

## Static transmission error reduction for modifying the helical gear geometry

Seokho Choi<sup>1\*</sup>, Yangsoo Kim<sup>2</sup>, Changjun Seo<sup>3</sup> and Heungseob Kim<sup>4</sup>

<sup>1</sup> Mechanical Engineering, Inje University, 50834 Gimhae, Gyeongnam, Korea, [snk0278@naver.com](mailto:snk0278@naver.com)

<sup>2</sup> HSV-TRC Center, Inje University, 50834, Gimhae, Gyeongnam, Korea, [cheykim@inje.ac.kr](mailto:cheykim@inje.ac.kr)

<sup>3</sup> HSV-TRC Center, Inje University, 50834, Gimhae, Gyeongnam, Korea, [elecscj@inje.ac.kr](mailto:elecscj@inje.ac.kr)

<sup>4</sup> HSV-TRC Center, Inje University, 50834, Gimhae, Gyeongnam, Korea, [mechkim@inje.ac.kr](mailto:mechkim@inje.ac.kr)

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Gear systems are extensively employed in mechanical systems since they allow the transfer of power with a variety of gear ratios. So gears cause the inherent deflections and deformations due to the high pressure which occurs between the meshing teeth when transmit power and results in the transmission error. It is usually assumed that the transmission error and variation of the gear mesh stiffness are the dominant excitation mechanisms. Predicting the static transmission error is a necessary condition to reduce noise radiated from the gear systems. This paper aims to investigate the effect of tooth profile modifications on the transmission error of helical gear. The contact stress analysis was implemented for different roll positions to find out the most critical roll angle in view point of root flank stress. The PPTE (peak-to-peak of transmission error) is estimated at the roll angles by different loading conditions with two dimensional FEM. The optimal profile modification from the root to the tip is proposed.

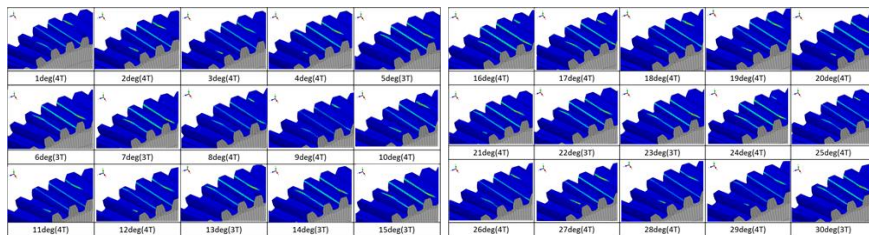


Fig.1 Teeth contact pattern according to a rotation angle

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