



The Blacksmith's Anvil

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QUALITY

The definition of quality is very broad:

Quality: The totality of features and characteristics of a product or service that bear on its ability to satisfy a given need. *This provides a fitness for purpose sense relating to the ability of goods or services to satisfy a given need.*

Manufacturing wants and needs a more understandable definition for their environment:

Quality for manufacturing: Manufacturing quality is conformance of the product to engineering's drawings and specifications. *This provides a quantitative sense for evaluations known as quality levels of conformance.*

Manufacturing's specific, understandable, and restricted quality target affects each of us. It impacts productivity, costs, delivery schedules, and our productive skills. Hitting manufacturing's target for quality (as specified by engineering's drawings) influences how we operate our machines, the class of people we hire, raw materials we purchase, workmanship standards agreed upon between engineering and manufacturing, teamwork, and cooperative attitudes.

Quality and grade **are not** the same words. Grade involves a process for ranking or sorting of products and features for a comparative sense for the degree of excellence. One well known merchandiser provides good examples of product grades listed for sale as: good, better, best. We can distinguish between aspects of quality and grade:

Grade: A rank indication of the degree of refinement, features, or capabilities for materials and products. When grade is applied to a service, it represents the diversity of functions or facilities provided. High grade products have low quality if they do not meet specifications. Low-grade products have high quality if they meet or exceed the specifications.

Grade definition: Engineering drawings define product grade. Some people describe this grade concept as quality. However, quality encompasses more than product grade rankings.

Manufacturing quality: Manufacturing builds a quality product by meeting, in every way, the requirements listed on engineering drawings and specifications. We can measure out-going product quality to verify how manufacturing is doing.

Higher grade products have more features and cost more to manufacture than lower grades. Hitting conformance targets the first time logically results in lower product cost regardless of the product grade. For manufacturing, conformance cost is lower than high cost non-conformance. Do it right the first time is usually a less expensive production strategy.

Quality is in the eye of the buyer—not the seller. Quality is a statement of what the end user wants and can afford. It does not mean buyers always want high grade or low-grade items. Quality means satisfying the buyers given needs for uniformity, consistency, and conformity to their requirements. Quality includes price, delivery, and fitness for use. Product quality also includes maintenance, service, reuse, and etc.—as viewed by the buyer.

End users definitions about quality products change with their needs. This change occurs even though the product design and manufacturing results match a fixed benchmark. End user "fickleness" is why product grades must change to meet needs of the market place. If products don't change to meet user requirements, new end users will claim the old benchmarked products have poor quality because they do not meet their immediate needs.

Marketing deals with customers who change their requirements. Product engineering interprets marketing's view of customer requirements with drawings and specifications which establishes manufacturing's requirements. Manufacturing uses these requirements for making parts. In a changing market place, manufacturing's target stays the same: *Products must conform to product engineering's requirements.* How well manufacturing hits the quality target determines success since *the bulls-eye for manufacturing is conformance to the engineering requirements.* Of course, do not forget that manufacturing is also obliged to meet special requirements on the sales order for details not listed on the drawing because these special conditions are part of the contract between buyer and seller.

Quality is: Satisfaction for customers. Quality is conformance for manufacturing and pride for craftsmen. Quality is opportunity for marketing and a challenge for engineering. Quality is an investment for owners. Quality products, free of defects, delivered at a reasonable costs are poverty for competitors, destitution for trial lawyers, cost reductions for accountants, reliability and predictability for end users, repeat orders for sales representatives, and happiness for the CEO. Supplying quality products provides jobs and security for you and me.

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