



DEVELOPMENT OF METROLOGICAL SCIENCE IN UZBEKISTAN DURING THE PERIOD OF INDEPENDENCE

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Annotation

The article is devoted to the development of metrological science in Uzbekistan during the years of independence and scientific research in the field of metrology.

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At present, the field of metrology is developing at a faster pace, since the development of industry, the fulfillment of modern requirements depends on instrumentation. This became more pronounced after Uzbekistan gained independence. Because in the days of the former Soviet Union, Uzbekistan was considered as a state based on the creation of a raw material base. 15-20 years ago, 70-80 percent of the gross domestic product (GDP) produced in our republic was mainly unprocessed agricultural products, and now the GDP includes various types of services, industrial and agricultural products ready for consumption.

During the years of independence, in a short period of time, "Uzdavstandart" (1992), and later the "Uzstandart" agency (2002), the Center for Standardization, Metrology and Certification of the Republic of Uzbekistan, was created as a national metrology department that fulfills the requirements for the quality and safety of products and services and processes, measurement techniques, etc.

Therefore, the state system for ensuring the unity of all measurements (O'BTDT) was also created. This system, along with the requirements of national legislation, was created on the basis of the rules of the Order of International and regional organizations of metrology.

In order to carry out a measurement in scientific research or production, first of all: 1) what is the measurement for or what is the definition of the object of measurement and is characterized by what physical quantities the object is; 2) by what means it is measured, that is, it is necessary to use the most optimal variant of the measuring device to achieve the required result; 3) in other words, it is necessary first to what clear definition the measurements will lead to. Measurements can be given using data





summarizing the requirements for dimensional measurement accuracy in which the industry is used in the electric power industry, in the field of mechanics and technology, in the field of medicine, in scientific research, etc. Measurements can be carried out using the national measuring system, which, of course, is highly organized and equipped with a modern instrument infrastructure, as well as under the conditions for ensuring the uniformity of measurements and the accuracy of their reliability.

It is known that in the first years of independence, three laws were issued, namely the laws "On Standardization" [1], "On Metrology"[2] and "On Certification of Products and Services"[3]. The implementation of these laws laid the foundation for raising the existing metrological service in our republic to a new stage of development. Let's stop a little on one of them, namely the law "About metrology". This law led to the development of metrology in our republic to a completely new stage in solving the issues of metrological support. The Law "On Metrology" consists of 5 sections, which includes 21 articles.

For the creation of a metrological service in our republic and the participation of individuals and legal entities, their functions and responsibilities in this regard are defined in this law. As stated in the law, state testing of measuring instruments, approval of their types and inclusion in the state list are carried out by the Uzstandard agency. The law also states the issue of supplying a mark on the state list. The law "On Metrology" states that approved measuring instruments or documents on their use must be marked with the state list of the manufacturer. As you know, you should always consider the status of measuring instruments in production and compare them periodically. Lists will be compiled for them, and the list of categories of measuring instruments will be approved by the Uzstandard agency. Measuring instruments, devices, fixtures and measurements related to research are included in the list of a group of measuring instruments that must be subjected to periodic comparison by the Uzstandard agency on the basis of the article of the law "On Metrology", according to article 7 of this law, it is separately indicated that measuring instruments used in practice must provide measurement results.

In general, along with other countries, Uzbek metrology has gone through various stages of historical development, formed, began to develop and is currently being improved. This is due to the development of the scientific branch of metrology, many scientists, experienced metrologists make a great contribution to the development of Uzbek metrology, such as academicians: M.Z. Khamidkhanova, D.A. Abdullaeva, N.R. Yusupbekova, V.K. Kabilava, T. D. Radjabova, professors: O.A.Azimova,





R.K.Azimova, M.F.Zaripova, Sh.M.Gulomova, H.Z.Igamberdieva, P.R.Ismatullaev, B.I. Khakimov and others.

It should be noted that the formed National system of training in the field of standardization, metrology and certification in our republic, as a positive innovation, is of great importance. If in the days of the former Soviet Union specialists in this field were trained in Russian educational institutions, now specialists with secondary and higher education are being trained in local educational institutions. From the first years of independence, this issue was seriously raised, and in 1992, on the initiative of Professor P.R. Ismatullaev, a department for training specialists in this field was established as part of the Tashkent State Technical University. On the basis of this department, during the academic year, a dozen young specialists of the academic level of bachelor's and master's programs with higher education in the field of standardization, metrology and certification are admitted to life.

More than 40 areas of metrology, standardization and certification are actively conducted at the research institute "Standardization, metrology and certification" under the agency "Uzstandard", retraining of personnel in the future.

At present, one of the main tasks facing the Uzbek Metrological Service is the implementation of all activities related to Uzbekistan's membership in the International Trade Organization (WTO).

The development of the society of the individual is closely connected with the history of the emergence and development of the measuring culture. And this connection lies in the continuous improvement of the system for ensuring the uniformity of measurements, measuring instruments and measurements in a continuous mode. In other words, the development of an individual in a society consists of the path taken through their senses and their experiences at a certain level, from a simple measurement to the scientific basis of measurements. And this path is the most basic in modern metrology, that is, the science of measurements, which teaches the unity of measurements using its methods and tools and ways to ensure its required accuracy [4].

The essence, the value of metrology, that is, measurements, is immeasurable in the development of science and technology, and in solving the problems associated with this, which opens up wide opportunities. The work carried out in the field of measurements indicates that its role in science and technology and in the life of the society of the individual is extremely high. Of course, the progress of society is determined by the state and possibilities of measurements and their metrological support. Ensuring the uniformity of measurements is one of the most urgent (priority) issues in metrology. That is why, obtained as a result of measurements, will be more





(higher) in importance and benefit only if the information about measurements (regardless of under what conditions, at what time, where measurements are taken) meets the requirement to ensure the uniformity of measurements with the required accuracy. Scientists praised the importance of measurements. For example, the great Russian scientist D.M. Mendeleev said on this occasion: "Whatever science begins with measurement, exact science cannot be imagined without measurement."

On the other hand, W. Kelvin said about measurement that "any thing is determined by the measure of its measurement." According to the interpretation of philosophers, the most basic in the examination, the study of physical properties, processes are methodological measurements [5].

Knowledge of measurements in Central Asia is historically thousands of years old. The study of sources for the creation of complex systems used in the national economy, production, in turn, opens up the prospect of developing various areas of metrology and measurement methods. The development of knowledge about measurements, that is, metrology, in turn, information-measuring methods and automation technologies, in research work, in theoretical metrology is the reason for the discovery of new areas of educational specialties. This necessitates a higher level of knowledge and skills in the field of metrology among specialists in all areas. For this reason, the low-power inertial instruments used in the past are gradually being replaced by very fast, high-performance instruments, which also change the activities of people performing this measuring action, and, of course, the demand for them will naturally increase.

At present, automation of measurement processes, computerization and the use of modern technologies can only be achieved with reference to a programmable system. In the development of modern metrology, a large place is occupied by the use of complex empirical (selection) methods, statistical methods based on the theory of probability, which form the scientific basis of metrology.

So, after Uzbekistan gained independence, a lot of work on metrology was carried out in our country. But these reforms and activities are related to physical metrology related to industry. However, the development of historical metrology did not introduce significant changes. Since Uzbekistan switched to the metric system at the beginning of the 20th century, units of measurement in our country, preserved from the Middle Ages and the New Age, began to gradually go out of circulation. This led to the fact that, in a certain sense, knowledge in the field of metrology was also forgotten. At the same time, this factor has led to an increase in the weight of research on historical metrology. It would not be wrong to say that this study of ours arose from this factor.





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