

# **FINITE ELEMENT ANALYSIS OF ROAD SAFETY STEEL BARRIERS WITH RESPECT TO BOTH POST SPAN AND IMPACT SPEED**

**G. Cuomo**

Researcher, BEng, CEng, MSc, PhD, University of Basilicata, Italy, DAPIT  
Department, Viale Ateneo Lucano, 85100, Potenza gianluca.cuomo@unibas.it

## *ABSTRACT*

The Standards on road safety barriers have been progressively implemented so as to increase the safety levels of road infrastructures.

For the assessment of the real effectiveness of such restraint systems, with respect to the above mentioned regulations, it is important to refer to the so-called crash tests so as to allow their type-approval within fixed safety standards. The recent developments in this area, however, count the use of finite element softwares apart from having recourse to real scale tests, for both design and adjustment of the restraint systems themselves.

Starting from these considerations, this paper is focused on the FEM simulation of the impact of a passenger vehicle against an N2 steel safety barrier, this type of element being the most popular in Italy.

Once the type and the mass of the car are fixed, several situations are investigated by combining various impact speeds, different impact spots and also changing the span between the posts of the barrier, so as to have a clear understanding to what extent such variables would influence the overall phenomenon and, more in general, the users safety. For each of the cases investigated, the ASI index is determined as well as their variations with respect to the changes of the boundary conditions.

In conclusion the Author points out, amongst all the results obtained, that both the post span parameter and the vehicle speed, are fundamental for the accident modelling, since in some situations the ASI value can be halved.

**KEY WORDS:** Road safety, steel barriers, ASI index, finite element analysis, crash tests