



‘Can You Hold This Tolerance?’ Is Not An Engineering Question

The implications of tolerances go far beyond mere technical compliance.

One of the most frequent questions in contract manufacturing is “Can you hold this tolerance?” Tolerances are a key deliverable on our precision machined products, so it makes sense that this would be a frequent question. But sadly, this question is often considered solely as a technical problem. In fact, the technical aspects are the least important factors that this question implies.

What Is The Purpose Of Our Business?

In two words, the purpose of our business is to “serve customers.” Customers provide demand, which provides the organization with its reason for being, in our case, contracting to produce precision components that the customer needs. Without customers there are no sales, no services and no profits. Loss of customers — or customer demand — is an existential threat of the gravest kind to an organization. Tolerances are an important aspect of the customer’s demand as the components that the customer wants to purchase “need” to meet those tolerances requested so that the components and the systems that they are a key part of function. This can be seen as even more than “important” when considering that often these components are part of human safety critical systems — where failure to function can mean life, death, serious injury or serious destruction of property.

The purpose of our business is to satisfy the customer’s demand by producing parts that meet their engineered requirements. Meeting tolerances is not negotiable: If they did not need them, they would not ask for them. Tolerances must be held. That is the basis of customer demand, which is the basis of our business.

What Is Our Philosophy Of Customer Service?

What is our vision of what we do? What is our aspiration for our business? For our place in the market? It is easy to get confused and lose track of what we are really trying to do in our business. The first distraction is profits. Profits are not the object of our business, they are in fact the reward for leading our business to serve our customers. If profits are the “goal,” then we will be seduced by many false idols that lure us into diverting our attention from serving the customer to taking a detour to maximize profits. Cheaper materials, cheaper tools, a shortcut here, an ignored safeguard or check to “save time” — because we all know “time is money” — all of these false idols subordinate the customer to the demands of our accounting scoreboard.

In his book “The Practice of Management,” Peter Drucker argues, “The role of profits in a business is to cover the risks inevitably involved in its operation ... the profit required to enable it to stay in business and to maintain intact the wealth producing capacity of its resources.” Profits are the necessary compensation that enable us to serve, and continue to serve our customers — those who bring us their demand, their needs to be filled. In his book “Management: Tasks, Responsibilities and Practices,” Drucker states, “Profit is not a cause, but a result — the result of the performance of the business in marketing, innovation, and productivity. It is a needed result, serving essential economic functions.”

For us to focus on profits, rather than meeting customers’ needs, is truly to put the cart before the horse. If we fulfill the customers’ needs, the result will be profits. How much profit do we make when we no-quote the job because “we can’t hold the tolerance?” Rhetorical question, really.

One Approach to Handling Difficult Tolerances

The question of restricted tolerances comes up frequently



in manufacturing and is often avoided because of the difficulty of analysis of capability (if one has data). And sometimes because no capability statistics exist. So the question is avoided, no-quoted or put in that ever-growing stack of “if only the customer would ...” that is seldom analyzed for insights into what our customers truly need.

This question has crossed my desk many times over my manufacturing career, as the quality assurance professional assigned to gather the needed facts and as the plant manager or division director with ultimate responsibility for operations, quality and profitability. My most frequent and preferred response was, “It is our intention to lead in the markets we serve. If we do not currently have the capability, it is our job to develop it to meet the market needs.”

The market — our customers, collectively — is continuously improving its products. We need to continuously improve our processes if we are to hold and gain market share. Failure to keep up with market (customer) demands is a great way to turn a small fortune into an even smaller one. Our imperative as leaders is to continue to improve our processes and personnel in order to preserve our competitive and preferred position with our customers and markets.

The Real Question

There are several possible objections to this way of thinking, of course. Not every quote will be economically viable over the medium or long term. It would be foolish for a business to invest in new capabilities when the demand is fleeting or insufficient to cover the needed return on

investment. This is why “Can you hold this tolerance?” is not an engineering question.

It is, in today’s world, an economic and business decision. Technologies exist and are readily available to help our shops create any combination of dimensional and geometric requirements imaginable — and if not by subtracting material, then by building it up using additive processes.

The question of “Can we hold this tolerance?” is really a leadership question. A question with its basis in economics, markets, and organizational trust and creditworthiness. Of course we can hold the tolerance. We just need to (fill in the blank). Will the demand justify our investment?

The real question, in fact: “Is this an opportunity that will help our company lead in the markets we serve? Is there a chance to improve our capabilities and in so doing increase the reward that our customers give us for meeting their needs?”

Can we hold this tolerance is **not** an engineering question. It is a question that tests our commitment to leadership. “Is it our intention to lead in the markets we serve? Is it our intention to be the preferred supplier of precision machined services to our customers?” These are the real questions that are implied by “Can we hold this tolerance?” Of course, we can if the economics are right. Now, who has that process capability data? **P**

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