

ROADMAP ON REGULATIONS AND STANDARDS FOR THE ELECTRIFICATION OF CARS

1. INTRODUCTION

Given the importance of reducing carbon emissions from road transport, and the price and security of oil supply, electric cars may well provide a viable alternative to traditional internal combustion engines using fossil fuels. In order to encourage the electrification of road transport, it is necessary to eliminate potential regulatory hurdles and to encourage standardisation activities on both intra- and extra-vehicle technologies.

The present roadmap describes the state-of-play with regard to regulatory and standardisation activities both at the European and international level and sets out a strategy to eliminate the identified obstacles in a timely manner with the involvement of all relevant stakeholders.

The present roadmap covers regulations and standards needed for both pure electric (propelled exclusively by the power saved in their battery) and hybrid vehicles (combination of electric propulsion with internal combustion engines).

2. ROADMAP ON REGULATIONS AND STANDARDS

2.1. Type-approval of electric vehicles

2.1.1. State-of-play

With the new Framework Directive (Directive 2007/46/EC¹) the legislative framework for type-approval of motor vehicles has been extended to cover all road vehicles irrespective of their means of propulsion. Thus, it now includes alternative powertrain vehicles, such as full electric and hybrid vehicles.

At the moment, there are no specific technical requirements in the type-approval legislation to deal with the specific characteristics and specific risks of electric vehicles, related to protection of users from electric shock, other safety issues and environmental performance. However, the proper functioning of the internal market shall also be ensured for new technology vehicles. Thus, it is necessary to develop a harmonised approach regarding approval requirements of electric vehicles.

UNECE Regulation 100 deals with the electric safety of vehicles, however it is not yet applicable to the EC type-approval of vehicles on a mandatory basis.

While the currently applicable version of Regulation 100 only applies to pure electric vehicles, an amendment to the Regulation (01 series of amendments, ECE/TRANS/WP.29/2010/52) that extend its scope to cover all road vehicles of

¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32007L0046:EN:NOT>

categories M and N equipped with electric powertrain (hybrid and fuel cell vehicles too) and updates the electric safety requirements has been adopted in March 2010 by WP.29². The revised UNECE Regulation 100 thus provides for appropriate requirements to ensure a high level of public safety related to electric vehicles.

Furthermore, amendments to UNECE Regulations 12, 94 and 95 on crash safety of vehicles in order to cover specific risks of vehicles with electric powertrain have been adopted in November 2010 by WP.29.

2.1.2. *Work to be done*

The elements of a harmonised legislative framework for the approval of electric vehicles are the following:

2.1.2.1. Electric and crash safety

In the context of the implementation of the General Safety Regulation (Regulation (EC) No 661/2009), the Commission has tabled a proposal for a Commission Regulation on the mandatory application of 62 UNECE Regulations. Regulation 100 on electric safety and Regulations 12, 94 and 95 on crash safety are included in the list of UNECE Regulations whose application will be mandatory as from 1 November 2012 for new types of vehicles and 1 November 2014 for new vehicles. The proposal received a unanimous positive vote by Member States at the last TCMV meeting on 13 December.

2.1.2.2. Review of other type-approval acts

Electric propulsion technology requires a special consideration from a regulatory perspective, given that on the one hand existing vehicle type-approval requirements need to be reviewed to take account of the specific characteristics of electric propulsion and on the other hand there could be potential issues associated with this technology that are not relevant for conventional vehicles.

Thus, a scientific review has been carried out to accommodate alternative propulsion technologies in separate type-approval acts so that test requirements fully take account of the specific technologies and potential risks that are not yet covered. The Commission services have launched a study on the subject, which is available at:http://ec.europa.eu/enterprise/sectors/automotive/files/projects/report_electric_vehicles_en.pdf Appropriate actions will be considered on the basis of the study's conclusions.

In addition, the ELSA group (Informal Group on Electric Safety) at UNECE will continue its work on developing requirements on batteries (rechargeable energy storage systems) to be included in UNECE Regulation No. 34 (which is included in the draft Commission Regulation on mandatory application of UNECE Regulations).

² UN's World Forum for Harmonisation of Vehicle Regulations.

2.2. Standards

2.2.1. Work to be done with regard to standardisation of the charging system of the batteries used in electric vehicles

The European Commission has mandated the European standardisation bodies on 29 June 2010 to adopt a European harmonised approach for the charging system of batteries used in electric vehicles so that this system is compatible with and can recharge all types of batteries of electric vehicles and it can operate in all EU States. No legal basis is foreseen for this issue.

An additional objective of the mandate is to examine the possibility to mandate the European standardisation bodies to develop or update existing European standards in order to address safety risks and electro-magnetic disturbances with respect to the charging system of batteries used in electric vehicles. The aim of these standards is to provide a presumption of conformity with the requirements of Low Voltage Directive (LVD) and Electromagnetic compatibility (EMC) Directive for this type of products. The legal basis for this issue will be LVD and EMC.

The standardisation process is currently ongoing with results expected in 2011.

2.3. Roadmap of actions

- (1) Follow-up the adoption process of the Commission Regulation on the mandatory application of 62 UNECE Regulations (including UNECE Regulation 100 on electric safety and UNECE Regulations 12, 94 and 95 on crash safety);
- (2) Consider appropriate actions on the basis of the conclusions of the study on electric vehicle type-approval requirements;
- (3) Follow-up the mandate to European standardisation bodies to adopt a European harmonised approach for charging systems.