

# Investigation of a Design Modification for Double Helical Gears

## Reducing Vibration and Noise<sup>(PDF)</sup>

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Title: Investigation of a Design Modification for Double Helical Gears Reducing Vibration and Noise

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关键词: [tooth profile modification](#); [tooth longitudinal modification](#); [double helical gears](#); [loaded transmission error](#)

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摘要: To reduce vibration and noise and increase transmission efficiency, a three segment method for modifying the pinion profile was proposed. Cutter surface equations were deduced by changing the shape of the cutter-edge, substituting three segment parabolas for the line. The influence of longitudinal tooth modifications on tooth surface load distributions was discussed. Transmission error minimization and uniformity of tooth surface load distribution were chosen as optimization goals and the modified parameters were obtained by applying the complex method. Finally, an experiment comparing the loaded transmission error, vibration, and noise both before and after modifications was carried out. The results indicate that the modified design is reliable.

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