

EXPERIMENTAL AND NUMERICAL INVESTIGATION OF THE VEHICLE FLOOR DAMPING IN A MINE EXPLOSION EVENT

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This paper describes a methodology which includes numerical simulation and experimental procedure developed in Plasan, which is used in the design process of a mechanism for absorbing explosive energy. The numerical modeling is performed by dynamic finite element code LS DYNA version 971, and the blast load impulse was applied by experimental drop test to simulate the behavior of a blast test on the vehicle floor. The collected data from each test were accelerations and High Speed (HS) camera photo recording. Very good correlation was achieved between numerical and experimental results quantitatively and qualitatively. Moreover, the velocity calculated from the accelerometers results, and the velocity calculated from the HS camera photo analyzing, correlate very well. Those results demonstrate the ability of using HS camera as a reliable signal measurement tool. The methodology enables simulation calibration and mechanism development with reduced number of full field blast tests, which are complicated, expensive, and unrepeatably accurately and can't be photo recording by HS camera during the explosion.