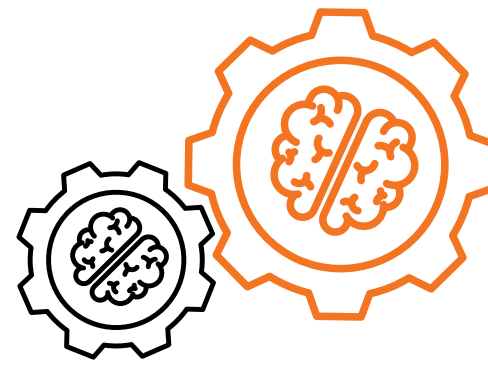


#MetalSector #Casestudy



Nanoprecise
Prediction with Precision

Machine Doctor Saves 36 hours of Downtime on Ball Mills

SCALABLE | WIRELESS | AUTOMATED

[Watch How Machine Doctor
Works](#)



www.nanoprecise.io

About Customer



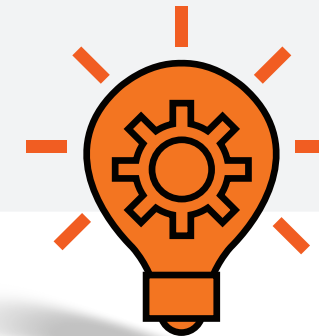
ABOUT COMPANY

The company is an integrated mining and resources producer of zinc, lead, silver, and cadmium. It is the second largest zinc producer in the world.



PROBLEM

- Monitoring of one of the most critical machines in the manufacturing plant.
- it is challenging to monitor and identify the faults by offline monitoring techniques.



SOLUTION

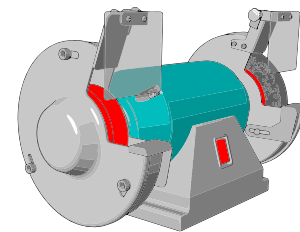
- The 6-in-1 wireless sensor was installed on critical cyclo-drives for sending data from machines
- Notifications were sent to end-users based on the acoustic emission from the machine,

Machine Doctor to the Rescue

APPLICATION

Ball Mill

Gearbox and Pinion



FAULT MODE

Stage 4 Fault

Gear Mesh Frequency &
Misalignment in Pinion



RECOMMENDATION



- Achieve proper alignment between pinion and girth gear.
- Tighten the fixture and eliminate any looseness
- Confirm lube oil analysis (wear particle) & check the gear teeth condition.
- Inspect the coupling for any sign of inaccuracies/damage.
- Check for pinion bearing clearances.





Machine Doctor in Action



Fault Detection

DASHBOARD MANUAL
 NOTIFICATION MANUAL
EQUIPMENT REPORTS
FEEDBACK
CHANGE PASSWORD
LOGOUT

>

●
pinion_nde_e533a

NOTIFICATION
ACKNOWLEDGE

UPDATING
DATA
UPLOAD
FREQUENCY

<p>Remaining Useful Life [% or Hours]:</p> <p>0 %</p>	<p>Recommendation:</p> <p>Review maintenance plan and parts availability</p>
<p>Fault Mode:</p> <div style="background-color: #d3d3d3; padding: 5px; text-align: center; margin-top: 5px;">MISALIGNMENT</div>	<p>Health Status:</p> <p>Needs maintenance review</p> <p>Stage: 4</p>
<p>Utilization Factor:</p> <p>1.00</p>	<p>Last Update:</p> <p>Oct 06 04:59 AM</p>

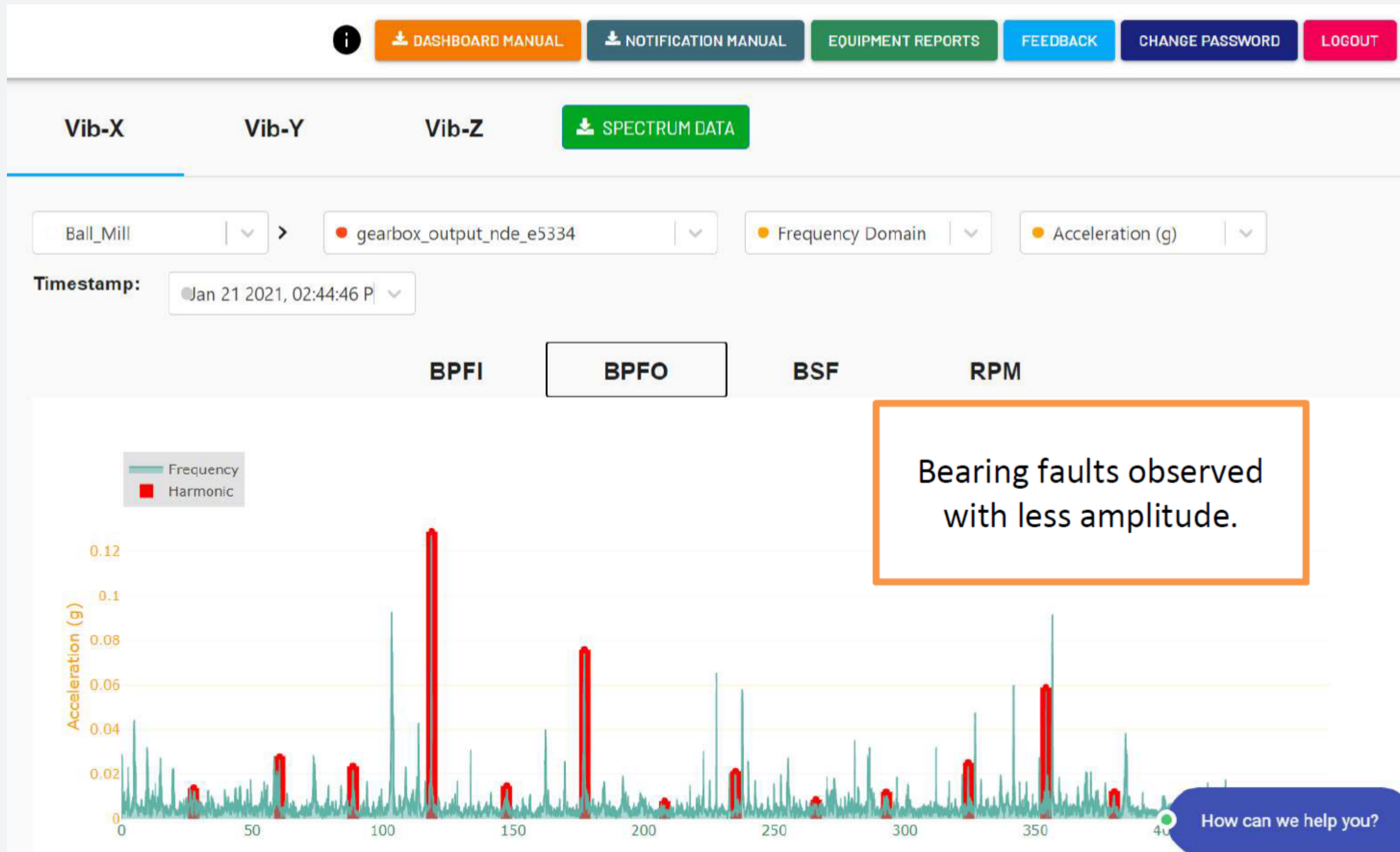
Notification Acknowledged

Update Data Upload Frequency

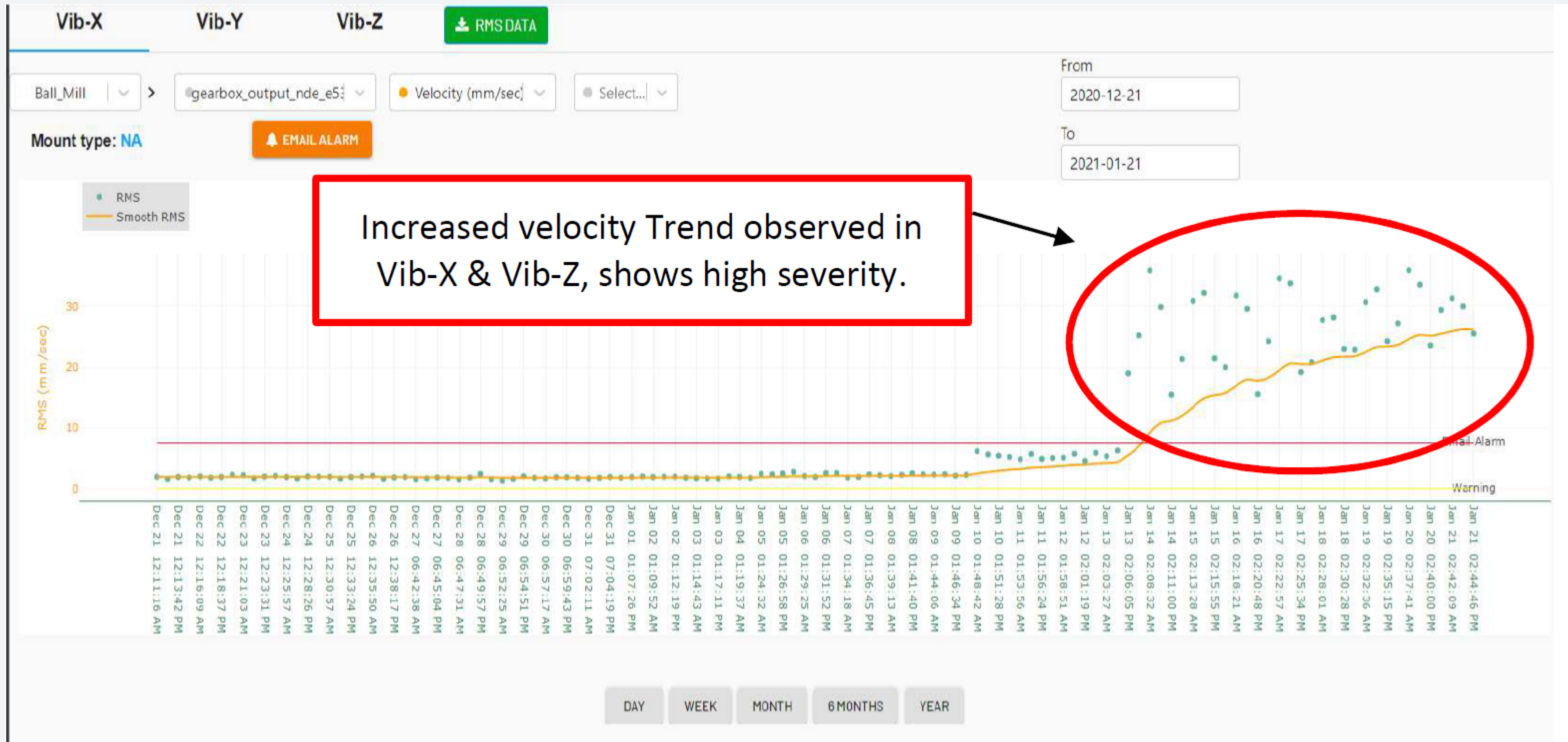
Misalignment of Pinion and Girth Gear



Frequency Spectrum

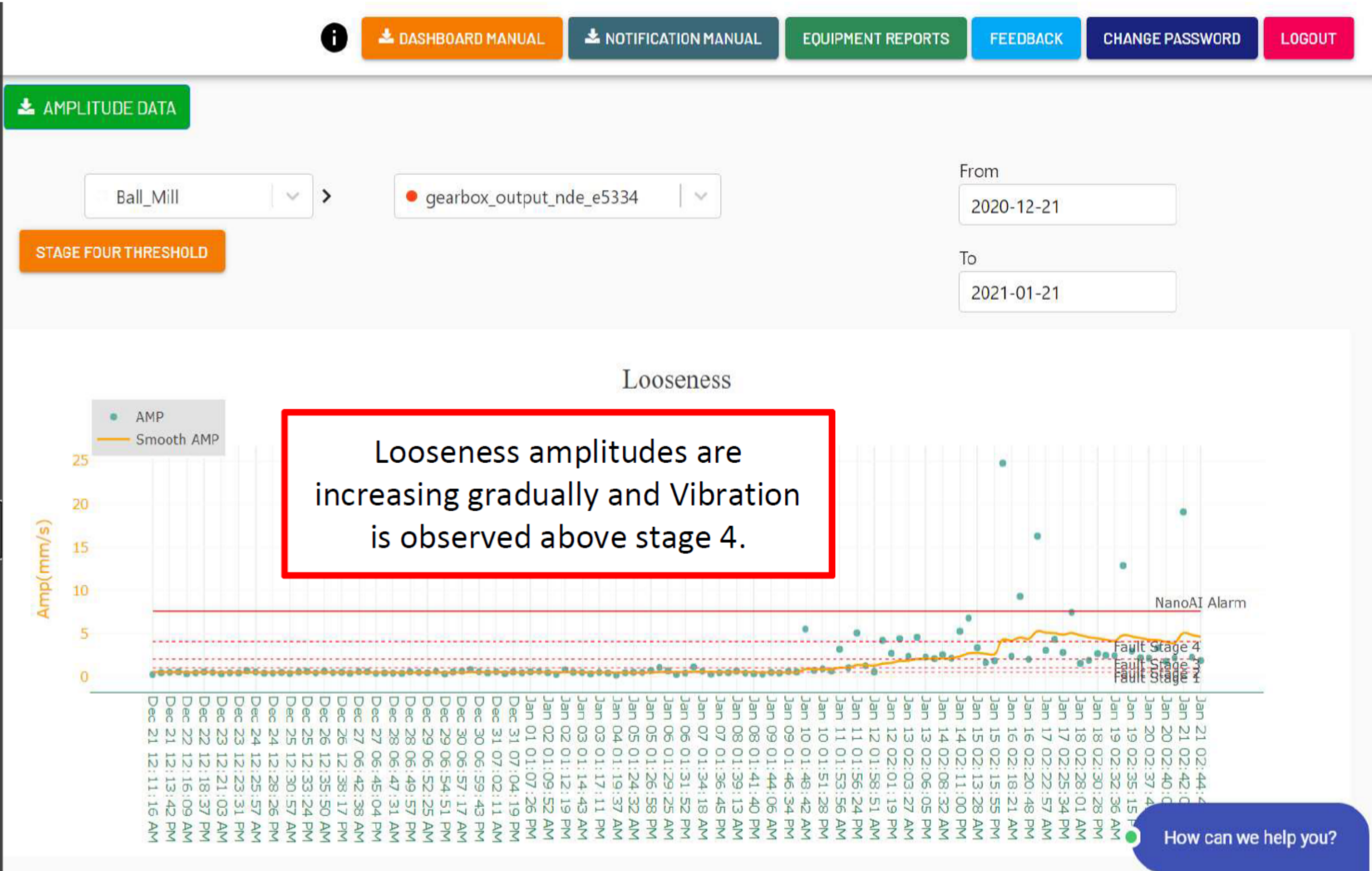


RMS



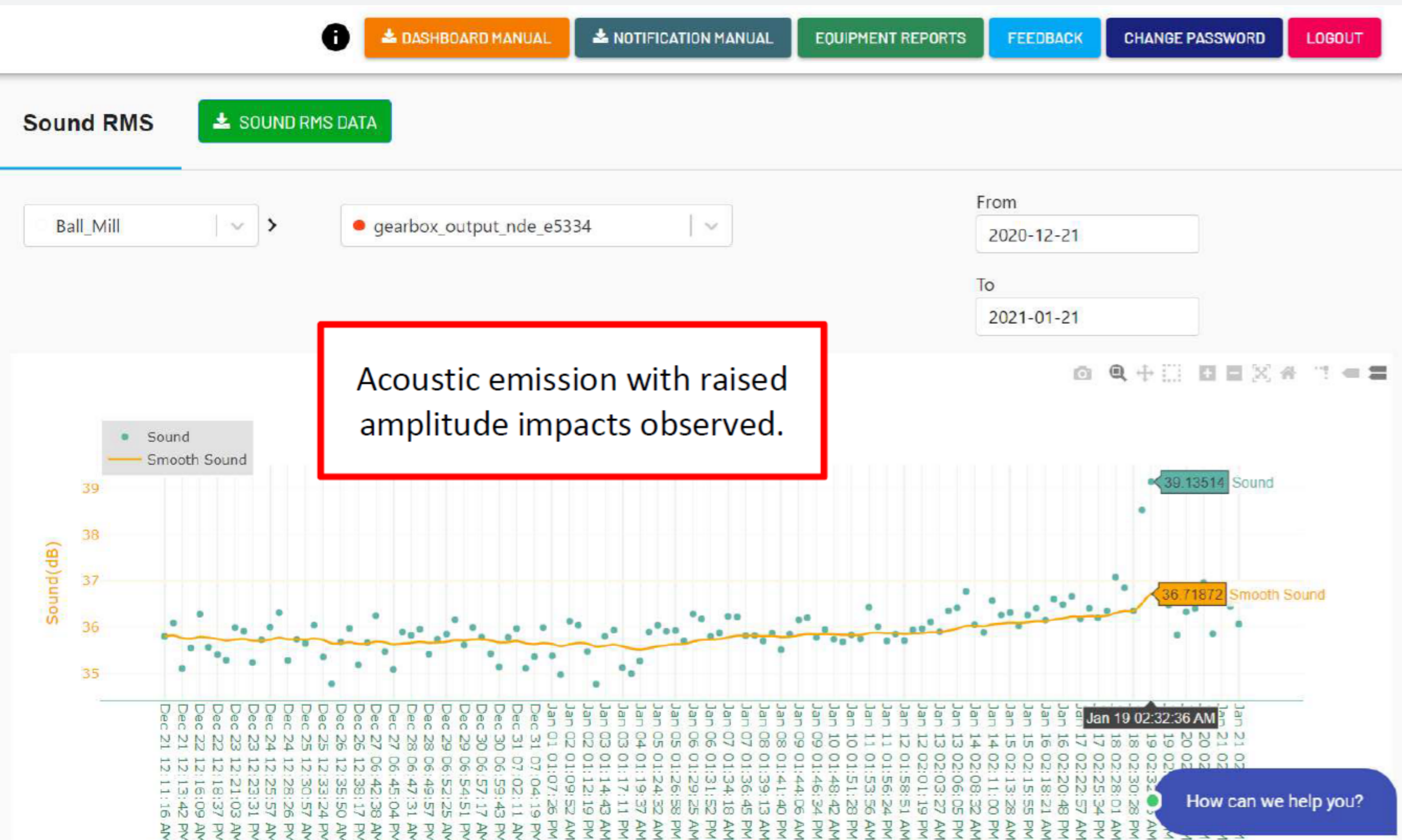


Fault Amplitudes: Looseness



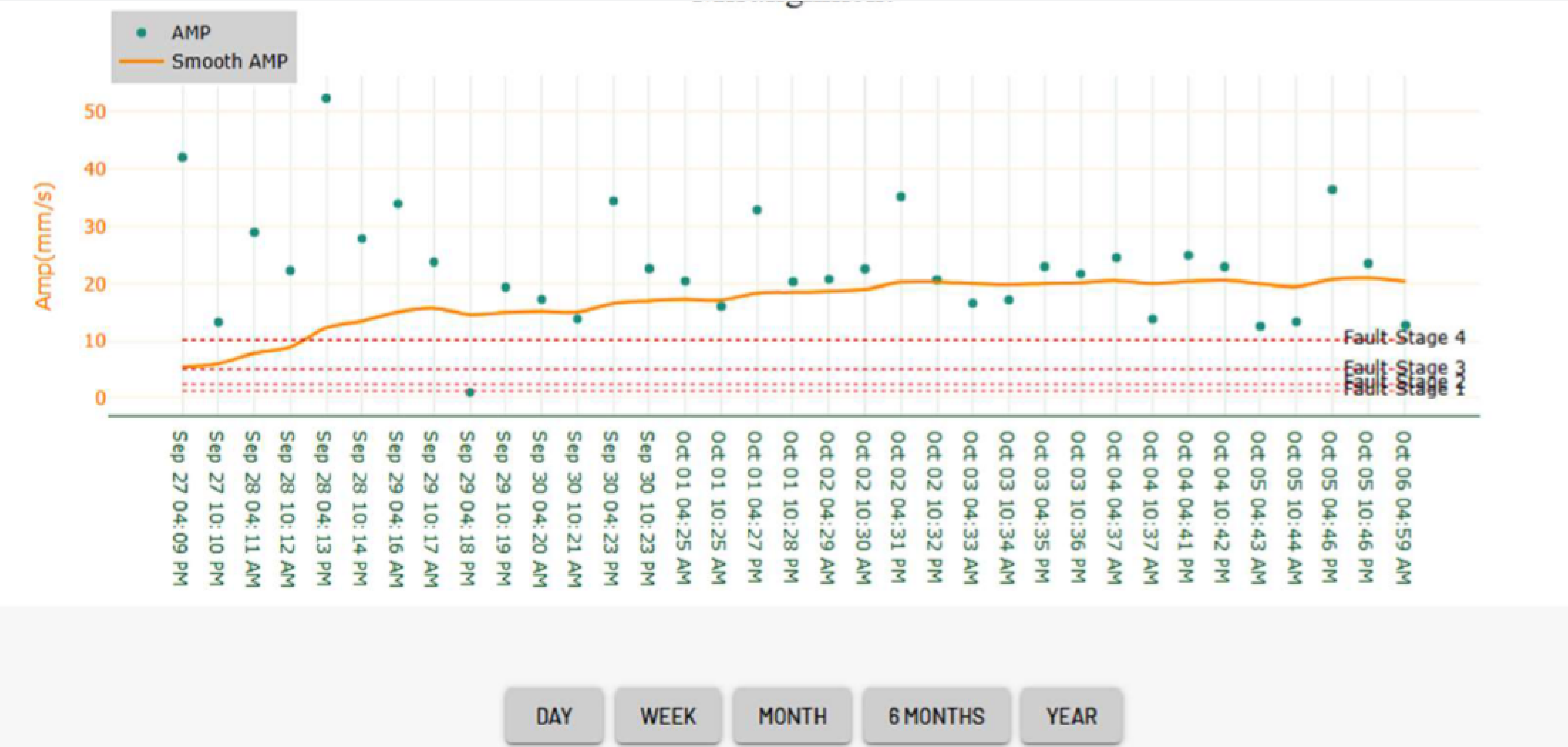


Acoustic Emission: Looseness





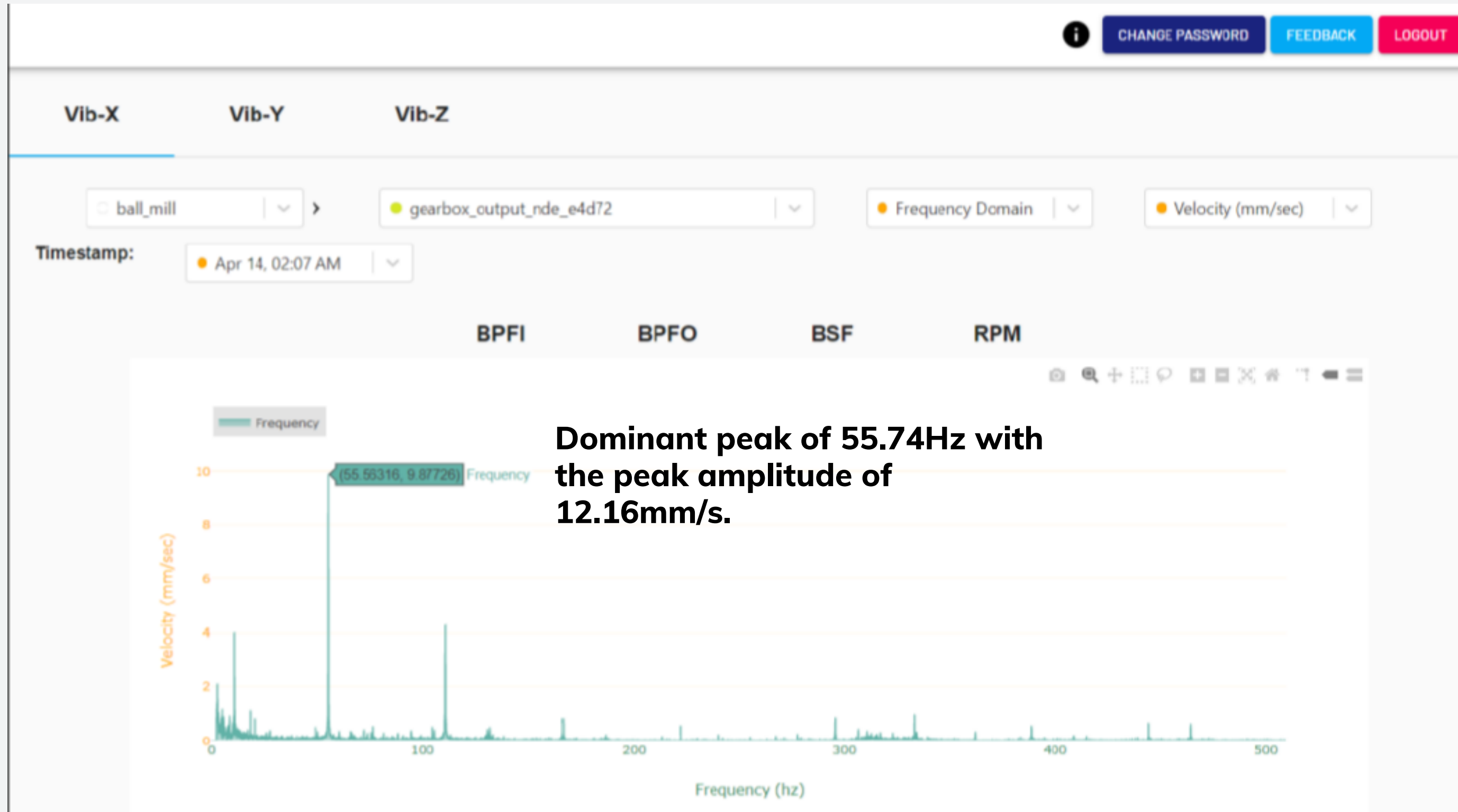
Misalignment Detection





Gearbox Output NDE

Frequency Spectrum



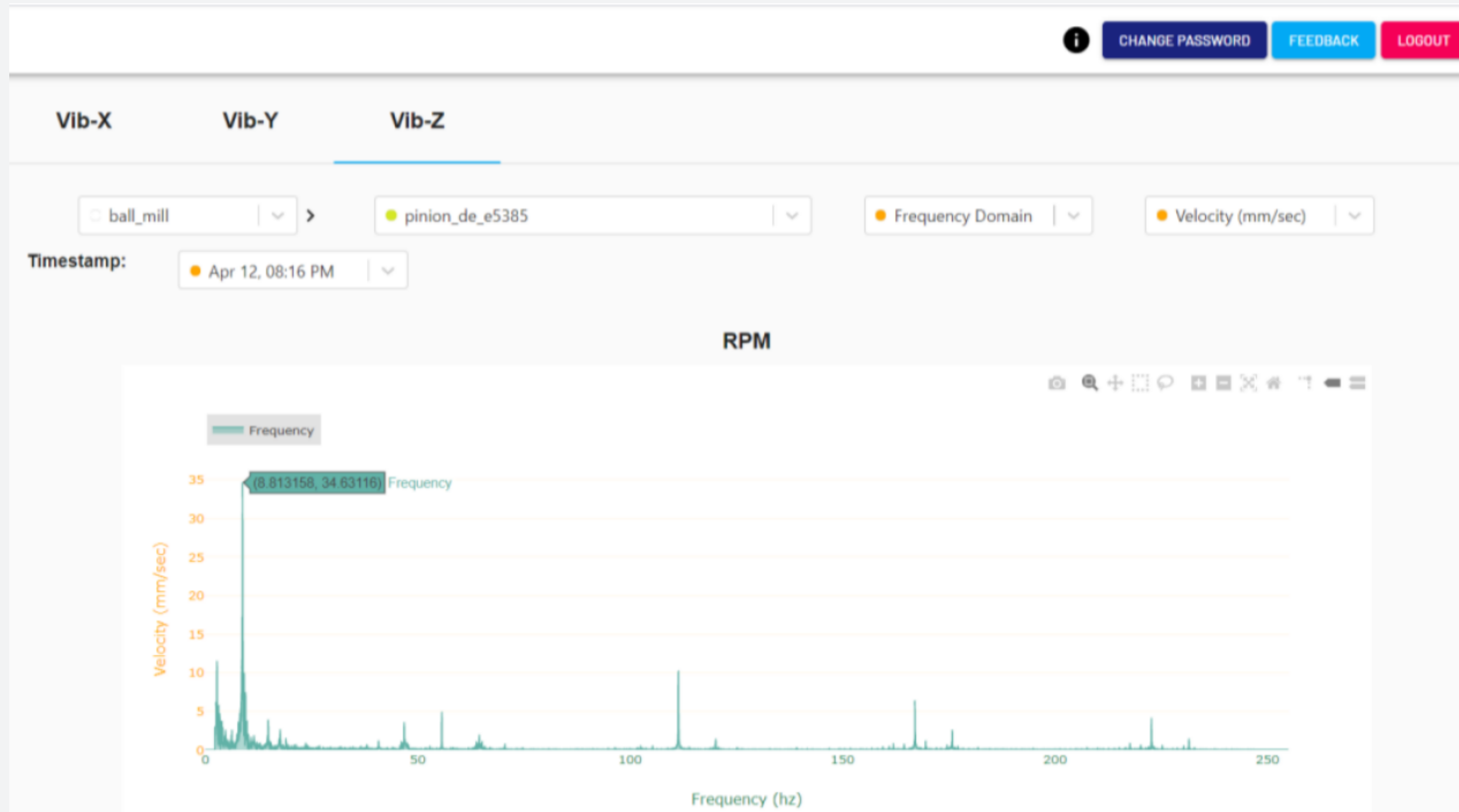
56.84Hz is pinion Gear Mesh frequency.

Status:
Gear mesh frequency from pinion transmitted to gearbox input side.



Pinion DE

Spectrum Analysis



RMS & Amplitude
both are high at
40.6mm/s and
34.63m/s respectively.



Benefits in Maintenance

TRUE WIRELESS SENSOR TECHNOLOGY

No issues of long wires & installation
Plug & Play - Installed in 5 minutes

REMOTELY PLANT TEAM CAN MONITOR EQUIPMENT

Reduced health and safety hazards to operations and maintenance personnel

ELIMINATE UNPLANNED DOWNTIME

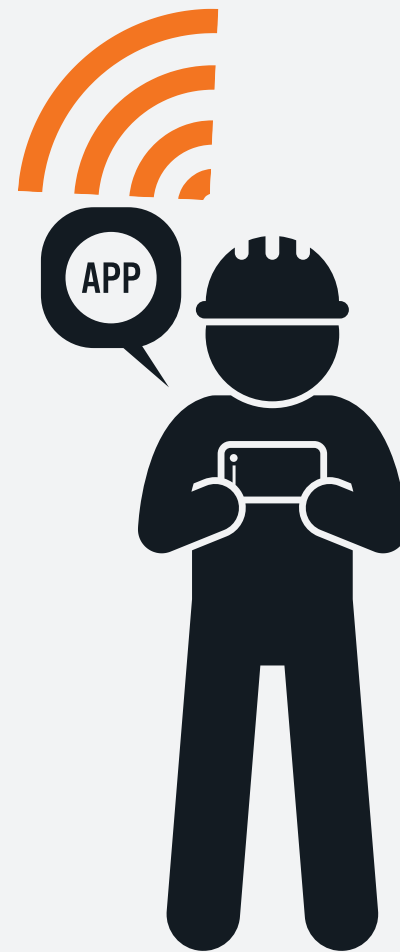
Improved efficiency in scheduling of maintenance activities

ADVANCE TRIGGERS ON SMS / EMAIL

Optimize the timing and frequency of repairs
1-2 Months of Advance Fault Detection

PINPOINT MECHANICAL & ELECTRICAL FAULT PLUS RECOMMENDATIONS

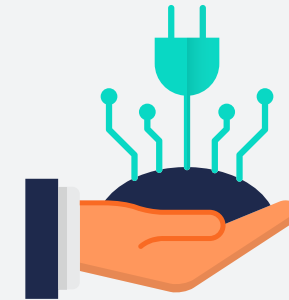
Saves time in Fault Finding from Spectrums



Why Nanoprecise



GLOBAL COMPANY



**BRINGING THE FINEST
TECHNOLOGICAL
INNOVATION**



**TRUSTED BY INDUSTRY
LEADERS & FORTUNE
COMPANIES**



**A TEAM OF 30+
INNOVATORS &
ENGINEERS**



**TRUE PARTNERSHIPS
FOCUSSING ON
CUSTOMER SUCESS**



"We are changing the maintenance world with technology"

BOOK A DEMO



solutions@nanoprecise.io

THANK YOU

