

HARNESSING THE POWER OF ULTRASOUND: ONTRAK WIRELESS DETECTS BEARING FAULTS EARLIER THAN VIBRATION MONITORING IN RECIRCULATION FANS



MONITORING A RECIRCULATION FAN'S NDE BEARING WITH THE ONTRAK WIRELESS

This case study focuses on a Recirculation Fan's Non-Drive End (NDE) bearing, a 4-15/16" pillow block bearing. To ensure the bearing's ongoing performance, the OnTrak Wireless System was installed to continuously monitor both the bearing's lubrication needs and its mechanical health. By tracking both lubrication levels and mechanical condition, the OnTrak Wireless system aids in the early detection of potential issues, ultimately helping to prevent downtime and prolong its operational life.

EARLY INDICATION OF BEARING ISSUES: ULTRASOUND VS. VIBRATION MONITORING

From the start of operations, ultrasound data indicated that friction levels on this bearing were consistently higher than those of similar bearings. Over time, friction levels gradually increased, eventually reaching the second alarm level despite multiple lubrication attempts. The OnTrak Wireless system's ultrasound monitoring detected a clear, upward trends in friction levels, but lubrication efforts did not return friction levels back to baseline, suggesting a deeper underlying issue.

To compare the early detection capabilities of ultrasound and vibration monitoring, the team tested when traditional vibration sensors would detect the issue initially flagged by ultrasound. Despite rising friction levels, the vibration data remained stable. **It wasn't until one full month later** that vibration acceleration began to increase, finally triggering a vibration alarm and indicating a developing mechanical fault.

By the time vibration sensors detected the issue, significant damage could already have occurred, compromising the bearing's structural integrity and efficiency. As a result, reducing the friction levels back to baseline could now require more intensive maintenance efforts and time.

ONTRAK WIRELESS SYSTEM SOLUTION

The OnTrak Wireless System's continuous ultrasound monitoring provided early detection of rising friction, giving maintenance teams one full month's advance notice before vibration alarms indicated an issue. Ultrasound, with its high sensitivity to changes in both friction and lubrication, identified the problem well before vibration sensors could detect any mechanical faults. This allowed the team to plan a controlled shutdown and address the issue, avoiding a potentially catastrophic failure.

RESULTS

This case study highlights the clear advantage of ultrasound monitoring in detecting bearing issues earlier than traditional vibration monitoring. The OnTrak Wireless system provided a critical early warning by detecting rising friction levels in early July, giving the team time to investigate and address the issue before a mechanical fault developed, which vibration acceleration only indicated one full month later.

This case study also illustrates the effectiveness of ultrasound technology for early fault detection in industrial bearings, demonstrating how the OnTrak Wireless enables proactive monitoring to identify issues well before they are detected by vibration sensors, ultimately reducing the risk of unexpected equipment failures.

KEY TAKEAWAYS

- Ultrasound monitoring detected rising friction one full month earlier than vibration, providing crucial early insight into bearing health.
- Despite regular lubrication, friction levels remained elevated, signaling the need for further investigation beyond lubrication alone.
- The OnTrak Wireless tracks both friction (via ultrasound) and vibration trends, ensuring comprehensive monitoring of bearing conditions.
- Early detection through ultrasound provided valuable time to react and prevent a minor issue from escalating into a severe mechanical fault.

