

ORGANIZATION PROGRAM AND COMPONENTS OF THE METROLOGICAL SUPPORT PROCESS

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<https://doi.org/10.5281/zenodo.10365459>

Abstract. *The enterprise's metrological support program includes a wide range of activities aimed at ensuring the accuracy and reliability of measurements, as well as compliance of manufactured products with established standards and quality requirements. Technological processes and equipment must be consistent with metrological requirements to ensure accurate and reliable measurements. The organization of metrological support includes control over the planning and implementation of tasks to ensure the accuracy and reliability of measurements, as well as established standards for the quality of products or services. It also includes ensuring that testing and measuring equipment meets the requirements for accuracy and reliability, as well as ensuring that personnel are qualified in the field of metrology and metrological support.*

Keywords: *measurement, measurement reliability, metrological support, standard, quality, technological processes.*

Introduction. Professional activities include products and services, equipment and technological process, instruments and measuring instruments, testing and the enterprise program for metrological support, control over planning at the enterprise and the implementation of metrological support plans [3].

Measurement is one of the ways a person understands nature, connecting theoretical knowledge with practical human activity.

Guaranteeing the reliability of measurement information is one of the important problems in achieving quality control of measurement results, which is the main part of metrological support (Fig. 1.1.).

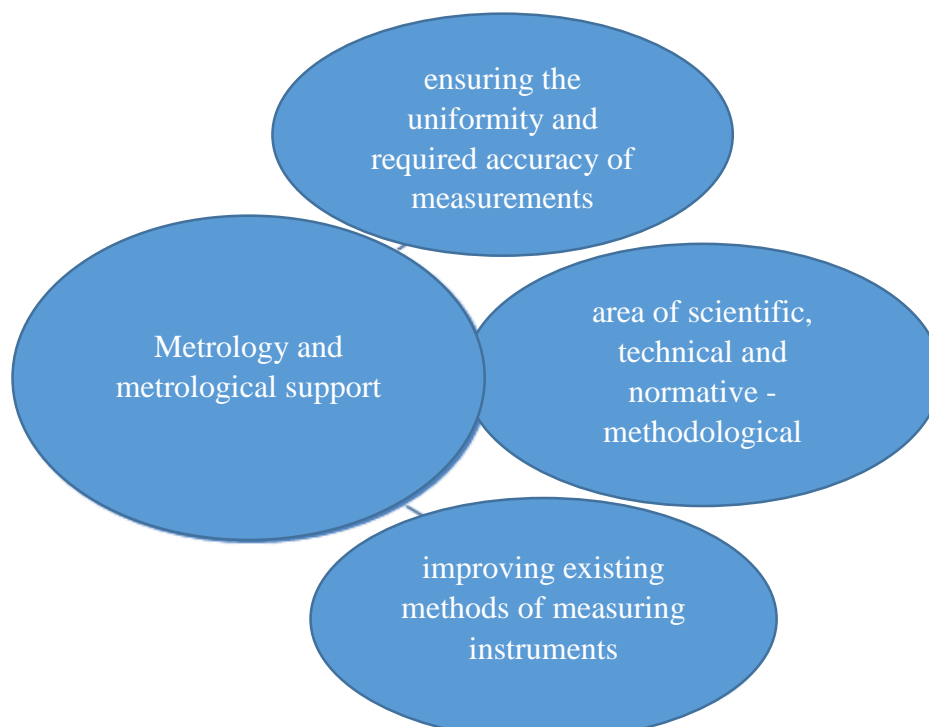


Fig.1. Relationship between metrology and metrological support

Metrological support gives the organization a guarantee that work will be carried out in accordance with standards. Which have regulatory data on quality control at enterprises.

Metrological support is carried out using nomenclature and the content of which should most fully reflect the multidimensional nature of metrological tasks and take into account the following elements:

- General state of metrological support of production at this enterprise
- Level of development of metrological services
- Completeness and timeliness of development of metrological provisions in industry documents
- The degree of importance for a given enterprise of metrological examination of design, technical and regulatory documents
- Development and certification of measuring instruments, calibration and verification tools, etc.

Within the framework of the normative and technical documentation, the participation of specific business sectors must be determined and the responsibility of each business sector for solving specific metrological problems must be established. The system of technical conditions for metrological support must include enterprise standards.

The first is the basis of the system and determines the tasks, relationships, sequence of metrological tasks and the organization of work of departments and services of the enterprise when solving metrological support problems. The second establishes the nomenclature of measured parameters of plans and programs that are an integral part of improving product quality; it is necessary to consider this issue in more detail.

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Planning of work of an industry and inter-industry nature is carried out by including relevant tasks in national and industry standardization plans, as well as in inter-industry metrological support programs for individual types and areas of measurements.

The development of a metrological support plan for newly purchased or modernized products should include monitoring of the organization's metrological services from the moment of receipt of the technical specifications or application for product development (if the enterprise is the developer of the documentation) or, if the developer is another enterprise, from the moment of receipt of the technical specifications and a complete set of design documents documentation.

The enterprise program for metrological support must be indicated in Fig. 2. Such plans help ensure that work meets established standards and ensures reliable measurement processes.

Management of planning at enterprises and implementation of planned tasks related to metrological support is carried out by the department of the chief metrology engineer.

There are a number of general and independent tasks of metrological support at various stages of the product life cycle.

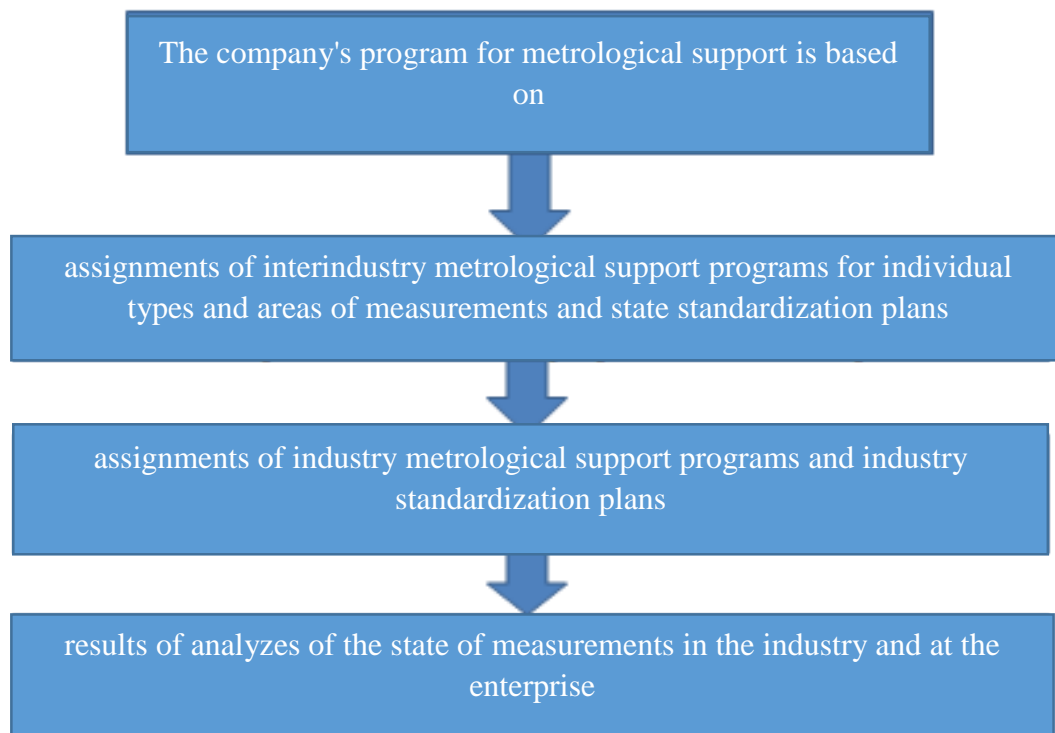


Fig.2. Enterprise program for metrological support

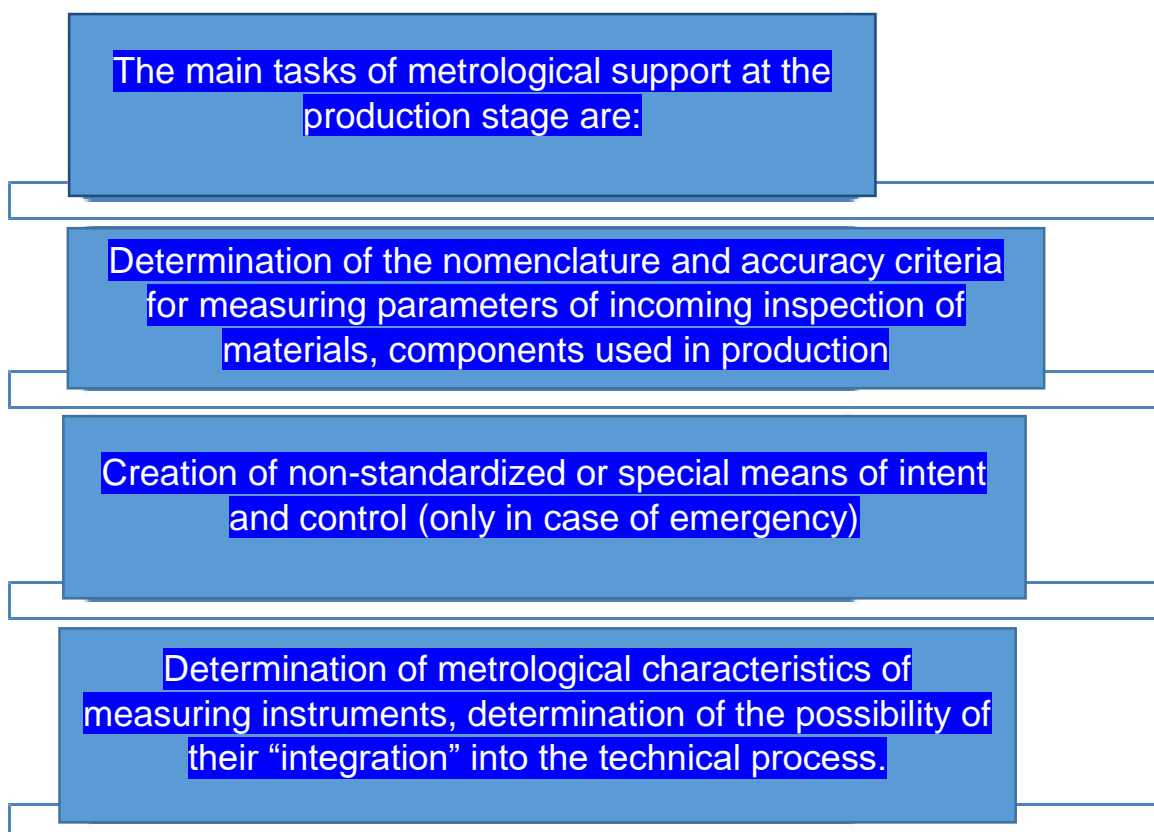


Figure. 3. Tasks of metrological support at the stage Production

Management of the plan and implementation of the tasks of the metrological support plan at the enterprise is carried out by the department of the chief metrology engineer. Metrological support gives the organization a guarantee that work will be carried out in accordance with standards. Which have regulatory data on quality control at enterprises. At various stages of the product life cycle, there are a number of general and independent tasks of metrological support.

The task of metrological support in creating general conditions for material production is: Therefore, metrological support has a significant impact on business results. This leads to streamlining of measurement processes and ensures the necessary consistency and accuracy of measurements.

Ensuring the uniformity of measurements and the required accuracy is united by the concept of “metrological support”. Metrological support gives the organization a guarantee that work will be carried out in accordance with standards. Which have regulatory data on quality control at enterprises.

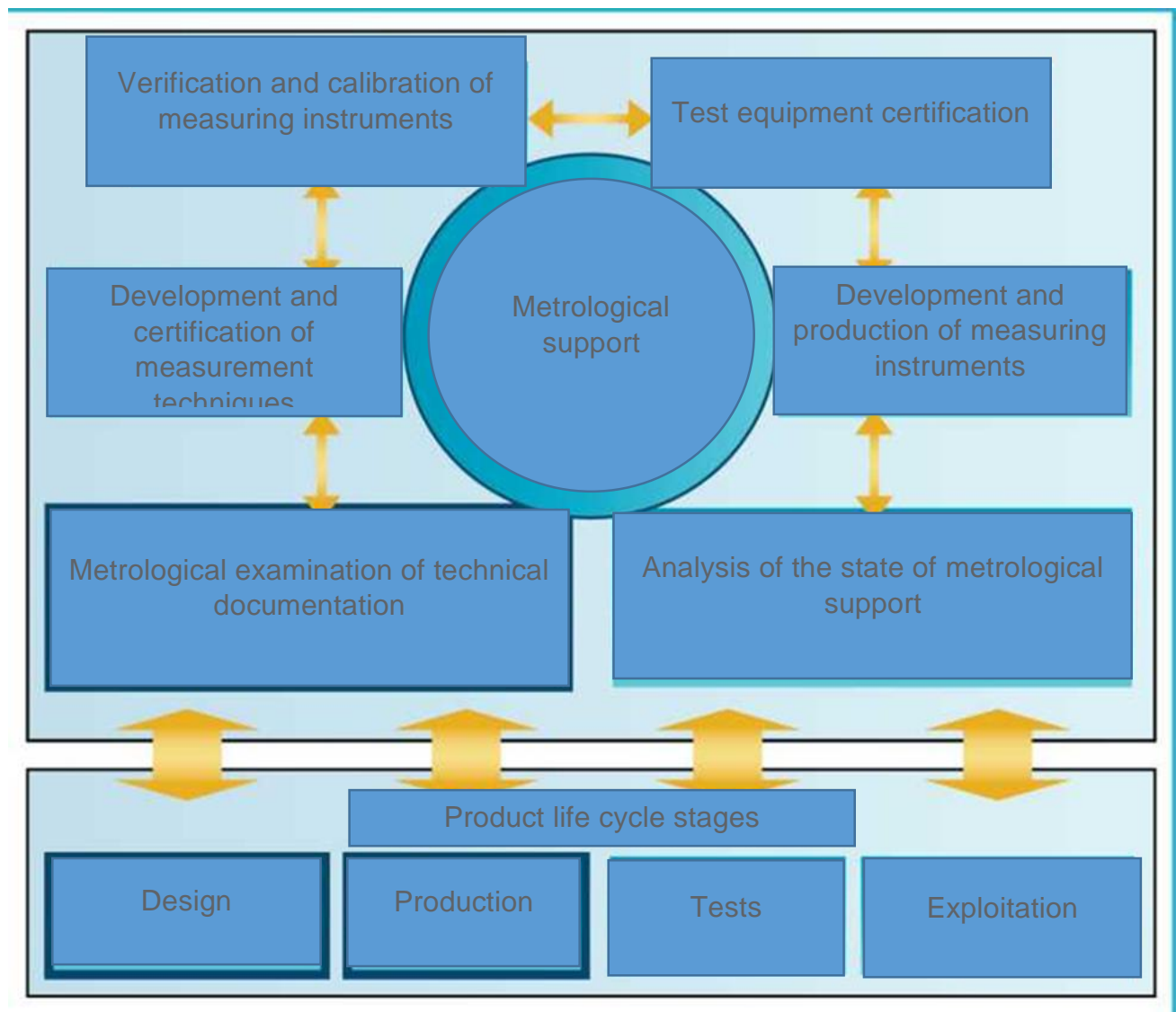


Figure. 4. Components of the metrological assurance process

The main tasks of metrological support are considered to be metrological services (MS), tasks established in accordance with the law give the organization a guarantee for carrying out work in accordance with standards. Which have regulatory data on quality control at enterprises.

The metrological service is responsible for introducing rules and regulations into metrological documentation, taking into account the transition from a planned economy to a market economy, harmonization with similar principles in other countries, introducing a sequence of documentation by a group of competent experts (technical committee for standardization), determining the best nomenclature for types of GSI documents, preparation of GSI documents.

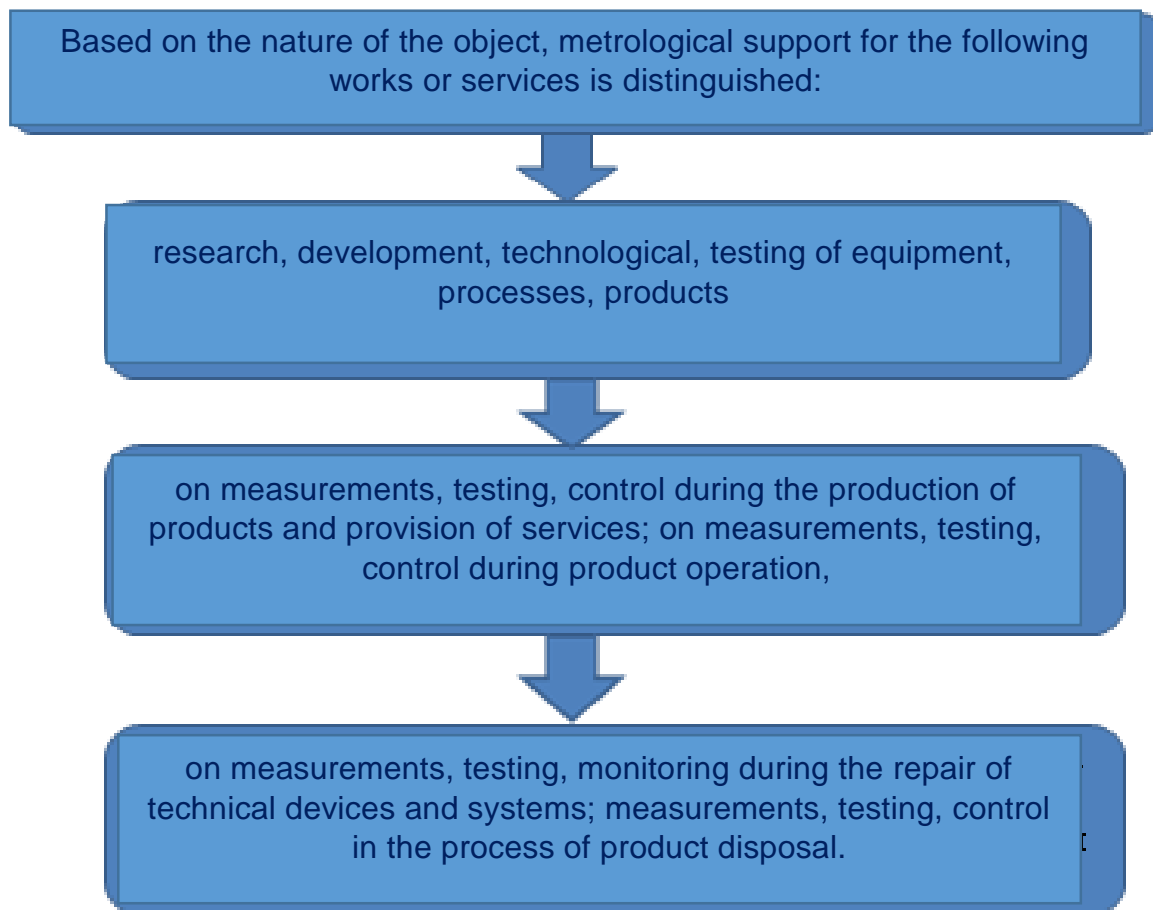


Figure 5. Nature of the object for metrological support

The nature of the object is determined by the list of tasks for metrological support of measurements.

From the point of view of the organizational form, the object of metrological support is: [6,7].

Conclusion. Metrological assurance provides an organization with assurance that it is working according to standards, which plays an important role in ensuring that all measurements and tests are carried out in accordance with established standards. This allows you to ensure the accuracy of the results, ensure their reliability and compliance with requirements, which in turn contributes to the quality of production and ensures confidence in the products or services of the organization, which have regulatory data on quality control in enterprises. In practice the following concepts can be used:

By “metrological support of workplaces” we mean metrological support of all measuring instruments. For example, for large associations, this is general metrological support for members of the association.

Metrological support of workplaces also includes the establishment of standards for the quality, accuracy and reliability of measuring instruments to perform specific tasks in the workplace. This also covers ensuring compliance with all regulatory and metrology requirements. For large associations or enterprises, centralized management and control of all metrological processes allows for uniform standards and procedures at all levels and in all departments of the organization.

REFERENCES

1. Закон Республики Узбекистан «О метрологии». 1993 г. 28 декабря.
2. O'z DSt 8.001:2010 Взамен O'z DSt 8.001-98. Государственная система обеспечения единства измерений РУз. Обеспечение единства измерений. Основные положения.
3. Усманова Х.А., Каримов Х. Х. Перспективы развития метрологического обеспечения страны. Роль нормирования, метрологии и стандартизации в производстве с технической точки зрения. РНПК. Фергана. 2022. стр. 231-232.
4. Магруппова М. Т., Усманова Х.А. Качество продукции и управление качеством. /Учебное пособие/. – Т.: “Фан ва технологиялар нашриёт-матбаа уйи”, 2020. - 233 с.
5. Марусина М.Я., Метрологическое обеспечение измерений, испытаний и контроля – СПб: Университет ИТМО, 2020. – 70 с.
6. Turgunbaev A, Usmanova H.A, Madaliyev Sh.B, Karimov Kh. Metrological Supply For Cotton materials. International Journal of Innovative Research in Science, Engineering and Technology (IJRSET). Volume 11, Issue 10, October 2022. PP. 13058-13062.
7. Матякубова П.М., Тургунбаев А., Усманова Х.А., Шеина Н.Е. Поверка и калибровка средств измерений. /Учебное пособие/. – Т.: Изд-во “Наука и технологии,” 2020. - 176 стр.
8. Каримов Х. Х., Усманова Х.А. Метрологический контроль и надзор за соблюдением правил и норм на предприятии. Международная конференция «Состояние и тенденции развития стандартизации и технического регулирования в мире». 2022. стр. 255-257.
9. Гвоздев В.Д. Прикладная метрология. Метрологическое обеспечение. - Учебное пособие. - М.: РУТ (МИИТ), 2018. – 72 с.
10. Донченко С.И. Щипунов А.Н., Храпов Ф.И., Панков А.А. «Метрологическое обеспечение деятельности предприятий оборонно-промышленного комплекса», Вестник Росстандарта, № 2, 2018 г.
11. Eshmuradov D. et al. STANDARTILASHTIRISH, SERTIFIKATLASH VA SIFATNI BOSHQARISH TIZIMLARI SOHASIDAGI ME'YORIY HUJJATLAR //Science and innovation. – 2022. – Т. 1. – №. А8. – С. 595-600.
12. Eshmuradov, D., & Bahronova, S. (2023). ISO SERTIFIKATLASH TIZIMLARI VA SIFATNI BOSHQARISH TIZIMLARI SOHASIDAGI ME'YORIY HUJJATLAR //Science and innovation. – 2023. – Т. 1. – №. А8. – С. 595-600. извлечено от <https://fer-teach.uz/index.php/epai/article/view/124>