

An improvement on helicopter transmission performance through use of high contact ratio spur gears with suitable profile modification design

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Abstract: This is a design/development study on helicopter transmission that had improved performance in terms of vibration and noise behaviour, in compliance with surface durability requirement, compared with what was achievable with previous designs. Different spur gears of both low and high contact ratios (HCRs) have previously been designed and tested in helicopter transmissions with different profile modifications but with limited performance improvement. The desired performance, however, was achieved through the use of a suitable profile modification for the HCR spur gears in mesh. Profile modification type of 'double relief' was applied for the first time to two sets of helicopter transmission spur gears, both with HCRs. Possibility of corner contact was avoided while achieving a relatively low value of peak-to-peak transmission