



**EUROPEAN
ENHANCED
VEHICLE-SAFETY
COMMITTEE**

**Status Report for the 22nd ESV
Conference**

Dr. Dominique Cesari, Chairman

INTRODUCTION

The EEVC, European Enhanced Vehicle-Safety Committee, was formed in June 1974 and has been active in participating in the ESV-programme. We are pleased to present the EEVC Status report containing a summary of the most recent results of our work at the 22nd ESV Conference.

Advanced Anthropometric Crash Dummies

This working group is the longest active Working Group within EEVC. The scope of the Working Group includes adult as well as child crash dummies and corresponding injury criteria. An overview of recent activities of EEVC WG12 is given below:

WorldSID dummies. In March 2009 a status report concerning the 50th percentile adult male WorldSID dummy was completed [1] and in April 2010 a status report concerning the 5th percentile female WorldSID dummy [2]. The development of the 5th percentile female WorldSID dummy has been carried out within the European R&D project APROSYS. An extensive international evaluation of this female dummy is currently taking place and members of EEVC are participating in the Informal Working Group for Side Impact dummies that is considering the appropriateness of WorldSID for future regulations.

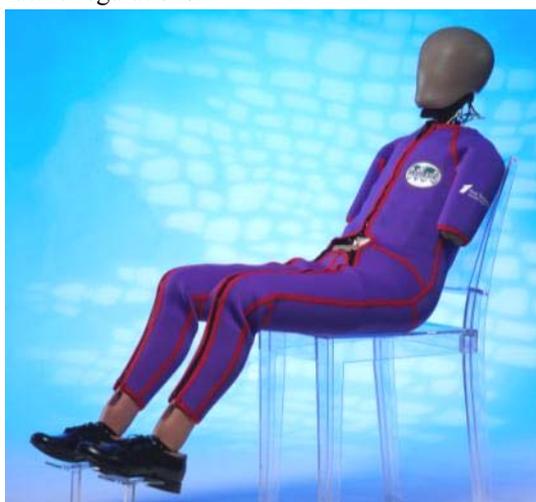


Figure 1: 5th percentile female WorldSID dummy

Advanced Frontal Impact Dummies. The main role on this work item of WG 12 is to advise on an advanced frontal dummy for regulatory use with

appropriate injury risk functions. For this purpose WG 12 follows closely the international activities concerning the THOR dummy taking into account the recommendations formulated by EEVC in 2006 [3]. Specific to lower leg injuries, EEVC WG 12 published a study in March 2009 addressing the THOR-Lx Design and Performance [4].

Whiplash Dummies. After completion in 2008 of an extensive evaluation of various crash dummies for low-speed rear impact, from which it was concluded that the BIORID is the most suitable dummy for this type of accident, WG 12 has focused its activities on seat performance criteria (whiplash criteria). In Dec. 2010 an interim report on the analyses of real world (insurance) data was finalized [5]. The main finding of this preliminary study was that the neck injury criterion NIC and upper neck shear force seem to be the best predictors for short and long term neck complaints following a rear-end impact. The work on this topic will continue in 2011 using a larger insurance database and new seat tests with the BIORID dummy in order to verify and further elaborate on these initial findings.

Child Dummies. The focus of the EEVC work in this field is on the new generation of European child dummies: the Q dummies. From a study completed in 2008 [6] it was concluded that the Q dummies offer a major step forward compared to the current P dummies used in UNECE Regulation 44. Currently the following 5 dummies are available in the Q family: a new born, a 9 month, a 1.5 year, a 3 year and a 6 year old dummy. The development of a 10 year old version of the Q dummies is taking place in the European project EPOCH [7]. The dummy is expected to be completed in 2012. WG 12 monitors these developments and plans to deliver a status report after completion of this dummy in 2012.

References

- 1) Status of WorldSID 50th Percentile Male Side Impact Dummy, EEVC WG12 Report Doc547 March 2009, see www.eevc.org.
- 2) Status of WorldSID 5th Percentile Female Side Impact Dummy, EEVC WG12 Report Doc557 April 2010, see www.eevc.org.

- 3) EEVC Recommendations on the Future of the Harmonised THOR Dummy, Report on the outcome of the Special Workshop on “Harmonization of THOR – The Advanced Frontal Dummy”, held 4-5 May 2006 at TRL, UK, see www.eevc.org.
- 4) Report on THOR-Lx Design and Performance, EEVC WG12 Report Doc. 546, March 2009, see www.eevc.org
- 5) Summary Report: Requirements and Assessment of Low-Speed Rear Impact Whiplash Dummies, EEVC WG12 Report , Doc. 505C, Oct. 2008, see www.eevc.org
- 6) Advanced Child Dummies and Injury Criteria for Frontal Impact, EEVC WG12 Report, Doc. 514, April 2008, see www.eevc.org
- 7) <http://www.epochfp7.org>

Side Impact Protection

The car side impact problem in Europe remains substantial and a frequent cause of fatal and serious injury. For this reason, the EEVC’s Working Group 13 has been active over recent years in providing advice concerning measures to reduce the risk of injury to road vehicle occupants in the event of a side impact and issued its latest report in March 2010. In this latest period, the working group focussed on determining the accident and casualty profile of European side impact accidents, and considered the development of a modified barrier based, pole and interior headform test procedures. The societal benefits and associated costs of a series of potential options for the modification of UNECE Regulation 95 were also considered.

French, Swedish and UK national data were analysed and showed that around one quarter of car occupant casualties are injured as a result of a side impact. However, this rises to between 29% and 38% for those fatally injured, illustrating the more injurious nature of this type of collision. In side impacts 60% of casualties are ‘struck side’ (SS) occupants and 40% are ‘non-struck side’ (NSS). The proportion of fatal casualties in simple car to car or car to pole impacts is substantial, 50% and 67% for the United Kingdom and France, emphasising both the relevance and importance of the mobile deformable and pole impact tests.

An analysis to estimate the likely societal benefits for modifications to UNECE Regulation 95 was completed for Great Britain; this highlighted that there is still much benefit to be gained from the side impact safety measures in place today for Europe (i.e. UN-ECE Regulation 95 and Euro NCAP). However, the introduction of a regulatory pole test (to the current Euro NCAP specification with full dummy assessment) into the existing UN-ECE Regulation 95 would deliver significant benefits to society in terms of fatal and serious injuries.

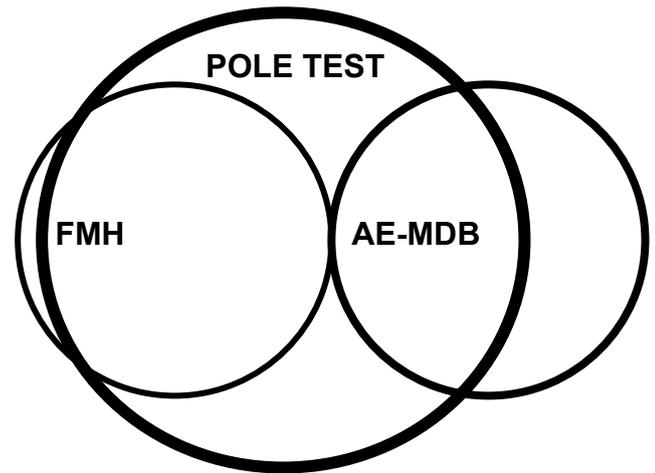


Figure 2: Interaction of different test procedures based upon potential benefits

Whilst the configuration of the current Regulation 95 barrier based test remains relevant, it is accepted that a more representative barrier is desirable and supportable from a safety perspective. Key characteristics of a revised test have been defined, though further work is needed to finalise the specification of the AE-MDB barrier Version 3 before it can be considered for use.

The EEVC WG13 test procedure for interior headform has been assessed as not fit for regulatory application at this time. Whilst a new test procedure has been identified and could be developed for use, the benefits from introduction of an interior head impact test appear limited at this time.

An analysis of National and in-depth data has been identified as the requisite first step towards better understanding of the injuries to non-struck side occupants, their associated mechanisms and determining the effectiveness of potential countermeasures.

EEVC current activities

EEVC has several active working groups dealing with the following topics:

-Car to Car compatibility

The working group on compatibility runs activities linked to the FIMCAR European research project. This group will analyse the results of FIMCAR as soon as they are available, with the aim to review these results with a pre-regulatory view.

-Child safety

In addition to the work reported above EEVC has focused its activities on child safety in the area of children transported in coaches and buses. In order to evaluate the importance and the specificities of this situation an accident analysis has just been performed by the EEVC accident studies working group (WG21).

-Virtual testing

EEVC has developed a new mandate for the working group dealing with this topic. This group will use a methodology based on case studies, from the most simple case (limited to geometry assessment) to the most complex (prediction of complex internal injuries).

-Bus and coach safety in frontal impact

EEVC recently began an investigation on this topic. The first step consists of an accident analysis performed by EEVC experts in this field in order to evaluate the importance of the problem and the conditions of representative accidents.

Future of EEVC

EEVC, which has contributed to IHRA activities from the beginning; is convinced that pre-regulatory safety vehicle research has to be approached at world-wide level; within that objective the Steering Committee of EEVC has confirmed that non-EEVC countries can participate at WG level to share their research with ours.

An EEVC Work Plan for the coming years

EEVC has existed for more than 40 years, and during this period the environment of pre-regulatory research in the field of vehicle safety in Europe (and world-wide) has considerably evolved. EEVC's Steering Committee has decided to launch an internal reflection on its future, with the challenge to understand better the new world in which we have to work and to determine our future research directions and priorities.

The discussion will consider the links with WP29, in order to take into account the agenda of WP29/GRSP (and other GRs dealing with vehicle safety) in EEVC priorities and to find the most

efficient manner to report EEVC work to these bodies.

The links with the European Commission will also be addressed in the discussions, especially the relations with DG Enterprise (in charge of regulatory aspects) and DG Research.

The planned discussions will also review the questions related to the status of EEVC, the procedures for financing researches prioritised by EEVC as well as the involvement of new countries in EEVC activities.

EEVC's Steering Committee has decided that the setting of the research agenda is the critical parameter in the further work of the EEVC, for both the scope of its activities and its priorities. It was agreed that short term and longer term research needed to be considered together.

For that purpose the EEVC Steering Committee has planned to meet in May, and expects to be able to report on our priorities during the oral presentation of EEVC Status Report at the 22nd ESV conference

In conclusion we are proud to note that EEVC has participated in all ESV conferences and has been responsible for organising the European part of the Student Safety Technology Design Competition since its inception. This year this was possible thanks to the FIA Foundation who sponsored the event, and some EEVC Steering Committee who contributed to the organisation of the competition.