Finite element analysis of road roughness effect on stress distribution of heavy duty truck chassis

Ojo Kurdi, author

Abstrak

ABSTRAK
Finite Element Method is one of the most power ful methods in numerical analysis techniques. The time consuming tasks and high costs can be reduced by using this method in the early stages of machine component design. The truck chassis is a base component of vehicles and integrates many of the truck component systems such as the axles, suspension, power train, cab and trailer. The truck chassis has been loaded by static, dynamic and also cyclic loading. Static loading comes from the weight of cabin, its contents and passengers. The movement of truck affects a dynamic loading to the chassis. The vibration of engines and the roughness of roads give a cyclic loading. The chassis used in trucks has almost the same appearance since models were developed 20 or 30 years ago, denoting that they are a result of slow and stable evolution of these frames throughout the years. The manufacturers of these chassis, in the past, and some still today, solve their structural problems by trial and error. Conducting experimental tests in the early stage of design are time consuming and expensive. In order to reduce these costs, it is important to conduct simulations using numerical software methods to find the optimum design. Determination of static, dynamic and fatigue characteristics of a truck chassis before manufacturing is important for design improvement. This paper presents the finite element
analysis (FEA) of road roughness effects on stress distribution of heavy duty truck chassis.