

**Industry comments on ECE/TRANS/WP29/GRVA/2018/04
(Proposal from Germany to amend UN R131 (AEBS))**

General comments:

AEBS is addressing one of the most common accident types. Industry considers the system as a cornerstone for improvement of road safety and can support a future update of the UN requirements. However, before defining the details of the technical requirements, an analysis of both safety benefits compared to current AEBS step 2 requirements and technological consequences is needed. Given the date for mandatory installation of AEBS step 2 in the different Contracting Parties (e.g. November 2018 in EU, between 2019 and 2021 in Japan), an accurate assessment of the effect of AEBS looks difficult to get in 2018, or even in the course of 2019 in EU (and even later in Japan).

The proposed changes to UN R131 will lead to a heavy redesign and complete validation of the system, furthermore within a quite ambitious lead-time:

- The new requirements looks to be tending towards a kind of “ACC or automatic headway control”, rather than a pure emergency braking system only intervening when the driver is obviously failing to react to a potential collision. For example the new requirements on wet roads will lead to earlier warning and braking phases, while the pre-braking phase will be permitted to reduce speed without limits.
- The consequences on the system concept of this new regulatory approach should be further analysed, since it may have consequences on aspects such as sensor performance, system strategies (e.g. warning, pre-braking etc.), balance between early intervention and limitation of false interventions etc.
- If this new approach may work for a typical highway use, it is a real concern if it will be relevant for city or interurban use case, all the more as the use of the deactivation means will be neutralized by the required automatic reactivation above 30km/h.
- The proposed changes also raise the question of differentiation of requirements for LCVs and HCVs, e.g. due to different vehicle dynamics and usage.

Regarding the application lead-time, it should be defined once the final technical requirements are decided; the industry must be given enough time for product development and industrialization.

During a former GRRF session in 2017, the EU and Japan proposed to prioritize the development of an AEBS regulation for M1 and N1. This proposal was accepted by WP29 and an informal group is working for more than a year now. This proposal to amend AEBS regulation or Commercial Vehicles is changing the priority. Such heavy modifications on UN R131 require an expert group to start, which will create additional resources issues to existing expert groups. AEBS priorities should be reviewed in the global context of new GRVA scope, and not only as a standalone subject.

Industry recommendation is to stick to the AEBS priorities decided at WP29, i.e. to start with M1 N1, while assessing in parallel the effect of new AEBS step 2 application. Industry is open to contribute to a technical meeting with interested CPs, e.g. to analyse the technical data and accident research data from Germany justifying the need for change.

Focus on some technical concerns:

- Increasing performance requirements to such a high level will lead to early interventions, with potentially higher pre-braking levels, which will increase the risk of false positives; and we know that false positives can provoke unnecessary emergency braking by the driver or in best case erode public and drivers' trust in the system. The performance level has to be balanced with the system robustness (against false positives). The new proposals here will at least require a heavy system re-design, and potentially lead to technical feasibility issues.
- Wet road requirements: how should the system detect dry and wet roads? If not able to do so (which is the case today), the system should be tuned with the assumption that the road is wet, which will lead to unacceptably early warnings on dry roads. This is a typical point where the technical feasibility is not proven.
- Relaxing of constraints on pre-braking: industry welcomes this relaxing of the requirements, however wonders if this will change, when coupled to other parts of the proposal, the philosophy of the system
- Manual deactivation is needed today to keep a high performance level of the system for the use which targeted by the regulation (highway / monotonous long haul drive), while managing specific use cases with a switch, e.g. driving through construction zone, front mounting equipment, Off-road use (non-special purpose vehicle), curvy countryside roads, heavy traffic... Deleting the switch will lead to more conservative system tuning, which is contradictory to a performance increase.
- Overriding: what is a conscious and unconscious action? How could the system detect and distinguish conscious actions from non-conscious actions? This is not relevant, especially for an SAE level 0 system.
- Detection of sensor blockage within a few hundreds of milliseconds is an issue, especially in case of partial blockage, which is the majority of cases. Currently the cases of sensor blockage by front equipment are dealt at national level or by recommendation to use the off switch at every power-on (which create owners' and drivers' frustration). The sensor blockage detection is from our standpoint more a safety measure than a means to automatically disconnect the system once a front equipment is installed. Industry however welcomes the willingness from Germany to find a solution for this issue.

Misc. items

- Not only the performance level is increased but also the structure of the regulation, which makes the whole text more difficult to read. Is it necessary to reformat the requirements?
 - Some requirements should be simplified (e.g. define a table rather than a complex formula).
 - The practical execution of the tests has to be feasible (e.g. test conditions, wet road) and reproducible (worldwide): new requirements on decelerating targets, increase of number of tests with differential speed etc. creates a number of potential questions.
 - Mechanical suspension will always be more difficult to tune, thus require potentially more lead-time; the text should be kept in the introduction
 - Reference to ISO working draft standard is not relevant (the work is not completed, ISO standard are not available to everybody...); furthermore the standard is changing the target type which have been used so far
 - Differentiation is needed between LCVs and HCVs (e.g. due to different Last point to brake vs Last point to steer).
 - Industry has a number of other comments, which we are ready to share.
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