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THE ROLE OF MEASUREMENTS AND THE IMPORTANCE OF METROLOGY IN INDUSTRIAL PRODUCTION

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ABSTRACT:
The authors of the article consider the role of measurements and the importance metrology in industrial production. The article deals with the issues of modern development metrological support, in order to reliably assess the quality of products. The authors draw attention to the fact that measurements are the most important tool by which people can learn phenomena and objects around the world.

Keywords: Metrology, Measurement, Confidence, Global challenges, Economic recovery.

INTRODUCTION

The relevance of this article is due to the fact that the future of metrology cannot be imagined without intelligent and network technologies, as it will play one of the most important roles in production management in smart factories of the future.

Metrology as a science dealing with the issues of measurements and their application contributes to introduction of modern technological processes, development of new types of products and increasing the competitiveness of the industry as a whole. At present, measurements and metrology in general play a huge role in industrial production. This due to the fact that today there is practically no area in which measurements would not be used. Statistics it is said that more than 20 billion different types of measurements are currently used in our country, since measurements are an integral part of labor processes that are carried out in large numbers industries[1].

It is noteworthy that measurements provide information about the state of certain social and economic processes. The undoubted advantage of measurements is that the information obtained accurate and reliable. In this regard, decisions to be made at various levels of government will also be correct. That is why measurements must be carried out as accurately as possible, since inaccurate information can lead not only to a decrease in the level of product quality, but also to a decrease in production accidents that could result in injury.

There are certain factors that affect the success of innovative processes of instrument-making enterprises[2]:

- The enterprise must have a strong scientific and technical potential;
- Requires large investments, which today are not so easy to attract;
- The enterprise must have a good, updated and powerful production and technical base;

[1] Afanasiev P A 2021 The role of metrology and quality management in overcoming the current global environmental crisis Historical, philosophical, methodological problems of modern science pp 87-92

[2] Zemelman M A 2018 Metrological bases of technical measurements (M.: Publishing House of Standards)

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• The management system should be built in such a way that enterprises are flexible and without excessive conflicts of interest embrace innovation by responding rationally to change. What should take place, both at the level of management and at the level of production, both at the level of managers and at the level of all employees of the enterprise[3].

Taking into account these factors and building competent management, you can get an effective the result of the implementation of the innovation strategy. There is no doubt that the improvement in the quality of measurements, as well as the successful introduction of new measurement methods, depend on the level of development of metrology as the science. It follows that metrology is the science of measurements, methods and means of ensuring unity and required accuracy of measurements.

The role of metrology in modern society cannot be overestimated. Providing an opportunity measurement of various properties of goods allows you to determine their technical characteristics, which transferred from producer to consumer. Compliance with the rules of metrology in various areas of commercial activity allows you to minimize losses from unreliable measurement results. The main task of metrology is to ensure the uniformity of measurements. Unity of measurements refers to such measurements in which the results are expressed in units of quantities approved for use in the Russian Federation, and the accuracy indicators are within the established limits. standards for ensuring the uniformity of measurements are enshrined in the Federal Law of the Russian Federation "On Ensuring the Uniformity of Measurements"[4].

Thus, increasing the accuracy of measuring the density of water in 1932 led to the discovery the heavy isotope of hydrogen - deuterium, which determined the rapid development of nuclear energy. Thanks to a brilliant understanding of the results of experimental studies of interference light, carried out with high accuracy and refuting the previously existing opinion about the mutual movement of the source and receiver of light, A. Einstein created his world-famous theory of relativity. the founder of world metrology D.I. Mendeleev said that science begins where they begin to measure. Metrology is of great importance for all industries, for solving the problems of increasing production. efficiency and product quality[5].

CONCLUSION

It should be noted that not only metrologists are involved in metrological support activities, i.e. or organizations responsible for the uniformity of measurements, but also of each specialist: either as consumer of quantitative information, in the reliability of which he is interested, or as a participant the process of obtaining, processing and ensuring the reliability of measurements[6].

[3] Dultsev D O 2021 The place and role of the metrological service in the quality management system Forum of Young Scientists 4 155-8

[4] Isaev L K 2021 Infrastructure of quality: standardization, metrology, conformity assessment Metrological support of innovative technologies pp 384-5

[5] Khabibullin T M 2016 The main stages in the development of the metrological service in Russia Symbol of Science 2-1 207-9

[6] Burdun G D and Markov B N 2004 Basics of metrology (M.: Publishing house of standards)

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The current state of metrological support requires highly qualified specialists. mechanical transmission foreign experience to domestic conditions is currently impossible, and specialists need to have broad enough to be creative in designing and making decisions based on measurement information. This applies not only to workers in the manufacturing sector. Knowledge in the field of metrology is also important for product sales specialists, managers, economists, doctors, teachers, etc., who must use reliable measuring information in their activities.

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