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Design, Modelling & Analysis of High Energy Safety Impact Guard for Heavy Duty Vehicle

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Abstract: ***Death due to Accidents are greater than natural disaster and terror attack in India. One of the most injurious cases is the crash between car and heavy vehicle. Every year lacks of passengers are killed due to road accidents in which 8% are due to heavy vehicles. Road accident causes loss of life and also property. Accidents can not be avoided completely but the impact force is decreased by application of High energy safety impact guard. High Energy Safety impact guard is protecting device used to reduce collision impact at rear end of heavy vehicle when accident occurs. Another aim of this project is to increase the striking area of collision so that the underride crashes of car should be avoided, which is done by using two outer members of safety guard. The of crushing element inside the safety guard cylinder act as a force destroying device. Presence of crushing element results into reduction of impact force at the collision area. This paper proposes analysis of new design of High Energy Safety guard mounted on the rear end of a heavy vehicle to protect under running of smaller vehicles like car.***
Keywords: Impact, Crushing Element, High Energy Safety Guard, Crushing, Underride.

I. INTRODUCTION

When a road accident between a car and a heavy vehicle happens, all the protection features for the occupants built into the car, such as seatbelts and airbags, have a reduced effectiveness. This because of the very big differences in geometry and stiffness between the two vehicles. The very large height of the truck, especially when the heavy vehicle is not equipped with a Safety Guard, it can allow the underride or also called underrun of the car.

Many people get injured during underride accidents. Because of high Collision impact between car and Heavy vehicle chassis, passenger present in car will cause death or seriously injured. To avoid such accidents safety guard has to be installed on the heavy good vehicle which would prevent the passenger of the small vehicle from getting fatal injuries. Without installation of the safety guard, entire energy will be on the frontal car structure which would not be able take such impact. The entire vehicle has gone underneath the truck and the car structure has got crushed due to the sudden impact load. Figure shows damage to small passenger vehicle during a rear underride accident.