

Revision of OIML R 134 on Weighing-in-Motion systems necessary for new applications

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Weighing-in-Motion systems need adequate standards

Weighing-in-Motion (WIM) systems measure the weight of vehicles when those are driving over the measurement point. Up to now WIM systems are mainly used at lower speed in legal metrology applications. However, WIM systems become more and more common in the field of Intelligent Transportation Systems (ITS). These systems are used for monitoring and pre-selection of overloaded vehicles on highways at travelling speed. Therefore, the need to certify such systems for legal applications is becoming more important.

The European Union recognised the potential of WIM system and the need for certification by including it in Directive 2015/719 amending Directive 96/53/EC on the maximum weights and dimensions of road vehicles. Article 10 (d) (1) of that amendment stated that WIM systems could be used to identify road vehicles that exceed the maximum weights. Additionally, it is stipulated that these WIM systems used for imposing penalties need to be certified. In that case, there should be high-quality and acceptable standards that allow for reliable certifications.

Directive 96/53/EC Article 10 (d)

- 1) *By 27 May 2021, Member States shall take specific measures to identify vehicles or vehicle combinations in circulation that are likely to have exceeded the maximum authorised weight*

...

Those measures may be taken with the aid of automatic systems set up on the road infrastructure, or by means of on-board weighing equipment

...

Without prejudice to Union and national law, where automatic systems are used to establish infringements of this Directive and to impose penalties, such automatic systems shall be certified. Where automatic systems are used only for identification purposes, they need not to be certified.

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Current Weighing-in-Motion standards

There are currently three well known “standards” which are used for local approvals or just to characterise or classify WIM systems:

1. The COST323 European WIM Specification (2002); it applies to Low Speed (LS) and High Speed (HS) WIM systems, for all applications, but not for trade of systems. This standard it is already widely used all over the world by manufacturers and users. Although it is formally not an official international standard, it is widely used as a reference in the testing and acceptance of WIM systems.

2. The ASTM E-1318 'Standard Specification for Highway Weigh-In-Motion Systems with User Requirements and Test Methods' (ASTM, 2009) from the American Society for Testing Materials. It defines and specifies four different types of WIM systems. The type IV system is intended for Low-Speed weighing for enforcement purposes. The ASTM E-1318 is intended to facilitate the relationship between a buyer and a vendor in non-legal applications.
3. The OIML R-134 (OIML, 2004 and 2006) 'Automatic instruments for weighing road vehicles in motion'. This recommendation is intended for use in enforcement and trade, however only for low speed weighing and weighing in controlled environment. This means systems used in restricted weighing areas and not on main roads. In some countries, like Czech Republic, France, Brazil and Switzerland there are existing type approvals based on local laws that allow using such systems also in main roads.

Moreover, there were several initiatives in the near past to set up a standard for legal metrology (EU and international), besides the OIML R134 which recommends to cover the need by national laws:

- European Standard Draft prEN XXX-1:2013, Weigh-in-Motion of Road Vehicles, CEN 2013-01 (formal voting 2016)
- NMi International WIM Standard (November 2016)
- Handbook 44 (2017): Section 2.25 Weigh-In-Motion systems

Also, EURAMET, the European Association of National Metrology Institutes is aware of the situation and is working on guidelines for such systems besides Guides for all other AWI's:

- AWICal, Project Number: 14RPT02: Guidelines on calibration of Automatic instruments for weighing road vehicles in motion and measuring axle loads (Draft March 2017)

Draft CEN and NMi standards not the right approach

The European standard draft EN 2013-01 was rejected by the European weighing industry (represented by CECIP) since these new standards (CEN and NMi) are considered the wrong approach. CECIP is convinced that the drafts of these standards cannot be considered a reasonable standard and following legal metrology principles. Such regulation may incur that low quality products could enter into the marked and create unfair competition, juridical problems and a bad reputation for standards that CECIP is supporting.

Need for revision of OIML R134

OIML recommendations are the most accepted standards in legal metrology world-wide. A revision of the OIML R134 to make it suitable for the intended applications is the optimal solution according to CECIP.

Therefore, CECIP is in favour of a revision of the OIML recommendation R134 to adapt it to the actual and future needs and to assure that a reasonable EU standard, based on a revised OIML recommendation, is realised for every type of WIM system.

With this new EU standard, it will be possible to approve European-wide WIM systems (low- or high-speed) in a proper way and within the principles (mission and vision) of legal metrology. These certified systems can also meet the need of EU member states that want to use these WIM systems for identifying the vehicles exceeding the maximum weights.

It is very important for authorities, manufacturers and society to initialize the process of a revision as soon as possible.

CECIP believes that the following points should be revised in the recommendation:

- Define suitable accuracy classes for all application;
- Intrinsic and external effects on the measurement;
- Validation of the measurements;
- Sealing;
- Testing procedures (initial, periodical);
- Data storage (big data);
- Type approval for the whole system (importance of ancillary equipment);
- Clear guideline for testing and calibrating WIM systems.

This will help to strengthen the position OIML R134 as the only standard for WIM and make suitable for all new fields of application.

CECIP (www.cecip.eu) is the European association representing the weighing instrument industry. Founded in 1958, CECIP has currently members in 14 countries. The weighing instrument industry in Europe is world leader and consists of around 700 companies that are mostly SMEs. The total turnover is approximately 3 billion euro and the industry employ about 50.000 persons.

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