Case Study: Enhancing Rail Safety with RailBAM Bearing Acoustic Monitoring

Introduction:

Keolis Commuter Services in Boston has implemented the RailBAM Bearing Acoustic Monitoring system to proactively safeguard rail bearings, ensuring the overall health of their railroads. This case study delves into how RailBAM's advanced technology has become an integral part of Keolis' maintenance strategy, preventing potential catastrophic events by detecting and addressing bearing defects in real-time.

RailBAM Technology Overview:

The RailBAM system utilizes cutting-edge beam-forming technology to detect both early and advanced bearing defects, such as surface, cone, cup, roller, and audible faults. Installed on rolling stock wheels, the system operates seamlessly during train pass-bys at line speed. Collected data undergoes comprehensive analysis and is presented to users through alert notifications, tabular formats, graphs, and historical reports.

FleetONE™ Database:

Keolis benefits from RailBAM's user-friendly FleetONE™ database, equipped with automated report functions and scenario settings for in-depth bearing and fleet analysis. The system employs two cabinets, sleeper-mounted auxiliary sensors, and a signal processing electronics rack located in a wayside enclosure. This setup ensures systematic maintenance planning in dynamic environments, optimizing asset performance and security.

Web Interface and Real-Time Monitoring:

RailBAM offers a web interface that enables Keolis personnel across the enterprise to receive real-time vehicle details at fixed or mobile workstations. User-configured alerts empower system administrators to tailor reports according to the specific needs of stakeholders.

Key Features for Keolis:

- Beam forming technology for reliable fault detection.
- Minimal traffic interruption during system installation.
- Web-based trending database for accurate fleet-wide statistical data.

- Early and consistent fault detection, preventing potential catastrophic events.
- Compliance with AAR rules and CE standards.

Case Study Highlights - Keolis Commuter Services:

Keolis relies on RailBAM to monitor the acoustic signatures of rail bearings. Any unusual sounds trigger immediate alerts, allowing the maintenance team to take prompt action before bearings overheat or break. The RailBAM system has become an essential component of Keolis' commitment to ensuring the safety and integrity of their railroads.

Conclusion:

The successful integration of RailBAM into Keolis Commuter Services' maintenance strategy exemplifies the system's effectiveness in enhancing rail safety. By providing early detection of bearing defects and facilitating proactive maintenance, RailBAM ensures the reliability and longevity of rail infrastructure, contributing to a safer and more efficient rail network for Keolis and its passengers.

(Source: Kinetix, RailBAM System “Brochure,” Wabtec Corporation, 2023)