

NEW METROLOGICAL LEGISLATION IN UKRAINE: GENERAL FEATURES AND IMPLEMENTATION PRINCIPALS

Y. Kuzmenko, S. Pronenko, D. Sabatovych

Abstract: The new version of the “Law on metrology and metrological activity” had been put in force in Ukraine on January the 1st 2016. In the aim of implementation of this Law forty sub-law acts had been developed in very short interval of time. The implementation of new legislation on metrology caused numerical questions by industrial metrological services due to necessity of transition from former USSR metrological system to new democratic and relatively soft approaches to metrological assurance for industry enterprises, testing and calibration laboratories. So the general principals of new legislation should be described and clarified.

Key words: law on metrology, measurement standard, verification, calibration, measuring instrument, precision of measurement.

As the new version of the LAW of Ukraine “On metrology and metrological activity” [1] had been put in force since January 2016 and its implementation together with forty (very shortly developed) sub-law acts had started, lot of questions by metrological services in industry appeared. These questions concerned the necessity of the implementation of new formats and approaches in metrological activities either in legal, or industrial and scientific metrology.

So it is, probably, useful to describe, as briefly as possible, the vision of metrological policy grounds, on which the Law and its sub-law acts’ provisions are based. It goes about general principals of measurement standards maintenance, providing the verification and calibration of measuring instruments (MI), measurements and calibration traceability assurance, parity and content of metrological activities in legal and voluntary spheres.

Main and general principal, laid down into the Law and sub-law acts distinguishes nowadays legislation, on which metrological system is based, from previous one, based on the principals of former USSR. The main ground principal is the democracy of the Law provisions in such sense that the Law and sub-law acts define the minimum “set” of legal requirements on objects and subjects of metrological activities and mechanisms for this requirements realization. All the solutions and actions related to everything NOT stipulated by the Law for industry enterprises are now NOT managed by the state but is completely in competence and responsibility of MI owners and users. The state gives enterprises and organizations much more authorizations and responsibilities for their measurement results liability than it was before. In fact, the legal sphere

is limited by 80 categories of MI, which are used in most socially critical spheres of the society life, such as health, environment, safety, trade. This lays in full compliance with OIML, ISO, ILAC documents provisions and international metrology organizational practice.

“Does certain MI belong to legal sphere or not?; is it subject to verification or calibration?; to provide the calibration by own laboratory, if yes – on which base?; to accredit own measurement, testing or calibration laboratory or not?; according to which range should calibration be ordered and to whom?” – the solutions for all this and many other questions belong completely to competence of enterprises, organizations and authorities and cause their complete responsibility.

Measurement standards

Such important and simultaneously specific category of measurement instruments, as standards, do not belong to the legal regulation sphere. It corresponds completely to the practice of EU countries, USA, Japan, Australia, Canada and other countries, to the principals of CIPM and its CIPM MRA [2] agreement. The Law stipulates the measurement standard definition in general sense of VIM: **“measurement standard - realization of the definition of a given quantity, with stated quantity value and associated measurement uncertainty, used as a reference”**

The legislation does not stipulate the verification of standards. It results from the definition of verification, its sense and the formats of verification’ results presenting. The standards of any precision and hierarchy level should be calibrated.

Measurement instruments in use verification

The verification is strictly legal metrology set of procedures. Its subjects and objects are clearly defined by Article 17 of the Law: “5. Verification of legally regulated measuring instruments in use shall be performed by:

scientific metrological centers that have internationally recognized calibration and measurement capacities for the relevant types and subtypes of measurements and/or with application of national measurement standards;

scientific metrological centers, metrological centers and verification laboratories empowered to perform verification of relevant measuring instruments.

6. The procedure for carrying out verification of legally regulated measuring instruments in use and the reporting on its results as well as the norms of time required for carrying out the verification of such instruments shall be established by the regulations of the central body of executive power that ensures the formation of state policy in the area of metrology and metrological activity.”

MI calibration

The transition from total verification for all measuring instruments in the past to strictly limited list of MI categories, subject to obligatory verification and calibration of the rest on voluntary basis has caused numerical misunderstandings: in the lists from enterprises and organizations, from conferences’ and workshops’ participants sound questions, such as “What should be authorizations for calibration laboratories?”, “Is enterprise allowed to calibrate its own MI for internal use?”, “Is it necessary in general to calibrate MI which are used besides legal sphere?”, “How to calculate calibration interval?”, “Is it allowed to use verified MI as the standards for calibration?” and so on. As well, as the calibration is not subject to legal regulation in principal, the Law in the Article 27 defines, who and on what basis is able to provide calibration:

“Article 27. Calibration of measuring instruments

1. The measuring instruments, which are used in the area and/or outside the area of legally regulated metrology, may be subject to calibration on the voluntary basis.

2. Calibration of measuring instruments shall be performed by:

scientific metrological centers;
metrological centers, calibration laboratories, accredited by the national accreditation body of Ukraine;

metrological centers, calibration laboratories, which have documentary evidence of the traceability of their measurement standards to the national measurement standards, measurement standards of other countries or international measurement standards of the relevant measurement units.

Provisions of Article 27 are completely in line with relevant provisions of the international document ILAC P10 “ILAC Policy on the Traceability of Measurement Results” [3].

Measurements’ accuracy control in enterprises (laboratories)

The most of questions, put by laboratories and enterprises, concerning first of all the maintenance of measuring instruments not-legal in sphere is caused by desire for receiving evidences, that measurement results are enough precise and reliable. It is quite natural that laboratories, aiming to perform the measurements’ quality control, submit the MI calibration to third party calibration laboratories and try to realize the internal quality control. It is quite useful for enterprise, because comprise one of the general criteria for calibration intervals definition.

Conclusion

Thus, the transition to modern metrological system in Ukraine is based on the organizational principals of new legislation.

1. Measurement standards should be calibrated by National Scientific metrological Centers or calibration laboratories, accredited by National Accreditation Agency of Ukraine (NAAU), regardless their level or sphere of use.

2. Calibration shall be performed strictly on the base of existence of relevant CMC entries in BIPM Database or on the base of NAAU accreditation.

3. The verification on voluntary basis should provide only organizations, authorized for this according to relevant sub-law act.

4. Enterprises and organization make their own decisions concerning certain standards calibration and other MI verification or calibration in accordance to up-to-date metrological legislation.

Section I: GENERAL ASPECTS OF METROLOGY, MEASUREMENT METHODS, UNITY AND ACCURACY OF MEASUREMENTS

References

[1] The Law of Ukraine “On metrology and metrological activity” # 1314 from 05.06.2014

[2] CIPM MRA «Mutual recognition of national measurement standards and of calibration and measurement certificates issued by national metrology institutes»

<http://www.bipm.org/en/cipm-mra/cipm-mra-text/>

[3] ILAC P10 “ILAC Policy on the Traceability of Measurement Results”

Information about the Authors:

Yurii Kuzmenko. Kiev technical university “Kiev politechnical institute KPI named Igor Sikorski”, 2000. PhD – 2017. Deputy director general

of SE “Ukrmetrteststandart” for general metrology, scientific activity and MI conformity assessment. 4, Metrologichna str., 03143 Kiev, Ukraine. www.ukrcsm.kiev.ua. jkuzmenko@ukrcsm.kiev.ua.

Serhii Pronenko. Kiev institute of civil aviation engineers, 1972. Head of department of international cooperation in metrology of SE “Ukrmetrteststandrt”. 4, Metrologichna str., 03143 Kiev, Ukraine. www.ukrcsm.kiev.ua. spronenko@ukr.net.

Dmytro Sabatovych. Makejevka institute of mining engineers. Director General of SE “Ukrmetrteststandart”. 4, Metrologichna str., 03143 Kiev, Ukraine. www.ukrcsm.kiev.ua. ukrcsm@ukrcsm.kiev.ua.