MODELING AND ANALYSIS REGENERATIVE SHOCK ABSORBER (RSA) ON SUSPENSION SYSTEM OF MILITARY VEHICLE WHEELS TIRE

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Abstract

Electrical energy needs at a modern military vehicles is very high to support elektronics and mechatronics equipment which is on the vehicle. So far, the supply of electrical energy from the vehicle comes from the alternator with taking some of the energy from cycle engine so that reducing engine power and improve fuel consumption.

This study was designed and modeled a RSA concept on the military vehicle suspension wheel tires that can recover wasted vibrational energy into electrical energy. Calculation of the electrical energy which can be generated by RSA will be simulated by using Matlab-Simulink software in time and frequency domain. In addition, the simulation with Matlab is also used to determine the effect of the use of RSA to the response of the vehicle body.

This analysis of data has been obtained a data of power harvesting that can be generated by the RSA on a military vehicle suspension system with 50% RSA of 200-64000 watts and 100% RSA of 200-5200 watts on the vehicle speed 20-60 km/h. Then has been obtained by addition of RSA, the body responses that occur is faster stable than the original suspension in general.

Keywords : RSA, power harvesting, military vehicle, suspension.