Quality Initiative

Quality Preference

Total Quality Management

W. Edwards Deming may be the most recognized figure in the development of what is now called TQM, but he built on the efforts of others. As early as 1911, Frederick Taylor introduced the concept of product inspection, which led to the creation of inspection departments and the first quality control. In the 1940's, the Japanese invited Deming, Joseph Juran and others to learn to produce high quality innovative products and change the world's perception of Japanese products as shoddy and poor quality. Philip Crosby later introduced quality circles to involve employees in the quality process. The Japanese achieved their goal, and the world took notice. The U.S. and other countries flocked to Japan to learn the secret to their success and in the 1980's and 1990's, TQM became a company culture shift as well as a system for improving product and service quality.

TQM Principles

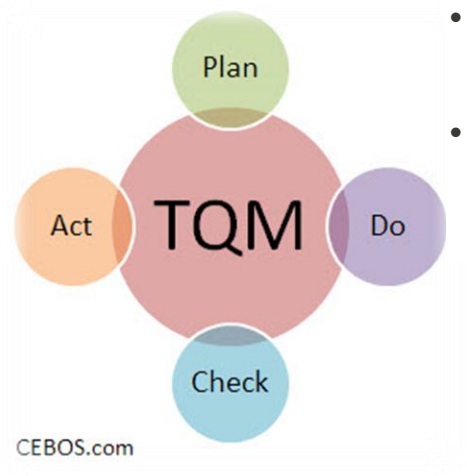
Total Quality Management is based on the principles of the early leaders. W.Edwards Deming's 14 Points stressed exceeding customer expectations, elimination of defects, continuous improvement, and inclusive participation in the quality improvement process. Joseph Juran added the managerial component to quality, and Philip Crosby's "zero defects" stressed that catching errors through inspection was not enough. The only acceptable quality standard was 100%. This could be achieved by quality teams of management and subject matter experts (the workers who did the job) working through a defined quality improvement process, statistical data analysis and measurement to exceed customer expectations.

"Total Quality Management (TQM), Management practices designed to improve the performance of organizational processes in business and industry. Based on concepts developed by statistician and management theorist W. Edwards Deming, TQM includes techniques for achieving efficiency, solving problems, imposing standardization and statistical control, and regulating design, housekeeping, and other aspects of business or production processes."

TQM Tools

The primary TQM tool for continuous improvement is the PDCA Cycle:

- Plan – In this phase, the quality team defines the problem, gathers and analyzes data, sets measurements and formulates solutions to improve quality.
- Do - The team implements the new process and tests the results against the desired results.



- Check- The team measures effectiveness and makes adjustments to refine the new quality process until the desired results are achieved.
- Act - The new improved process is implemented, all parties are notified and trained on the new process and metrics are set in place to monitor the quality process effectiveness.

Quality Action Teams – These teams are comprised of "stakeholders," of those who do the work, are affected by the problem, or use the product or service. They can be SMEs, customers, managers and workers from other departments that contribute to or are end users of the product or service. The four stages of team development – Forming, Storming, Norming and Performing was a popular training topic for new quality teams to overcome difficulties and be productive.

Quality Team Tools – TQM introduced tools such as statistical process control, brainstorming, flow charts, fishbone diagrams, data gathering by observation, and decision making tools like rank order and nominal group technique.

TQM principles and methodology have been adopted and expanded in other quality systems such as Six Sigma and the ISO series of global quality certifications.

What began as a way to eliminate errors and rework has become a global benchmark for quality management system that focuses the value of every worker's contribution to quality improvement and exceeding customer quality expectations.

Quality Control.

Quality control, or **QC** for short, is a process by which entities review the quality of all factors involved in production. ISO 9000 defines quality control as "A part of quality management focused on fulfilling quality requirements".

This approach places an emphasis on three aspects:

1. Elements such as controls, job management, defined and well managed processes, performance and integrity criteria, and identification of records
2. Competence, such as knowledge, skills, experience, and qualifications
3. Soft elements, such as personnel, integrity, confidence, organizational culture, motivation, team spirit, and quality relationships.

Controls include product inspection, where every product is examined visually, and often using a stereo microscope for fine detail before the product is sold into the external market.

Inspectors will be provided with lists and descriptions of unacceptable product defects such as cracks or surface blemishes for example.

The quality of the outputs is at risk if any of these three aspects is deficient in any way.

Quality control emphasizes testing of products to uncover defects and reporting to management who make the decision to allow or deny product release, whereas quality assurance attempts to improve and stabilize production (and associated processes) to avoid, or at least minimize, issues which led to the defect(s) in the first place. For contract work, particularly work awarded by government agencies, quality control issues are among the top reasons for not renewing a contract.

Quality control in M/s Upadhaya Valves Manufacturer Private Limited is concerned with three main aspects:-

1) Quality of materials
2) Quality of components and
3) Quality of finished products (valves, pipes and fittings)

Quality controls should not be confused with quality assurance. The latter is concerned with ensuring that the quality control and systems used are maintaining the standard specified.

Basic quality control requirements are indicated, but not necessarily specified by standard specification to which the valve is made or covering valve for similar application. If the valve is such that it is not covered by a particular standard or specification, then those valves are manufactured according to requirements and application of the buyer. In regular production, careful control of materials supplied, visual and dimensional inspection of components and pressure testing of the final valve at ambient temperature will be sufficient.

The extents of quality control to be applied in the manufacturing of a valve should be determined primarily in relation to its application. We generally, apply quality control appropriate to the normal uses of such valves. We readily advise to our factory the standard control procedure for particular valves and this should prove more than adequate for most of the purposes. Obviously, this will vary according to the type of valves, being more exhaustive for a high-pressure steam valve than for bronze radiator valve. Where valves are of special designed, made of special material as compared with normal production or critical services, then more exhaustive quality control may be considered desirable. Such cases should be discussed in detail with prospective buyers.

MATERIALS

It is necessary to ensure that materials used are as specified and they are in suitable condition for the purpose intended. The latter will involve general inspection and or may include non-destructive testing procedures in appropriate to form, such as ultrasonic testing, radiography and crack detection. The scope and extend of NDT should be determined in relevant to the severity and hazard of end use of the valves. For items in regular mass production, some form of sample is often used as material quality control and again the extent of testing is determined by the intended purpose of valve.

COMPONENTS

When materials quality control has been applied, quality control on components is basically one of inspection against the design requirements. Again the applicant of total inspection or the use of sample must be determined by circumstances.

FINISHED VALVES

Here quality control is concerned with satisfactory operation and function of valve in accordance with the specification operation and function of valve in accordance with the specification to which it is made. This will involve both inspection and testing. Usually including Hydraulic pressure testing, both body and seat where valves have a primarily shut-off function.

Many valve specifications including British standard require that there shall be no visual leakage through the valves seat under specified test condition.

External Inspection

In practice, it is appreciated that test carried out under different condition.

Some valve product standard has acknowledged the impartibility of zero seat leakage concepts for certain industrial valves and in this maximum leakage rates are specified.

Specified permissible leakage should be based on process consideration, such as hazard resulting from leakage after emergency shut-off etc. In many industrial applications, some degree of degree of leakage is acceptable and permissible.

All aspects of quality control, inspection and testing should be carefully weighed against the application and hazard associated with the service of the valves. Caution should be exercised to avoid over specification, which can result in an unnecessarily expensive product and which may reduce source of available and extend the delivery time.

Any requirement for quality control (for materials and test certificates, if they are thought to be necessary) should be discussed and agreed with the supplier at the time of order, changes made after work as commenced may lead extension of delivery times.

It is controlled by one of our department called as 'QUALITY CONTROL DEPARTMENT' headed by an Engineer as Quality Manager, having inspectors and Supervisors under him. All are responsible to reply direct to the Chief Manager or Managing Director.

The system used in our factory has following sections:-

1) Control of drawing and changes.
2) Procurement Control

3) In-Process Inspection
4) Special Process control
5) Calibration
6) Corrective Action
7) Final Inspection
8) Painting and Packing
9) Clearance/Dispatches

QUALITY RESPONSIBILITY

Each employee is responsible for the quality of the contributes to the product, either directly or indirectly. Quality Control Department is responsible for inspection of the materials at receiving section, during manufacturing and assembly and for acceptance of finished products.

It is divided into four parts:-

a) Ferrous castings for all Cast Iron parts of the valves. These items are manufactured in our Foundry at 245 'K' road, Belgachiya, Howrah. Raw materials used to manufacture Valves and fittings meet standard is Cast Iron to IS:210 gr. 200. The Quality Control foundry engineer specifies Heat No. of all castings. Each heat has testing bar either integrally cast with body or separately marking Heat No. After casting and fatling the test bar is detached from casting and sends to laboratory at our factory P-280 Banaras Road, Belgachiya, Howrah, where our Laboratory In-charge carries the test of Cast Iron part and testing bar as per specification on universal testing machine to find out grade and quality. After satisfaction, he issues instructions to the factory, receiving section to receive the materials from foundry with identification mark. After receiving the castings, again the Inspection Engineer check each part on sound prove to issue to supervisor for machining.

b) For non-ferrous items of Valve such as trims for body and seat, nuts, bushes etc., we have foundry for non-ferrous at our factory at 60/1/1 'O' Road, Howrah where similar type of arrangements as stated above have been made and same system to receive non-ferrous castings after carrying the test, as per specification for mechanical and chemical reports.

c) Stem materials, generally, we purchase from recognized stockiest such as stainless steel rounds/bars from indigenous manufacturers who issue test certificate with materials for gradation, chemical composition, UTS as specified in specification and after receipt, we again test in our own laboratory for chemical and mechanical properties of stem materials and satisfaction we put for further operation.

d) BOUGHT OUT ITEMS: We purchase from local indigenous manufacturers/stockiest bolts, nuts, rubber insertion, compressed fiber packing etc. as given specification.

e) After receiving all materials and after machining our inspecting engineers check each and every parts are dimensionally as per drawing and specification and on satisfaction they put forward to assembly section. During inspection, if any material in not qualified and observes below specification, instantly Quality Control Manager makes a report and rejects with marking and tag and set aside for disposition. The control and disposition of non-conformities is the responsibility of Quality Control Department.

f) ASSEMBLY: On time of assembly all parts are
elated to make Valve are kept in inventory section and reinserted by assembly section engineer and after assembly, the operation of valves are observed to see the strength, clearance setting of valves and other facts. And on satisfaction, the assembly department

releases the valves for testing hydraulically. After hydraulic testing, as specified in specification and on satisfaction, the Valves are use to transfer for painting and finishing, and after that the valves are transferred to dispatch section or offered for inspection to the buyers nominated inspection agencies for quality assurance and acceptance of the materials. Generally the materials are finally inspected and accepted and released for dispatch/shipment after full satisfaction and meeting the requirement as per satisfaction and order. Inspection are generally carried out by the under noted independent third party inspection from time to time.

An **inspection** is, most generally, an organized examination or formal evaluation exercise. In engineering activities inspection involves the measurements, tests, and gauges applied to certain characteristics in regard to an object or activity. The results are usually compared to specified requirements and standards for determining whether the item or activity is in line with these targets, often with a Standard Inspection Procedure in place to ensure consistent checking. Inspections are usually non-destructive.

To prove ones Quality of the product one has to pass the inspection of the materials which can be said as first stage of proving the quality and the second is feedback forms filled by the customers.

Internal Inspection: As the materials gets ready the factory engineer of the company inspects the materials and then when the materials gets a pass certificate then the company sends a internal inspection report to the to its client and then gives a request letter to the third party inspection agencies or the client to inspect the materials. Inspection agencies like SGS, RITES, TCI, ROI, Bureau Veritas, Tata Consulting Engineers, M. N. Dastur, EIL and such others.

External Inspection: As the company raises a request letter to the third party (inspection agency), client or for Joint Inspection, visits the

Internal Inspection

manufacturer's factory and inspects the materials and gives a final pass certificate to them and then the materials go under painting and gets ready to dispatch from the manufacturer's firm.