Recent Development and Applications Of Crash Test Dummies

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Abstract: Current methods to evaluate the crash safety of a vehicle include the use of instrumented, physical, human surrogates in specific test conditions to estimate a human's injury risk under the same conditions. The surrogates i.e. anthropomorphic test dummies or ATD's, must possess the general mechanical properties of the humans of interest and have sufficient mechanical impact response likeness to interact with the vehicle's interior in a human-like manner. Historically, dummies are developed to cope with a principal direction of impact, e.g frontal or side, and to assess the risk at the most critical injuries associated. However, the complexity of the loading environment that today's dummies are being exposed to in crash tests is changing significantly due to advancements made in structure, interior and restraint technology. This creates an increasing need for more advanced, highly biofidelic crash test dummies with extended injury assessment capabilities. A number of new crash test dummies under development will be presented, providing the background, design and their application. Amongst these are: THOR, WorldSID, BioRID and more advanced child dummies.

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