

# Case Study – Wireless - Kappa X Gearbox Brg Defect

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Food Sector



## Background



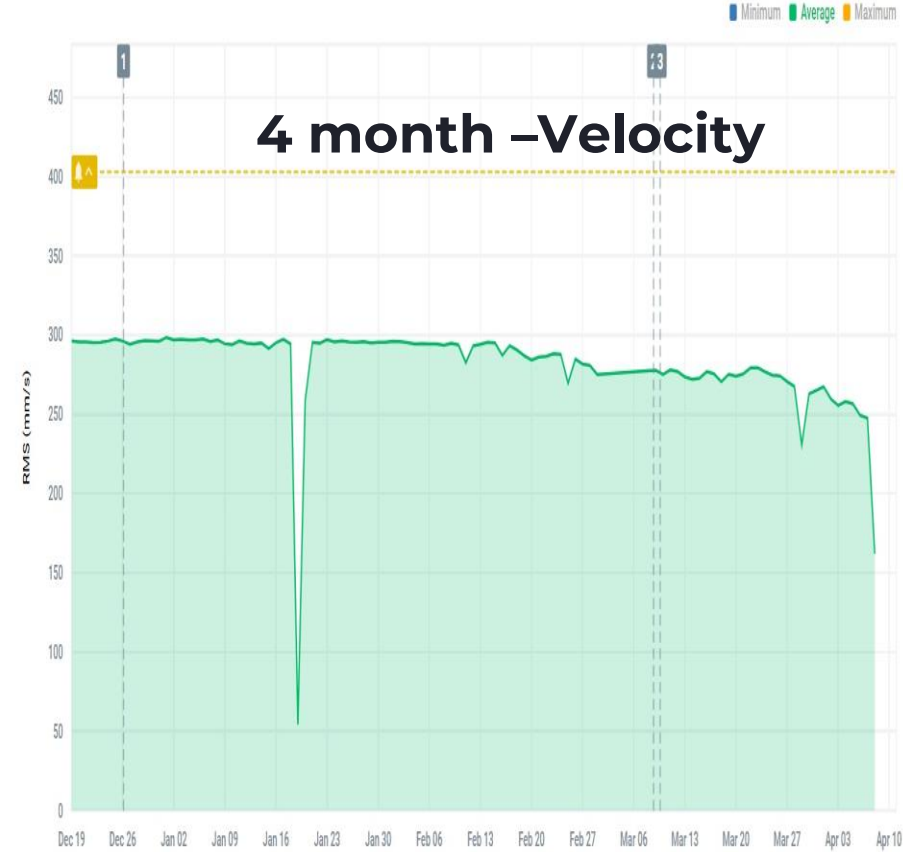
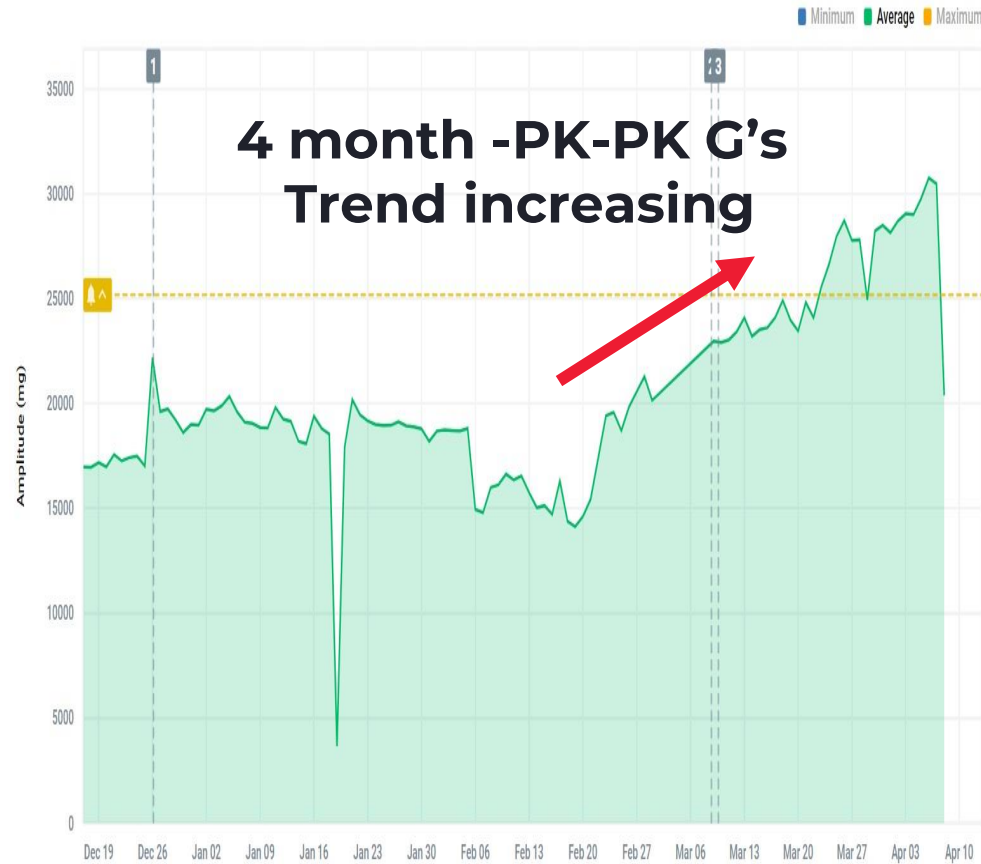
- Critical vibrating cleaning screen for a food production factory
- Vibrating screen, 2 off gearboxes run at 200mm/sec RMS 840 RPM
- Kappa X wireless sensors placed on Gearbox 1 & 2 fan to monitor condition- 1 min short term trends, with power bands, spec, waveform. Magnet attached.
- Known bearing defect on Gearbox 2, wireless sensor used to track degradation until the end of campaign. This is to avoid costly shutdown to replace gearbox.

# Gearbox 2 - Trends



PEAK TO PEAK

VELOCITY RMS



## Analysis

- High G levels increasing trend PK-PK G's
- Velocity levels steady

# Gearbox 2 – Spectral & Waveform Data



**INFORMATION**

TIME	10:07:03 on 17th March	
OA VEL.	22.8 mm/s	0.899 in/s
OA ACC.	6.52 g	2519 in/s <sup>2</sup>
PK-PK ACC.	80.7 g	31158 in/s <sup>2</sup>
CREST FACTOR	5.54 (ratio)	
SAVED RPM	843	

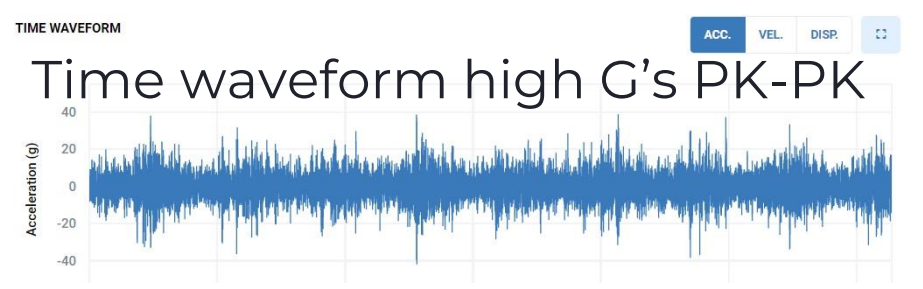
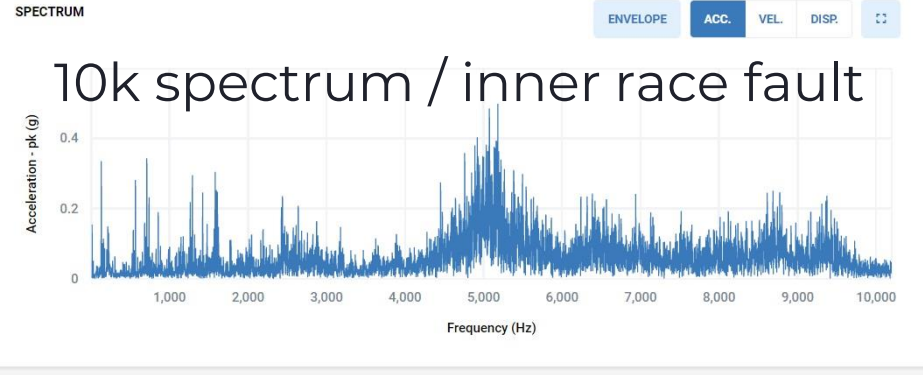
**ANALYSIS OPTIONS**  
These settings are not saved

RPM  
843

FFT WINDOWING  
Hann window

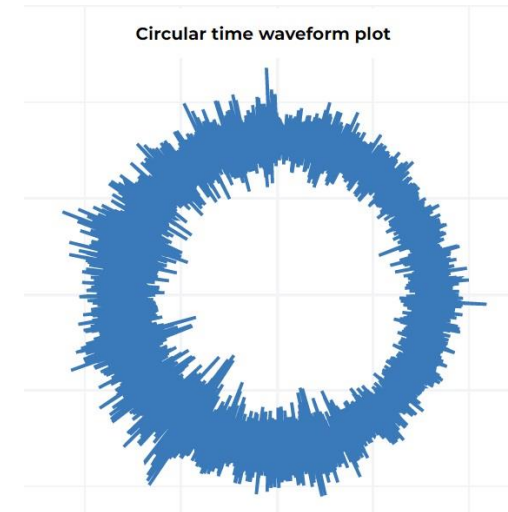
BEARING  
No bearing specified

FILTER TYPE



## Analysis

- Inner race defect confirmed
- 9.2 orders non sync

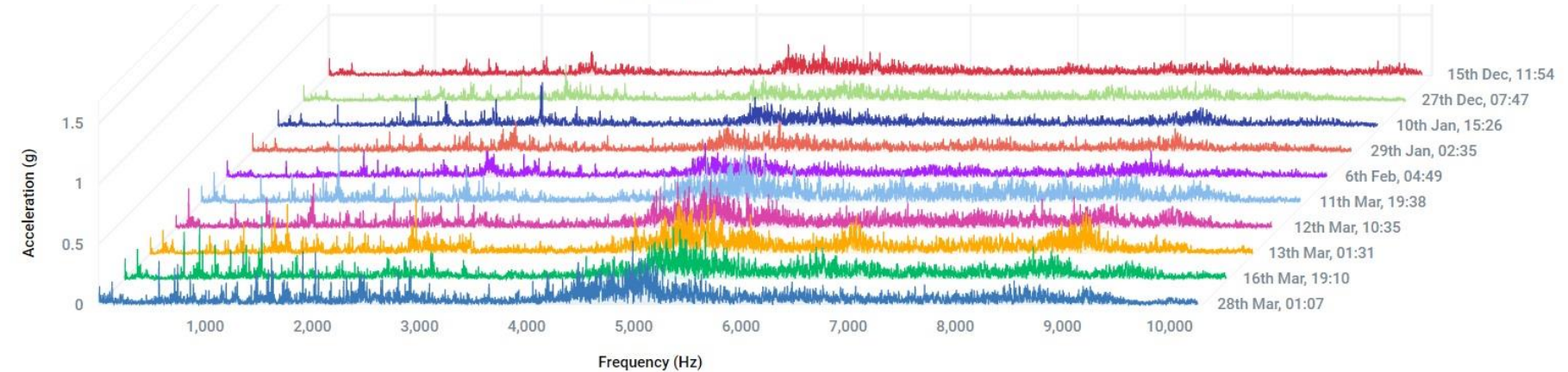
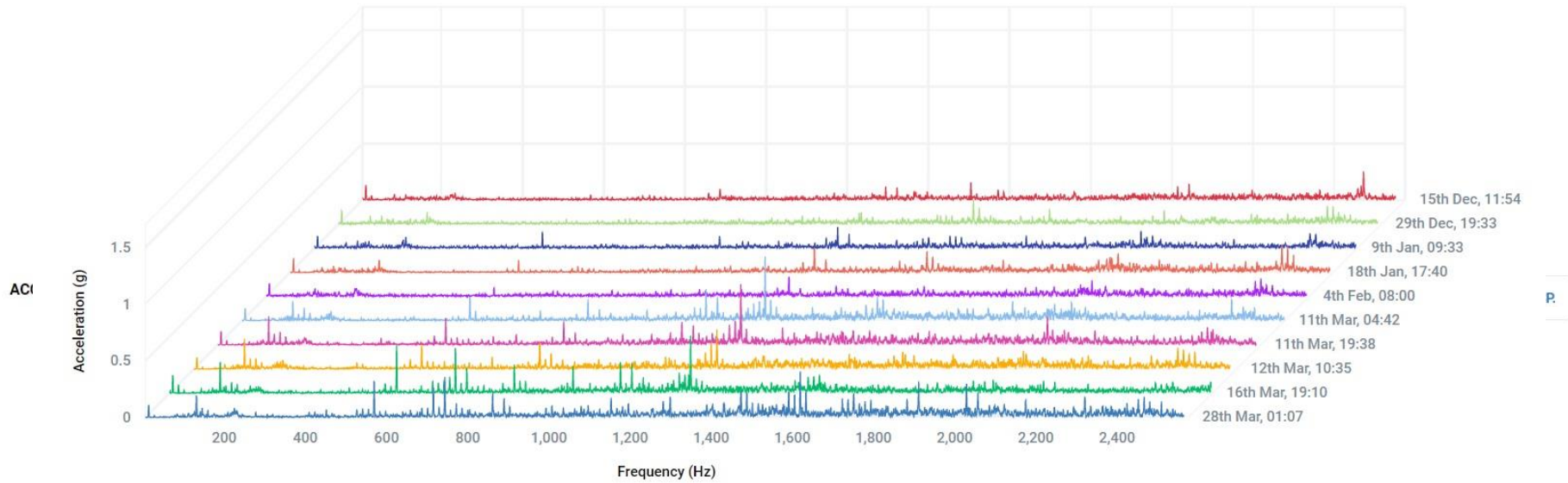


# Gearbox 2 – Spectral Historical Data



ACCELERATION WATERFALL PLOT

Hann window



## Analysis

- 2.5K degradation waterfall plot
- 10K degradation waterfall plot

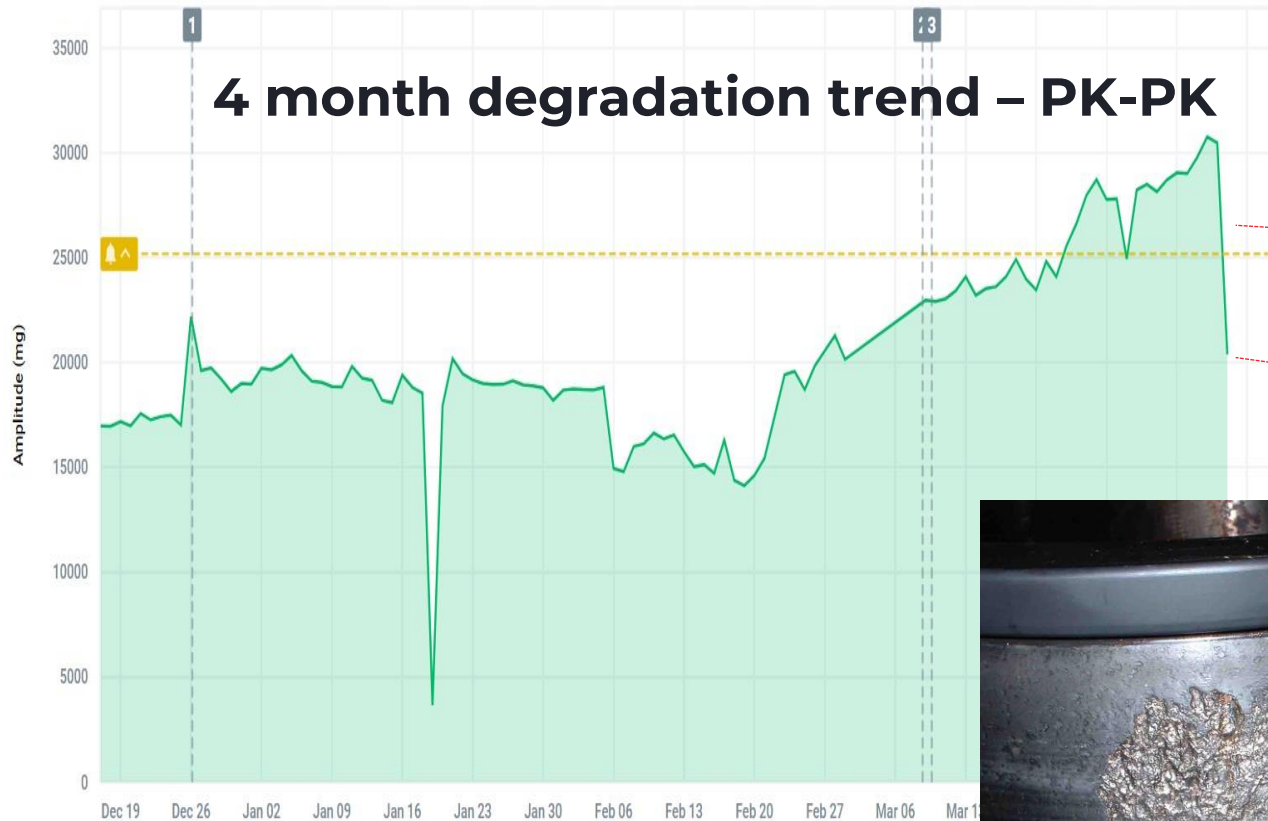
# Gearbox 2 – Nursed through to the end of production campaign



PEAK TO PEAK



Minimum Average Maximum



## Analysis

- High G levels increasing trend PK-PK G's
- Unit shut down, end of campaign. Wireless saved shutting the plant down to replace the gearbox.
- **Estimated operational cost savings £42000**



Inner race defect gearbox 2



## FURTHER INFORMATION

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