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6th Meeting: WP29 - GRSP – Informal WG on Electrical Safety (ELSA)

Brussels – Offices of the European Commission

28 April 2009

29 April 2009

Meeting Report

Agenda (see ELSA-6-1)

The agenda was adopted.

Meeting Minutes of the Fifth Meeting (see ELSA-5-4)

Minutes of the fifth meeting were approved.

Action Items

Action items are listed in attached Table 1 (3rd meeting), Table 2 (4th meeting), Table 3 (5th meeting) and Table 4 (6th meeting) together with the organization/country responsible for each item.

Furthermore in Table 5 (6th meeting) action items are listed which are of importance for the GTR on hydrogen vehicles.

It is the result of the 6th meeting that there are no remaining open action items regarding the incorporation of the sub-section “in-use” into ECE R100.

The items concerning “post-crash” are also listed, and most of these items remain open pending further discussions. But most of them are still open because of the pending discussions.

ECE R100 and EU Type Approval Process (see ELSA-6-3)

The representative from the European Commission made a presentation regarding the further development to integrate ECE R100 into the EU type approval process.

Electric vehicles are now within the scope of the re-worded Framework Directive 2007/46/EC. Since technical requirements for electric vehicles are not yet included, the European Commission agreed to prepare a Council Decision to make ECE R100 mandatory for type-approval.

This topic was discussed during the meeting of the Technical Committee Motor Vehicles (TCMV) on 15 April 2009; however a decision was postponed pending the update to ECE R100. To enable a decision during the next meeting (6 July 2009) the members of ELSA proposed that the attending representative of the EC make a presentation about the “new” ECE R100.

Furthermore the Working Party on the Low Voltage Directive agreed during the meeting on 12 March 2009 that electric vehicles are outside the scope of

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the Low Voltage Directive (LVD). The Working Party also agreed that chargers of the batteries of electric vehicles shall be considered electrical equipment falling within the scope of application of the LVD.

The members of ELSA agreed that only parts of the charger outside of the vehicle are under the scope of the Low Voltage Directive. All vehicle components will be regulated by ECE R100.

Re-worded ECE R100

1. Scope

The extension of the scope to vehicles category L, mainly L6 and L7, was discussed. It was agreed that since no representative of these vehicle categories attended the meetings of ELSA they should be out of the scope. If there is an interest to include these vehicle categories in the future, an amendment of ECE R100 is possible.

2. Definitions

2-9 "Electric power train"

It was agreed to add the word "electric".

2-14 "High Voltage"

The study reservations regarding the upper limits from the USA were withdrawn.

Justification:

For live parts where the voltage is above 1,000 VAC or 1,500 VDC the state of the art protection degrees IPXXB and IPXXD cannot be applied. With higher voltage it is not enough to require that, for example, the finger probe does not come in contact with the live parts. At high voltage levels, the air gap width would have to be defined in detail; insulation material will have higher requirements for higher voltage.

2-24 "Service disconnect"

The word "disconnecting" was replaced with the word "deactivation" to avoid unnecessary design constraints.

2-26 "Vehicle type"

A definition for "vehicle type" was added.

4. Approval

4-1 Annex 5 and 7 where added

4-2 The updated ECE R100 will become the 01series. This has to be incorporated in the text.

4-4-1 In the footnote the contracting parties were up-dated.

5. Requirements and Tests

5-1 Protection against Electric Shock

Subtitle 5-1 "General" can be deleted.

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5-1-1 Protection against direct contact

The paragraph numbering was corrected.

5-1-1-3 Connectors

It was agreed that the requirements for connectors should be specified in a dedicated sub-paragraph 5-1-1-3 under "Protection against direct contact".

5-1-1-4 Service disconnect

The paragraph numbering was updated. Furthermore service disconnect will be mentioned explicitly.

5-1-1-5 Marking

Paragraph numbering was updated. Furthermore an allowance was added to allow the symbol to appear on the RESS.

Based on a presentation by OICA the wording for the exemptions where the symbol must appear was reworded.

Japan withdrew the study reservation regarding the covering of cables. Orange is now the agreed color.

5-1-3-1 Electric power train consisting of separate DC- or AC-buses**5-1-3-2 Electric power train consisting of combined DC- and AC-buses**

For the incorporation of subsection "in-use" into ECE R100, the USA withdrew its study reservation regarding the values of 100 and 500 ohms/volt. But prior to the USA accepting these isolation values in the up-coming GTR for hydrogen vehicles, the pending amendments to FMVSS 305 have to be finalized.

5-1-3-3 Fuel cell vehicles

The requirements under this sub-section are only valid for fuel cell vehicles. Therefore it was agreed to express this in the title of the sub-paragraph.

Furthermore the representative from the USA stated that for the subsection "post-crash" an alternative where the minimum isolation resistance requirement cannot be maintained is not acceptable.

5-1-3-4 Isolation resistance requirement for the coupling system for charging the RESS

JASIC asked for an explanation from OICA why this paragraph was added. OICA explained that there is a need to specify requirements for the coupling system. Therefore provisions from existing standards were incorporated. Based on this explanation, ELSA agreed the paragraph.

5-2-1 Protection against excessive current

Main contactors should also be allowed as a protective device for protection against excessive current.

5-2-3 Protection against overcharging

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It was agreed to delete this paragraph.

5-3 Functional Safety

An improved wording regarding the momentary indication for "active driving possible mode" was agreed. Furthermore it was agreed that the driver is informed of the selected direction of vehicle motion.

5-4 Determination of Hydrogen Emissions

5-4-1 An improved wording of the paragraph was agreed.

5-2 RESS, 5-3 Functional Safety and 5-4 Determination of Hydrogen Emissions

Although the requirements of ECE R100 are for "High Voltage", France has the understanding that the requirements of §§ 5-2, 5-3 and 5-4 can be considered for approvals of vehicles with voltages lower than 60 VDC or 30 VAC.

11 Transitional Provisions

It was agreed that the secretary of the group should make a proposal for the text of this paragraph.

The paragraph was added because it is already the case that approval authorities require electric and hybrid vehicles to fulfill the existing ECE R100. As the design of a new vehicle is a complex and time intensive process, it is not possible to abruptly switch from the requirements of the "old" to the "new" ECE R100 during an ongoing design of a new vehicle. The text together with the proposed 36 months transition period still has to be agreed.

Annex 1

It was agreed that in the communication form a description of the vehicle regarding RESS type, working voltage and propulsion system should be added. This will require a renumbering of the form.

Annex 2

As the revised ECE R100 will become the 01 series of the regulation, the examples of the arrangement of the approval marks has to be aligned.

Annex 3

It was agreed by majority that the sentence "Live parts..... in operation." can be deleted.

Annex 4**2-1-2 Measurement method**

It was agreed that the possibility to remove parts during the measurement when they can be damaged should be deleted.

Annex 6

In the documentation describing the essential characteristics of road vehicles or systems, the vehicle category has to be described.

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Annex 7 (including Appendix 1 and 2)

It is normal to use “shall” instead of “must” in ECE regulations. Therefore “must” has to be replaced by “shall”.

Next steps regarding amended ECE R100

It was agreed by the ELSA members that the amended ECE R100 should be presented as an informal document during the May 2009 session of GRSP. (Remark: Document was presented and will become a working document for the December 2009 meeting of GRSP.)

Subsection “in-use” and subsection “post-crash” in GTR for hydrogen vehicles

Before ELSA can go ahead with both subsections to be incorporated into the GTR for hydrogen vehicles, the USA has to finalize their ongoing rule making process regarding FMVSS 305. At the end of the process the USA (authority and industry) should have a clear position concerning both sub-sections.

Date and venue of the next Meeting

The following was agreed by the group for the next ELSA meeting:

Date: 10. – 11. September 2009

Venue: VDA (German Automobile Association) in Frankfurt

Thomas Goldbach,

27.05.2009

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Table 1(3rd meeting in Bonn)

Subsection “post-crash”		
Where	What	Who
§ 2.	Definitions should be listed alphabetically Status: Will be done by the secretary of the group as soon as the document is finalized.	Secretary of the group / open

Table 2 (4th meeting in Paris)

“in-use”		
Where	What	Who
2-22 (now 2-14)	Contact with chairman of IEC TC 69 for a justification regarding the upper limits (1.500 V DC and 1.000 V AC) Status: OICA gave an explanation which was acceptable.	OICA / done
2-22 (now 2-14)	Study reservation form USA regarding the 1.500 V DC and 1.000 V AC Status: OICA explanation was accepted.	USA / done
Attached Sheet 1 2-1-2	Proposal for a re-wording of the second paragraph Status: Paragraph will be deleted.	TÜV / done
“post-crash”		
Where	What	Who
2-13	Do we need this definition? Status: “post-crash” was not on the agenda of the Budapest meeting	OICA / open
2-18 / 2-19	What is the difference between “barrier” and “enclosure”? Is it necessary to have both definitions? Status: “post-crash” was not on the agenda of the Budapest meeting	OICA / open
2-22	Study reservation by the USA regarding 1.500 V DC and 1.000 V AC Status: “post-crash” was not on the agenda of the Budapest meeting	USA / open

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Where	What	Who
3-1	Question whether 5.0 liters of electrolyte spillage is still realistic. Therefore information about the battery design in the past and the future is necessary. Status: "post-crash" was not on the agenda of the Budapest meeting	OICA / open
3-2	Check whether the requirements out of FMVSS 305 is o.k. in § 3.2 Status: "post-crash" was not on the agenda of the Budapest meeting	OICA / open
4-3	Proposal regarding energy conversion system Status: "post-crash" was not on the agenda of the Budapest meeting	OICA / JASIC open
5	Justification required why alternative test and analysis methods should be allowed. Status: "post-crash" was not on the agenda of the Budapest meeting	OICA / open
5-2	Both sentences in green have to be checked Status: "post-crash" was not on the agenda of the Budapest meeting	OICA / open
5-2	Why 5 seconds ? Status: "post-crash" was not on the agenda of the Budapest meeting	USA / open
5-3	Green part of the text has to be re-worded Status: "post-crash" was not on the agenda of the Budapest meeting	OICA / open
5-4	t0 and t1 have to be defined to be able to integrate the product Status: "post-crash" was not on the agenda of the Budapest meeting	OICA / open
5-5-1	Table 1 is missing Status: "post-crash" was not on the agenda of the Budapest meeting	OICA / open
5-5-2	What does it mean that the access probe shall not touch the live parts ? Wording is not precise enough. It may be necessary that the live parts of the vehicle have to be listed in a form. Status: "post-crash" was not on the agenda of the Budapest meeting	OICA / open

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Table 3 (5th meeting in Budapest)

“in-use”		
Where	What	Who
3-2-4	Justification for the exclusions of labeling is necessary. Status: Based on the vehicle demonstration by OICA the wording was changed.	OICA / done
3-2-4	The possibility whether to allow only orange color for the identification of outer covering etc. has to be checked by Japan. Therefore Japan raised a study reservation. Status: Japan accepts only orange for the identification.	Japan / done
4-3	Justification whether a test for possible overcharging is necessary or not is necessary. When there is a justification a well proven test procedure will be necessary. Status: Paragraph was deleted.	TÜV / done
Attached Sheet 3 2. Test conditions	The test conditions in general have to be checked. It should also be proven whether it could be allowed to use drawings and/or CAD. Status: The text was re-worded.	OICA / JAISIC / USA / done

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Table 4 (6th meeting in Brussels)

“in-use”		
Where	What	Who
2-14	Provide justifications for upper limits; what requirements in section 3 would be affected by the upper limits? Status: Justification for the upper limits is in this report (see 2-14 in text above)	done
3-2-4	The exceptions essentially preclude the marking requirements; either remove the exceptions or remove the marking requirement. Status: See 5-1-1-5 above	done
4-4	Same questions on overcharging? What level is considered overcharging? Status: Paragraph regarding overcharging was deleted	done
Attached sheet 3; section 2	The last paragraph is not possible for compliance test. Status: Section was deleted	done

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Table 5 (6th meeting in Brussels)

“in-use” in GTR		
Where	What	Who
3-3-2-1& (now 3-4-1) 3-3-2-2 (now 3-4-2)	Study reservation form USA regarding the 100 ohms/Volt and 500 ohms/Volt thresholds Status: Because of the ongoing rule making process in the USA a study reservation regarding the up-coming GTR for hydrogen vehicles is still necessary.	USA / open
Whole document	<ul style="list-style-type: none"> Where does the USA need an explanation or justification for their rule making process regarding the implementation of the GTR for hydrogen vehicles in the USA? No justifications for the requirements are provided - It is difficult to make an assessment of the relevance of the requirements without review of the justification document. Status: As soon as a complete list is available OICA will provide the necessary justification.	USA / OICA open
Section 3-3	“Protection against indirect contact”: design restrictive - It is written for type approval. Status: The paragraph has to be amended in a way that the requirements are acceptable for type approval and self-certification.	All / open
3-4-2; 2 nd paragraph	What is the justification of requiring 100 ohm/volt for AC buses? How would one determine how much insulation was used by the manufacturer? How would we conduct compliance test? Looks like these requirements are designed for type approval. Don't think we could regulate this. Status: Justification has to be delivered by OICA	OICA / open

4-1	What is excessive overheating? 150 degrees? Does this coincide with Lithium Ion battery thermal runaway temperatures? What is the justification? Status: Justification has to be delivered by OICA	OICA / open
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