

EARLY DIAGNOSIS PREVENTS STRUCTURAL DAMAGE TO CRITICAL HVAC ASSET



AVT Reliability® supports this pharmaceutical production facility in building a more reliable and predictable operation through monthly condition-based maintenance inspections. Services include vibration analysis, ultrasonic inspection, and thermal imaging, underpinned by the Machine Sentry® platform.

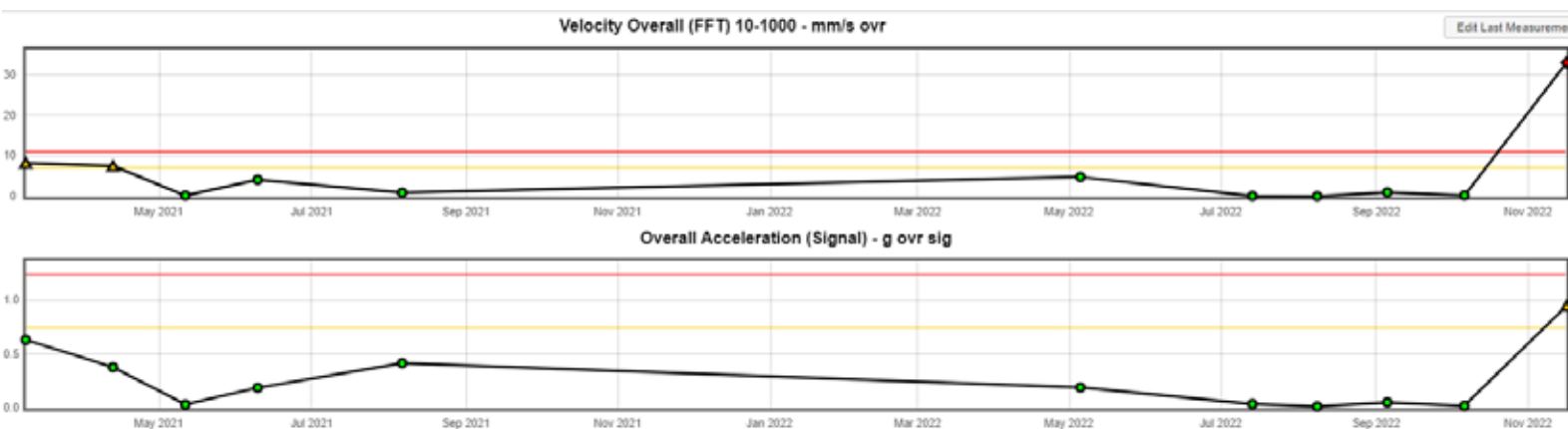
THE CHALLENGE

The asset under investigation was a supply fan unit supporting a product technology laboratory, several airlocks, and ground-floor storage areas. As part of the HVAC system, the fan is essential for maintaining safe working environments, product handling conditions, and cleanroom integrity. A failure would have impacted both production and personnel access, with costly downtime and emergency repair consequences.

OUR APPROACH

AVT Reliability® Ireland has provided monthly condition-based monitoring services to this site since March 2021. The programme includes data collection from key rotating equipment using Machine Sentry® mobile sensors connected to hard-wired accelerometers mounted on fan and motor bearings.

This particular fan had been monitored over time, with a clear baseline established. AVT's approach involves regular data trending, analysis, and reporting through the Machine Sentry® platform, ensuring early warnings are delivered before faults escalate. The goal is to identify pre-failure indicators and give the customer time to act proactively.



“ This is a great example of the value condition monitoring adds. We caught the issue before it caused serious damage, and the replacement was done without impacting production. ”

OUR FINDINGS

During a scheduled site visit in late 2024, AVT engineers identified a loud mechanical noise from the fan during operation. Vibration data confirmed a clear increase in both velocity and acceleration readings. Spectral analysis revealed unbalance, looseness, and signs of synchronous impacting. Acceleration waveforms displayed a high crest factor, exceeding 30g peak-to-peak.

AVT raised an Action Note and recommended the unit be shut down immediately and switched to standby.

Bearing details were not available at the time, which limited deeper fault confirmation, but the data clearly showed the fan was operating in a deteriorating condition.

THE SOLUTION

Following AVT's alert, the client switched to the standby unit and inspected the fan during the next planned shutdown. Significant mechanical damage was found on the fan assembly, and wear was observed on the bearings. The decision was made to replace both the fan and motor.

Post-installation vibration readings showed a marked improvement. According to ISO 10816 vibration severity standards, the asset moved from “Unacceptable” to “Good” across all monitored points.

The successful intervention restored the system to reliable operating condition without unplanned disruption.

FOLLOW UP

On AVT's next monthly visit, the replaced fan and motor were operating within normal parameters, and all previous fault indicators had cleared. The removed components showed visible wear and mechanical degradation.

If the issue had remained unaddressed, further structural damage could have occurred. As a result, AVT and the site have agreed to implement statistical alarm thresholds for this and other critical HVAC assets using the Machine Sentry® platform.

AT A GLANCE

INDUSTRY: Pharmaceutical Manufacturing
 PROCESS: HVAC – Laboratory and Airlock Ventilation
 EQUIPMENT: Supply Fan
 PRODUCTS: Machine Sentry® sensors
 SERVICES: Monthly condition-based monitoring including vibration, ultrasonic, and thermal inspections

Need help?

Contact our experts

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