

<p>Report of the ad-hoc GRRF meeting on EVSC Budapest 25 and 26 November 2004</p>
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Chairman: Mr. Laszlo PALKOVICS

Secretary Mr. Roland Gillebeert

Participants: see list of participants annexed.

Associated documents: EVSC04-01 Joint position on amendment of R13
EVSC04-02 What regulation to be considered?
EVSC04-04 State of the art on EVSC Dr. HEES
EVSC04-05 State of the art Trailers. Mr. C. ROSS
EVSC04-06 Testing of EVSC Mr. MAYR-FRÖHLICH

Summary of the most important points of the meeting:

1. A proposal from the industry working group has been taken as a basis
2. The participants agreed to include the requirements in R13, and amend R79
3. As a platform for the regulation, most of the participants accept the design requirements + demonstration of the functionality vs. performance requirements, however, a list of the potential tests will be composed.
4. A list of vehicle categories and lead times will be made
5. A list of non compatibility of vehicles will be made.

Tasks required for the next meeting:

1. Potential performance tests – Mr. Gabor BRETT to ask for proposals and compose it by January 20
2. List of the category of vehicles and lead time – Mr. Palkovics by January 20
3. Compatibility list, deeper investigation – Mr. ROSS by January 25.

Next meeting: January 25 2005 at OICA PARIS

Report of the FIRST DAY meeting

The chairman introduces Mr. Karoly PONGRACZ of the Ministry of Economy and Transport of the Republic of Hungary.

Mr. Karoly Pongracz welcomes the participants and explains the task of the department in Hungary. The Hungarian decrees are mainly based upon the EU Directives and the Regulations of the United Nations of Geneva.

The responsibility of the department is to strive to an improvement of the road safety and the EU Directives and ECE regulations are good tools to build safer vehicles. He hopes the meeting will be fruitful and wishes success to the meeting.

The chairman welcomes the participants on his turn to this first meeting on EVSC. This meeting is a combined effort of the industry and the contracting parties representatives to come to an acceptable solution for the introduction of vehicle stability programs in certain categories of vehicles.

The agenda is then reviewed to come to a more consistent program.

A roll call of the delegates is done.

The chair points to the mandate of this group:

- These are:
1. Come to a consolidated target and have a common concept
 2. Where shall we regulate (R13, R111, R79, a combination or even a new Regulation)
 3. How to regulate.

We have to respect a timeline. The next meeting will be held in Paris in the OICA premises on January 25 2005. It will be a one-day meeting.

After that a report will be presented at the GRRF of February 2005.

The chair invites the industry to give some update of the state of the art on EVSC.

Dr. HEESS (Daimler Chrysler) give an overview of what was presented in GRRF before.

The presentation is saved under document nr. EVSC 04-04.

The presentation shows how the system works in general. The driver gives the path. The task of the control is to follow the intention for direction of the driver. Therefore the steering wheel angle is measured and other parameters like longitudinal dynamics, braking and engine input. The state of the vehicle, single wheel speeds and so on is gathered to know what is happening.

Other info like yaw angle measurements measure lateral acceleration, the load on the wheels and so on.

The control over the vehicle is recovered by braking individual wheels or axles, while at the same time the engine power is controlled by the fuel injection. Once steer by wire is introduced, even the steering angle could be corrected; In this case also R79 will have to be amended.

We distinguish between directional road stability control having 2 dimensions and stability having 3 dimensions.

There is also input to the motor vehicle from the trailer.

The existing state of the art can be summarised as follows:

Stability control systems are common in middle and high range of passenger cars.

Also in smaller vehicles one sees the introduction of stability control systems

VAN type of vehicles are just commencing. A period of 2 year, at least, is required to cover VAN's; the problem is the higher point of gravity of these vehicles.

HGV (heavy goods vehicles): vehicles having EBS can be equipped with EVSC. Germany requested heavy coaches and HGV for ADR transport to be equipped with EVSC.

For HGV we cannot cover all variants. The basis being EBS on pneumatic brakes. I. E. air over hydraulics is a system for which no solution is on the market today.

When referring to heavy vehicles, we have coaches in mind and tractor semi trailer combinations with simple axle configuration. A tractor 4 x 2 with a 2-axle semi trailer. We are now working towards semi trailers having more axles.

The market spread of EVSC systems is that about 50% of the cars produced in Germany have EVSC. In Europe this is about 25%.

The ESP equipment for HGV is an open question.

We have systems for EPB (Electronic Pneumatic Braking). More and more equipment becomes available. There is no solution for vehicles between 5 to 12 tons

Especially the dynamics of the full trailer are still difficult to grasp. It is still not clarified what system can be introduced. These trailers have a steered axle.

Mr. Colin Ross then gives an overview of the trailer state of the art.

His presentation is saved under reference EVSC04-05

If one looks at accident statistics, in the U.K. we see about 1 roll over accident per day.

There are reasons to believe the situation is not better on the continent. More roundabouts are made, and these create situations where rollovers occur.

The causes are in general: driver misjudgement, collision avoidance manoeuvres, in this case the trailer cannot sustain and rolls over. Vehicles tripped, hit something and rolls over, over speed, over the systems limits, even minor misjudgements can cause roll overs; it is not always a matter of over speeding.

Influencing factors for roll over are i.e. move of the centre of gravity, the loading conditions have an impact, secondary conditions like roll stiffness of the vehicle, tyre pressure, torsional chassis stiffness, suspension characteristics. The longer the chassis, the less stiffness.

In case of low tyre pressure, this will cause sooner a roll over.

Introduction of EVSC is a major step forward. The system can apply the brakes of the individual wheels without commands from the driver. In case of trailer we refer also to roll over stability, this can be with or without EVSC.

Mr. Mayr-Fröhlich from MAN gives a presentation on the test methods used to evaluate the EVSC systems. This presentation is saved under ref. EVSC04-06.

Each vehicle must have its own release due to many different parameters like wheelbase, axle configuration, centre of gravity etc.

We see that city buses and military vehicles do not have EVSC and it is not foreseen for these vehicles.

Test done need careful preparation, one must add supporting wheels to the bodywork, which, in case of buses, represent a difficult and expensive construction. This particularly the case in high mue conditions where the change of roll over is realistic.

For truck semi-trailer combinations, a prepared trailer is available.

In case of high mue, special test areas must be looked for like Boxberg, Papenburg, Mira etc, low mue is covered on proving grounds in snowy and cold areas. In fact complete winter tests are needed in Scandinavia.

The tests are not without risk. They time consuming and very expensive.

We also see that in case of super single wheels, the EVSC is a need. A puncture of such a super single has fewer consequences if EVSC is mounted on the vehicle.

Extensive tests are done on normal roads. Comfort should not be jeopardised. The clients must have an acceptable solution. It is proved that EVSC makes a vehicle safer.

The chair asks for comments:

The system must warn the driver before something happens. But this must be in a comfortable way. It is not allowed to be such that the systems educate the driver.

A correct compromise between comfort and driver acceptance must be looked for.

Anyhow, it will not be possible to switch of the EVSC.

Specifically in roundabouts the help of EVSC is welcome. The Scandinavian winter conditions also require EVSC. Traction control is normally combined with EVSC, but traction control can be switched off; although in that case the driver will receive a warning.

The chair concludes that all are on the same level of understanding.

Mr. Gabor Brett makes a presentation on where to put the EVSC requirements.

The presentation is saved under the reference EVSC04-02.

The presentation shows an extensive overview of the different Regulation in which one could include the EVSC requirements. The regulations considered are : R13, R79, R111, R107 or even consider a new regulation just for the sake of the EVSC.

The EVSC is interacting in more than 1 requirement. It deals with the braking, the steering, suspension, powertrain, driver assistance, pre-crash systems, complex electronic systems etc.

One can go from minimal to maximal in the approval of the system. Or may be one could go for a modular concept.

Even a complete new regulation can be considered. Or something like Regulation R10 (EMC). When it comes to vehicle type approval, this could be omitted in the first phase, but it is desirable to have a system approval for EVSC.

The chair thanks Mr. Brett for this extensive and complete overview and asks for comments.

There are a number of questions raised: why would we regulate? It is not needed, but mandated by GRRF. Sooner or later we will have a regulation on it.

The mandate was the potential to have certain vehicles equipped with EVSC. All we need is some kind of definition.

This viewpoint is accepted. We would be better off without a test than a bad one. With all the regulations shown (by the Hungarian delegate), it can never work. We must aim to amend one regulation only. We should not consider retrofit to existing vehicles. Comparison is made to ABS braking systems not being mandatory but on vehicle above 16 Tons. It could happen to EVSC as well.

According to the group regulation R13 seems to be the natural choice to put in EVSC requirements.

Mr. Paul Jennison presents his document EVSC04-01.

This document is the result of 4 meeting of the industry whereby the vehicle manufacturers, the suppliers, CLCCR, truck and bus manufacturers where involved. The document is based upon Regulation 13. It would need restructuring if the requirements would have to be put in a different regulation. Today there is no regulation on the subject. The industry felt a regulation was needed if EVSC would become mandatory.

More specifically, we needed definitions. Point 2.28 is what came out of the meetings. We have specific definitions for power driven vehicles and trailers. The definition is clear and not bound to a specific manufacturer or brand.

The document is revised point per point and leads to the document saved as EVSC04-01 as attached to this report. It must be underlined that all parties involved can live with the text, although some refinements could be added.

While debating on this document, a large number of aspects related to EVSC and Roll over stability functions surfaces.

It is clear that the industry is not ready to cover all vehicles at present on the market. More specifically the vehicles between 5 and 12 tons GVW and having air over hydraulics are not covered. Full trailers give a problem. EVSC in combination with Roll over control could solve the problem. The steering axle of full trailer constitutes an extra complication. In case of steered axle, one needs yaw control also.

The Japanese industry delegation states that in Japan the tractor vehicles have only roll over control, but this is referred to as stability control.

Mr. Jennison says the document is made up to cover certain categories of vehicles, not all categories.

When tackling the problem of testing, different opinions are given. Germany wants definitively a test in order to check that what is claimed by the manufactures is correct. Simulation can be accepted on condition it can be checked. The Dutch delegation has his doubts about the quality of the improvement. A 1% improvement could already be sufficient to get a certificate. The question is how to measure. The forum agrees that describing a test would be very difficult if not at all impossible. The test as presented by the representative of MAN can not be used for type approval. The German delegate insists on having some kind of test to confirm the simulations. A computer is OK but does not show real live conditions.

The industry points to the fact that for a motor vehicle the EVSC must be tailor-made. This is not the case for a trailer. The criteria are the many types. This is the reason why Annex 19 of R13 is specific for trailers.

According to Mr. Jennison, there is a big difference between a motor vehicle and a trailer. The actual functionality gives a tremendous difference.

According to the German delegate, the missing link in this document is the vehicle category to be considered. But it is not our task to decide about this.

The conclusion of the discussion of the documents are the following:

- Tests: some simulation in relation to roll over to be demonstrated

- Vehicle categories to be decided on

- Refine the text at some places.

Mr. Jennison refines the outcome as follows:

- Inclusion of this document in R13, and amendment to R79

- Definition of the stability control function.(point 2.28)

- Design requirements versus performance requirements (5.2.1.31.5)

- Testing

- Vehicle categories

The chair presents the above points for further debate:

The German delegate believes it is a good idea to start with R13., but believes one should discuss the creation of a special annex for it. But he has no strong feelings about it.

The Hungarian delegate believes it would create problems to approve to R13 without testing the EVSC.

The chair does not believe it would change anything.

The German delegation still believe a different annex would be better.

The chair concludes that this has to be decided by the GRRF.

The group again comes to the point of testing.

Germany: One should define a minimum test, i.e. this vehicle must fulfil this test. But adds that he has no answer at this time what this test would be. This is related to point 5.2.1.31.2 of the document.

The industry delegate (DC) remarks that one should have at least fundamentals of what can be measured.

The question is asked why do we need 5.2.1.31.2.? The next point (5.2.1.31.3) makes this meaningless.

Mr. Jennison says the idea was not to exclude anything.

The chair says that we will present it to GRRF like it is. We must make an evaluation of what can be done or not done. We should look for performance measures. Thereby we will not exclude future proposals.

For the next meeting (January 25 2005 in Paris) we should prepare a list showing possibilities for tests.

The chair invites the participants to contribute to this list.

Categories of vehicles:

There are for the moment 2 documents tabled within ECE on the subject of EVSC:

1. Informal document GRRF-55-7 from Hungary
2. TRANS/WP.15/2004/11 OF THE German delegation in WP15

If the requirement for EVSC becomes mandatory, long lead-times must be foreseen. One must also consider the huge number of vehicle to be re type-approved.

Having regard to the German document, looking for motor vehicles over 12tons, it was already stated that no systems are available and thus considerable lead-times must be granted.

After some discussion on this subject the chair proposes the following:

We must make a list to see what categories of vehicles should be covered and what lead-times are required. One should consider non-compatible combinations as well.

Report on the SECOND DAY meeting

The chair takes the opportunity to go through the document once more to make clear agreements.

The secretary says that the numbering of the document have to be changed to be in compliance to the UNECE rules.

All documents and presentations referring to EVSC will have a numbering starting with EVSC followed by the last two digits of the year and followed by a sequence number.

The document tabled will thus bear the reference: **EVSC04-01**

The chair says we should recommend an amendment to R13 for practical reasons.

Thus we can avoid long procedures and extensive amendment work.

Consideration of R79 and possible R111 can be looked at in a later stage.

The consensus of this meeting is clear: we go for amendment of R13.

The German delegate says we need brake experts anyhow to deal with this matter, therefore R13 is the best place.

Once more the group starts discussion about testing methods and if we should have tests in the first place.

The majority can live with design requirements and a demonstration of the functionality. It is understood by the German delegate that a simulation can be accepted but a sample vehicle should be used to demonstrate the system. He is not prepared to accept simulations as such.

Looking for a text that could cover the needs of the different delegates, Mr. Jennison proposes to cover this in a footnote.

The German delegate indicates that the footnote has the same effect of a paragraph, but he has no strong feelings about that.

The chair says that it must be agreed between the vehicle manufacturer and the test authority what is acceptable and what is not.

Some more editorial changes are proposed. Verification is not the same as validation. Demonstration is not a word one likes to see in a regulation, Alternative to... etc. are considered. At the end of the debate, the group returns to the original text.

The Dutch delegate still feels that we need to see progress. The text as it is still allows bad systems.

The chair replies that there is today no experience available, and that we will collect information on the subject.

The compatibility subject is again debated. The chair asks Mr. Colin Ross to make an updated table for the next meeting. We must have a good idea of the obstacles and difficulties to inform GRRF accordingly.

Mr. Colin Ross questions how we can advise GRRF correctly having regard to the fact that no experience exists. A lot of open questions remain unanswered, there is the non availability of the technique.

The chairman then closes the meeting thanking all participants for the contributions and their positive attitude.

Next meeting: in PARIS on January 25 2004 at the

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Preliminary agenda items:

1. Revision of document EVSC04-01
2. List of test possibilities
3. List of category of vehicles/lead-times required
4. Non compatibility of vehicle combinations
5. A.O.B

Enclosed documents and presentations:

EVSC04-01 Joint position on amendment of R13 Mr. P. JENNISON

EVSC04-02 What regulation to be considered? Mr. GABOR BRETT

EVSC04-04 State of the art on EVSC Dr. HEESS

EVSC04-05 State of the art Trailers. Mr. C. ROSS

EVSC04-06 Testing of EVSC Mr. MAYR-FRÖHLICH

Roland Gillebeert

Secretary EVSC ad hoc Meeting.