STAGE 2 BEARING FAILURE IDENTIFIED ON DIESEL BOOSTER PUMP VIA MACHINE SENTRY®

AVT Reliability® supports this offshore energy client in maintaining critical system uptime through remote condition monitoring. Using Machine Sentry® fixed vibration sensors, AVT's Remote Diagnostic Centre (RDC) identified early-stage bearing deterioration on a diesel booster pump, enabling timely intervention before failure occurred.

> ***"Monitoring frequency is critical in situations like this. Once the data showed early signs of failure, we were able to act quickly and avoid serious disruption."***
>
> *- Remote Diagnostic Centre, AVT Reliability®*

Fig 1: Acceleration trend - rise and post-replacement reduction

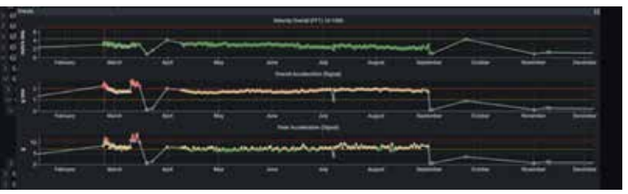


Fig 2: Waterfall spectra - high-frequency bearing fault indicators

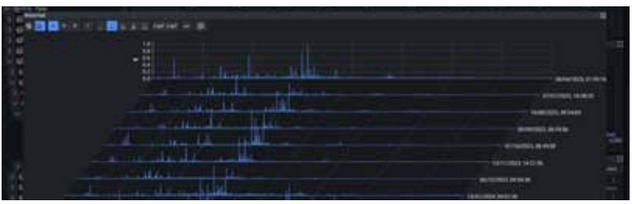
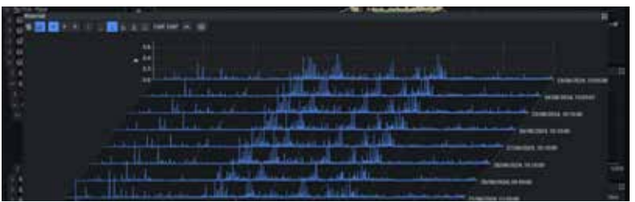


Fig 3: Post-replacement spectra - return to normal condition



THE CHALLENGE

The diesel booster pump is a production-critical asset. While a standby pump is available, both units must remain operational to ensure system redundancy.

A failure in service would not only reduce operational resilience but could result in unplanned downtime and costly disruption to offshore operations. Early detection and planned replacement were essential to minimise risk.

OUR APPROACH

Initially, the asset was monitored on a monthly schedule using Machine Sentry® fixed sensors.

Following the abnormal data observed in early 2024, AVT escalated the data collection frequency to daily, with enhanced analytical reviews conducted twice per week.

This approach ensured that any deterioration in condition could be tracked in near real time. Once the pump was replaced, monitoring returned to its routine monthly schedule

OUR FINDINGS

In February 2024, AVT's RDC team observed a noticeable increase in overall acceleration levels on the monitored pump. Spectral data between 2–3 kHz indicated developing bearing fault frequencies, consistent with stage 2 failure.

Given the trend's upward trajectory, AVT increased the monitoring frequency from monthly to daily, with twice-weekly data analysis. As concern grew around the potential for catastrophic failure, an Action Note was raised advising the client to replace the pump assembly and associated bearings.

THE SOLUTION

A replacement pump was sourced, overhauled, and tested before being installed offshore. Once operational, AVT resumed vibration monitoring and confirmed that acceleration amplitudes had returned to satisfactory levels.

The early warning provided by the Machine Sentry® system allowed the site team to replace the unit in a planned and controlled manner, avoiding unplanned failure.

FOLLOW UP

No further action was required following installation. The post-replacement vibration profile confirmed the fault had been resolved.

AVT continued standard monitoring and advised that the asset had returned to a healthy condition. The proactive replacement prevented a failure event estimated to carry a cost of over £18,000.

AT A GLANCE

INDUSTRY: Oil & Gas
PROCESS: Critical pump system
EQUIPMENT: Diesel booster pump
PRODUCTS: Machine Sentry® Sensors
SERVICES: Remote condition monitoring and diagnostics

Need help?
Contact our experts

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