

# An Application of LS-DYNA for the New FMVSS 208 Front Impact Tests

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## ABSTRACT

The automotive safety community is currently facing the challenge of new front impact legislation (FMVSS 208), to be introduced in the USA in 2004. Vehicles will be subjected to an increased number of and type of barrier tests. This paper describes a new technique, using LS-DYNA, to aid the vehicle development process. A virtual “sled” has been developed for analysis of the different FMVSS 208 impact scenarios. This sled model would typically be created and exercised early in the vehicle development process, before a full vehicle model can be created. The sled can incorporate the target structural response of the occupant compartment (translational and rotational accelerations; intrusion; yaw and pitch; steering column motion), the restraint systems (airbags and seat-belts) and the occupants (driver and passenger; different percentile dummies). This modular approach allows different barrier configurations (rigid; rigid angled; deformable offset), impact speeds and occupant sizes (Hybrid III 5<sup>th</sup> and 50<sup>th</sup>) to be modeled with simple changes to the input file. The benefits of this approach are the ability to obtain a preliminary assessment of vehicle compliance for a wide range of impact scenarios at a time when the vehicle package is still being determined.

