Exercise 5 – Revise Paragraph

Due Jan 26

Revise the following paragraphs using the Core Rules.

It is investigated whether or not tri-axial accelerometers can provide crucial flight regime information for helicopter gearbox monitoring systems. Typical vibration monitoring systems for helicopter gearboxes rely on single-axis accelerometer data. It is widely assumed that this is adequate. Tri-axial accelerometers measure vibration along three mutually perpendicular axes. The frequency content of the three different directions is compared and analyzed using time-synchronously averaged vibration data from the sensors. The tri-axial data are decorrelated using a mathematical transformation that is known as principal component analysis. The benefits of using tri-axial data for vibration monitoring and diagnostics are explored by analyzing the changes in the direction of the principal axis of vibration formed using all three axes of vibration. The results indicate that tri-axial accelerometers can provide additional information about the frequency content of helicopter gearbox vibrations, providing researchers and industry with a novel method of capturing and monitoring changes in baseline vibration signatures.

We show that tri-axial accelerometers provide more information about the frequency content of helicopter gearbox vibrations than do single-axis accelerometers. Typical vibration monitoring systems for helicopter gearboxes use single-axis accelerometer data. Tri-axial accelerometers measure vibration along three mutually perpendicular axes, and should provide more information. We use time-synchronously-averaged accelerometer data and analyze the frequency content of the three axes. We apply principal component analysis to decorrelate the tri-axial data, and analyze the changes in direction of the principal axis of vibration (COMMENT: changes in response to what?). The results indicate that tri-axial accelerometers provide more information about the frequency content than single-axis accelerometers, and thus provide researchers a novel method of capturing and monitoring changes in baseline vibration signatures.

CHANGES:
Change passive voice to active, make text more concise, point out some missing information that would clarify the abstract, get the key idea into the lead sentence.