 Proceedings of ICCES'08, pp.1397-1397

Analysis, Design and Qualification of Roadside Safety Devices Through Simulation and Testing (Experiments)

James C. Kennedy and Chuck A. Plaxico

Summary

Advances in computational tools (Software and Hardware)over the past years have resulted in use of these techological based methods to aid in design and qualification of devices used to improve safety on the National Highway System(NHS). What used to be a test and design iterative method and been changed to a design (via simulation) and virtual test (also simulation) approach that has sifgnificantly reduced cost and time to the market place for solutions (hardware) to roadside safety problems. The design of candidate hardware solutions to roadside safety problems is achieved via use of sophisticated FEA methods to arrive at configurations that can ssatisfy the requirements for products used on the NHS. This up front virtual desgin eleminates the need for an iterative testing based design scheme which greatly reduces time and cost to arrive at an effective solution. While use of any candidate product intended for the NHS must utimately be physically tested, virtual testng (simulation based)provides insight into the degree of confidance the (computationally based) design has to satisfy the requirements of the physical tests. Several examples will be presented that illustrate the approach that employs FEA techniques accompanied by laboratory testing at the component level to arrive at an effective computational model of the candidate product for the roadside safety problem. Comparisons of computer predicted results with full scale impact tests (vehicle at test speed impacting into the candidate product solution) will be presented and discussed.