THE ANNALS OF "DUNAREA DE JOS" UNIVERSITY OF GALATI
FASCICLE XIV MECHANICHAL ENGINEERING, ISSN 1224-5615
2024

QUALITY CERTIFICATION AND ACCREDITATION

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ABSTRACT

Due to the technological progress in industries, transport, communications and information technology, the foundations were laid for a rapid diversification and renewal of the supply of goods, as well as for the globalization of markets.
As a result of this rapid expansion of international trade, the need arose to introduce new practices that would ensure increased trust between trading partners and, in particular, consumer confidence in the quality of purchased products. Because the manufacturer's simple statement no longer offered objective guarantees regarding the quality of products, in a number of countries, primarily in the highly industrialized ones (England, France, Germany), the "certification" system was introduced.

KEYWORDS: Quality certification, Globalization of markets, Certification system, EOQ, ISO 9000, European norms EN 45000.

1. INTRODUCTION

The objective of certification is to guarantee, through a third-party body, the independence of the manufacturer and the beneficiary, the conformity of a product, service, process or the company's quality system with a pre-established reference.

If an intermediary, a third-party partner, is placed between the manufacturer and the beneficiary to guarantee quality, then it is beneficial for both the manufacturer (the number of customers increases) and the beneficiary (he knows that he has purchased a product with the quality he wanted). Thus, the manufacturer, knowing that he is being supervised, takes additional measures to ensure quality: he improves his management, is more demanding of suppliers, hires personnel with appropriate qualifications and who are interested in creating more competitive products.

The beneficiary of the products or services is more easily oriented towards the manufacturer who will provide the necessary product or service, having the certainty that the purchase made does not need to be tested and that his interests are taken into account.

Certification has also proven beneficial for certification institutions and bodies, the demand for such services is continuously increasing.

A new category of specialists, "calitologists", has emerged. They must also turn to these certification institutions for certification or training through courses.

Certification has gained wide acceptance in international trade, especially after the emergence of the international standards ISO 9000 and the European norms EN 45000.

It can be said that the quality system was developed in response to the challenges of the increasing globalization of the market and was unanimously accepted.

Companies and governments allocate considerable resources to the development of infrastructures to comply with these standards, which is a necessity for both commercial and government suppliers.

For economic agents from countries that are not part of the European Union, quality system certification represents the "passport" to enter the EU market. The establishment of quality systems by developing industries has become absolutely essential if they want to

enter the competitive market and win, but especially to maintain themselves in this market from Europe and North America.

2. CONCEPTUAL FRAMEWORK OF QUALITY CERTIFICATION AND ACCREDITATION

The European Organization for Quality (EOQ) defines certification as the procedure and activity carried out by an authorized body to determine, verify, and attest in writing the quality of products or processes in accordance with established objectives.

The European standards EN 45000 present the following definition: the action of a third party that proves the existence of adequate confidence that a product, process or service, appropriately identified, is in accordance with a certain standard or other normative document.

Therefore, certification is a way of attesting the conformity of products, services, processes, the quality system of a company, with a pre-established reference, attestation that is carried out by a neutral body, independent of the manufacturer and beneficiary, called a certification body.

The official recognition of the competence of a certification body is achieved through accreditation. The main purpose of accreditation is to keep certification bodies under control. This control can be exercised directly by the state, or by a body that deals with all technical aspects of accreditation. In order to ensure a uniform basis for accreditation, the European standardization bodies CEN (European Committee for Standardization) and CENELEC (European Committee for Electronics Standardization) have developed the EN 45000 series of standards. The application of these standards is mandatory in the countries of the European Union. They were also adopted by Romania, as national standards, in 1993.

According to these standards, the certification body must be impartial and have an appropriate administrative and organizational structure.

The certification body must have:

- ✓ documented certification procedures;
- ✓ necessary means for certifying and supervising compliance with the certification conditions;
- ✓ documented procedures for resolving appeals, withdrawing, or canceling certificates granted.

The certification body is obliged to keep under control the documentation relating to the certification system and to maintain a registration system adapted to its own conditions and in accordance with the regulations in force. The certification body must have an effective quality assurance system. For this, it must develop a quality manual and the necessary procedures, and the system must be evaluated through internal audits and periodic reviews.

The staff employed must be adequately trained for the functions they perform.

3. PRODUCT QUALITY CERTIFICATION

Product quality certification is the attestation by the certification body of their compliance with a certain standard, with another normative document. The objective of certification is to guarantee quality.

The advantages of this type of certification are:

1. It contributes to the promotion of products on the market. Certification represents objective proof that the quality characteristics mentioned in the standard are respected, and consumers have more confidence in certified products;

2. It eliminates multiple and costly tests carried out by the manufacturer and various beneficiaries or intermediaries;

3. It contributes to the removal of technical barriers to the free marketing of products, under the conditions of harmonization of certification procedures and the use of identical or comparable references.

Given all these advantages, manufacturers are interested in continuously improving the quality of the products they produce, in order to meet the certification conditions.

The proof of conformity of products, granted to the supplier, may be in the form of:

- a certificate of conformity;
- a mark of conform
- a license.

There are two types of product certification: mandatory and voluntary.

Mandatory certification refers to products that are subject to national regulations regarding the protection of life, consumer health, or environmental protection. Voluntary certification certifies that an industrial product or equipment complies with standards or other technical specifications. This type of certification is used by the company to maintain sales markets or to conquer new market segments.

4. PRODUCT QUALITY CERTIFICATION METHODOLOGY

Product certification involves completing the

following important steps (figure 1):

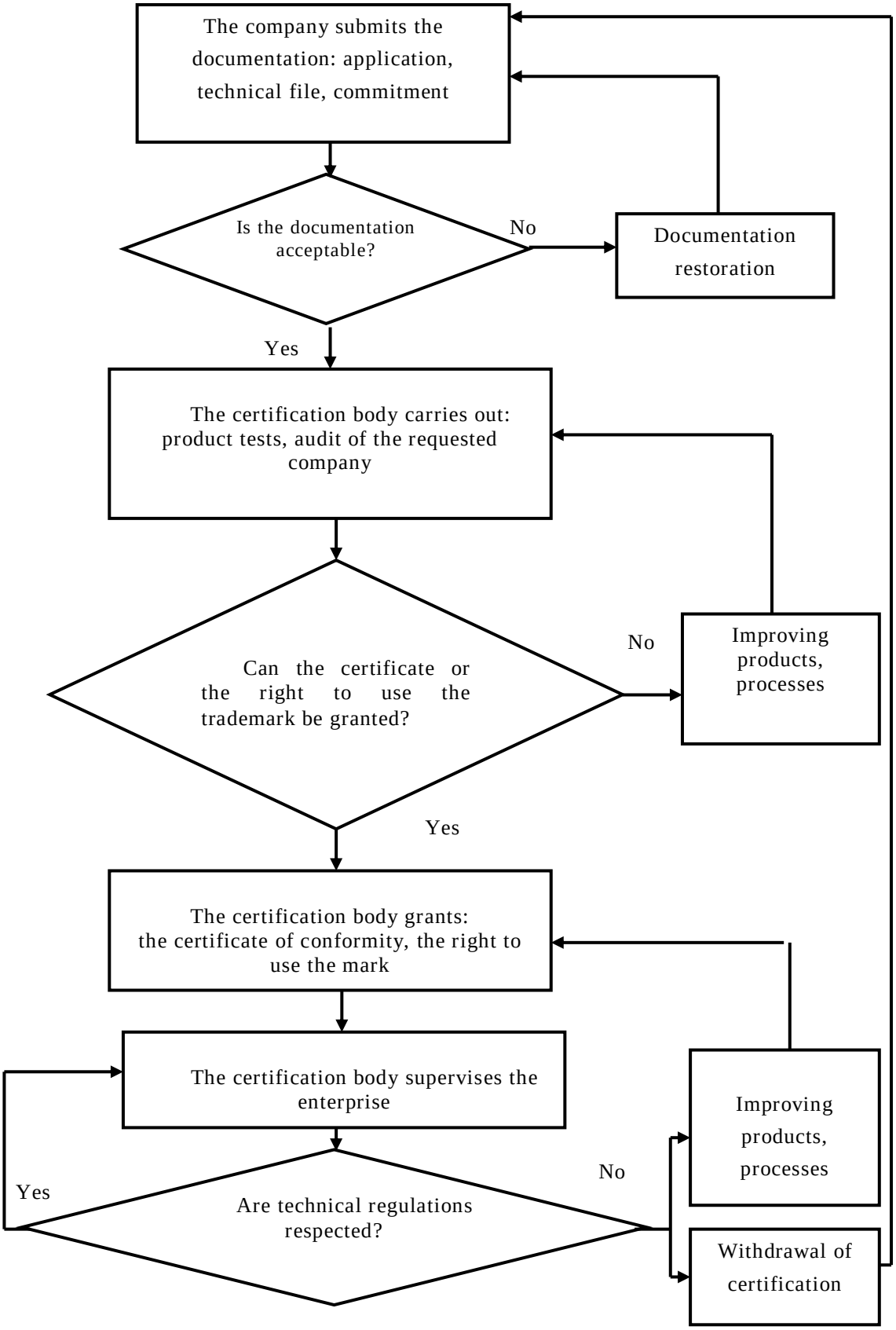

Fig. 1 General methodology for product quality certification

Step 1

Request for certification, based on an application accompanied by the technical file and the undertaking of the company regarding compliance with the requirements of the reference technical regulation;

Step 2

Instrumentation of the file by the certification body and carrying out tests on the product in an accredited laboratory;

Step 3

Carrying out an audit at the company by the certification body or on its behalf to verify that the manufacturing process is kept under control and that the inspections and tests on the product are carried out properly;

Step 4

Granting the certificate of conformity and the right to use the conformity mark. If certification is refused, all the characteristics that are not satisfied or the reasons that led to this decision will be specified. The procedure can be resumed from the file investigation phase, when the manufacturer considers that he has taken all the necessary measures to ensure that production is carried out in compliance with all the required specifications;

Step5

Maintaining the right to hold the certificate or the conformity mark, based on the manufacturer's self-control and periodic checks carried out by the certification body.

In case remediable manufacturing deficiencies are found, the certification body makes the necessary recommendations and suspends the right to hold the certificate or conformity mark until they are remedied.

5. CONCLUSIONS

In order to demonstrate the superior quality level of products and services, the use of new methods and practices regarding their conformity has emerged as a necessity.

Thus, in addition to the quality and warranty certificates offered by manufacturers together with the product, certification systems for quality systems, processes, products, services, and personnel regarding their quality and conformity have emerged.

Accredited laboratories have also been developed where the tests, measurements, and samples necessary for product certification are carried out.

REFERENCES

[1] **Ghelase, D.,** *Sisteme de Asigurarea Calitatii,* Braila, Editura Ceprohart, 2002.

[2] **Ghelase, D., Daschievici, L.,** *Implementation of Total Quality Management,* The Annals of "Dunarea de Jos" University of Galati, Fascicle XIV Mechanical Engineering, ISSN 1224-5615, Vol. 2, pg. 21-24, 2021.

[3] **Ghelase, D., Daschievici, L.,** *Quality Audit,* The Annals of "Dunarea de Jos" University of Galati, Fascicle XIV Mechanical Engineering, ISSN 1224-5615, Vol. 2, pg. 13-16, 2021.

[4] **Ghelase, D., Daschievici, L.,** *Quality Management Documents,* The Annals of "Dunarea de Jos" University of Galati, Fascicle XIV Mechanical Engineering, ISSN 1224-5615, Vol. 1, pg. 23-26, 2022.

[5] **Paraschivescu, A.O.,** *Managementul Calitatii***,** Editura Tehnopress, 2020.