

# What is Expected of the Part?

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As a former steel mill metallurgist, helping customers determine the best grade of steel to use for a part was one of my favorite parts of the job. Shop owners and machinists get told what to run, with little input on why or why not a particular grade of material should be used. Contract review at the time of the initial quote provides an opportunity to make certain that the choice of material makes sense for the ultimate function during end use as well as provides the most economical choice for fabrication.

## Selection based on costs?

It is no secret today that the purchasing function at all major companies is based on minimizing costs. At first, it is easy to agree with the statement that we should select the material that provides us with the lowest cost. But this can be a very dangerous way to select materials. For example, do we mean the lowest cost for the material to be made into a part, do we mean the lowest cost for the parts themselves, or do we mean the lowest cost that will meet the final performance requirements of the end user?

The lowest cost material may be cheaper on a per-pound-of-material basis, yet cost the shop dearly in increased time required to make a suitable part. For many machined parts, the material-cost component of a finished part is far less than the cost of the machine time to fabricate the part. Not to mention additional processes such as heat treating, plating or anodizing. Getting cheap

material may force the other costs of production to double or triple, not to mention making processes more difficult to control and increasing time needed for setup and tool replacement.

The lowest cost for the parts themselves can mean that the material is selected to assure that the parts produced have all the known requirements met for delivery, and at the most affordable price. This idea too is an easy one to support. What customer doesn't want the cheapest compliant parts delivered to their door? But just because the parts meet the explicit requirements of the print does not mean that they are the best choice for the customer.

The real question is, "What is expected of the part in subsequent processing and final end use?" It is not, "What is the lowest cost material to make the part?"

Several times in my career I have been called to help solve the mystery of parts that are perfectly fine upon receipt, but crack during the customer's final installation. Usually these failures occur during a crimping, swaging, staking or

other cold-work process. The parts were made out of material that fully met the customer's explicit (stated) requirements, yet the parts were not suitable for the customer's process because they cracked during cold work. Other examples can be materials selected for cosmetics at the expense of mechanical properties, or materials selected for machinability at the expense of weldability.

## Selection based on performance, at customer and by end user.

This is why contract review is so important. Using highly machinable materials to get the lowest price part from our machine shops does no one any good if those same parts fail in subsequent assembly steps. The fact is that some materials machine extremely well, but are not appropriate for subsequent cold work or assembly by welding. These are the kinds of things that should be considered during

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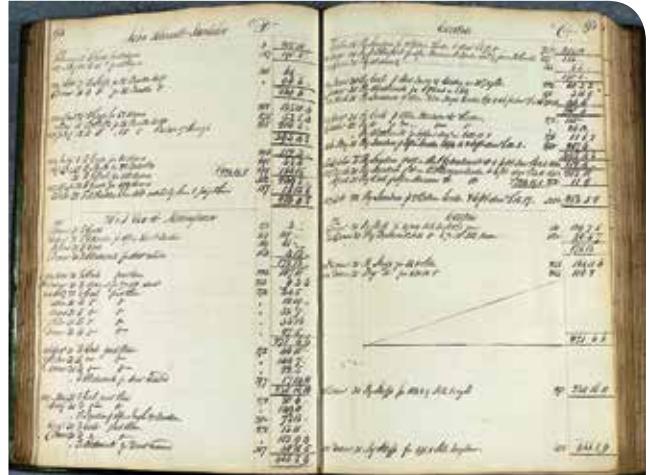
## What is Expected of the Part?

contract review. Similarly, grades that machine well may be less-than-stellar performers for anodizing or other surface finish treatments.

The lowest cost for parts that meet all stated and unstated (but expected) requirements can only be had if there is informed communication between the customer and the producing shop. Yes, we can get you very cheap parts by using cheap materials. Will they be suitable? Well that is another question entirely. Can we produce parts out of materials that will give the customer the lowest possible price per part delivered to them? Again, yes we can, but without further insight, those parts may have been optimized for lowest cost production by machining, but not optimized for the customer's remaining processes nor end use.

The real question to be asked at the time of contract review is: "What is expected of the part in subsequent processing and final end use?" Not, "What is the lowest cost material to make the part?"

If there are no subsequent operations to the part, then optimizing for lowest-cost delivered may be appropriate. But if there is a requirement for further cold work in



assembly or surface finishing, then contract review, to determine the suitability of the proposed material for the application, is critical if the supplier wants to maintain a zero-defects and 100 percent on-time reputation. Design for manufacturing is not just about what happens in our shops. It is also about what happens when your customer gets the parts in his.

## Core Powered Fills Needs for Customers, PMPA and Veterans



Core Powered Inc., founded in 2004, serves tooling needs for companies in the United States, Canada, Europe and around the globe. The company provides long-term manufacturing solutions that reduce complexity, simplify strategies and maximize manufacturing skills for companies with Hydromat, Eubama and Buffoli rotary-transfer machines. The company also specializes in putting coolant feed into rotary-transfer machine tools that do not commonly have that capability, extending tooling life and eliminating chip problems for several customers.

"We specialize in tooling for Hydromats and make or repair anything that holds a part or tool in a conventional Hydromat or Hydromat CNC machine," says Charles Ruecker, president and CEO of Core Powered. "We are

the only company in North America, other than the OEM, where you can get all the tooling to hold the workpiece, hold the cutting tool, load the part, turn the part around and profile the workpiece from a single source. We are the leading aftermarket work-holding supplier for Hydromat rotary transfer machines in North America."

### Business of the Future

Core Powered is set apart by a unique business structure. Mr. Ruecker came from a family tool and die business background, took current conditions and what the future of manufacturing was looking like, and created Core Powered to manage and market the services it offers. The company built unique relationships with exclusively specialized companies to fulfill customer orders. According to