

Effects of rim and web thicknesses on root stresses of thin-rimmed helical gear

Abstract

This paper presents a study on root stresses of thin-rimmed helical gears with web arrangement of various rim and web thickness. Thin-rimmed helical gears used in this study were meshed with solid helical gear. Root stresses were measured from the beginning of engagement to the end of engagement by using the strain gauge method. The changes of root stresses from the beginning of engagement to the end of engagement were examined and the meshing position where the maximum root stress occurred (worst loading position) was determined. Effects of rim and web thickness on the root stress, the maximum root stress and the position of maximum root stress were clarified.

Keywords — Helical gear, root stress, rim thickness, thin web, symmetric, worst loading position, worst meshing position.