

## Small-Supplier Partnerships

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In many manufacturing companies, the dollar amounts spent on purchased services and materials exceeds 50 percent of total expenditures. But when installing quality controls, we often fail to place proper emphasis on supporting these suppliers and making them aware of our expectations up front. The general result (for both sides) is heartache and grief. Who needs it?

One thing that quickly (relative term) becomes apparent when beginning a supplier-partnership process is the differences between suppliers. Products can be purchased from high-volume continuous supply companies. Products can be purchased from distributors. Products and/or services can be purchased from a small supplier or subcontractor.

What is the difference between these types of structures? Pretty much everything. The hierarchy of a 2-to 50-employee subcontractor or supplier is likely to be totally foreign to people who have dealt primarily with large corporations. The method of controlling quality is also significantly different for the company manufacturing one or two of something, one time only.

Yet, many of us in the quality profession attempt to treat all suppliers the same way. Our surveys give bonus points for a quality department that is separate from manufacturing and reports to the president or division manager. Requirements for process-capability studies and ongoing statistical control are placed upon these small suppliers, and we ask for segregated, fenced-in hold areas for nonconforming product. Does this always make sense?

When it comes to supplier requirements and surveys, one size does not fit all. It also does not work very well to simply mark questions "not applicable" and remove the points for that question from the total, as every remaining question then takes on significantly more weight in the scoring than may have been intended. The small-lot volume supplier, and requirements should reflect this. What follows are a few steps in working with small suppliers to achieve the hoped-for results.

1. Don't surprise the supplier with an audit. Surprise audits are a good way to destroy a working relationship if one existed. Instead, pay a preliminary visit to the supplier and let him know what is expected. An outline of expectations and a copy of the survey form should be left behind. Give the supplier sufficient time to review the requirements and determine compliance, and always make yourself available to assist. Remember, you may be the most knowledgeable person he has worked with on quality requirements.

2. If the supplier is currently providing a product or service for your company, keep him abreast of ongoing quality performance. Don't wait until the audit to nail him to the wall with 17 rejections over the past three months. Working with the supplier during this time to upgrade systems and quality will help during the actual audit.

3. Schedule the audit at a time that is convenient for both companies. A small supplier is unlikely to have staff that works specifically with customers on these issues. You are likely to be working with the owner/president, who is also the quality manager, production manager, purchasing manager and so on. It may take several tries, but patience is important.

4. Perform the audit. This takes some tact and open-mindedness. In many cases, the owner of the small metal-cutting shop is a journeyman tool and die maker who really knows how to manufacture a product, but may not be familiar with the subtleties of quality-documentation systems. At first, it may be more important to look at intent to meet requirements rather than the letter of the law. Think positive! The goal is to work toward completely meeting the requirements in the long run (the requirements being a supplier that delivers high quality products, on time, at the lowest cost).

The next question is what should be expected from small suppliers and how can we help them get there?

The first thing to look for is an active gage-calibration system. If the supplier does not ensure the gages are accurate, how can there be any real confidence in the product being measured. Most small suppliers do not have a formal gage calibration system. It is likely that personnel are occasionally checking their micrometers against gage blocks which are several years old and have not been calibrated.

In this situation, the first step is to work with the supplier in getting a good set of reference gage blocks with which to check other gages. The need for a sophisticated gage recall system generally isn't there, and operators may be able to check micrometers and other similar tools against these reference gage blocks and log the results on a chart or in a notebook. This is not remotely close to the requirements of MIL-STD45662, but it is a start.

Don't forget the surface plates. The general feeling by many small suppliers is that accuracy lasts forever. Depending upon the environment and usage, these should be checked at least

once a year. Another important area is control of raw material. Does the supplier have bar stock color coded or marked as to type of material? Can the supplier tell you where the material came from, and does he have material certifications?

Control of raw material is important. It doesn't take long to find out the impact of a tool that was supposed to be made of A2 tool steel and is really C1018 cold-rolled material. We're not looking for a sophisticated material control system, just trying to ensure the supplier knows what is what. This also goes for other components or material that a supplier may procure for use in end products.

How does the supplier identify material that is nonconforming? In many cases, a nonconforming part can be used as a set-up part for later operations, even if it is unusable as end product. Rather than focusing on segregated hold areas, some method of positive identification, such as blueing with toolmakers ink, should be sufficient. In this way, the part can still be used as a set-up part, but is unlikely to get mixed up with conforming product.

Another area of discussion is how the supplier will inspect and document the results of the inspections. Are the parts to be inspected 100 percent? Are critical dimensions the only dimensions to be documented? Does the supplier have a standard form for documenting the results of the inspection, or will a form be supplied by you?

If the supplier can show that the product meets the requirements time after time, and results of inspections are documented, perhaps the need for incoming inspection can be reduced.

Finally, when disagreements arise and you are a large customer working with a small supplier, remember that big companies do make errors too. Don't be in a hurry to beat up on the small supplier only to have to look for an elegant way out of the situation later

if you are wrong (the voice of experience here). No matter what your experience level, there is likely something you will learn during these supplier visits if you have an open mind. When it comes to suppliers, one size doesn't fit all, and you shouldn't try to make it so.

### **Cpk Update**

Since 1987, I have discussed some of the problems with using indices such as Cp, Cpk and others indiscriminately. The problem is really acute when distributions follow something other than normal, or when the sample sizes are small. I thought that I might have been beating a dead horse for awhile, but I recently received a document that makes me feel otherwise.

The following statement is contained in: *Supplier Quality Improvement Guidelines for Production Parts*; NAAO/DPO Production Purchasing; Ford Motor Co.; April 1989. I will quote:

"Data for a certain characteristic (i.e., flatness, concentricity) is not normally distributed [perhaps too strong a statement]. Tests should be done, such as reviewing a histogram, plotting on normal-probability paper, or using more precise methods to determine if the data is significantly nonnormal. If nonnormality is suspected or confirmed, more flexible techniques should be used. These include computerized curve fitting and graphical analysis. Refer to a standard statistical text for information on the analysis of nonnormal data."

While Ford may have come up short in not telling users that they should not use Cp and Cpk in this situation, I feel it's a good start. Another point: The standard statistical text will generally not cover analysis of nonnormal distributions. I know; picky, picky, picky. Where do we go from here on this topic? I guess as far as we want. This is one big customer who evidently is listening to its generally smaller supplier base. We can all take a lesson from that.