

VIBRATION ANALYSIS DETECTS MISALIGNMENT ON REVERSIBLE SCREW CONVEYOR



“ Catching this trend early meant we could fix the issue quickly and avoid an unnecessary breakdown. It shows the real value of routine condition monitoring. ”

AVT Reliability® provides ongoing remote condition monitoring through Machine Sentry® to help customers transition from reactive to predictive maintenance. In this case, routine vibration analysis enabled early identification of developing misalignment on a screw conveyor drive system, allowing the client to take timely corrective action and avoid a costly unplanned failure.

THE CHALLENGE

The asset in question is a reversible screw conveyor driven by an electric motor and gearbox. It had been categorised as a “standard” asset within Machine Sentry® due to its relatively low criticality to production.

However, while its failure might not halt operations, any unplanned breakdown would still result in avoidable costs associated with labour, spares, and potential production impact. Without intervention, the defect would likely have progressed to mechanical failure, requiring emergency maintenance and extended downtime.

OUR APPROACH

This asset is included in AVT’s ongoing condition monitoring programme, which involves data collection via Machine Sentry® fixed sensors and remote analysis by AVT’s RDC team.

Vibration data is reviewed on a rolling schedule, and emerging fault trends are identified early using spectral analysis. For this application, no physical inspection was initially required, data-led insight alone enabled targeted corrective maintenance before a failure could occur.

Post-repair readings are used to confirm the effectiveness of remedial work.

OUR FINDINGS

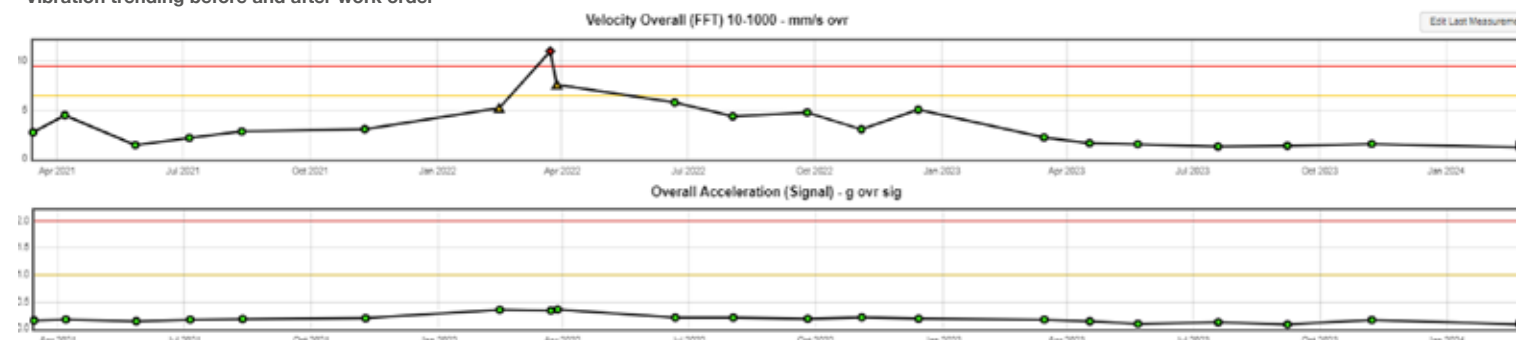
While carrying out routine remote data analysis, AVT’s Remote Diagnostic Centre observed a steady increase in velocity readings from February 2022 onward.

Vibration spectra showed a dominant peak at 49.5 Hz, equivalent to 2x motor running speed, across both radial and axial planes on the motor and gearbox sides of the coupling. This signature is commonly associated with misalignment.

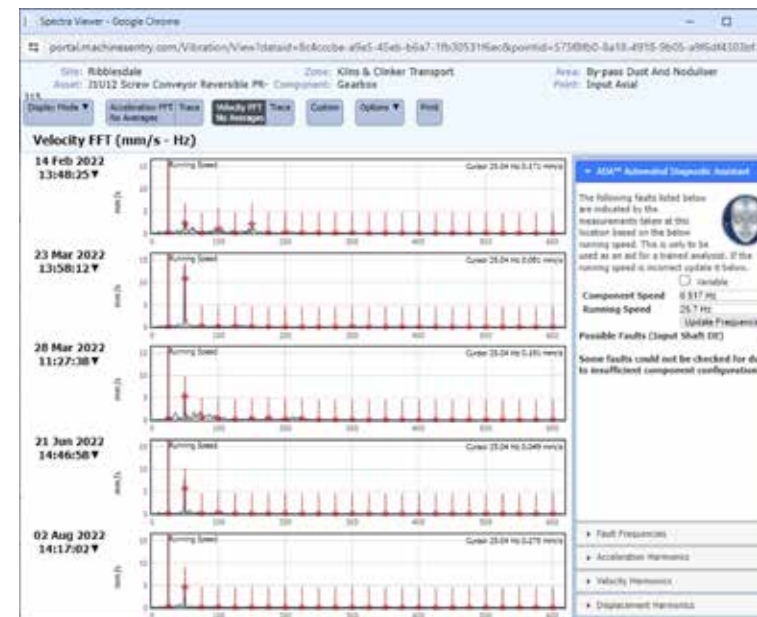
By April 2022, with velocity levels continuing to rise, an Action Note was raised by AVT advising that the coupling be realigned.

The customer carried out the realignment according to the original equipment manufacturer’s specification. Subsequent vibration readings confirmed a notable reduction in overall velocity and 2x amplitude, indicating the defect had been successfully resolved.

Vibration trending before and after work order



Spectrum before and after work order displaying outer race frequencies



THE SOLUTION

In response to AVT’s recommendation, the site engineering team performed a coupling realignment on the screw conveyor system.

No further intervention or failure reports were required. Vibration levels and spectra returned to within acceptable parameters, confirming the success of the repair.

Routine monitoring of the asset has continued under the site’s standard asset category.

FOLLOW UP

This early detection and minor corrective action prevented a potential unplanned failure.

If left unresolved, the misalignment could have progressed to bearing or coupling damage, requiring costly repairs, additional labour, and potential production disruption.

AVT’s condition-based approach ensured a proactive fix at minimal cost and without operational impact.

AT A GLANCE

INDUSTRY: General manufacturing
PROCESS: Material conveying
EQUIPMENT: Reversible screw conveyor (motor, gearbox, coupling)
PRODUCTS: Machine Sentry® Software
SERVICES: Remote condition monitoring and vibration analysis

Need help?

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