

**GRE-OVIG-2007-006**

(1<sup>st</sup> session of the GRE Informal  
Group on Operating Voltage, 19-20 June 2007)

Paris, 21 June 2007

## **Draft Report OVIG-1**

(GRE Informal group on Operating Voltage)

held at the German Ministry of Transport

Bonn, 19 - 20 June 2007

### 1. Adoption of the agenda

Documents: OVIG-2007-01 (Chairman of OVIG)  
OVIG-2007-02 (Chairman of OVIG)

Agenda adopted with no modification.

### 2. Approval of the minutes of the Preliminary “0” Meeting

Documents: GRE-57-7 (Chairman of OVIG)  
TRANS/WP29/GRE/2007/3/Rev.1 (UNECE Secretariat)

Report adopted as in GRE-57-7.

Terms Of References become TRANS/WP29/GRE/2007/3/Rev.1, not available at the time of the meeting (see GRE-57 official minutes, paras. 14 and 15).

### 3. Workshop on Operating Voltage

Documents: OVIG-2007-03 (IEC)  
OVIG-2007-04 (MAN – OICA)  
OVIG-2007-05 (SMMT – OICA)

#### **OVIG-2007-03:**

Light source manufacturers design the products on the base of:

- Laws of physics
- Vehicle manufacturer’s operating conditions
- Vehicle manufacturer’s performance requirements
- Unavoidable compromises

Conclusion of the presentation: Specified performance requirements need defined operating conditions.

#### **OVIG-2007-04:**

- Market required manufacturer's initiative on light source lifetime
- Voltage limitation already obtained through different techniques, e.g. PWM (Pulse Width Modulation).
- Experience and customer fleet feedback and warranty data show that current lighting designs meet all performance requirements
- Voltage limitation increases bulbs lifetime.

Conclusions of the presentation:

- No need for additional voltage control. On-board computer can increase light sources lifetime
- Issue of voltage limitation is already market driven (user need for increased light source lifetime).
- The vehicle manufacturer takes the responsibility for his products.

**OVIG-2007-05:**

- Need for a structured work plan
- Safety concerns not well defined, hence causes difficult to determine
- Targets still unclear
- GRE timing mandate difficult to achieve

Conclusion of the presentation: Proposal for a work plan needs to be adopted.

**Supplier:**

- Standing presentation. Samples of prototypes of device voltage management components circulated around the table.
- More and more PWM control now fitted in current production.
- If lower voltage threshold is required, Industry will face major electronic problems.

Conclusion of the presentation: Some prototypes already exist at least in some lamp manufacturers plants.

4. Summary of the Presentations (discussions and comments by delegates)

**OVIG-2007-04:**

- COP concerns, perception of emitted light is difficult to measure
- Discussion about lifetime v/s voltage ("halogen effect" can decrease lifetime at low voltage)
- Results could be similar on 12V system
- Passenger Car/Light Truck manufacturers have similar solutions

**OVIG-2007-05:**

- Lots of causes for the safety problem. Some are already investigated, but need to take all causes into account, and rank their importance / influence on the problem.
- Additional possible causes:
  - Bulb itself can fail (not due to voltage input)
  - OE bulbs may have longer lifetime than after-market bulbs
  - The bulbs are sometimes driven in another way than that of their design.
  - Lifetime is a problem with a need for proper testing.

- Installation of lamps/instructions for use by vehicle manufacturers sometimes deviate from the lamp suppliers recommendations
- Not a road safety problem to be addressed by UNECE R37. More a problem of safety and discomfort for the driver
- OICA: Manufacturers do not want to be forced (with regulations) to equip their vehicles with lighting control gears. There are other techniques for controlling the luminous flux

## 5. Development of a Working Program (Running Order)

Documents: TRANS/WP.29/GRE/2007/03 (OVIG)  
 OVIG-2007-05 (SMMT - OICA)  
 OVIG-2007-06 (SMMT - OICA)

- Production of OVIG-2007-06: matrix of problem resolution.
- Discussions based on TRANS/WP.29/GRE/2007/03 and OVIG-2007-06 (see item 6 below)

## 6. First discussions

Documents: TRANS/WP.29/GRE/2007/03 (OVIG)  
 OVIG-2007-06 (SMMT - OICA)

### **Basics for discussions in the group**

- The group agreed not to hold discussion on the basis of document GRE-56-20
- Chair: Suggested the following basics for the group:
  - Basic question: “How can component requirements be merged with vehicle requirements?”
  - Need to investigate and confirm which technical solutions currently exist for voltage control.
  - Suggested to establish reference conditions with the aim of describing a vehicle’s “normal conditions of use”. No need to look at extreme conditions.
  - Tasks of the group:
    - Establish program of work focused on performance.
    - Keep technology freedom to the manufacturer.
  - Other ideas are still welcome.
- Italy:
  - The group should focus on performance by the vehicle manufacturer.
  - Lamp manufacturers should provide a defined performance at a defined voltage but should not be responsible of this voltage, unless they provide the voltage control.
  - Suggested that OICA provides description of a vehicle’s “normal condition of use”.
- Germany:
  - For correct usage of the lamp, voltage should be within a defined range in defined conditions.
  - Basic facts in Germany:
    - Lots of problems on the road because of too low voltage in the vehicles of less than 3 years old.
    - Reduced bulb lifetime.

- Dipped beam headlamps glare.
- One expert from CLEPA: Proposed ISO 3559-1976 as a description of the “normal conditions of use”. This was not agreed by the group.
- OICA:
  - Need to hear from the Contracting Parties what is really the problem. Impossible to solve a problem if no clear understanding. For example: Problems on a 10 year old vehicle cannot be solved at the time of its construction.
  - Questioned whether the in-use performance of the vehicle must be regulated?
  - PWM already fitted in some current production. Some future vehicles however won't have PWM, especially lower cost types.
  - Stabilisation / regulation solutions not feasible at Industry level; not realistic into a vehicle (however feasible in a laboratory with an unlimited power supply). Only "voltage limitation solutions" should be examined.
  - Suggest to consider OVIG-2007-05 proposal for program of work. This would lead to clear understanding of the problems causes and their appropriate resolution.

#### **Light source lifetime:**

The Chair organized a tour de table about importance of light source lifetime:

- France: no opinion.
- Italy: Not a safety problem as such, but could become a safety problem in certain conditions e.g. if repeated failures.
- EC: Safety problem as already agreed in TOR. But impossible to guarantee that lamp lifetime is the same or longer vehicle lifetime.
- D: Safety problem as already agreed in TOR. Voltage can affect lifetime.
- Vehicle manufacturers: not a safety problem.
- All: Recognized it as a vehicle “consumable item” (light sources are subject to wear)

#### **Completion of matrix (OVIG-2007-06):**

- Discussion on causes of glare.
- The group decided not to take into account the causes not related to voltage (i.e. misaim, dirt)
- The group decided to mention in the justifications to GRE that the list of proposed technical solutions is not exhaustive (i.e. misaim, dirt), but would include on the matrix for information only.
- Discussion on added costs related to technical solutions. The group decided temporarily not to address costs in order to avoid a differentiation between classes of vehicles (premium v/s low cost).
- EMC: EMC problems could be caused by some of the technical solutions. Compliance with UNECE R10 as last amended must be assured.
- Italy: low voltage must have very low priority and in any case would be significant to trailers only. Concerns mainly CLCCR.

## 7. Present Conclusions

### **Technical conclusions**

- Voltage affects luminous flux and lifetime of light sources.
- Need to find a good balance between glare avoidance and in-service performance.
- Proposed solutions should address “normal conditions of use” only.
- Light source lifetime recognised as a “consumable item”.

### **Conclusions on method of work**

- Basics for the group: “To what extent is it possible to determine the performance on the vehicle, and reproduce the conditions at Type Approval?”
- Need to address all M, N categories; open question: What’s about O categories?
- Request for data from other Contracting Parties in addition to Germany.
- Comments on draft matrix to be communicated to Chair and Secretariat.
- The outcome of the group should focus on performance requirements on vehicles in normal conditions of use, and not on specific technical solutions.

## 8. Home Works

- Germany to provide data about failure of in-use lighting units, and dipped beam headlamp glare.
- **OICA to propose conditions representing the vehicle’s “normal condition of use” on a date agreed by OICA and the OVIG.**
- Interim report to be tabled at GRE-58 as an unofficial document agreed by the OVIG
- OVIG to be added to UNECE website by secretariat
- All documents to be available on UNECE website.

## 9. Next Meeting

- GRE-58 input to be taken into account at next meeting.
- **OVIG-2 scheduled for 12 November 10:00 am at VDA (Frankfurt – Germany).**