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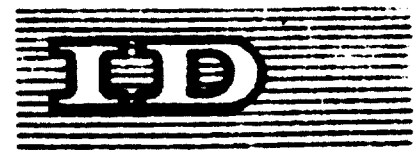
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ORGANIZATION AND MANAGEMENT OF QUALITY CONTROL
PROGRAMS FOR SUCCESSFUL INDUSTRIAL DEVELOPMENT 1/

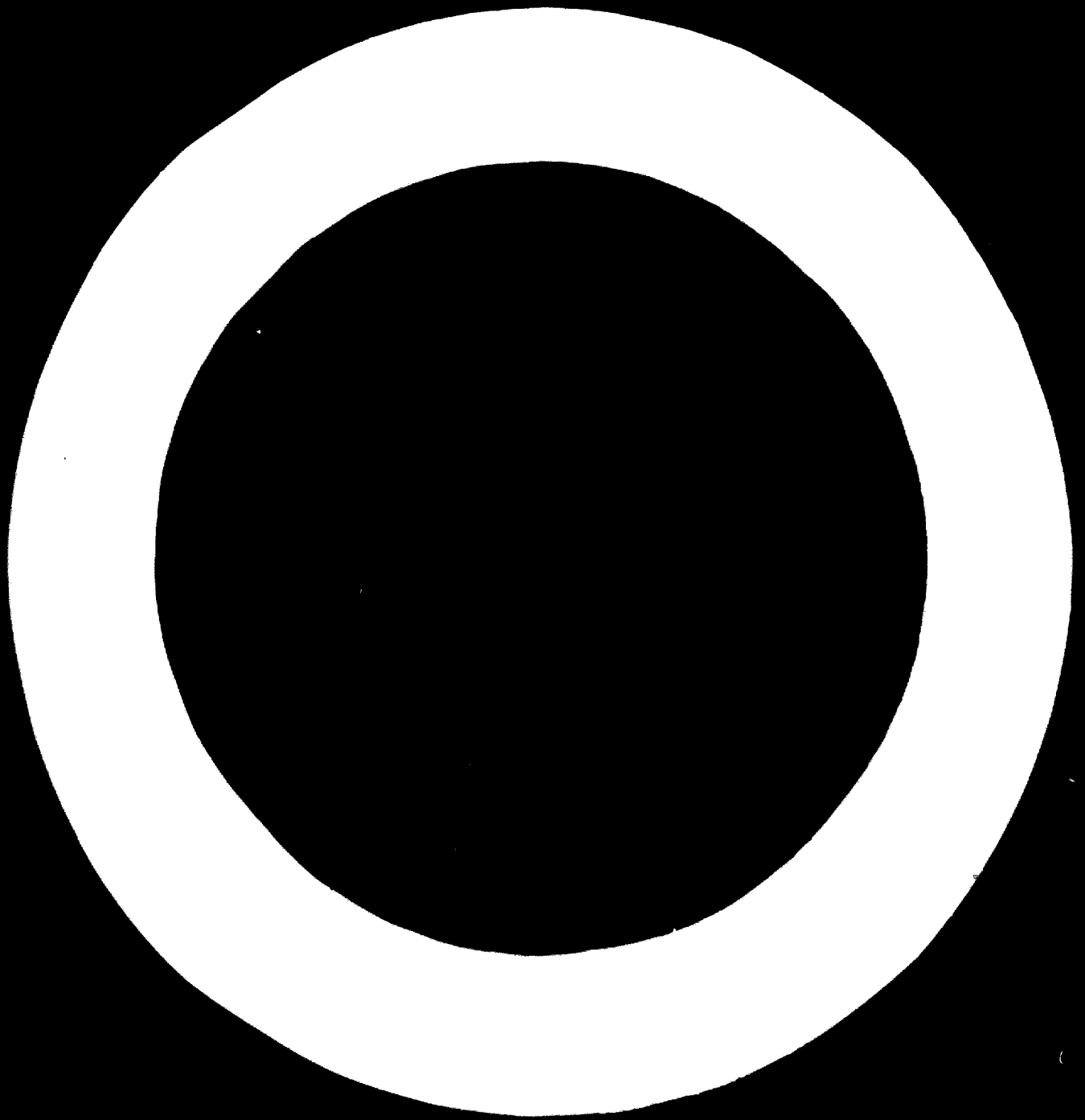
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In Spain, we began the industrial applications of quality control in the year 1947.

The initial difficulties were numerous, due above all to the very special situation of Spanish industry in those years, in which raw materials could not be imported. Only domestically-produced raw materials were available and so, from the beginning of the implantation of the manufacturing program, the desirable quality of the raw materials failed.

Several simultaneous steps were taken, however, which gave positive results in a relatively short period of time.

These steps were the following:

1. Teaching and popularization
2. Industrial applications
3. Organization of the National QC Association

1. TEACHING AND POPULARIZATION

Logically, the first step, the first stage, should be to train technicians, professional engineers and executives in this new field of quality control and its organization.

Initially, the teaching was fundamentally of statistics, and it was begun in Spain in the School of Economic Sciences of the University of Madrid. Later, these courses passed to the School of Statistics and then to the Higher Technical Schools of Engineering of Madrid, Barcelona and the University of Deusto in Bilbao, which included these new subjects in their study plans.

In the 60's, the Institute de Racionalization del Trabajo (Work Rationalization Institute) which depends on the Consejo Superior de Investigaciones Cientificas (Higher Council of Scientific Research) of the Ministry of Education and Science, and the Productivity Commission of the Ministry of Industry, organized intensive courses, one week long, for the firms' technicians, initiating them into the application of elemental quality control techniques, such as the use of control graphs for dimensions, defects, and application of sampling tables.

Parallel to these official teaching institutions, several company organization consulting firms also dedicated themselves to the preparation of intensive courses for the main industrial regions of the nation -- on the specific subject of quality control.

Several books by Spanish authors were published, translations of foreign books were brought out in Spain -- principally of books from the U.S. -- and technical magazines and the press began to publish articles divulging the techniques of quality control in most of the industrial professional fields.

Today, there are courses which last several months, such as those of the Industrial Organization School, which depends on the Ministry of Industry, and those of the Spanish Association for Quality Control which is an independent institution which associates individual members and collective members such as firms. These courses have, for the moment, taken on the form of correspondence courses for inspectors, foremen and technicians, compatible with work.

Our experience with this subject makes it possible for us to advise, trying to keep others from making the mistakes we have made and to get them to take advantage of the successes achieved.

For a country which wishes to make public the applications of quality control, beginning, for example, in 1972, our advice would be as follows:

1. Interest the government.
2. Interest the executives of the main firms.
3. Interest the Ministries of Education, Industry and Commerce and the military ministries.

We did not begin our popularization in this manner, we did not go directly to the top, we did not begin by interesting the general managers and the boards of directors of the large firms and, as a consequence, we lost a lot of time in

developing the applications, as those who initially attended the courses were university students and second-rank technical personnel, i.e., very few executives. Most of the specialists and most of the countries made this mistake at the beginning, as the pioneers were statisticians and professionals who had very little to do with industry in general. They were followed by engineers who did move in the industrial-technical world, but these could not easily conquer the financier or the high executive of a firm -- this is something which, at present, economists and company organizers are accomplishing.

Without the support of the general management of a firm not much can be done in teaching or applying quality control, and for this reason the most important objective is the top management, which can be reached through government with orders, laws and regulations which impose minimum guarantee norms and responsibility for the quality of services and products in order to protect the "consumer".

For these reasons, at the beginning we indicated that it is necessary to begin by getting the government interested, in order to get positive reactions from entrepreneurs and to organize, in the ministries or departments most directly involved in education and responsibility derived from poor quality, the wisest controls, which we shall expound upon further on.

To finish the part dedicated to teaching and concerning popularization, we must give a quick and brief review of the present situation in the countries which are most advanced in this field.

In the United States, Japan and some European countries, there are now, in universities and technical schools, complete studies of the techniques of quality control and their organization and management, constituting a new specialty or career and given several different names, such as "quality engineer", "quality and reliability", Engineer Master in Quality Control", "PhD in Quality Control", etc., and the reason for these studies is that the market, and the companies, need such modern technicians to fill new jobs with very specific responsibilities.

These studies are using the most advanced teaching techniques which make it possible to take care of a large number of students with few professors and, besides, to accelerate the teaching by reducing time and intensifying the teaching.

So, we have correspondence courses, programmed instruction courses, radio courses with notes, television or videotape courses and courses which use small computers with programs specially prepared for teaching.

Which is the best method? It all depends on the men available and on money. These are what decides that which is most appropriate for each case.

2. INDUSTRIAL APPLICATIONS

Simultaneously and almost parallel with teaching and popularization, we began in Spain the industrial applications of quality control.

The same thing has occurred in this field of work as in popularization, and it is logical for it to happen with any innovation, as only experience perfects technique, corrects defects and gives way to new methods; if we had to begin the applications today we would be faced with new conditions, other characteristics, another industrial climate. The method used then was justified; today, in the majority of the cases, it would not be.

Initially, quality control was tied to the Inspection Department and the latter, in turn, depended on manufacturing.

Today, quality is just as or more important than price and delivery, and the amount manufactured; this change of mentality in the world market has had an extraordinary influence on the company organizational charts. Insofar as the importance of the person in charge of quality is concerned, the concept has been widened and everyone is talking about and applying total quality control, which begins with the purchase of raw materials and follows with receiving, manufacture; quality control studies failures in guarantee, design change, etc., giving rise to constant improvement in products and processes.

We in Spain, as well as other people in their respective countries, began -- more than 25 years ago -- by educating inspectors, heads of inspection teams, chief foremen ... and the difficulties were very great because the correction of defects implied enormously complicated changes such as new raw materials, new tools, new machines, etc., and for this reason those initially in charge of quality control were quite extraordinary people since, thanks to their constructive collaborationary work which was completely different from the old police-inspector mentality, the way was cleared little by little, giving rise to a great change in the situation brought about in relatively little time.

We had to begin by interesting management in quality control, initiating the applications with the best-prepared personnel which the companies had and which was, in all of the companies, the inspection personnel.

Today, it is more advisable to begin by criticizing the product design or the cost of quality from the point of view of the failures and defects and act consequently on engineering, manufacturing, sales, guarantees and marketing. In this last, the quality and price of competing products must be watched constantly to avoid being eliminated from the market.

The applications should always be adapted to the special conditions of each company and there is no rigid norm. At times it is best to begin applying quality control methods in the department which is in the worst condition insofar as failures and defects are concerned; at other times in the department which has the smallest work load.

All of the departments of a company should be considered and reorganized from the point of view of its participation in the quality of the final product. They can be:

- Purchasing
- Suppliers
- Receiving
- Manufacturing
- Metrology
- Engineering

Marketing
Accounting
Personnel
Sales
Guarantees

The names and duties can differ from company to company, and it is the task of the Quality Manager, of Product Safety Manager -- as he is now called in many firms in the U.S. -- to adapt himself to the organizational chart or to propose a change to be approved by the management.

Companies with old-fashioned organizational charts have the Inspection Head subordinate to the Manufacturing Head, that is to say that the head in charge of quality reports to or is subordinate to the Manufacturing Head.

In the modern company this situation has disappeared since it is not possible to be a judge and an interested party at the same time. For this reason the first step which was taken in company organization was to grant the then Inspection -- now Quality Control -- more functions and more responsibilities with the same rank as the Manufacturing Head and, in many cases, in more advanced countries such as the U.S. and Japan, the position of Quality Manager is directly subordinate to the President and is even usually an Executive Vice President who is in charge of quality control.

In Spain, application was begun in the telephone industry and followed by the automobile, food, construction, basic, home appliance, textile, shoe, chemical industries, etc.

The industry with the greatest number of applications is the automobile industry and that which is the most advanced in the application of quality control is the electronics industry.

There are two differentiated fields related to the application of quality control: government and private industry.

It is the job of the government to organize, study and make public everything related to standards, this being the basic point for the private firm to really be able to organ-

Figures 1, 2 and 3

Figura 1.

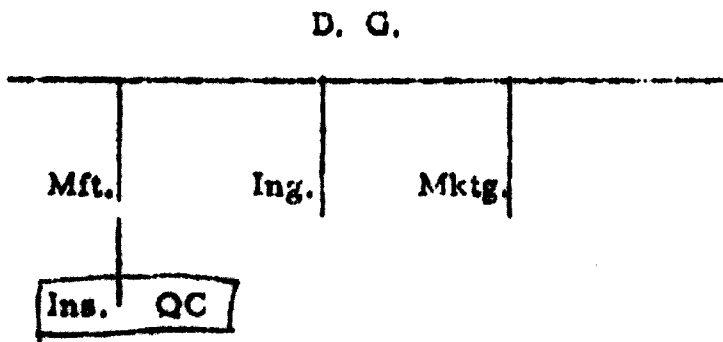


Fig. 2.

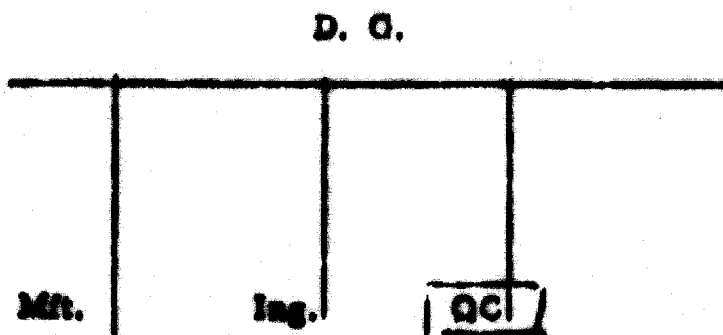
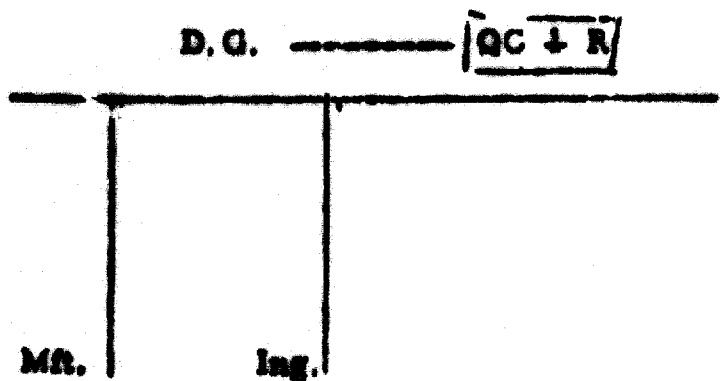


Fig. 3.



themselves for organizing quality control.

It is the job of the government to control the companies which certify the quality of products, processes or services of other private enterprises so that they may fulfill their authentic duty, and it is also the job of the government to verify the quality of the commercial trademarks by controlling their identity and agreement with labels and catalogues.

If the official or government party does not perform the duties which belong to it, then private enterprise should have only competition as an incentive to improve quality and if there is no competition, it is quite possible that quality would not improve.

To sum up, we shall say that it is the task of the government of each country to organize and control the following functions:

- Preparation and publication of standards, specifications and typifications.
- Organization and publication of the National Products Catalogue.
- Organization of Metrology Control.
- Control of Quality Certification.
- Quality control of national products and
- Organization of national campaigns for the popularization of quality control, with official awards.
- Organization of official teaching of the specialty of quality control.

3. ORGANIZING THE NATIONAL SOCIETY FOR QUALITY CONTROL

The countries which are most advanced in the applications of quality control show us the efficacy of national organizations of persons interested in these techniques. For example: the A S Q C (American Society for Quality Control) with 26,000 members; the J U S E (Japanese Union of Scientist Engineers) and the J A Q C (Japanese Society for Quality Control) and the E O Q C (European Organization for Quality Control) with 21 members, i.e., 21 European nations plus an important number of associate institutions and members.

In Spain, the A E C C (Asociación Española para el Control de la Calidad) /Spanish Association for Quality Control/ was founded, integrating all of the firms and individuals interested in the applications of quality control.

So that it may serve as a guide, we reproduce below part of its articles of association and organization.

ARTICLES OF THE SPANISH ASSOCIATION FOR QUALITY CONTROL

TITLE I

Denomination, goals, business address, life and personality

Art. 1. With the name of "Asociación Española para el Control de la Calidad" (AECC), an association is constituted and created, as a full juristic person, which, in its structures and national scope, joins the various sectors related to, in or for quality control and for which it is their exponent and representative to the effects of Art. 2. of these articles.

The association shall be a non-profit organization and should destine any income from any source to the fulfillment of its statutory goals.

The scope of its regular activities shall be all of the Spanish territory.

Art. 2. This association being created for perfecting and improving its members in the science and technique of quality, its goals are the following:

- a) The primary goal of the association shall be to promote and help the implementation and practice of quality control and its techniques in Spanish industries, services and administration. Promote and help the teaching of quality control techniques at all levels and by all types of public and private organizations.
- b) Promote, organize, direct, sponsor or collaborate in meetings, work committees, conferences, talks, shows and other activities for the discussion, study

and publication of technical or scientific papers related to quality, or any other papers in harmony with quality which the National Council of the Association deems wise.

- e) Orient, channel and counsel the members which so request on both means and training systems for problems related to quality and especially those concerning promotion of same.

These activities could be extended to non-members just as long as this is considered by the National Council of the Association under the terms which are agreed.

- d) Cooperate with the public administration in everything concerning the promotion of quality and pass on to same the problems related to quality which arise in each individual circumstance.

- e) Promote the improvement in quality of national products and services.

- f) Compile, select and distribute information related to the science and technique of quality and related subjects.

- g) Anything else which the Association feels of interest for increased diffusion and progress of the science and techniques of quality.

Art. 3. In order to achieve its goals, the AECC may cooperate with any other national or international analogous association.

Art. 4. The Association shall be based in Madrid, calle de Serrano nº 150. The National Council, as the governing body of the Association, may decide to move the headquarters, within the capital city, Madrid, informing the very next General Assembly of such a decision.

Province or regional delegations may be created later on following approval of the General Assembly.

Art. 5. The life of the Association is indefinite.

Art. 6. The Spanish Association for Quality Control has its own legal status as a juristic person, with full capacity to acquire, possess and dispose of all kinds of goods, as

well as to enter into obligations and exercise civil actions and administrative and similar actions with no other limits than those established by the laws of the country.

TITLE II

MEMBERS

Art. 7. The Association's members are broken down into:

- 1) Honorary Members
- 2) Collective Members
- 3) Numbered and Individual Members
- 4) Associate Members

Art. 8. The members' duties are:

- a) Comply with and fulfill the Articles.
- b) Pay dues and the contributions which may be agreed upon.
- c) Not compromise the prestige of the Association nor of its members nor make decisions which could affect the Association in any way.
- d) Faithfully fulfill and aid the development of the goals of the Association in any area within their reach within the strictest framework of professional ethics and morality.

The members are also expected to attend proceedings which are convened and to collaborate as much as they can in the activities of the AECC. They must also report to the National Council on everything which, being related to quality control, its management or allied techniques, could help or hurt the good progress of the Association or the interests of the associates.

Art. 9. With the exceptions which appear in Arts. 12 and 13, the members' rights are:

- a) Being elected to occupy positions in the Association.
- b) Participate with voice and vote in the Assemblies.
- c) Take part in the benefits corresponding to

the work, objective and goals of the Association.

- d) Form a part of the committees and work commissions which are formed.

Art. 10. HONARARY MEMBERS

These persons so designated by the National Council who have accepted such a nomination are honaryry members.

They are members with full rights.

Their votes have an individual nature.

They are exempt from paying the inscription and annual

Art. 11. COLLECTIVE MEMBERS

Such firms, ontities, societies, organizations and of- ficial bodies which so desire are collective members, follow- ing request of admission, in accordance with that established in Art. 14 of these articles.

They are members with full rights and as such may send the representatives which they wish to the Assemblies; only one, designated for this purpose, may be the spokesman for the firm or body which he represents.

In any event, his vote shall be equal to five indivi- dual votes.

They shall pay the inscription and annual dues in keep- ing with that established by the General Assembly on this mat- ter.

Art. 12. NUMBERED OR INDIVIDUAL MEMBERS

These persons which so desire are numbered or indivi- dual members, in accordance with that established in Art. 14 of these Articles.

Initially, they have the same rights as the honorary and collective members except for that their right to participate in the work committess may be subject to the operating norms of such committees or are active at any given moment and have been authenticated by the National Council.

Their votes shall have an individual nature.

They shall pay the inscription and annual dues in keep- ing with that established by the General Assembly on this mat- ter.

Art. 13. ASSOCIATE MEMBERS

These persons which so desire and which, being in a

period of professional training, request admission, are associate members, in accordance with that established in Art. 14 of these Articles.

Their rights are limited to attending the public proceedings organized by the AECC.

They have neither voice nor vote.

They shall pay the inscription and annual dues in keeping with that established by the General Assembly on this matter.

Art. 14. For admission to the Association a written application must be filed addressed to the Secretary-General. The Secretary-General shall initially accept the request, nominatively submitting it to the National Council.

Art. 15. Members will leave the Associations

- a) When they so request.
- b) In case of dissolution.
- c) By verdict issued by a tribunal composed of five members of the General Assembly presided over by the President of the AECC, at the request of the Council, when inappropriate conduct is judged to exist.
- d) By agreement of the Assembly when the members have not paid the dues and the agreed-upon contributions, at the request of the Council.

TITLE III

1. THE GENERAL ASSEMBLY

Art. 16. The General Assembly, the highest authority of the Association, constitutes its legislative body. Its statutorily-agreed decisions are obligatory for all members.

Art. 17. The General Assembly is made up of the honorary, collective and numbered members.

Art. 18. There can be regular and extraordinary General Assemblies and they must be convened by the National Council of the Association, on its own initiative or by the procedure described in Art. 21.

Art. 19. The regular General Assembly shall be convened

at least fifteen days in advance and must meet at least once a year.

Its jurisdiction covers:

- a) Election of the corresponding Council Members, in accordance with what may be determined in these Articles.
- b) Approve, as necessary, the accounts and balances for the fiscal years, as well as the report on the annual progress of the work done by the Council.
- c) Pass judgment on the questions which the Council decides to submit to the General Assembly.

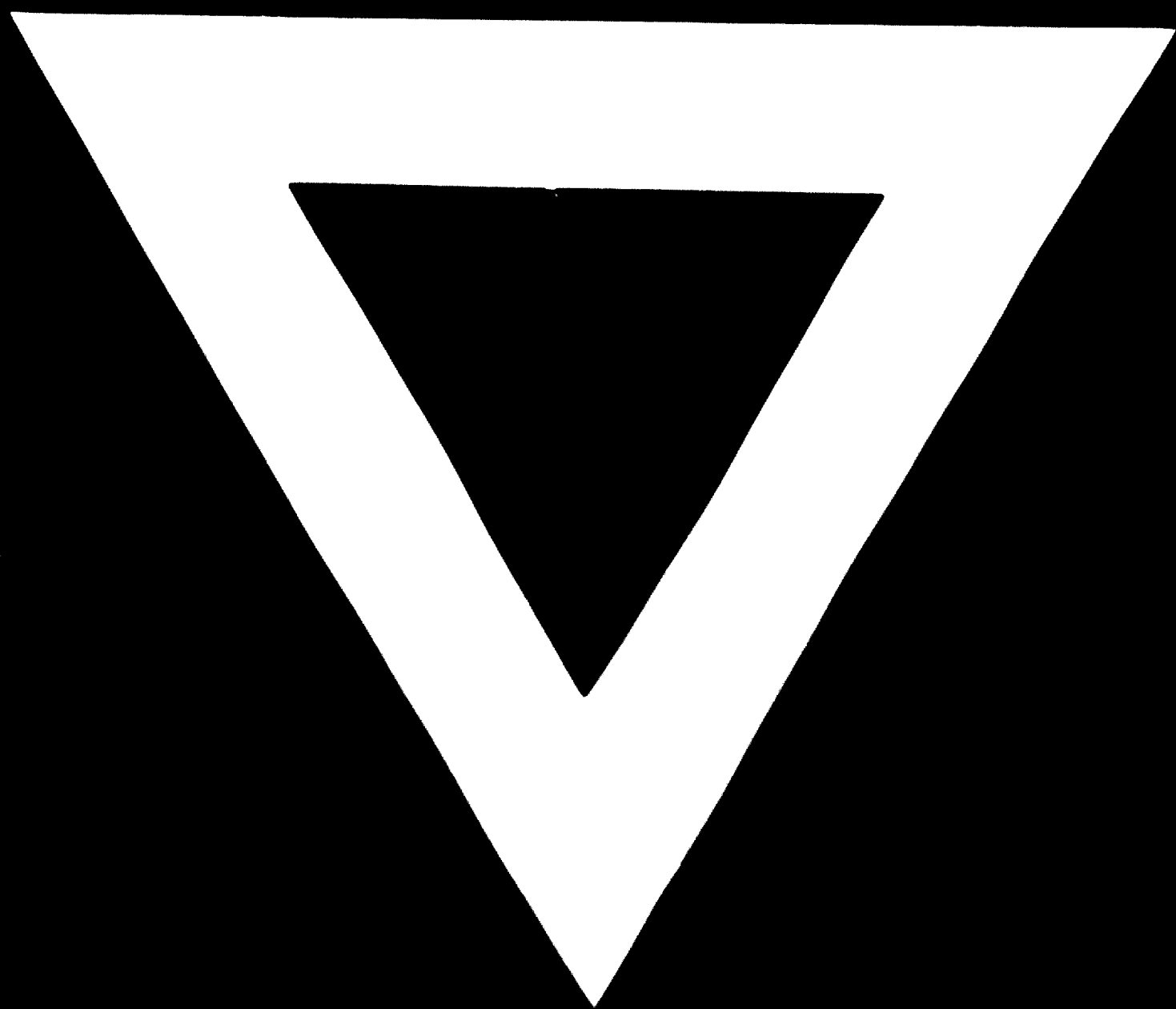
The governing elements are completed by the Honorary Council, the National Council and, to handle day-to-day matters, the position of paid Secretary-General has been created.

The economic resources of the Association come from the individual dues, dues from firms and the small income from sale of publications, organizing talks, seminars, National Days and Congresses.

The Spanish Association for Quality Control (AECC) is constituted by sections and committees.

The sections are the following: Automotion, Food, Construction, Electreelectronics, Chemistry and Pharmacy; and the committees are the following: Training and Education, Trustworthiness, Terminology and Glossary, Legal recognition of the professional categories dedicated to quality control.





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