ACCEPTANCE TESTING HIGHLIGHTS PRESERVATION FAILURE ON STORED EQUIPMENT

AVT Reliability® was engaged to carry out vibration analysis during Factory Acceptance Testing (FAT) on a general extract fan prior to its deployment offshore. The aim was to verify the mechanical condition of the unit following long-term storage and confirm its suitability for service.

OUR APPROACH

Factory Acceptance Testing is used to confirm whether new or refurbished machinery is fit for purpose before installation or offshore deployment.

AVT's role in the FAT process involves capturing and analysing vibration data using Machine Sentry® Fixed (MSF) sensors and mobile data collectors.

Multiple readings are taken across the test cycle to assess vibration trends, identify abnormal patterns, and diagnose potential faults. The resulting vibration report is then submitted to the client with actionable recommendations, helping inform whether the unit should proceed to site or be held back for rework

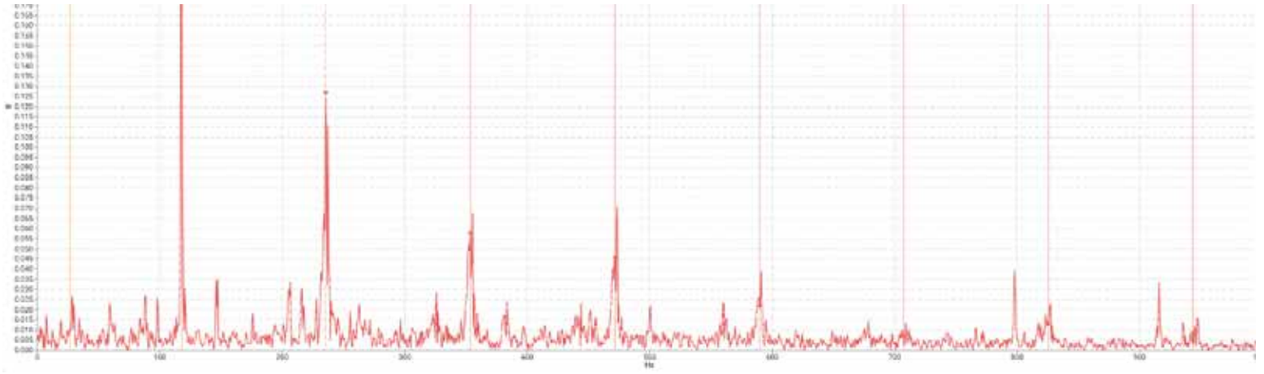
THE CHALLENGE

The general extract fan is a critical HVAC asset for offshore operations. If both installed fans were to become unavailable, it could trigger platform down-manning and directly impact production.

The fan under test had been refurbished and placed in storage for two years. Without proper inspection, deploying a potentially compromised unit risked in-service failure, costly downtime, and unplanned maintenance.

OUR FINDINGS

The fan underwent a one-hour test run, during which AVT engineers took vibration readings at set intervals using Machine Sentry® technology. While fan readings were within acceptable limits, elevated high-frequency vibration activity was detected at the motor.



Spectral analysis revealed non-synchronous harmonics aligned with bearing fault frequencies. The fault signature was consistent with false brinelling, a type of damage caused by micro-vibration during storage.

This occurs when static bearings are exposed to external vibration, causing indentations in the raceways of the bearing, even while not rotating. Once present, this damage cannot be reversed, and bearing replacement is the only viable solution.

THE SOLUTION

Following the FAT analysis, AVT recommended that the motor bearings be replaced prior to shipment.

The identified damage was due to preservation issues, and replacing the bearings would restore the asset to acceptable operating condition and prevent early-life failure once in service.

> ***"This case shows why FAT inspections matter. We caught a preventable defect early, avoided unnecessary offshore risk, and protected asset reliability from day one."***
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> ***- Condition Monitoring Engineer, AVT Reliability®***

FOLLOW UP

The fan motor bearings were replaced, and the unit was retested the following week. Vibration data collected during the retest showed significantly lower amplitude levels, with no remaining evidence of bearing defects.

The machine was deemed fit for service and cleared for deployment.
Had the original defect gone undetected, the unit would likely have failed offshore, with replacement and downtime costs estimated at over £30,000.

AT A GLANCE

INDUSTRY: Oil & Gas
PROCESS: HVAC – General Extract
EQUIPMENT: Axial fan and motor assembly
PRODUCTS: Machine Sentry® Sensors
SERVICES: Factory Acceptance Testing with vibration diagnostics

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