

# Optimize Cost of Ownership with Wireless Monitoring

## Microstrain wireless sensing and data acquisition system application



The operation and maintenance of rotorcraft can account for more than half of a platform's total cost of ownership. Health and usage monitoring have been shown to reduce maintenance cost by over 15% while reducing unscheduled downtime by nearly 50%. Embedded wireless sensor networks for monitoring critical rotorcraft components provide the actionable condition information needed to optimize the schedule and cost of maintenance practices, maximize structural life, and enhance platform safety with a lightweight, scalable system.

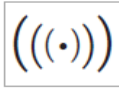
MicroStrain's distributed rotorcraft Wireless Health Monitoring Systems provide a wealth of information about aircraft component health and usage. Specifically, wireless sensors enable autonomous reporting and tracking of pitch link strain, landing gear load, structural loads and fatigue, and bearing health. Microstrain's Wireless Sensor Network enables bi-directional communication with the rotorcraft management system. Data collection can be event triggered, during specific flight regimes, and/or both. Data collection and storage can be in a centralized location.



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# Wireless Sensor Network

Supplied  
Sensor



HUMS

## SG-Link-RGD-LXRS

Wireless Analog Input Sensor Node

- Four input channels + triaxial accelerometer
- Strain sensor signal conditioning
- Custom sample rates up to 4096 Hz
- MIL-STD-461F

## WSDA-RGD

Ruggedized Wireless Sensor Data Aggregator

- $\pm 32$  microsecond node-to-node synchronization
- Up to 2km line-of-sight range
- MIL-STD-810F (environmental) and MIL-STD-461E (EMI/RFI)

## MicroStrain LXRS® Protocol

MicroStrain's proprietary **Lossless Extended Range Synchronized (LXRS®) wireless protocol** is a 2.4GHz, IEEE 802.15.4-compliant communication architecture combining microsecond time-synchronization with a scalable star network. User-controllable sampling rates are automatically coordinated over thousands of wireless sensor nodes, all with 100% reliable data throughput under most operating conditions.



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