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Proposals for amendments to annexes A and B of ADR: construction and approval of vehicles

ECE/TRANS/WP.15/2022/5 – Battery electric vehicles

Transmitted by the Government of Germany

Introduction

In principle, Germany appreciates the introduction of Battery Electric Vehicles (BEV) in the ADR Agreement. However, the proposals as presented in working document ECE/TRANS/WP.15/2022/5 (by the Netherlands) should be further developed before they are included in ADR.

Concerns

1. No analysis of the whole vehicle

WP.15 has given the mandate to establish IWG-EV and the corresponding subgroups to ensure a holistic examination of all relevant matters. As the work of the five subgroups has not been concluded, it is not yet possible to make content-related revisions to the ADR Agreement. Document ECE/TRANS/WP.15/2022/5 is not in line with the given mandate and requires further consideration, including a revision of further chapters of ADR. Moreover, the participants of the “Vehicle Usage” and “Vehicle Construction” subgroups have prepared a catalogue of questions on UN Regulation No. 100 that concerns battery safety. This catalogue has so far neither been replied to nor evaluated. UN Regulation No. 100 serves as a basis for integrating battery-electric drive systems into the ADR Agreement; therefore, it makes sense to resolve the outstanding issues before formulating requirements to be included in Chapter 9.2 of ADR.

Furthermore, it was reported at the IWG-EV meeting of 28 March 2022 that no significant activities had been undertaken so far in the three subgroups (Hydrogen Vehicles Subgroup, Trailers and Bodybuilders Subgroup, Explosives Subgroup).

In addition, the “Trailer and Bodybuilders” subgroup has not met. So, at this point of time, it is not yet possible to make reliable statements as to whether, and in what way, the bodies or trailers of a commercial vehicle should be designed to minimize possible dangers. This applies to ADR vehicle categories AT and FL (see ECE/TRANS/WP.15/2022/5, Annexes I and II).

2. No holistic consideration of the ADR Agreement

2.1. Technical requirements

Annexes I and II to the working document (ECE/TRANS/WP.15/2022/5) refer almost exclusively to Chapter 9.2 of ADR. In section 9.2.4 of ADR, the paragraphs were only renumbered, but no content-related amendments were made. In general, necessary amendments with regard to AT and FL vehicles, if any, should be made in the entire Chapter 9.

Furthermore, it makes sense to integrate battery electric drive systems into the entire ADR Agreement. Here, it should be considered to amend Chapters 4.3 and 6.8.

The requirement that “[m]easures shall be taken to prevent any danger to the load by heating or ignition” cannot be fulfilled, as it is not specified what concrete protection targets are required or what parameters are relevant for assessing the measures as adequate. It is also not a good idea to describe such a requirement only in Chapter 9.2 of ADR.

Moreover, the switching-off of the electric power train by means of a battery master switch should be examined thoroughly. Breaking the electrical circuits suddenly may damage components that need to be cooled separately, which might cause a greater danger (cell overheating) than without breaking the circuit.

2.2. Administrative requirements

To administratively register a BEV in an adequate way, it is also necessary to amend the certificates of approval for vehicles carrying certain dangerous goods (9.1.3.5 of ADR).

2.3. Safety requirements to be met by loaders, unloaders as well as carriers

The requirements applicable to vehicle crews, equipment, operation of the vehicles and documentation in Part 8 of ADR as well as the safety obligations of the participants in Chapter 1.4 should also be taken into account. It must be assessed in advance whether necessary information and obligations for loaders and unloaders need to be included here.

Outstanding issues

1. What protection target is to be pursued in general? For example: Protection of the load for a period of [x min].
2. Have the risks that the individual power train components may pose to the load been fully considered?
3. What general requirements should battery master switches for a BEV have to meet? For example, is it permissible that the cells of the high voltage drive batteries remain energised even though the battery master switch has been activated?
4. Battery master switch: What is necessary to break the electrical circuit in a controlled and safe manner?
5. Is it necessary to consider the battery types more closely with regard to the protection of the load? (Batteries containing flammable electrolytes could possibly be assessed differently than solid state batteries. Here, a definition seems to be necessary as well as a differentiation between the power train variants: BEV/HFCV/Hybrid).
6. In what state (loaded with dangerous goods or empty) is it permitted to charge the high voltage drive battery?

Recommendation

Germany recommends that BEVs only be integrated into the ADR Agreement after completion of the IWG-EV’s mandate.

Only after the results of all IWG-EV subgroups are available there will be a sufficient basis for formulating all necessary requirements. All necessary amendments to ADR regarding BEVs should be adopted as a comprehensive package.