

AGUSTAWESTLAND SAFEGUARDS HELICOPTER RELIABILITY WITH HUMS

AgustaWestland's permanently mounted accelerometers were developed to monitor helicopter gearbox health on the AW139, in close collaboration with Brüel & Kjær.

CHALLENGE

When people's lives depend on gearboxes performing, even after potential engine failures, we need the very best in reliability and quality to ensure gearbox health and predict failures. Equally, absolute reliability is vital to eliminate false alerts.

AgustaWestland needed highly robust and reliable sensors for their gearbox Health Usage Monitoring systems (HUMS). These needed to be able to detect bearing failure in the gearbox, requiring the ability to make high frequency measurements. The sensors needed to continuously operate in demanding environmental conditions, while withstanding their effects on the data and on the security of the system.

SOLUTION

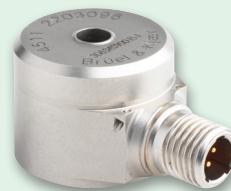
A flight-certified accelerometer was quickly developed using finite element modelling, which allowed consultation throughout the design process and minimal prototyping before the flight certificate approval testing. The design avoids low- and high-frequency electro-magnetic interference, and the practical and secure centre-bolt mounting allows any cable direction. The high resonance frequency of 43 kHz enables confident detection of bearing failure.

CONCLUSION

Brüel & Kjær HUMS sensors have been in production for over ten years without a single quality issue, thanks to innovation alongside customers such as AgustaWestland.

Brüel & Kjær is AS9100/EN9100 certified to meet aerospace industry quality management standards.

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Type 4511 is immune to dust, humidity, electro-magnetic interference and ground loops