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Testing of Electric Vehicles

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Testing of Electric Vehicles

On the 25th of August 2010 Euro NCAP announced that it will commence its focus on Plug-In vehicles. Early 2011, the first results of full electric vehicle tests will be released.

As testing these vehicles is new to Euro NCAP, additional preparations and precautions are taken to ensure safety before, during and after testing for all persons involved. Tests with Plug-In vehicles will therefore only be performed at crash laboratories whose personal is trained to work with high voltage vehicles.

In general, Euro NCAP will not treat Plug-In vehicles different to any other vehicle assessed. The UNECE Regulation 94 (Frontal Impact) and Regulation 95 (Side Impact) updates are noted, but will not be part of the Euro NCAP assessment.

Pre-test information

Additional information is required for a safe preparation of Plug-In vehicles. The location of the service plug, the minimum charge of the Rechargeable Energy Storage System (RESS) to any state which allows the normal operation of the power train and how to put the vehicle in neutral drive.

Vehicle preparation

Plug-in vehicles will be prepared for the full scale tests exactly the same as any other vehicle. However, before any preparation, the service plug needs to be removed to ensure there is no voltage within the high voltage circuit other than the batteries.

Additional measurements

It is already required during Euro NCAP tests to measure the voltage of the battery during the complete test. UNECE R94 and R95 are updated with a special paragraph on 'Protection against electrical shock'. Four test options are allowed to verify the protection against electrical shock;

1. Absence of high voltage
2. Low electrical energy
3. Physical protection
4. Isolation resistance

For the first two options, onboard measurements are required during test which is preferred option by Euro NCAP. The other options can be done at any time after test. Euro NCAP does not allow the use of the IPXXB (Physical protection test) and will at least perform the isolation resistance test.

To be able to see whether the automatic disconnect has functioned correctly during test an exterior LED indicator light will be mounted to show the status of the switch. The OEM is asked to provide guidance for mounting the LED lights.

Post-test

After the crash test extreme care needs to be taken to ensure that there is no high voltage exposed before anybody touches the vehicle. Immediately after test, the ignition is switched off and if possible the service plug is removed.

For storage, inspection and viewing the OEM is asked how to discharge the complete high voltage system so that there is no remaining energy.