

## **Report from the informal group on Camera-Monitor Systems, UN Regulation No. 46 (Devices for indirect vision)**

The text reproduced below has been prepared by the expert from the Netherlands to inform GRSG on the work progress of the informal group on Camera-Monitor Systems (IGCMS-II).

1. At its 105<sup>th</sup> session, GRSG decided to restart the informal working group on camera-monitor systems (IGCMS) for the replacement of mirrors of class I to IV and [VII] by camera-monitor systems (CMS) and agreed on the Terms of Reference (ToR) for a further stage II. WP.29 gave its consent in its 161<sup>st</sup> session. The main reason for re-establishing the informal group is that the simple reference to ISO-16505, as given in ECE/TRANS/WP.29/GRSG/2011/23/Rev.1, is not appropriate as that the standard will contain several recommendations instead of clear type-approval requirements.

Participants of IGCMS-II are representing vehicle manufacturers, manufacturers of devices for indirect vision as well as Contracting Parties and technical services from Germany, UK, France, Japan and the Netherlands,  
The officers for IGCMS-II are Mr. Schoenemann of Gentex (secretary) and Mr. Jongenelen from the Netherlands (chairman).

2. IGCMS-II met several times as follows:
  - 1<sup>st</sup> meeting: 5 and 6 February 2014 in Cologne,
  - 2<sup>nd</sup> meeting: 27 and 28 March 2014 in Berlin,
  - a short intermediate telephone conference on 5 March 2014 which faced technical problems while another telephone conference is scheduled for 13 May 2014.Further meetings are scheduled for 5 and 6 June in Paris and, if needed, 29 and 30 September 2014 in Geneva.  
The planning is to have the final proposal available in GRSG-107, preferable as a formal document or otherwise as an informal document. Adoption by GRSG should take place in its spring 2015 session.
3. First meeting (5 and 6 February 2014)  
The IG agreed in principle with the ToR as adopted by GRSG in its 105<sup>th</sup> session, however:
  - \* it is not the intention of the IG to make proposals for improvement of the provisions of UN Regulation No. 46, but only for amendments for the application of CMS of class I to IV and [VII] under the same conditions as for mirrors and
  - \* the primary task has already been finalized by IGCMS-I.IGCMS-II took note of a presentation on the progress of the development of ISO 16505; it is expected that the standard will be published at the end of 2014,  
The IG started a first discussion of a proposal by Germany for amending document ECE/TRANS/WP.29/GRSG/2011/23/Rev.1.  
All documents are available on the website of the informal group.
4. The working document IGCMS-01-02 is based on the principle that for devices for indirect vision of class I to IV and [VII] the requirements and test methods of ISO-16505 will apply

unless otherwise provided in a new Annex 12 to UN-Regulation No. 46. Such topics of Annex 12 concern:

- functional safety,
- adjusted default view,
- overlays,
- operating readiness
- installation of the monitor in a vehicle (obstruction of the field of vision, positioning, reflection),
- luminance and contrast of the monitor,
- gray scale rendering,
- smear,
- point light sources,
- color noise,
- geometric distortion,
- pixel faults,
- flicker,
- glare on the monitor,
- image formation time,
- failure behavior and
- image quality.

It is recognized that further distinction is needed between requirements for component approvals and for installation approvals.

5. Second meeting (27 and 28 March 2014).

The group noted a presentation of BAST on the comparison of the use of CMS with the use of mirrors; the conclusion was that no significant differences are recognized.

The IG continued the examination of the German proposal and

- supports, in majority, the idea that a modification of the view by the driver should not be regulated but left to the responsibility of the vehicle manufacturer,
- reached a principle agreement on several topics like adjusted default view, operating readiness, viewing angle, flicker and image formation time, while for the other topics listed above further discussions are needed,
- will not deal with devices of class VII for category L vehicles as ISO 16505 doesn't cover CMS's of class VII unless a specific contribution of that vehicle sector is provided,
- supports, in majority, the view that the amendment of UN Regulation No. 46 can get the format of a supplement as no changes for existing approvals are proposed,

The group will also submit in the 107<sup>th</sup> session of GRSG an editorial amendment to UN Regulation No. 125 for taking account of obstructions of the driver's direct field of view by CMS as well; that proposal should be treated by GRSG and WP.29 in parallel.