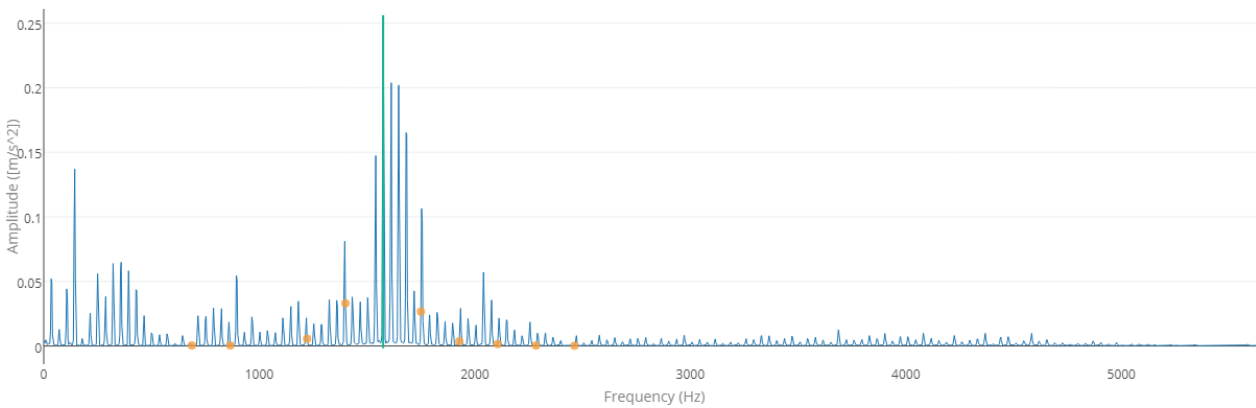


DemoDoc.docx

Date 2018-03-16

4841_Acceleration.jpeg

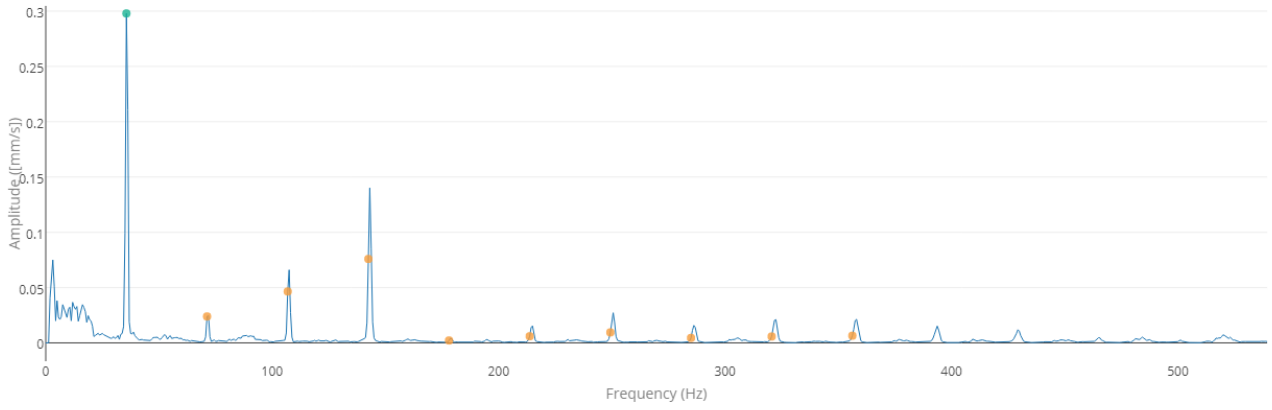
Date 2018-03-16



Acceleration spectrum for BC-1 Distillate Pump for data collected on: 2017-12-14 01:56:36

4838_Velocity.jpeg

Date 2018-03-16



Velocity spectrum for BC-1 Distillate Pump for data collected on: 2017-12-14 01:56:36

Definition of Condition Codes

1		(1) Good and Stable	2		(2) Initial Fault detected (P)
3		(3) Deteriorating	4		(4) Approaching Failure (F)

Definition of Failure Mode Codes

BDD	Belt Drive - Damage	BDM	Belt Drive - Misalignment
BDP	Belt Drive - Pulley	BDT	Belt Drive - Tesion
BRF	Bearing – Friction	BRRRD	Bearing – Race/Roller Defect
BRS	Bearing – Setup	BW	Bearing - Wear
ERB	Electrical - Rotor bar	ERI	Electrical - Rotor Issue
ESI	Electrical - Stator Issue	FBPI	Flow - Vane / Blade Pass Issue
FT	Flow - Turbulence	GTI	Gear - Tooth Issue
MBS	Mechanical - Bent Shaft	MM	Mechanical - Misalignment
R	Resonance	RL	Rotational Looseness
SL	Structural - Looseness	SSF	Structural - Soft Foot

Definition of Failure Type Codes

SPO	Sporadic	SYS	Systematic
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Definition of Severity Codes

AF	Advancing Fault	DEF	Defect
EF	Early Fault	SF	Serious Fault
VSF	Very Serious Fault		

Definition of Action Type Codes

FA	Failure Avoidance	IMP	Improvement
LE	Life Extension	O	Other
REP	Repair		

Definition of Urgency Codes

ANO	Action Next Opportunity	ANS	Action Next Shutdown
AWC	Action When Convenient	IA	Immediate Action
NAR	No Action Required		

Definition of Value Limits Colors

 Nominal	 Investigate	 Warning	 Alarm
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Disclaimer:

The report contains information about vibration data collected. The information is not advice, and should not be treated as such. You must not rely on the information in the report as an alternative to vibration analyst advice from an appropriately qualified professional. If you have any specific questions about any vibration analysis matter you should consult an appropriately qualified professional. To the maximum extent permitted by applicable law, we exclude all representations, warranties, undertakings and guarantees relating to the report. We will not be liable to you in respect of any business losses, including without limitation loss of or damage to profits, income, revenue, use, production, anticipated savings, business, contracts, commercial opportunities or goodwill.