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M/457 EN

Standardisation mandate to CEN, CENELEC and ETSI in the field of tyre pressure gauges for motor vehicles and tyre pressure management systems (measuring instruments)

I Objective

The general objective of this mandate is to create European standards for the metrological aspects of tyre pressure gauges (TPG) which operate using pressure equipment to inflate the tyres of road using vehicles (cars, trucks) and which may be capable of interacting with tyre pressure management systems (TPMS) which monitor the pressure of the tyre of the vehicle, whereby the TPG may be steered by the TPMS.

II Background and justification

The Competitiveness Council on 25 September 2008¹ underlined that, in general, lack of standards, or the slow updating of existing standards hamper the uptake of innovation, whilst standardisation that is lively and strong has the power to accelerate the access of innovation to both domestic and global markets. It underlined the need for standardising bodies to act in a coordinated manner to promote European standards, to take better account of convergence of technologies and to involve all parties concerned in a transparent manner. The Council invited industry and other stakeholders to accelerate their cooperation in the development, implementation and use of standards supporting innovation in relation to the sustainable industrial policy and other areas particularly relevant for innovation. It also recommended fully utilising synergies.

REGULATION (EC) No 661/2009² OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 July 2009 « concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor » aims at improving road safety and energy efficiency by means of requiring accurate tyre pressure monitoring systems (TPMS) in new cars. From 2014 all new cars would need to be equipped with a system for continuous monitoring of tyre pressure (TPMS), which would give a warning as soon as tyre pressure is significantly below the

¹ Council Conclusions on standardisation and innovation , Competitiveness Council of 25 September 2008,
http://ec.europa.eu/enterprise/standards_policy/standardisation_innovation/doc/councilconclusions_20080925_en.pdf

² OJ L 200/1 of 31.07.2009

optimal. Currently there exists no European standard for TPMS. However, there is an ISO standard (21750: 2006) which establishes overall performance guidelines for the systems. In the USA, FMVSS 138 has introduced mandatory specifications for TPMS aimed at improving vehicle safety. Within Europe, discussions have been under way in the framework of the United Nations Economic Commission for Europe to create a new European standard for TPMS which will differ from the US standard insofar that it will increase the level of sensitivity to improve fuel consumption as well as improving safety. It is anticipated that this new standard will be referred to in the implementing measures of the Regulation on the General Safety of Vehicles, mentioned above.

The Proposal adopted by the Commission for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL repealing Council Directives 71/317/EEC, 71/347/EEC, 71/349/EEC, 74/148/EEC, 75/33/EEC, 76/765/EEC, 76/766/EEC, and 86/217/EEC regarding metrology³ indicates that the existing harmonised directive on Tyre Pressure Gauges for Motor Vehicles (Directive 86/217/EEC)⁴ is virtually obsolete in terms of technology. Directive 86/217/EEC defines tyre pressure gauges as “instruments not fitted with pre-setting devices used in fixed or mobile installations for inflating motor-vehicle tyres in which a mechanical measuring system transmits the elastic deformation of a sensing element to an indicating device”. For this typology of mechanical instruments there exists an international OIML standard⁵. Whilst an international standard for technologically more advanced TPG does not exist there are also no barriers to trade apparent on the internal market for such technologically more advanced TPG of which EU sales are estimated to be €70 million annually⁶. It concludes that at this stage it is not evident that harmonising TPG under Article 95 of the Treaty is required as a precondition to obtain the benefits expected from requiring TPMS on all new cars.

It is expected that the entry into force of the regulation No 661/2009 requiring TPMS on all new car designs by November 2012 and on new cars by November 2014 will trigger brisk technological development in the area of both TPMS and TPG, notably also in the area of interoperability whereby the TPG may be steered by the TPMS.

There are currently two types of TPMS, indirect and direct.

- Direct TPMS measure the tyre pressure in each individual tyre. Resetting is not normally possible from within the car, so communication with the TPG is very relevant. What is more it is to be expected that future TPMS will be load-dependant i.e. more air asked if the load in the car increases.

- Indirect TPMS detect any variation between the rotation behaviour of the different wheels, which would indicate a loss in pressure in at least one of the tyres. Resetting can be automatic or by the driver to recalibrate the system each time the tyres are inflated. From an energy efficiency and safety point of view, the reset only makes sense if the tyres have first been inflated to the correct values.

³ [COM\(2008\)801](#) of 3.12.2008

⁴ OJ L 152/48 of 06.06.1986

⁵ [OIML R23\(1975\) on Tyre pressure gauges for motor vehicles](#)

⁶ [Impact assessment, SEC\(2008\)2910 of 3.12.2008, p166 ff.](#)

Current practice by drivers of cars with TPMS may not reflect the full potential of TPMS or may be due to lower accuracy, calibration or control of current tyre pressure gauges or the lack of automatic communication.

It is possible to develop common solutions for interoperability which will enable full competition on the scale of the EU market to reduce the price of highly performing state of the art instruments. However, the involvement of many different parties in the absence of harmonisation could result in a multitude of competing technological solutions, which although not fundamentally different, may nonetheless be mutually incompatible thereby fragmenting competition on the internal market. In addition, from a competitiveness point of view, Europe could become a market leader should harmonised solutions be developed, hence the need for European standardisation.

Existing standards at the European level may not be sufficient for a full coverage, although they may be a useful base for future development. Proactive integration of various solutions may aid a rapid development.

III Description of the mandated work

CEN, CENELEC and ETSI are requested to develop:

1. European standard(s) containing harmonised solutions for the metrological performance of TPG. Such TPG may be fitted with pre-setting devices used in fixed or mobile installations and/or be capable of interacting with TPMS within an interoperable framework using where needed the interoperability standard mentioned below. These solutions must be standardised to achieve full interoperability and compatibility. Solutions when operating should be metrologically sound, state of the art and safe and should at least satisfy the parameters mentioned in the Annex.
2. European standard(s) covering the interoperability of TPG with TPMS, through standardised interfaces and data exchange formats allowing advanced information and management and control systems between TPG and TPMS. The architecture must be open and scalable to support from the simplest to the most complex applications. Furthermore, the architecture must consider all current relevant communication media and be adaptable for future communication media. The communication standard(s) must allow the secure interfacing for data exchanges between the TPG and TPMS, including the avoidance of (radio) interference (crosstalk i.e. TPG connecting to the wrong TPMS).

IV Execution of the mandate

CEN, CENELEC and ETSI shall present a work programme to the European Commission within 3 months of the acceptance of the mandate. This work programme shall include the precise time schedules for the work as well as a full list of the European standards to be developed. After notifying the Standing Committee under Directive

98/34/EC, the European Commission will without delay inform CEN, CENELEC and ETSI of the proposed standards it accepts as being covered by this mandate.

The deliverables shall nevertheless be presented to the European Commission within 36 months of the acceptance of the mandate.

CEN, CENELEC and ETSI shall provide an annual combined progress report on the mandated work.

It is requested that deliverables should take into account applicable legal requirements concerning the confidentiality of personal data protected under Directive 95/46/EC⁷ and Directive 2002/58/EC⁸.

Given the many parties involved, e.g. vehicle users, instrument producers, third party instrument owners (petrol stations, garages) and vehicle manufacturers and component suppliers, special attention should be paid to transparency during the process of developing these standards.

CEN, CENELEC and ETSI should take into account international, European and national standards that have already been developed or are under development.

Acceptance by CEN, CENELEC and ETSI of this mandate starts the standstill period referred to in Article 7 of the Directive 98/34/EEC of 22 June 1998⁹.

Organisations to be involved

As appropriate, CEN, CENELEC and ETSI will invite the representative organisations of consumers' interests (ANEC), environmental protection (ECOS), workers (ETUI) and small and medium-size enterprises (NORMAPME) to take part in the standardisation work.

CEN, CENELEC and ETSI shall also invite WELMEC (authorities of member states responsible for legal metrology) in so far as it is relevant for the development of standards requested by this mandate, to take part in the work.

⁷ OJ L 281/31 of 23.11.1995.

⁸ OJ L 201/37 of 31.7.2002.

⁹ OJ L 204/37 of 21.7.1998

Annex: Parameters for tyre pressure gauges

The following should be taken into account when developing the standard(s) for TPG (III.1 above). In particular, points 1-5 below should be covered by the standard(s).

Tyre pressure gauges are fixed or mobile instruments, which indicate the pressure difference (gauge pressure p_e) between the pressure in the tyre of a motor vehicle and the pressure of the ambient atmosphere. They also include all those parts between the tyre and the measuring element. The instruments may also include installations for adjusting the pressure of the motor vehicle tyres. The instruments may be fitted with presetting devices.

1. Rated operating conditions
 - 1.1 The measuring range of the gauge pressure
 - 1.2 The gauge pressure near the indication.
 - 1.3 The temperature range
 - 1.4 The mechanical environment.
 - 1.5 The electromagnetic environment.
 - 1.6 Where necessary, a sign indicating the operating position of the instrument
2. Maximum permissible errors (MPEs)
 - 2.1. The classes of MPE for measured gauge pressure, whereby at least one class of MPE for TPG should be equal to or smaller than the MPE for TPMS
 - 2.2. The hysteresis of a tyre pressure gauge in relation to the MPEs and temperature. (Hysteresis is the difference between the indications of the instrument when the same pressure (except pressures at the lower and upper limits of the measuring range) is reached by increasing or decreasing the pressure.)
 - 2.3. Where relevant, the effects of minor change from the fixed operating position
3. Permissible influences of electromagnetic disturbances
 - 3.1. The influence of an electromagnetic disturbance on the variation on the measurement result in relation to a critical change value related to the value of the MPEs for the measured gauge pressure
 - 3.2. An indication when the measurement result is not valid
4. Suitability
 - 4.1. Durability of the measuring elements by means of adequate durability tests.
 - 4.2. The resolution of tyre pressure gauges with digital indication
 - 4.3. The scale interval for tyre pressure gauges with line scale indication
 - 4.4. If included, a stop at a predetermined mark.

- 4.5. Measures to prevent fraudulent use of tyre pressure gauges with presetting devices
- 4.6. An indication that the filling process of the tyre has been completed
- 5. Units of measurement
 - 5.1 The legal units of measurement to be used for indication of the measured gauge pressure.