Standardisation and Quality Improvement

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It is agreed on all hands that improvement of quality is an important outcome of the standardization process. The author reviews in this paper recent developments in the USSR, Great Britain and Japan in this regard and makes some suggestions to help the personnel engaged in standardization and certification activities discharge their responsibility of ensuring quality improvement in line with the expectations of the consumers - both national and overseas. These concern not only standards formulation and certification but also design of products, cost factor and research and development besides formation of quality circles in industry - Ed.

1. INTRODUCTION

Standardization is a key which helps in opening many doors. Recently it has opened the door of quality improvement for full consumer satisfaction. To appreciate this new opening, it is desirable to have some historical perspective to understand and appreciate the full significance of this development.

2. EVOLUTION OF THE CONCEPT ON STANDARDIZATION

Standardization as we know it today was conceived by Eli Whitney in 1793. He had received a bulk order of 10, 000 guns from the US Government. While executing the contract, Eli Whitney found that if he were to follow the then existing production methodology, that is, each worker producing a gun all by himself, it would be impossible to supply the guns in time. He, therefore, introduced an innovation. He copied a model gun and visualized components with precise dimensions, assigned the task of producing various components to different workers and introduced the system of assembling interchangeable components. Thus, the origin of the concept of standardization is linked with component standardization, interchangeability, assembly line, enhanced productivity and execution of an order in time. We are so used to this now that we cannot think of any other methodology for mass production.

Possibly, the early history of standardization centred round these ideas only. However, the concept grew fast in the twentieth century and during the First World War, it was applied to achieve many more objectives. Some of these applications during these and subsequent years are : variety reduction of finished products and minimization of components ; simplification all through production line; procurement of standardized raw materials ; economy of human effort ; inspection, testing and quality control ; in-process quality control ; total quality control ; and certification by national standards bodies. Forward-looking companies set up their own company standards departments and adopted standardization as an important management tool for protecting their brand names and for supplying standardized goods to win consumer confidence. Then governmental agencies also started asking for more and more goods certified by national standards bodies, thereby utilizing the concept of standardization for consumer protection.

This rapid growth of certification naturally led to the question : Do certified goods provide full satisfiction to consumers ? Not always, would be an honest reply. The reason is simple. No certification agency defines 'quality'; it depends on a 'standard' and this in turn might have been prepared at a time when this new challenge had not emerged. It is therefore, necessary to shake off our shackles and start thinking in terms of strengthening the role of standardization and certification in improving the quality of goods and their ability to compete in national and international markets.

I shall try to illustrate this in the light of recent developments in the USSR, the UK and Japan.

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3. RECENT DEVELOPMENTS IN THE USSR, THE UK AND JAPAN

USSR

During 1967-69, the USSR started certification of industrial goods on an experimental basis in 65 undertakings. The results of the experimental certification were encouraging. Economies achieved through certification of these products totalled 700 million roubles during the period. The second phase of certification began in 1971. Its disinguishing feature was that industries became responsible for switching over from certification of important individual articles to certification of production as a whole. In accordance with the procedure adopted, products were graded (Deluxe, Grade I and Grade II) and various undertakings directed to watch the growth of the quantum of Deluxe grade of goods and reduction in the quantum of second grade goods. Deluxe grade goods were awarded the State Quality Mark.

However, subsequent investigations revealed that there were instances when award of a State Quality Mark was not objective and the opinion of consumers was ignored. It was realized that it was very important to find the causes leading to the gap between 'quality of certified goods' and 'consumer satisfaction.' Thus, the USSR evolved in 1974 'Basic regulations of procedures for certifying the products' aimed at further improvement of the existing certification system and strengthening of the role of certification in improving the technical level and quality of products and making them exportable. In this background, certification was defined in a new light as 'a complex of organizational and technical achievements introduced in the industry as well as planned improvement in the quality of goods.' Lacunae in the definitions of the quality grades were eliminated and new requirements incorporated. Besides, the requirements were made stricter for goods which have to compete in the international market and hence must conform to standards that take the provisions of foreign standards into account, guarantee economic effectiveness and satisfy the needs of national economy and the individual customer.

UK

A White Paper entitled 'Standards, quality and international competitiveness' was introduced in 1982. Subsequently, the British Government expressed its determination to enhance the status of standards and quality assurance programmes in the UK with the objective of increasing industrial efficiency and strengthening international competitiveness. It was decided that the British Government would lay greater emphasis on the preparation and use of British Standards and independent assessment and certification procedures to meet the needs of public purchasing agencies and overseas consumers.

Japan

Japan has enacted 'Industrial Standardization Law.' This Law inter alia, provides that :

a) Any person who believes that the quality and other aspects of a certified commodity are not in compliance with the standard may submit a claim to the Minister ; and

b) Surveys should be carried out on the inspection method in order to determine how the practical method, acceptable criteria, of sub-standard products and quality of certified goods are defined taking into consideration quality characteristics of the commodities of processed products.

In Japan, the emphasis seems to be on certified products not conforming to the standard being brought to the notice of the highest authority and the determination that certification procedures must be strengthened to meet the quality requirements of the consumers.

Thus, we find that the earlier limited objective of inspection, testing and certification has been widened in the last decade and personnel engaged in standardization and certification have been given a new responsibility of ensuring quality improvements so that their efforts come up to the expectations of the consumers - national as well as overseas. How should we gear ourselves up for coping with this new challenge ?

4. SOME SUGGESTIONS

In the light of this new challenge, it seems imperative that we should have some hard thinking to discard or revise some of those precepts that have so far been taken for granted. Some of these are discussed here alongwith proposals for their revision.

Corpus of Standards vis-a-vis Conformity Certification

It has so far been taken for granted that personnel engaged in inspection, testing and certification should regard standards as their Bible. Possibly, this situation cannot be changed as inspection, testing and certification procedures must be uniform for all agencies. However, it appears that standards prepared so far may not provide full consumer satisfaction. In this connection, I wish to quote from the White Paper of the UK referred to earlier : 'The present corpus of British Standards is of variable quality.... They are not always sufficiently clear and specific for regulatory use. The Government

believes, therefore, that a change of approach by British industry to standards and their use is required. Extra effort and better resources must be devoted to the development of relevant clear standards reflecting sound and modern technical practice and commercial consideration.'

The state of affairs mentioned above is equally applicable to Indian Standards and, possibly, all standards issued by other agencies. The reason as stated earlier seems to be that committees finalizing the standards had never visualized that the standards being finalized by them would be required for quality improvement of goods at the national level and goods certified on that basis would be required to face competition in the international market. Nevertheless, time is now opportune for us to treat standards not as a Bible, but only as a document which attempts consumer satisfaction. This implies that at the earliest opportunity an attempt should be made to identify the lacunae in standards in respect of quality requirements, sampling procedures, acceptance criteria, etc. This feedback to committees should be our first and foremost duty.

Earlier, certification had been defined as 'the action of certifying by means of a certificate of conformity that a product or service is in conformity with the specific standard or technical specifications'. Therefore, certifying agencies have been considering their job as complete once they have assured conformity with the specification. In the new situation, it is imperative that whenever conformity certification does not satisfy a consumer, organizational and technical changes should be brought about in the certification system.

Product Design

While dealing with this sensitive area, I should like to quote a sentence from the book 'Total quality control' by A.V. Feigenbaum : 'The goal of competitive industry, as far as product quality is concerned, is to provide a product and service into which quality is designed, built, marketed and maintained at the most economical costs which allow for full consumer satisfaction.'

We have so far taken it for granted that design should not be frozen in a standard so that the manufacturers can continue to improve the product. Whereas this generalization must be respected a review seems necessary. My experience shows that in the absence of design details, quality control effort on many occasions becomes weak and on occasions out-of-date designs of certified products do not satisfy the consumers. Therefore, for quality improvement, it is necessary that standards personnel should be on the active look out for improved designs, new manufacturing process, improved materials and new technologies.

To my mind, review of product design is another important area where we should start applying ourselves. And I quote from Feigenbaum again : 'Among the areas that may be considered for design review are : specific customer quality requirements, including product features, reliability and safety test data ; requirements specified by regulatory agencies or appropriate government and industry standards ; manufacturing feasibility, including facilities, equipment and scheduling ; inspection and test requirements consistent with the state-of-art capability ; product liability ; vendor part and material dependability ; reasonable tolerances ; life cycle considerations ; appropriate service and maintainability features ; adequate packaging requirements, etc.' This should not be dismissed as jargon only. We know specific situations when certification or export inspection ceases. We have only to analyse these situations for identifying design deficiencies so as to help the Committee in formulating the appropriate standard.

Cost

So far, we have kept cost factor totally outside our purview. Time is opportune to realize that one cannot have a quality product without paying its due price. Besides, there is a phenomenal change in the attitude of the consumer who is now prepared to pay any price for the product but he wants the products to be reliable, and this too for a reasonable period of time. A customer interviewed in a marketing survey put it very simply : 'I want to buy products that work correctly day after day when I push a button.'

It is, therefore, for consideration that for quality improvement, we should have data on comparative costs of the product sold and favoured in the market. We would be failing in our duty if we are a party to certification of those products which are cheap but do not provide satisfaction to consumers ; or those products which are unduly costlier ; or whose cost can be reduced without sacrificing consumer satisfaction.

Research and Development

For upgrading technical specifications, for carrying out certification activity in this broader perspective, and for identifying new designs, new processes and latest technologies, it is obvious that research and development should be invigorated. Many of us don't know that there is a major tax incentive provided for R&D expenditure in the current tax laws

which is : 'A deduction under section 35(2)(ja) of the Income Tax Act, 1961 of 100 percent capital expenditure other than in hand incurred on scientific research which is duly recognized by the Department of Science and Technology, Government of India.' Despite this incentive, we know well that there are only a few companies in the country which pay due attention to R&D effort and latest test equipment for monitoring quality. During certification or in-plant quality control assessment of companies, scant attention is paid to R&D activities and improved test equipment available at the manufacturing unit. It is desirable the we should play a catalytic role in the initiation or augmentation of R&D activities which, on most occasions, are a part of the quality control laboratories we visit day in and day out.

Quality Circles

We have so far confined our attention to 'materials' only. To my mind, it is desirable that this horizon should be expanded to include 'men' also. This brings us to the last suggestion of 'Quality Circles' which are assuming unprecedented importance as a technique for increasing productivity and quality of products. The basic assumption in having quality circles is that everyone working in an industry or business would like to use his brain in addition to his labour. Quality circles, therefore, lay emphasis on improved communication, job satisfaction, higher morale, personnel development, mutual respect between workers and management, development of future leaders, supervisory growth, and involvement and commitment of people. For quality improvement, it is necessary to encourage the quality circle movement and during inspection and certification, we should make it a point to assess : how far this technique has been applied in a manufacturing unit ?

5. CONCLUSION

Strengthening of certification systems for quality improvement of products for full satisfaction and/or protection of consumers is the latest trend in several countries. This poses a new challenge to the person engaged in standardization, inspection, testing and certification of products. For facing this new challenge, it appears necessary that there should be rethinking in respect of some of those precepts which have so far been taken for granted. Specifically, this rethinking seems necessary in respect of identification of gap which might exist between 'technical specifications and certification systems' and 'full consumer satisfaction.' For the purpose, constant vigilance and feedback information is necessary for agencies formulating a standard or operating a certification system. Prima facie, there appears to be a case also for our being more alive to new designs, process and technologies. Besides, it is necessary for us to play a catalytic role in the R&D activities of a manufacturing unit and we should provide valuable information to standards formulating committees which we often collect by way of consumer complaints and products not being able to compete in the market. In addition, we may start taking note of the cost which consumer wants to pay and the extent to which quality circle movement has made its impact on a manufacturing unit.

National Welding Seminar - 87
26-28 November, 1987, Bangalore.
Organised by The Indian Institute of Welding, Bangalore Branch.

WELDING - 87, the National Seminar on welding for this year will be organised by the Bangalore Branch on behalf of the Indian Institute of Welding on 26-28 November, 1987 at Bangalore.

The first announcement and call for papers has been already sent to all individual members. The seminar will have a number of technical sessions to cover broad fields such as fabrication, welding processes, equipments and consumables and research work connected with welding.

Several awards have been announced for the authors presenting the best papers in the following respective fields :

- for research papers, I.T. Mirchandani Memorial Research Award and H.D. Govindaraj Memorial Research Award.
- for papers on welded fabrication, KCP Award
- for papers on development and application of welding systems - Modi Award.

All correspondence should be sent to :

The Hon. Secretary,
The Indian Institute of Welding, Bangalore Branch,
C/o. Karnataka Welding Products Ltd.,
Chitrapur Bhavan, 4th Floor, No. 68,
8th Main Road, 15th Cross Malleswaram,
Bangalore - 560 055

IIW becomes official international standardizing body

In September 1986 the ISO officially recognized, for an initial three year period, the IIW as an international standardizing body, under the terms of ISO Council Resolution 19/84. Resolution 19 lays down the conditions for the acceptance by ISO of international standardizing bodies and the procedure for standards drafted by them to be recognized by ISO. The International Institute of Welding is the first organization to have fulfilled the criteria imposed by ISO in order to benefit from this special status.

Procedure for adoption of ISO standards

Under resolution 19 an accelerated procedure for the preparation of standards, to co-exist with the traditional procedure, is introduced. A draft international standard (DIS) submitted by an officially recognized body, such as IIW, is eligible for consideration under the accelerated procedure which entails only a simple "yes" or "no" vote by the member bodies of ISO, the results of this vote determining whether or not the DIS will then be submitted to the ISO Council for endorsement as an ISO standard. On acceptance, the DIS will be considered as having equal status to ISO International Standards which have passed through the traditional ISO Commitee network.

It should be noted however that the accelerated procedure will apply only to new draft standards, the traditional route to be continued for those draft standards already in progress.

Organization of standardizing work within IIW

A new procedure to be followed within the IIW for the preparation of DISs has been adopted in order to take advantage of the accelerated procedure. A DIS, which may be drafted by any one of the IIW Working Units, is transmitted to all IIW member societies for comment and for voting. The DIS is then submitted to the Governing Council together with a resolution ; if approved the DIS is transmitted to the Select Committee "Standardization" to ensure that it complies with ISO requirements. After examination and approval of the DIS by the Select Committee, the Scientific and Technical Secretary forwards it to the Central Secretariat of ISO for consideration under the procedure previously mentioned. A draft DIS may be issued in one of the IIW working languages only, i.e. English or French, while it is considered to be a working document. However, when it becomes necessary to send it out to member societies for examination, it must be available in both languages.

The organization of standardizing work of this nature within the IIW will necessitate liason with ISO on three levels : (1) between the Scientific and Technical Secretary and the Central Committee of ISO concerning the application of Resolution 19 : (2) between the Select Committee "Standardization" and ISO/TC 44 "Welding" in order to plan and co-ordinate the work and (3) between IIW member societies and ISO national member bodies in order to facilitate acceptance of IIW standards.

Role of Select Committee "Standardization"

The Select Committee "Standardization" will play an important role in IIW standardizing work by pursuing its task of liaison between IIW and ISO and extending it to become responsible for the planning and follow-up of standardization work and for checking that texts of draft standards are in conformity with ISO guidelines. In effect, it will become a kind of "clearing house" for draft standards. With regard to planning, the Select Committee will prepare and upadate on a yearly basis a working programme which it will transmit to ISO/TC 44, indicating the planned procedure (traditional or accelerated) to be followed and, in turn, ISO/TC 44 will also keep the IIW informed of its own programme of work. In order to ensure the best possible co-ordination between both organisations the present arrangements by which a member of ISO TC/44 participates in the work of IIW Select Committee "Standardization" and IIW appoints observers from its Working Units to the corresponding sub-committees of ISO TC/44 will continue.

Attention

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If you have not yet renewed your membership of the Institute for the current year, please do so as per the Ammended Subscription Rates, at the earliest.

—Editor