Scopus

Documents

Sawalhi, N.

Vibration content and sideband modulations of a planetary gearbox with three and four planets
(2016) *13th International Conference on Condition Monitoring and Machinery Failure Prevention Technologies, CM 2016/MFPT 2016*, .

Abstract
This paper serves the purpose of providing an understanding of vibration content (Spectrum content and sideband modulations) of the Bell 206 (3 and 4 planet) helicopter gearbox for vibration analysis and modeling. The frequency content of the two configurations is first analyzed and compared. The paper shows the effect of changing the number of planets on the fundamental gear mesh frequency (epicyclic mesh frequency) and its sidebands. The effect of changing the number of planets does not only change the planet pass frequency (number of planets times the rotation speed of the carrier) but also causes an asymmetry of the modulation sidebands about the epicyclic mesh frequency (carrier speed times the number of teeth on the ring gear). For the three planet arrangement, the epicyclic mesh frequency and its harmonics are not suppressed, thus the epicyclic mesh frequency has the highest amplitude with sidebands around it. For the four planet arrangement, the epicyclic mesh frequency and its harmonics are suppressed (other sidebands shows strongly). The paper explains these observations and compares both the epicyclic mesh frequency harmonics and their sidebands for the two arrangements. © 2016, British Institute of Non-Destructive Testing. All rights reserved.

2-s2.0-85002596341
Document Type: Conference Paper
Publication Stage: Final
Source: Scopus