

A STUDY OF THE IMPACT ATTENUATOR

Mahir Hussain*

*Assistant Professor,

Department of Mechanical Engineering, Faculty of Engineering,
Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, INDIA

Email id: mahir.engineering@tmu.ac.in

DOI: 10.5958/2249-7137.2021.02637.9

ABSTRACT

The impact attenuator provides a charge channel for transverse and vertical loads in the event of off-center and off-axis collisions. The impact attenuator is distinguished by the concentration of energy dissipation in a limited zone and the recognition of the system by a static body movement. The impact attenuator minimizes vehicle frame damage and protects the driver from personal injury during the collision, according to the study. The impact dimmer's crush can absorb kinetic energy and evenly transfer low load to the remainder of the system. To understand the behavior of vehicle impact crushing, this paper examines academics' work in the areas of design and impact mitigation analysis. The researchers' geometric structure and material choice for the impact attenuator are briefly described first, followed by the FEA analysis and experimental testing techniques. The experimental and simulation experiments will be split into three groups: test, simulated test, and comparison.

KEYWORDS: *FEA, Lightweight material, Impact Attenuator, Vehicle.*

REFERENCES:

1. M. M. Squires and L. F. W. Lesack, "Spatial and temporal patterns of light attenuation among lakes of the Mackenzie Delta," *Freshw. Biol.*, 2003.
 2. J. Fahland, C. Hoff, and J. Brelin-Fornari, "Evaluating Impact Attenuator Performance for a Formula SAE Vehicle," *SAE Int. J. Passeng. Cars - Mech. Syst.*, 2011.
 3. T. Sugimoto and T. Kawaguchi, "Development of a surface defect inspection system using radiant light from steel products in a hot rolling line," *IEEE Trans. Instrum. Meas.*, 1998.
 4. N. Takahashi et al., "Two year operation of the Precipitation Radar (PR) onboard TRMM satellite," in *International Geoscience and Remote Sensing Symposium (IGARSS)*, 2000.
 5. S. Boria, J. Obradovic, and G. Belingardi, "Experimental and numerical investigations of the impact behaviour of composite frontal crash structures," *Compos. Part B Eng.*, 2015.
 6. G. Belingardi and J. Obradović, "Design of the impact attenuator for a formula student racing car: Numerical simulation of the impact crash test," *J. Serbian Soc. Comput. Mech.*, 2010.
 7. J. Hinch, D. Sawyer, D. Stout, M. Hargrave, and R. Owings, "Impact attenuators: a current engineering evaluation," *Transp. Res. Rec.*, vol. 1198, pp. 76–89, 1988.
-

8. N. Agrawal, J. Raj, and G. Saxena, "Design and Analysis of Impact Attenuator: A Review," *Int. J. Mech. Eng.*, 2015.
9. N. S. Potabatti, "Design and Physical Testing of Impact Attenuator for Formula Sae Racecar," *Int. J. Sci. Eng. Technol. Res.*, 2016.
10. F. Imanullah, Ubaidillah, A. S. Prasajo, and A. A. Wirawan, "Experiment evaluation of impact attenuator for a racing car under static load," in *AIP Conference Proceedings*, 2018.