Finite Element Based Vehicle Component Fatigue Life Assessment According to a Customer Usage Profile

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Abstract

In this study, construction and standardization of a track for performing fatigue and reliability tests of light commercial vehicles are described. Such a test track is necessary for design and manufacturing verification of these vehicles. Fatigue characteristics of Turkish roads were determined by analyzing fifty different roads. This paper focuses on defining the load spectrum and equivalent fatigue damage of the leaf spring resulting from accelerated tests on a route. Fatigue analysis and estimated lifetime of the part were calculated using Finite Element Analyses and verified by the Palmgren-Miner rule. When as customer profile the Turkish automotive user is taken into consideration and accelerated test tracks are designed for the reliability and fatigue tests of the related company, linear FEA of the spring represents a convenient procedure.

Keywords

Author Keywords: Materials Testing; Automotive customer usage; Leaf spring; Finite element; Fatigue analysis; Palmgren-Miner rule

KeyWords Plus: ROAD PROFILES; DESIGN

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