

# TOTAL QUALITY CONTROL

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Total Quality Control [TQC] is a name generally given to a more encompassing program than Quality Control. Often the terminology is used interchangeably and incorrectly to the purist. TQC has come to mean the entirety of operations and procedures incorporated in order to warrant that the end product meets the consumer needs in merchantability, reliability, usefulness, and for intended usage. TQC is the end integration of the many quality control procedures utilized on individual components that make up the end product. Generally speaking a TQC program dictates which and how many quality control procedures will be utilized.

Quality Control procedures are those methods utilized or applied to a manufacturing process to see that the end product of the individual process complies with the variation allowed in the specifications and control drawings. QC reduces the variability inherent within a process to acceptable limits.

Quality Assurance or Quality Assurance Department is the person or the division of persons assigned to plan and run the Total Quality Control program. It is this division that chooses and administers all the quality control procedures to be integrated into the Total program. The overall goal of a quality assurance program is to reduce the variability of all components of the end product to acceptable limits, where the ultimate user of the product is satisfied with respect to merchantability and reliability of the end product.

The Quality Assurance program has many acceptable and proven methods of insuring the quality of the end product. Since corporate profit is always a main goal of manufacturing, the quality assurance division must decide "How much is enough" control and inspection.

Cost of quality control can not simply be decided by the cost of division overhead and costs of the control and inspection process itself. The costs of control and inspection trigger other costs as well such as:

- o. The slowing down of the manufacturing process.
- o. The costs of rejected parts and lack of Q.C has other costs as well
- o. Long term cost of customer dissatisfaction.
- o. Warranty replacement costs.
- 0. Product recall costs.
- o. Product liability lawsuits.
- o. Costs of bad public relations.
- o. Costs associated with down time for maintenance to the end product.

Product design, system safety design, reliability design, manufacturing quality assurance, and maintainability of the product are all important facets in delivering an end product that is satisfactory in field usage.

Lawyers will be told that engineering design encompasses and incorporates many choices. For the designer / manufacturer the end product must:

- a. Comply with regulation (if applicable)
- b. Serve its intended purpose.
- c. Present no unwarranted hazards.
- d. Be competitive.
- e. Be safe - present acceptable risk.
- f. Be cost effective. (Inexpensive but satisfactory)
- e. Make profit.

A Lawyer auditing any such program, be it quality assurance, reliability or system safety is always scrutinizing from two aspects. Usually a product failure has precipitated the inquiry, and since the attorney has two favored causes of action, Strict Product Liability in Tort and Negligence, the lawyer is attempting to ascertain why a defective product got to field usage, or what substandard corporate conduct allowed a bad product to get to the field.

The areas of System Safety design, Quality Assurance, and Reliability are always fertile ground for a trial lawyer to begin his inquiry. The reason is simple in that each discipline attempts to define, quantify and limit product hazard and defects.

1. System safety attempts to define hazards, quantify, and predict design failure modes. It attempts to reduce hazard to some acceptable limits.
2. Quality Control attempts to insure a product manufactured is in conformance, within allowable variance, to the specifications.
3. Reliability attempts to predict and insure product performance, within some acceptable limits, throughout the products expected useful life.

The lawyer is searching to define those limits and show either that the company breached its duty and is negligent, or that the company's procedures created and allowed a defective product to reach the consumer. It is a failure within one or more these three disciplines that usually results in a defective product reaching the consumer. Each of these disciplines requires the designer to have specific knowledge concerning his product, and to make specific decisions concerning that product in the area of how much safety, quality and reliability is enough.