Fatigue Strength Evaluation for Leaf Spring of Commercial Vehicle Based on Proving Ground Response


Key Words: 도로하중조건(road-load condition), 피로강도(fatigue strength), 태어스프링(leaf spring), 피로설계(fatigue design), 3-점 굽힘 피로(3-point bending fatigue), 피로한도(fatigue limit)

Abstract: Suspension system of vehicle is directly influenced to ride and handling. Therefore, suspension part should have enough endurance in its lifetime to protect passenger against accident. Leaf spring is one of major suspension part of vehicle. According to increase commercial vehicle operation in the market, the endurance of leaf spring is become most important design issue of suspension development process. But, the traditional leaf spring test method is not enough to verify the endurance of leaf spring. Therefore, new method is necessary to verify the endurance of leaf spring. In this study, strain and acceleration of leaf spring is measured through the proving ground tests. Using the test results, the effect of shot peening on the fatigue strength of leaf spring materials are estimated. And also, fatigue strength of actual leaf spring ass'y was evaluated based on proving ground response. It is expected that the results obtained can be used as the basic information for fatigue design covering the endurance requirement of leaf spring.

FE-Analysis of the Ventilated Brake Disc with the Helical Grooved Vent

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Key Words: Ventilated brake disc(벤etur리터드 브레이크 디스크), helical grooved vent(나선형 홈이 있는 벤드), FEM(융합요소법), Heat transfer(열전달), Thermal deformation(열변형)

Abstract: The brake disc is thermally deformed by the frictional heating during braking. In this paper, new prototype of the brake disc with the helical grooved vent is proposed to improve the heat transfer from the disc to the air. The helical grooved vent has high convective film coefficient and more stiffness for the bended thermal deformation. The FEM analysis had been practiced for the comparisons of the heat transfer and thermal deformation between the proposed ventilated brake disc and the conventional one.