
QUALITY MANAGEMENT AND COMPETITIVE BENCHMARKING ISSUES

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The article reviews the changing norms of quality management over the years and discusses some of the important concepts associated with Quality Management Systems. The standardized procedures ensure a marked decrease in defective products and benefit the organization as well as its stakeholders. Binani Zinc Limited is one organization where the implementation of the four quality management systems has contributed a great deal towards continual improvement and customer satisfaction.

Introduction

Quality has been widely accepted as the most powerful and sustaining factor that would give the supplier an edge over competitors. Activities to assure quality of products and services to customers were initially organised by suppliers through third party certifications of products, or by providing facility for second party inspection by customers. These activities however failed to convince customers about reliability of products or services and about the capability of suppliers to consistently provide reliable quality. The need for assessment of the quality system of the supplier's organisation came to be recognised as the remedy for the inadequacy of product certification and these activities gave rise to formulation of quality system standards by companies, defence organisations and different national standard bodies.

Many manufactured items are part of large projects and a failure in one component can often lead to considerable losses due to unplanned outage or delays in commissioning of the plant. Costs to the client of such delays and outages are very large. Applying formal quality assurance to the purchase and supply of items is, therefore, the most cost effective way for the client to provide a high degree of confidence that he will not suffer from such failures.

Many engineering products are also used in systems or projects where failure could imply a considerable safety hazard. Chemical plants, nuclear plants, pipelines or any pressurised or transport components come into this category. The cost of a failure in terms of human life or injury cannot be quantified and therefore, cannot be accepted.

The traditional approach to the manufacture of many components has been to design, manufacture and then inspect. This implies that inspection may result in scrapping a component. This philosophy is acceptable in the case of low value items, but it cannot be used for a high value item because the economic consequences of scrapping a component and undertaking major remedial work are too high. Hence it is imperative to have a Quality Management System, which, as far as possible, prevents such failures from occurring.

Requirements from an organisation

An organisation should

- Achieve, maintain and continuously improve the quality of its products in relationship to the requirements of quality.
- Improve the quality of its own operations, so as to meet continually the customer's and stake holders' stated or implied needs.
- Provide confidence to its internal management and other employees that the requirements for quality are being fulfilled and maintained, and that quality improvement takes place.
- Provide confidence to the customer and other stakeholders that the requirements for quality are being, or will be, achieved in the delivered products.
- Provide confidence that quality system requirements are fulfilled.

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Standard

Globalisation of manufacture and marketing had, by this time, already impacted on the need to develop International Standards for products and services. Since the parallel development of quality system standards by various national and multi-national establishments proliferated, the International Organisation for Standardization (ISO) felt it was appropriate to develop the International Quality System Standard to harmonize efforts in this area by various national and multi-national bodies. Thus, this would facilitate international trade by providing globally accepted Quality System Standards for third party certification under contractual requirements.

Advantages of a Quality Management System

The application of a formal Quality Management System can have two advantages for the manufacture

- A formal quality system will tend to prevent failures and therefore will lessen the risk of attracting damages and this could possibly lessen the premium for product liability insurance.
- The documented evidence of the control of quality, in the form of a formal quality assurance system can, in many cases, provide a defence against a claim for defective goods.

Benefits through Quality Management

The following benefits can be expected by the implementation of a proper Quality Management System.

- Customer satisfaction
- Reduction in customer complaints
- Reduction in fire fighting
- Reduction in inspection efforts
- Improved safe working
- Reduction in machine break down
- Reduction in quality cost

Intent of a Quality Management System

The intent of a Quality Management System can therefore be summarised as,

- A systematic approach to design, development and manufacture.
- Prevention of failures rather than relying on forced manufacturing inspection.
- Objective evidence that quality has been achieved.

It is extremely important to understand that the intent of a

formal quality system is to prevent errors or defects from occurring and therefore lead to continuous quality improvement. It is not meant to provide a bureaucratic framework for a traditional inspection policy.

For those organisations that do not compute cost of quality, the cost is usually built into the overheads cost and gets little notice. Organisations instituting a quality system can see an overall improvement in this parameter, as the rationale for an effective quality system is its cost effectiveness. Very often, quality cost is also used to identify 'benchmarks' in an industry segment and close monitoring is instituted.

Quality

Quality can have different definitions as perceived by each customer. It could be one among the following or the combination of any of the following.

- Degree of excellence
- A distinguished attribute
- Degree of goodness or worth
- A superior rank or skill
- Reliability
- Trustworthiness
- Achievement in a consistent manner
- Standardization of form
- Fitness for purpose
- Conformance with requirement

It becomes essential to have a common definition for Quality, which is acceptable to all customers. As per ISO 9001 : 2000, the definition of quality is '**the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs**' which stresses the importance of satisfying the implied need of the customer.

Quality System

Quality, when defined and specified, does not necessarily mean that it is either the Product Quality or the Process Quality. It deals with the process control measures to be incorporated to achieve the desired quality. A Quality System, in which the quality of process and product form a part, is essential to ensure the desired quality.

As per ISO 9001 : 2000, a Quality System is defined as 'the organisational structure, responsibilities, procedures, processes and resources needed to implement quality management. Quality System consists of quality management, quality

assurance, quality control, inspection and testing’.

Quality Management System

In order to have an effective Quality Management System in place, the commitment and the involvement of the top management is highly essential. Systems are always top-driven, wherein the involvement of all concerned is a must for its successful implementation.

As per ISO 9001 : 2000, Quality Management is defined as ‘**all activities of the overall management function that determine the quality policy, objectives and responsibilities and implement them by means such as quality planning, quality control, quality assurance and quality improvement within the systems’.**

Implementation of a quality management system will lead to a **Total Quality Management (TQM)** which is defined as ‘**the management approach of an organisation, centred on quality, based on participation of all its members and aiming at long term success through customer satisfaction and benefits to all members of the organisation and society’.**

TQM is thus based on

- Continuous improvement for which a cultural change may be required.
- The role of each individual as both a customer and a supplier.
- Total commitment from the management and involvement from the employees.

Quality Costs

Cost of quality plays a major role in determining the effectiveness of the Quality Management System. Quality Cost could even be taken as a measure for “benchmarking” the operational efficiency of an organization. The Quality Cost can be categorised into Failure Costs, Appraisal Costs and Prevention Costs. Failure costs can be subdivided into Internal Failure Costs and External Failure Costs.

Internal Failure Costs are associated with defective products, components and materials that fail to meet quality requirements and result in production losses. Internal Failure Cost will lead to

- Low first pass yield
- Scrap
- Rework and repair
- Trouble shooting
- Re-inspection and retesting
- Material review activities

- Down grading

External Failure Cost is generated because of defective products being supplied to the customer. External Failure Cost comprises of

- Processing of customer complaints
- Reworking of returned items
- Lost opportunities cost

Appraisal Cost is associated with testing, inspecting, measuring and auditing of processes, materials, components and products to ensure that they conform with quality standards and performance requirements.

Prevention Cost is associated with designing, implementing and maintaining the quality system. Prevention Cost comprises of

- Quality system audit
- Quality planning and process control
- Quality training
- Supplier assessment and surveillance

The Internal Failure Cost in the beginning could be excessive, in the sense that a defective product is not sent to the customer and this, in turn, reduces the External Failure Cost. In course of time, with the implementation of an effective Quality Management System, the Internal Failure cost gradually comes down, thereby the total Internal and External Failure Cost is brought under control. With an effective Quality Management System in place, when the Internal and External Failure costs are under control, the cost on Appraisal and Prevention is also greatly reduced as they become insignificant. Quality Control and Inspection become an unnecessary activity with the implementation of an effective Quality Management System.

Quality at Binani Zinc Limited (BZL)

Brief History of BZL

BZL is involved in the business of manufacturing Special High Grade Zinc of 99.99 % purity. Besides Zinc, Cadmium and Sulphuric Acid are produced as byproducts. The Company was established in the year 1962 and started its production from 1967 onwards. BZL is the first company in the country to produce Zinc Metal.

Systems at BZL

The following four Management Systems are in place in BZL and are found to be effective in improving the overall quality of the organisation.

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- **ISO 9001 : 2000** – Quality Management System
 - **ISO 14001 : 2004** – Environment Management System
 - **OHSAS 18001 : 1999** – Occupational Health and Safety Management System
 - **SA 8000 : 2000** – Social Accountability Management System

The organisation's performance on Quality, Environment, Occupational Health, Safety and Social Accountability has greatly improved with the implementation of the four Systems mentioned above. All these systems are found to be very effective in meeting higher standards in the performance of BZL. Continual improvements have been effected in various operations of the plants through the implementation of proper process control. Standard Operating Procedures have been implemented at every stage of operation.

Benchmarking

It is a continuous, systematic, process of evaluating and comparing the capability of one organisation with others

normally recognised by industry leaders as insights to optimize the organisation processes.

At BZL, the industry leaders in Zinc Manufacturing have been identified and the bench marking figures for the key parameters have been listed in order to achieve the same levels through implementation of effective Management Systems.

Conclusion

The implementation of the four Management Systems has contributed a great deal towards continual improvement and Customer Satisfaction at BZL. More and more of measurable and quantifiable objectives are being identified for continual improvement. Quality improvement programmes have been designed and successfully implemented. The system driven approach has been found to be an effective tool for achieving continual improvement.