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Proportional Integral Derivative Control of Hydro-Gas Suspension Unit for Tracked Vehicles

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Abstract

High-speed tracked vehicles traversing off-road terrains are subjected to ride vibrations of low frequency and large amplitude. This causes bodily discomfort to the operator and limits the mobility and performance of the vehicle. The damping of the terrain vibrations is achieved by a Hydro-Gas Suspension Unit (HGSU) with inbuilt damper and hydraulic actuator piston mechanism. The present studies have been carried out to develop a quarter-car dynamic model of passive and active suspensions for improving the HGSU characteristics using proportional integral derivative controller. Performance of the active suspension

system has been compared with the passive suspension system through simulations using MATLAB/SIMULINK software.

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