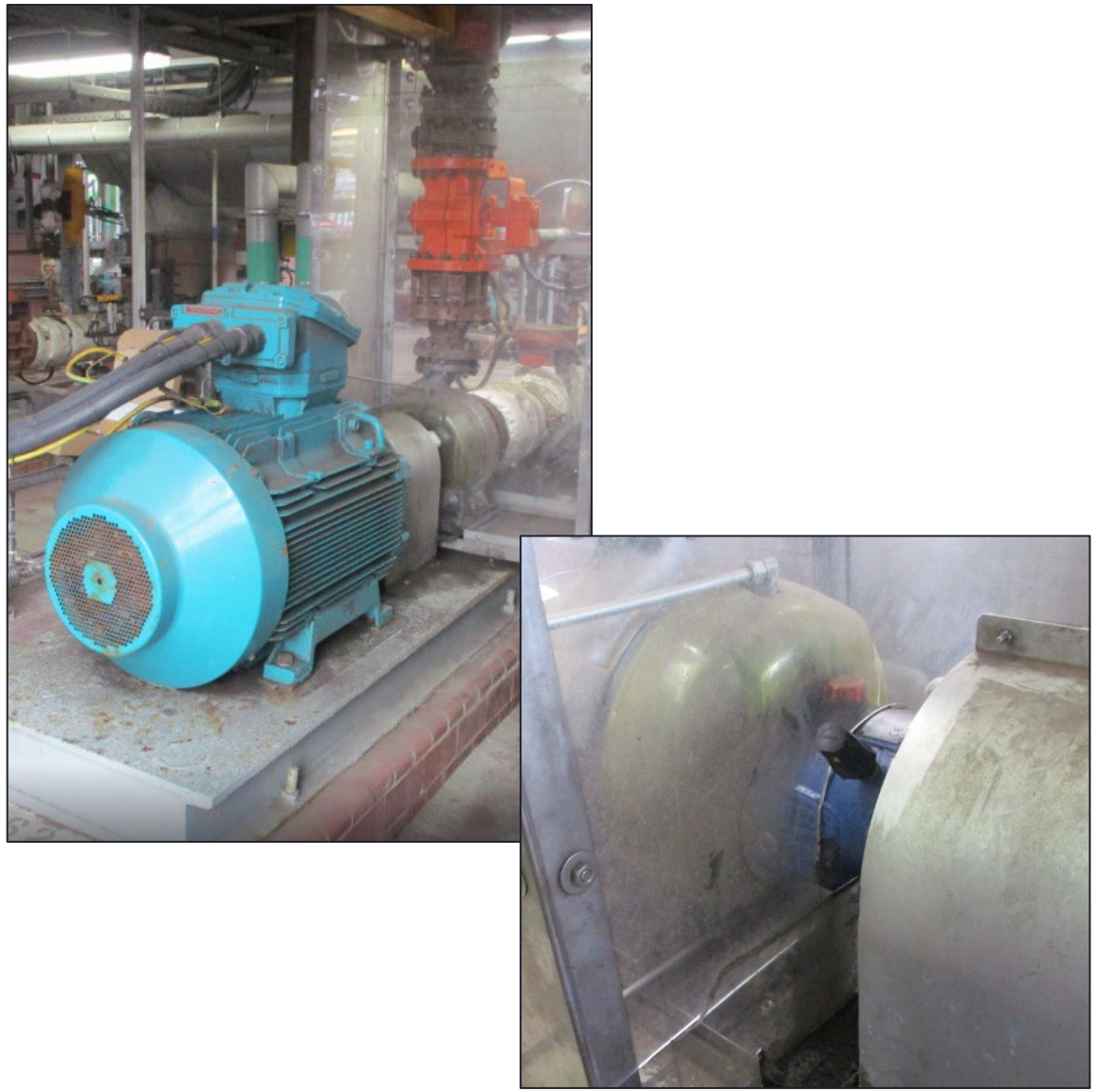
RMS
RELIABILITY MAINTENANCE SOLUTIONS

Case Study
Wireless Vibration
Kappa X
Acid Circ Pump
Pump Efficiency Loss

Sensoteq

Background Acid Circ Pump



- Acid Circ Pump in ATEX Zoned Area
- 250 kW Centrifugal Pump 2771 RPM
- Aggressive pump application mixing sulphuric and nitric acid within pump.
- Special alloy impellor and bowel
- Known limited lifespan of impellors and bowels due to aggressive environment.
- Kappa X wireless sensor fitted to pump
- Short term tri axial vibration / temp readings every 3 mins Spectrum / Waveform every 24 hours upto 10kHz range.

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Acid Circ Pump– Vibration Comparison Trends – 9 months

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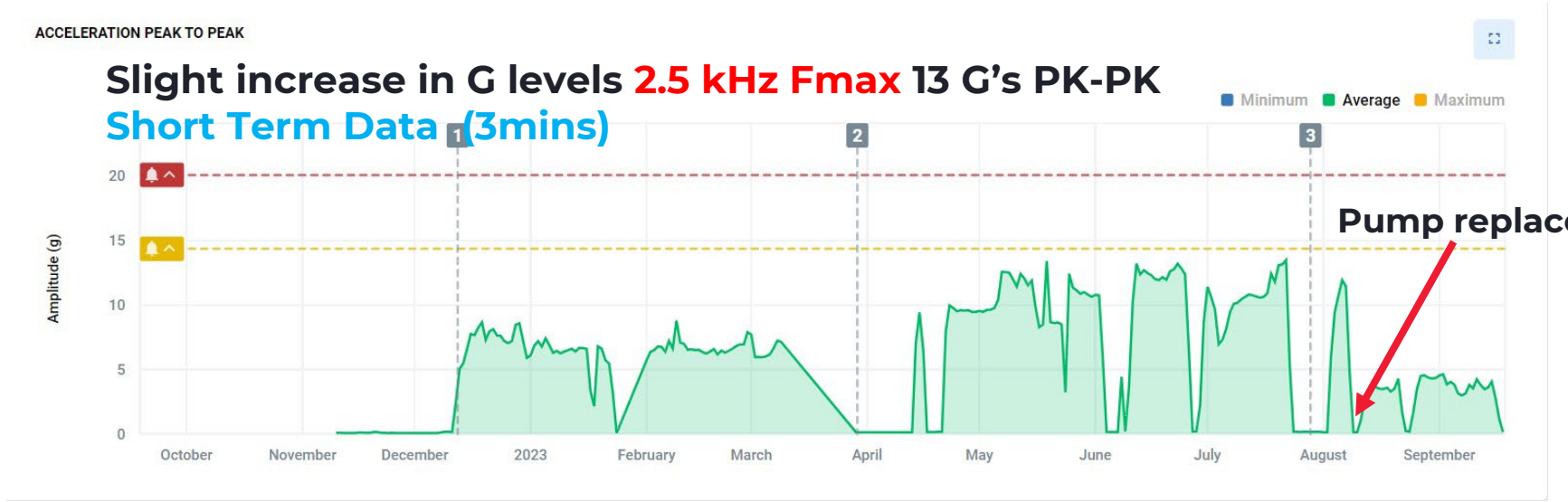

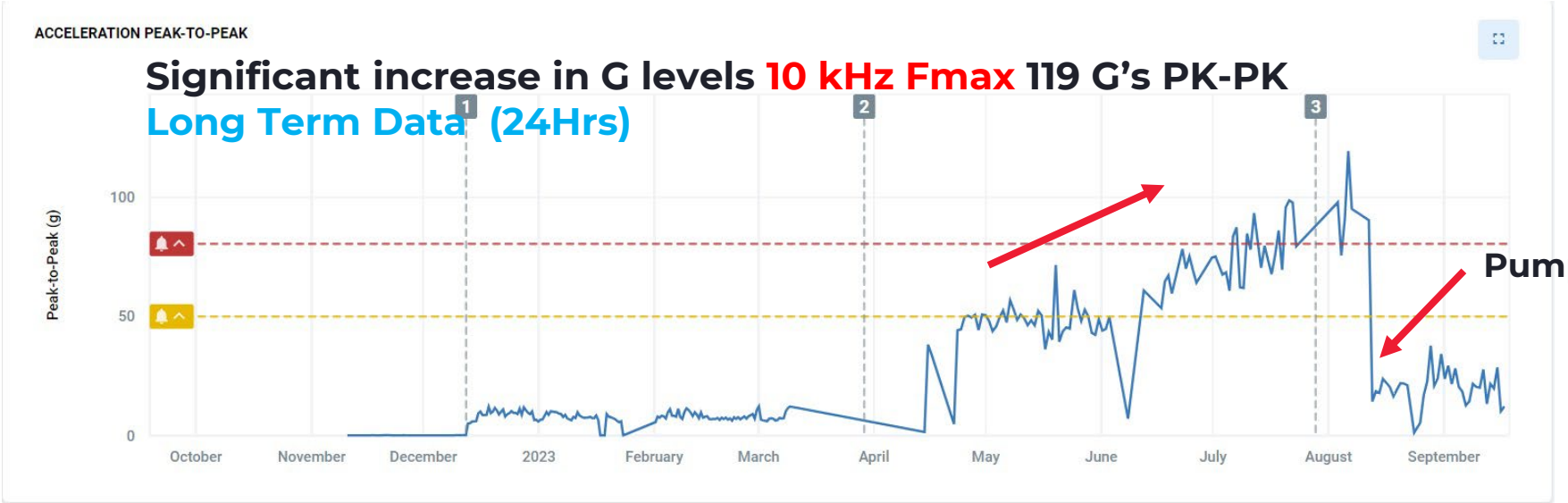

Analysis

- Increasing High G levels on daily 10kHz PK-PK Trend
- Increasing trend over over 4 months

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Acid Circ Pump – Wireless Spectral & Waveform Data 10 kHz

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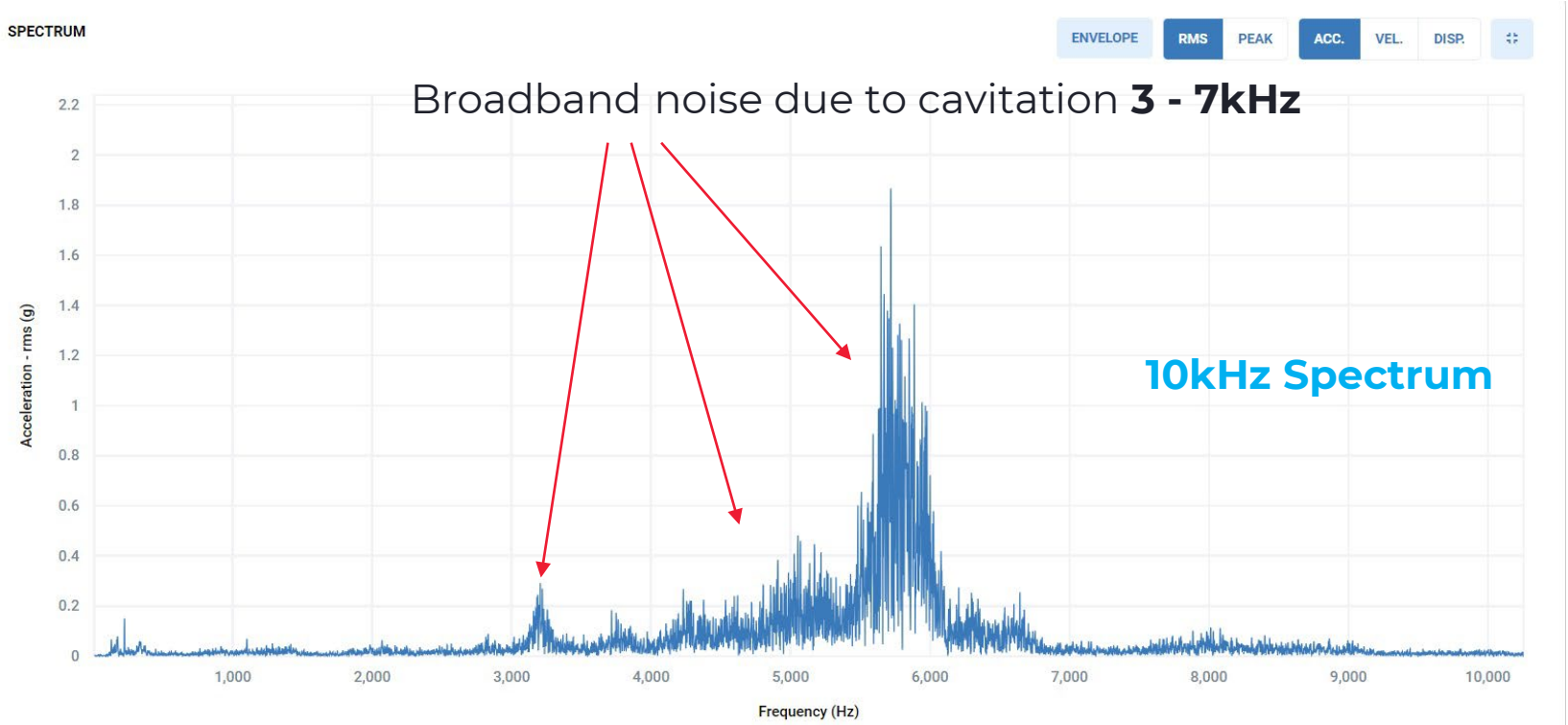

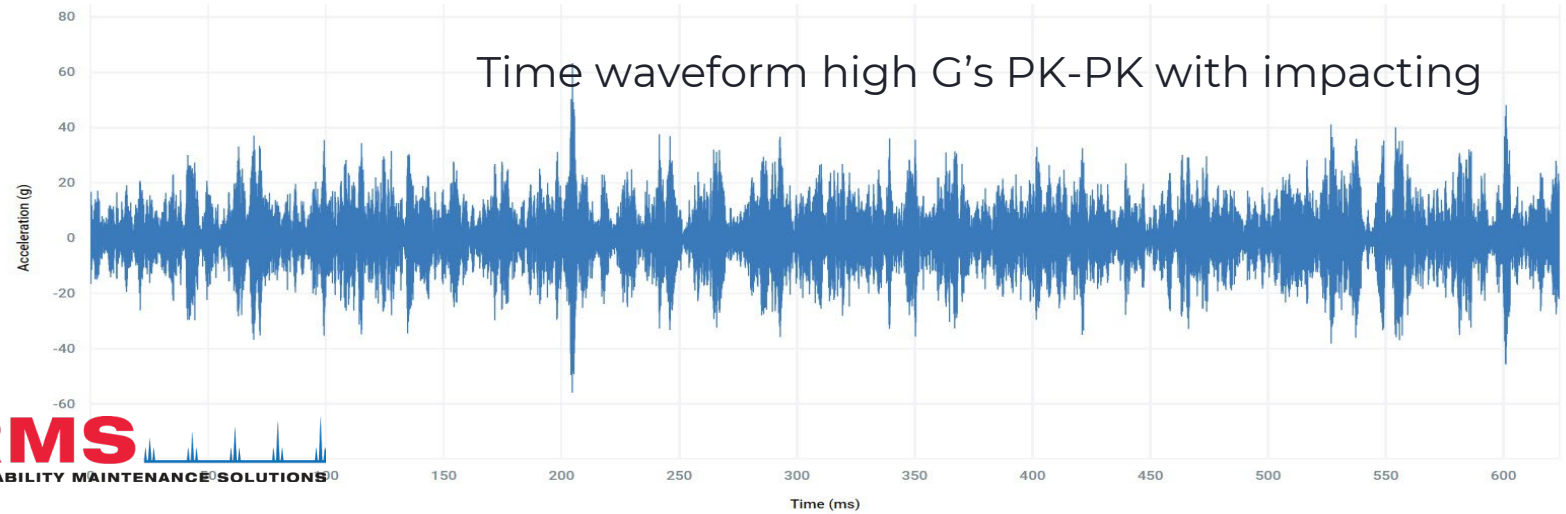

Analysis

- Broadband high frequency energy in spectrum
- High PK-PK levels in waveform up to 119 G's
- Pump Cavitation related

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Acid Circ Pump – Spectral Historical Data – Before & After

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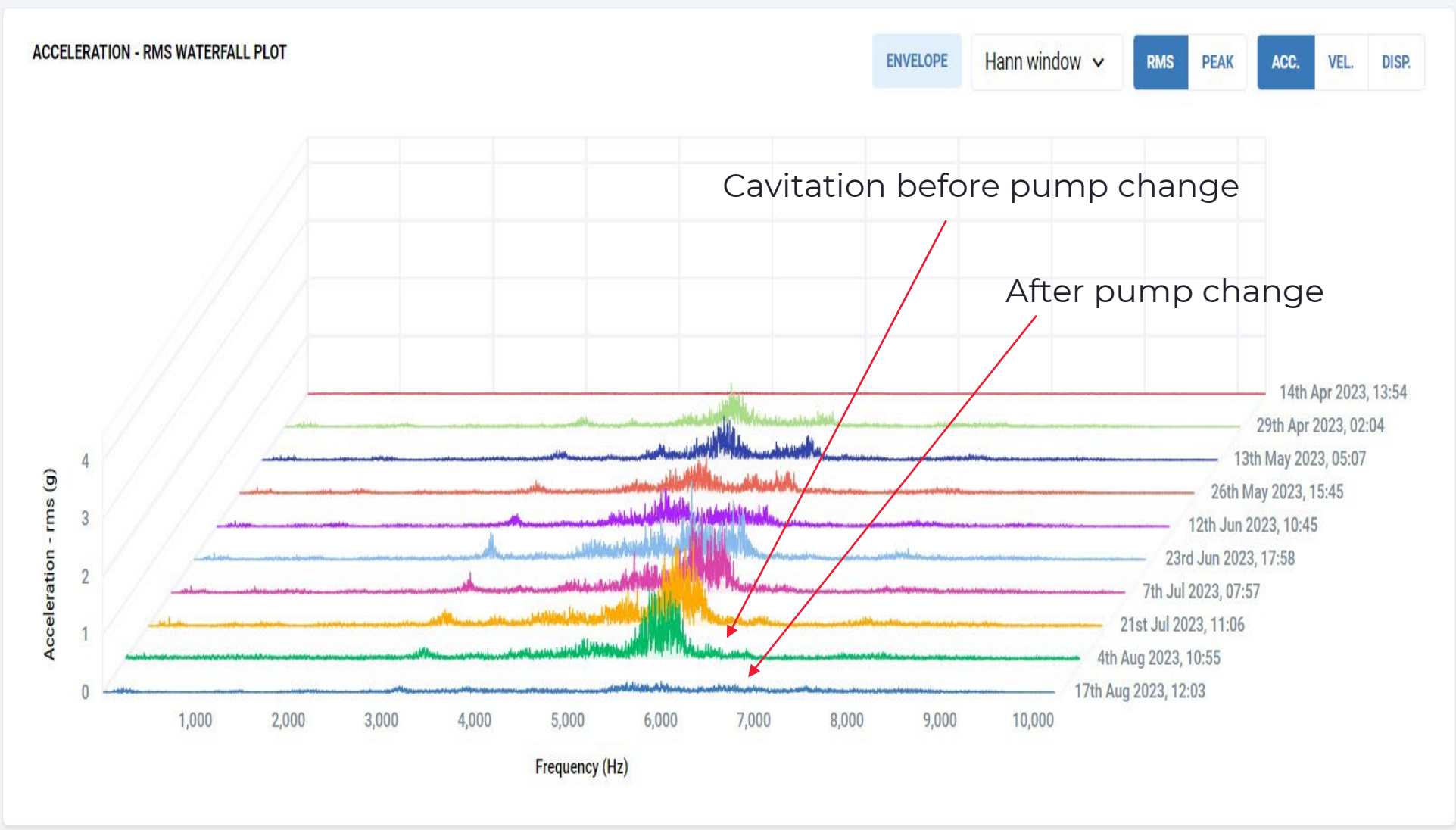

Analysis

- Reduction in broadband noise after pump change
- Pump efficiency increased with new pump fitted

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Acid Pump – Root Cause Analysis

Root Cause Analysis

- Lack of efficiency due to pump wear on rotating impellor and pump casing
- Root cause of wear is due to aggressive application leading to cavitation within the pump
- High freq wireless vibration can be used to assess internal pump wear in this application.