Thesis Title	A Study of Transmission Error in Helical Gear Mesh Using Finite Element Analysis
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Abstract

This paper is a study of torque, load and transmission errors on a pair of helical straight tooth gears in one complete cycle of tooth mesh. The finite element model considers the whole gear which is used to select the hexahedral element and contacts element. The frictional force causes variations in torque on the gear body which spins in the opposite direction to that of the relative sliding velocity and is always perpendicular to the line of contact. The frictional force causes gear noise, vibration and wear. In one complete cycle there is a variation in the contact of double and triple tooth pair gears which causes variations in load, displacement and transmission error on the gear body. The transmission error of gears in mesh is considered to be one of the main important causes of gear noise and vibration.

The analysis of data was performed by an analysis program on a personal computer. In one complete meshing cycle of 39.1897 degrees of pinion, where 57 meshing positions were investigated, each mesh position was equal. The result of the analysis showed that variation of torque in finite element analysis is comparable to the theoretical results. This torque of triple tooth pair gears have more contact than double tooth pair gears. The results of variations of load and transmission error in finite element analysis was found comparable to the Load Distribution Program (LDP). From this analysis of helical gear models. Finite element analysis is both practicable and reliable.