Research on the Body protective effect with airbag.

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ABSTRACT

The Body injury is major problem which is happed after air bag blast but It's ignored by the Researchers. This paper focuses its study on the influence of different parts of the dummy loaded after the initiation of the airbag on the dummy's neck so as to protect the occupants better. Hybrid III prototype is used to evaluate the response of the occupant in the collision. The biological force reaction of Hybrid III prototype's neck is based on inertia during the collision, when the dummy is constrained by the safety belt or the seat back.

This paper evaluates the effect of airbag loading on 5% female Hybrid III prototype. With experimental methods, this paper studies the different effects of different contacting parts when the initiation of the airbag loads on the dummy, focusing on the effect of 5% female Hybrid III prototype. It also illustrates some results that are changed by the experiment about the head / neck design of the 5% female hybrid III prototype preventing the airbag from trapping in.

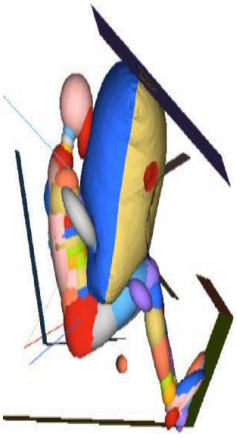
1.Introduction:-

Every 4 mints one person die in India due to Road accidents by source of National Crime Records Bureau, Ministry of Road Transport & Highway, Law commission of India, Global status report on road safety 2013. Road environment and the technical conditions are different; traffic accidents show different morphological features. Automobile safety has become one of the factors that hinder India's transportation industry and the further development of the automobile industry. Nowadays, when automobile industry in the world continues to develop and grow, especially with the continuous promotion of the expressway, it has been recognized that due to the effect of drivers, road environment, climate, the technical conditions and other unexpected factors, it is impossible to avoid traffic accidents completely. How to ensure the safety of passengers to the limits in accidents, reduce the injury caused by accidents and improve vehicle safety has important practical significance. Security has become one of the major development directions of modern automotive

2. Types of injuries by Airbag

- Neck injury
- Bruising or swelling of the brain
- Fracture or Break in the Face
- Burn on the chest
- Ear injury
- Post-Traumatic stress disorder(PTSD)
- Hearing loss
- Fetal injury or puncture to the placenta in pregnant women

- Lacerations to the liver, spleen, veins, heart, arteries, lungs and brain stem.



Most of 2.5 % of drivers involved in serious crashes are likely to suffer serious injury due airbag. However, most airbag injuries occur in low-speed collisions. Shorter people are located closer to airbags and therefore are at an increased risk of injury. Children and elderly are also more susceptible to airbag injuries.

3 Main Cause of injury

The main causes the formation of inert gas to be filled inside the fabric and various techniques such as stored gas system and solid-propellant gas generation have been considered, Sodium azide based inflators are vastly used in airbag system. This chemical reacts with KNO_3 and forms N_2 and inflates the airbag. Burns therefore arise due to chemical, thermal, and or mechanical insult.
Airbag explosions send plastic materials and chemical hurting towards motorists at 200 mph, with noise level of 170 db.

4 Airbag injury prevention

- Always wear a seat belt in 80% of airbag-related deaths between 1990 and 2008, the victim was not wearing a seat belt
- Children under 12 should ride in the back seat when possible
- Always use the correct car seat for your child's height and weight.
- Keep seats positioned at least 10 inches back from the airbag deployment area in your vehicle.
- Keep children properly restrained and in the proper seated position at all times.

5. CONCLUSIONS

Through the above experiments, the following conclusions can be drawn: when the airbag explodes and contacts with different parts of the dummy, it has fewer effects on the head, the chest or the thigh but a great impact on the neck. The mode of the airbag directly contacting with the head of the dummy does minimal harm to the human body. If it contacts with the chin, then the harm will be relatively serious; if it directly occurs between the jaw and

neck, then the harm will be extremely serious. Therefore, in the process of designing the airbag, a series of parameters need to be adjusted to control the direction and posture when it opens so as to guarantee that the airbag acts on the head of the dummy when it is exploded

6. REFERENCES

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