



ISSN: 2350-0328

**International Journal of Advanced Research in Science,  
Engineering and Technology**

**Vol. 7, Issue 2 , February 2020**

# **Product Quality Control at Engineering Enterprises**

**D.V. Xakimov, S. X. Isroilova, E.J. Alikhanov, T.A. Zayliddinov, G.E. Ergasheva**

Professor of Department metrology, Andijan Institute of Machine Building  
Assistant of Department metrology, Fergana Polytechnic Institute, Ferghana, Uzbekistan  
Assistant of Department metrology, Fergana Polytechnic Institute, Ferghana, Uzbekistan  
Assistant of Department metrology, Fergana Polytechnic Institute, Ferghana, Uzbekistan  
Assistant of Department metrology, Fergana Polytechnic Institute, Ferghana, Uzbekistan

**ABSTRACT:** This article discusses the basic concepts of product quality management, the technical level, the product quality management system in the republic, its legal and theoretical foundations, quality control tools and their definition, improving quality and competitiveness, such as improving consumer quality based on consumer demand.

**KEY WORDS:** Control, high technology, sub-sectors, personnel, labor, consumer, efficiency, etc.

## **I. INTRODUCTION**

Product quality control in the field of mechanical engineering is an integral part of the production process and is a complex organizational and technical process. The main task of which is to guarantee the production of products that meet the needs of the consumer. [1-4]

Analysis of recent studies and problems of quality control, as one of the most important areas of industrial enterprises, constantly attract the attention of scientists. ISO 9001, ISO 9003 States: "if necessary, the supplier shall develop procedures to ensure the selection of statistical methods necessary to verify the feasibility of the process and acceptable product characteristics."

The purpose of this article is to consider the quality control of products in the engineering industry.

## **II. MAIN PART**

Mechanical engineering is a type of industrial activity of enterprises of the manufacturing industry and the service sector specializing in the design, production, maintenance and disposal of all kinds of machines, technological equipment and their parts.

Mechanical engineering is divided into three groups:

1. laborious;
2. metal-intensive;
3. science-intensive.

In the industrial society, mechanical engineering was a key industry, the level of its development showed the economic power of the country, as well as military potential. During the transition to the information society, mechanical engineering has not lost its key role, since it is the development and creation of means of production that ensures the economic independence and security of regions and countries. For example, countries using mainly imported equipment and machinery are dependent on exporters of machine-building products, regardless of their own production volumes, for example, consumer goods. That is why the development of its own engineering industry is one of the main tasks that must be solved by countries wishing to take a leading position in the world economy.

In addition, modern engineering is characterized by high technology and knowledge-intensive, thus, the development of this industry is associated with the need to strengthen science and education. For example, if earlier in the 20th century, mechanical engineering was associated with huge factories, conveyor production, required the involvement of a large number of workers, now modern mechanical engineering is focused on robotic production with a minimum of personnel, which is mainly assigned to management and engineering functions.



ISSN: 2350-0328

## International Journal of Advanced Research in Science, Engineering and Technology

Vol. 7, Issue 2 , February 2020

It is worth taking into account the aspect of ensuring the security of the country, because engineering is the main supplier of military products.

Being a large industry producing a huge range of different products, mechanical engineering is divided into a number of sub-sectors:

- General mechanical engineering (e.g. production of means of transport, agricultural machinery, production equipment).
- Heavy machinery (e.g., production of metallurgical, mining equipment).
- Среднее secondary mechanical engineering (divided into automotive, machine tools, etc.).
- Точное precision engineering (instrumentation, radio and electronic industries);
- □ production of metal products and blanks;
- □ repair of machinery and equipment, etc.

The quality of machine-building products largely determines the efficiency of the entire national economy of the country, as machine-building creates the technical base of all branches of the national economy. It is known that the cost of production of machines is ten times less than the cost of their maintenance during operation. Therefore, improving the quality of machines in their manufacture gives a huge economic effect. The task of improving the quality of machines is very complex and can be solved only with the integrated use of many modern methods and tools. [5]

Any process of quality control of technological process (TP) is based on the following elements: obtaining information about the state of the object by measuring the output variable and determining the requirements for its values; processing the status information object; the decision to change the state of object and the elaboration of the control law; the influence of Executive bodies on the object in accordance with the selected control law. To implement the control process, it is necessary to obtain a mathematical description of the TP, i.e. create an information base, which is a set of mathematical models.

Technical control at machine-building enterprises are inherent:

- a variety of objects of control and accordingly controlling parameters both on the nomenclature, and on value and tolerances;
- a large number of methods and means of control;
- significant costs for technical control;
- absence of regulated procedures of design of system of technical control;
- inconsistency of requirements for the design of technical control systems.

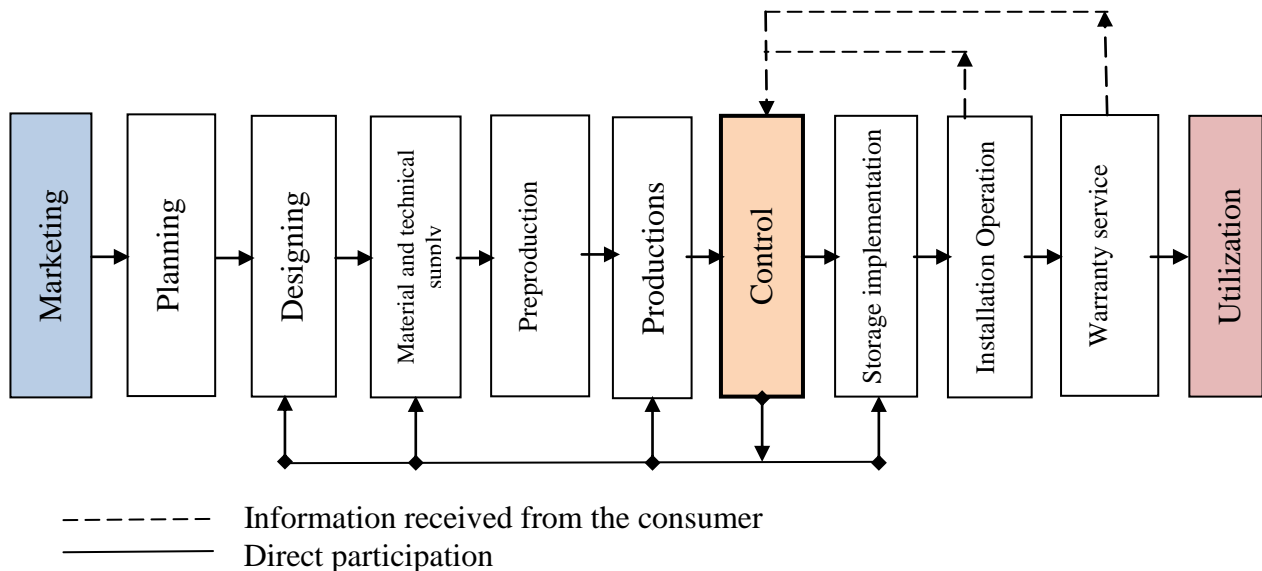
Considering the system of technical control in the system of product life cycle, we observe the influence of technical control service in the whole production process (Fig. 1.).

In the development of technological processes, operations and processes of technological control are considered as an integral part of the technology. At technological preparation of production establish accuracy of measurements and reliability of control, level of mechanization and automation of control operations, productivity and quality of work of inspectors, labor intensity and number of personnel of OTC, indicators of economic activity of the enterprise depending on to what extent control became the reliable lock to release of substandard production and its efficiency as the lever of quality management.

When designing technical controls use technology advances science in the field of standardization of processes, increased accuracy, performance and reliability of technological systems, adopting analytical methods and indicators, organization system design: simultaneous and interrelated activities of all the services of preparation of production, reduce time and reduce costs of design, ensuring productivity growth and specialization of design work, improve their quality.

Engineering and technical personnel of OTC, directly takes part in development of technological control of quality of production.

The next stage in the product life cycle system is the influence of technical control service on incoming materials and components-input control [6].



**Fig.1. Structure of organizational influence of technical control service in product life cycle system**

Work to determine the quality of products coming from other enterprises begins with the conclusion of contracts with the supplier supply Department. Before you enter into a contract, you need to analyze the supplier. In the analysis it is necessary to take into account the economic component, the stability of production, the level of standardization and certification of production, the transport component, the ability of the supplier to respond to the buyer's comments, the level of acceptance control, its technical support, the reliability of the results.

The effectiveness of input control measures directly depends on the scale of these measures. A wide range of quality control methods can be used in a wide program of input inspection of materials. The program itself is developed by specialists in technical quality assurance together with specialists in technical control of production processes, which should implement this program. The purpose of the program is to provide the degree of control of materials entering the enterprise that is required for the proper use of these materials in production.

The scope of control procedures required to obtain materials depends on the type of material and varies from enterprise to enterprise. When developing methods of control for this material, it is necessary to take into account factors such as the number of controlling personnel, available at the enterprise control and measuring equipment, as well as those deviations in the quality of the material that are permissible under technical conditions.

Consumers are divided into two types:

Consumers can be grouped by other characteristics: type of product, belonging to the region of the world, country

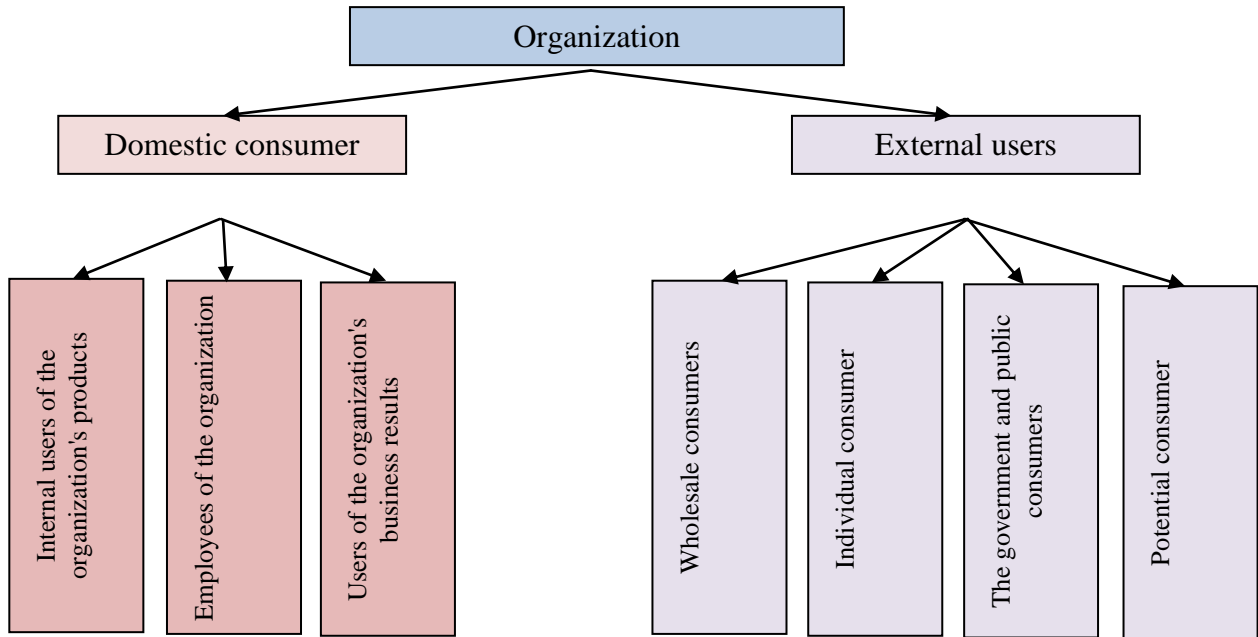


Fig. 2. Consumers of products (services) of the organization

(domestic and foreign), the region of the country, the volume of consumed products, etc. Grouping of consumers can be carried out simultaneously on two or more features. For example, wholesale consumers purchasing one type of product can be grouped by country of residence. [7]

To improve performance, the organization must evaluate the satisfaction of all its customers. However, in order to increase the competitiveness of its products, business development, it is especially important for it to know the attitude of its wholesale, individual and potential consumers to its products.

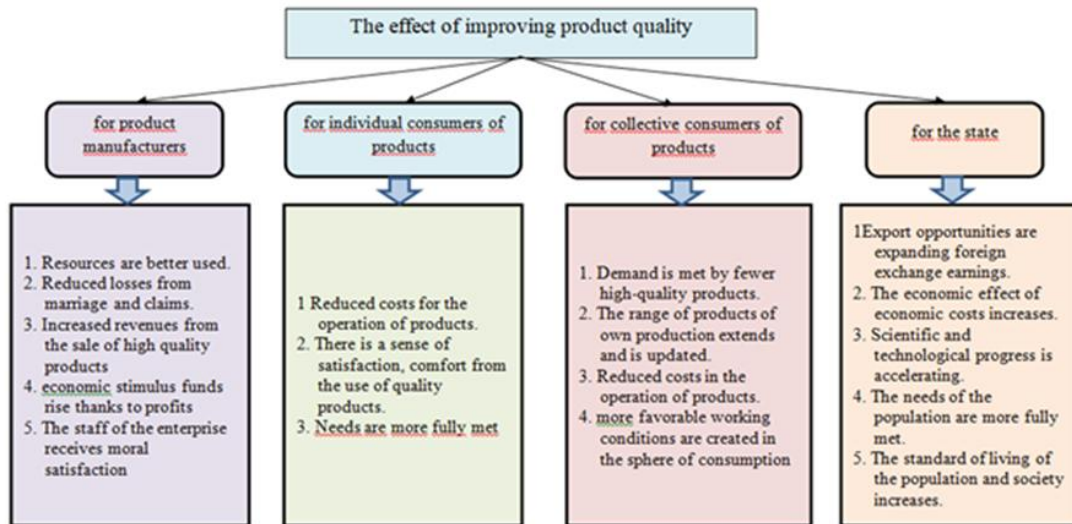


Fig. 3. The effect of improving product quality

The satisfaction of this group of consumers is estimated mainly by the following characteristics of the organization: product quality, the process of interaction with consumers (ease of access to information about products and their purchase; conditions in the office or store where the purchase is made; care and qualification of personnel, etc.), the processes of delivery, pre-and after-sales preparation of products, its warranty and post-warranty service, the cost of products.

In today's world, the prevailing vision of quality as one of the fundamental categories that determine the way of life, social and economic basis for the successful development of man and society. Based on this, quality improvement has economic, psychological and social effects. All members of society, producers and consumers of products, the state as a whole are interested in good quality. The value of quality improvement for them is shown in Fig. 3.

The effect of improving the quality of products has a variety of forms of expression: direct saving of materials and energy, obtaining more products per unit of labor costs, cost reduction and profit growth, acceleration of turnover of working capital, as well as economic and social development of the enterprise.

High quality and used engineering products is evident in how it meets the needs of people and allows you to save resources when performing work, etc. High product quality contributes to the prestige of the manufacturer and the state, improve moral ethical climate in the workplace and in society. Low level of quality of products, on the contrary, becomes a source of considerable difficulties and even problems not only in production activity, but also at operation, in trade and, at last, in a life.

Currently, it is generally recognized that improving the technical level and quality of engineering products is the most important national economic task. It is necessary to take into account the fact that the reduction of material consumption of products helps to reduce labor costs for the production and operation of machinery and equipment. This allows a more rational use of human resources.



ISSN: 2350-0328

**International Journal of Advanced Research in Science,  
Engineering and Technology**

**Vol. 7, Issue 2 , February 2020**

**REFERENCES**

- [1]. Technical control in mechanical engineering. Designer's Handbook. M. Mashinostroenie, 1987
- [2]. M. M. Kane, A. G. Suslov, O. A. Gorlenko, B. V. Ivanov, V. N. Koreshkov, A. I. Medvedev, V. V. Miroshnikov quality Management of engineering products: a textbook under the General ed. M. M. Kane. Moscow: Mashinostroenie, 2010. 416 PP.
- [3]. Nikiforov, A. D. quality Management [Text] / A. D. Nikiforova-Mokva: bustard, 2015. - 720 p.
- [4]. Radionov, V. V. quality Management [Text] / V. V. Radionov // Novosibirsk. State Acad. Of Economics and management. – Novosibirsk. 2015. - 44 sec
- [5]. Kh. T. Yuldashev, Sh. S. Kasymov, Z. Khaydarov // Applied physics. (2), 94 (2016).
- [6]. Halleyev, V. I., Vargina, M. K. quality Management: problems, prospects [Text] / V. I. Galeva, M. K. Vargina // Certification. - 2013. - No. 4. - Pp. 11-13. [
- [7]. Z. Khaydarov and Kh. T. Yuldashev // Applied physics. No. (5), 75 (2016)..