

Simulation of a Car crash using ANSYS

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ABSTRACT

An important factor used in determining the crashworthiness of an automobile vehicle during impact is its strength. In designing, a car structure should have the property of protecting or reducing the level of damage done to the driver and the car body, by absorbing the impacted load and reducing the stress values. The frontal side of a car is more liable to high energy impact and deformation during a crash. This paper provides the simulation and analysis of a car frontal crash impact on different barriers using explicit dynamics in ANSYS workbench. A car body of Aluminum materials moving with an initial velocity of 35m/s is used to analyse the developed stress and deformation on impact into a steel material wall, static and a moving car having the same speed and body structure. The developed stress and deformation due to the crash for all the three scenario were plotted and analysed. The collision impact and deformation between two moving cars was found to be higher, followed by a static vehicle, and the least is with the static wall.

KEYWORDS

ANSYS; Crash test; Explicit dynamics; FEA

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