APROSYS FINAL EVENT

Integrated Project on Advanced Protection Systems

Classic Assessment and Test Tools

Advanced side impact test method

FUNCTIONALITY

- Suite of side impact test protocols for enhancements of R95 and Euro NCAP
- Investigation of non struck side occupants and side impact compatibility

EXPLOITATION

- EEVC WG13: Improved regulations
- Euro NCAP: Improved protocols
- Industry: Improved car design

SOCIO-ECONOMIC IMPACT

- Reduction in casualties in side impact

TECHNICAL DESCRIPTION

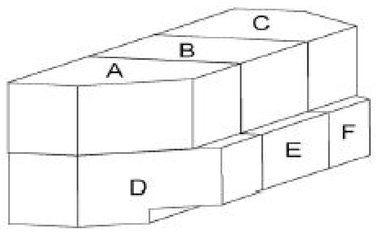
Objective

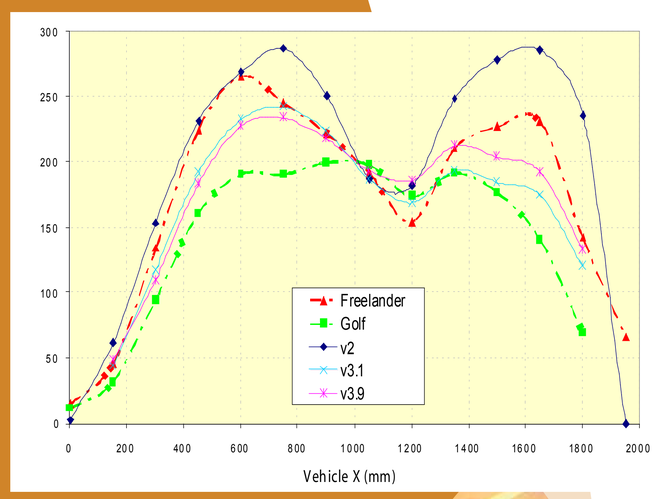
To complete and to evaluate the various draft protocols from EEVC WG13 and IHRA:

- AE-MDB test
- Car to pole test
- Interior headform test
- Side OOP tests

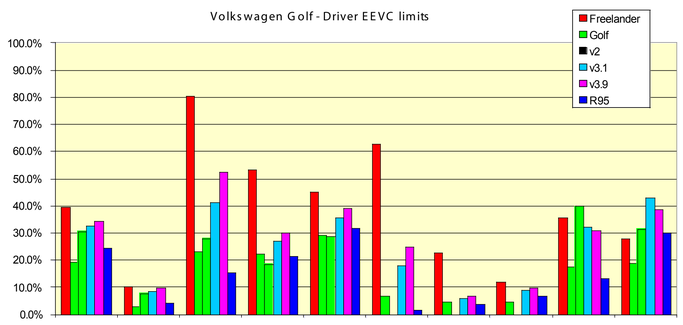
Approach and Results

AE MDB test
Two improved AE-MDB barriers with bumper beam elements, v3.1 and v3.9, were evaluated by comparison with baseline car to car tests, LCW calibration tests, robustness tests and computer simulations. ES-2 and WorldSID dummies (both 50th and 5th percentile) were used during testing. Analysis of dummy data, vehicle deformation and door intrusion velocity was performed.





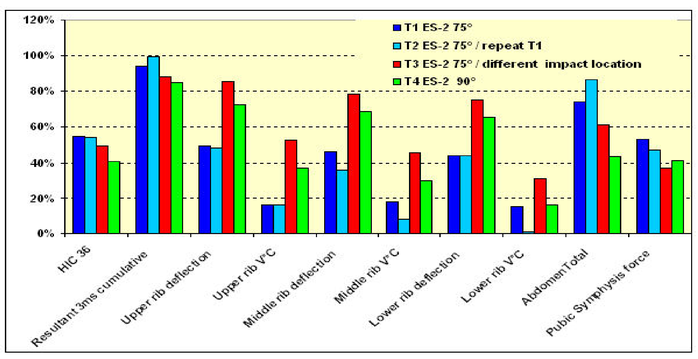
Vehicle deformation



Driver dummy results

Both AE-MDB v3 barriers were found to be more representative of an EU vehicle than previous AE-MDB barriers and the current R95 barrier.

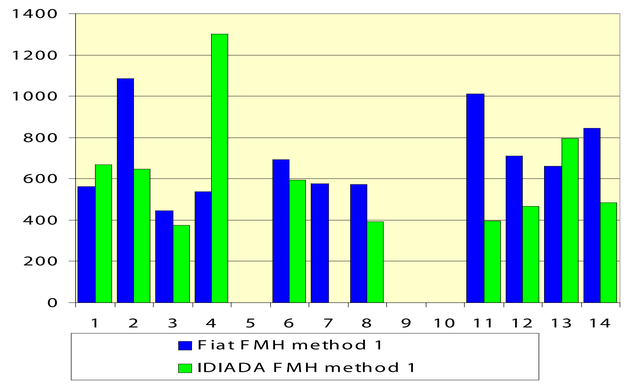
Car to pole test
Various car to pole test specifications were evaluated by full scale tests and numerical studies. Avensis and Legacy vehicles were used at two impact speeds of 29 and 32 km/h. Different angles of impact (0° and 15°), impact locations and pole diameters were also investigated.



Driver dummy results

The results showed a slight preference for a perpendicular car to pole test. However, the oblique test is also suitable for implementation.

Free motion headform test
Various alignment and impact tests were performed using Fiat Stilo and VW Golf.



FMH results

Major improvements to the EEVC WG13 draft protocol were proposed from this study.

Side OOP tests
IHRA draft protocol was evaluated by testing at 4 test laboratories using typical OOP scenarios for Europe. 3/6 year old Child and SID2s dummies were used. Additional tests with CRS were also performed.

Analysis of accident data found that there is no need for side OOP tests in Europe.

Further work

- Consideration of protocols by EEVC WG13
- R&D for side impact compatibility
- R&D for non struck side occupant safety improvement

SIXTH FRAMEWORK PROGRAMME

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