

7 myths on purchasing injection molded parts and injection molds.

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Many companies think the purchasing of a mold is the tooling necessary to produce a part. While correct there are some considerations that need to be made before you purchase.

Myth #1. *Always buy the most economical mold.* Economical does not necessarily mean the lowest purchase price. (Even if that's the only budget you're concerned with.) If you take the lifetime volume of the part multiplied by the part price, add in the tool cost plus 15% for maintenance, then divide by the total lifetime volume you'd get the overall cost of that part. As a second calculation, repeat this using the prices from several quotes. While a mold will probably be between 15-25% of all the money spent on this project, the impact the 'high' bidder or the low bidder on the total project is minimal. Don't waste your tooling dollars but consider the overall cost of a mold before placing the job:

The folks you know can probably deliver the best tool because they *know you*. Going to someone you've never done business with or can't give you a good feeling about being a good match is going to be an expensive education.

Calculate the total cost of the mold – even though travel is “Not my Budget”, placing a job in Singapore is usually an invitation for a Road Trip for everyone with Manager on his business card. Keep in mind how many days/person will be spent on follow up etc. Also remember the money spent on trips is coming from the company profits regardless how the bookies try to hide it somewhere else.

Once the mold is released from the mold maker and sent to the molder, who will do the 'tweaking' to get the mold on-line? Who will do the maintenance if they are not the original builder? Who controls the designs or CAD/CAM drawings so that replacement parts can be manufactured?

Myth #2. *Molds have an infinite life.* An injection mold is a lot like your car. It wears out with disuse or misuse or use.

Disuse: Molds are made out of steel.

Unless you are in an area where the humidity is consistently below 10% where condensation will not form the molds will rust. You need to seek out a molder who will preserve your tool rust and time. This means using mold preservative after every use and wrapping it in a moisture barrier if it is to be stored for a long period of time.

Misuse: Visit your molder, they come in all flavors:

If the place looks the bottom of a trash dumpster – cat litter under every machine, parts on the floor, grease everywhere and NOISE; you are dealing with a low cost low quality molder. If your runs are short and you have little need for precision this is the shop for you.

If your molder asks you to put on a paper hat, lab coat and booties; the machines are quietly humming, the place is clean enough to do brain surgery; you've got a very precision oriented probably ultrahigh volume molder. All this overhead is spendy but if you want your tools to last for more than 10 million cycles this shop might be for you.

If the shop floor is clean, you frequently notice robots and the few operators present seem to know what they are doing, you are probably in what is generally considered a custom molder. This shop is usually very contentious about quality, delivery, and maintenance and can deliver normal maintenance without destroying you mold.

Use: Molds wear out over time.

Maintenance is something that cannot be avoided and somebody has to pay for it. As part of your procedures make sure there is a listing of what you and molder consider 'disposables'. These are components covered under the umbrella of 'routine maintenance'. Also make sure you have an understanding of what will be considered 'general' and 'major' maintenance.

These last two categories can add up to as much as 30% of the mold's original purchase price. However they can extend the life of the mold by orders of magnitudes. Just like having a

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spare tire in your car, if your part has any substantial lifetime volume (more than 100,000 pieces) it is in your best interest to have 10% spare cavities in the event of a 'crash'. Making the cavities at the same time the mold is constructed is considerably cheaper than having a cavity custom made.

Myth #3. *Six Sigma is necessary* – Don't be silly, you can calculate 6 Sigmas on a bowl of popcorn. But what's the point? Too many companies inflict Cp and CpK values on a molder that are simply unnecessary.

Sadly, most industrial designers/engineers have their least expertise in the field of plastics. Because of the all the tolerances used in a product are consumed with the castings, sheet metal and weldments etc.; whatever is left over is assigned to the plastic parts. Once the molding process is stabilized with a well-maintained machine there will be almost undetectable variance in the parts.

There are industry standards for each material stating 'commercial' and 'fine' (precision) tolerancing. These have been developed over time and are based on the variation of the raw material, the process variations and the variations of each cavity from the mold's construction. Quite like the laws of physics while we may ask for than is published, there's little hope we'll get it.

Cp tells you if the variance in the process is the same size as the variance you'll allow in your specification. CpK tells you how well the process variance fits into your specification. It is common to require a CpK of 1.33. This cuts the tolerance in half. A CpK of 1.66 divides it by four. If you already specified 'fine' your hopes of 'extra-super-fine' are probably going to be futile.

Ignoring all the wall plaques of quality hanging on the wall, the number of Black Belts you have, or how many 'Lean' words pepper you vocabulary, ask the simple question "What tolerance AND precision do I really need?" Specify accordingly. It's a simple as that.

Myth #4. *Your engineering and purchasing staff is qualified to buy a mold.*

Injection molding, building, and qualifying a mold is a skill by itself. Smart companies 'partner': They bring the molder in as a consultant during the design phase. Then the mold build contract and molding production is awarded to him as payment for this consulting.

Buyers consistently think they can beat up a molder/mold maker for a lower cost. It is a common tactic for a buyer, just before sourcing the job, to cross quote this Partnering company "Just to keep them 'Honest' " Was this Partnering thing Dishonest? Neither buyers nor engineers understand that this stunt is a lesson learned very quickly by the molder. The next time you ask for a Partner he'll suggest you look elsewhere or ask for a purchase order for Services Rendered.

If you don't have your own talent and want to competitively bid the project, hire a consultant or treat you partner like a partner. The consultant has no agenda where the job should be placed, only in the success of the project. A side benefit of using a consultant is that he is hired when the project begins and 'fired' when it ends with no bad feelings.

Myth #5. *There are 10 guys in the lobby who can do the job 15% cheaper.*

If they could, they would. Talk is cheap but you can neither afford to lose time or money to find out. Perfect Parts (parts that work), On time (per the schedule), Every time (with a consistent history of performance) at an Economical Cost (the low bidder not the parts that have been air freighted because somebody got the schedule wrong) is the expectation of every buyer. But before anything else On Time Delivery is everything. Get a buyer out of earshot of the executives and you'll be told while 'the bottom line is everything', he would gladly pay between 10-15% more if there was a guarantee of on time delivery. Have a 'sanity' check with the specifications on not if you can make the CpK requirements but when the part is made it is functional for the application. When picking a shop, look for people who are busy, meaning they aren't underbidding the job to avoid bankruptcy, but not overloaded where they can't grow with you. Have your molder show you he both has and can manage the capacity for your program.

Myth #6. *Giving the molder a Task to become more productive keeps him competitive.*

Productivity improvements are good: they lower costs and open available production capacity. BUT who should pay for it? If it's a huge piece of capitol equipment, the molder should pay the

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customer for it out of the savings generated by the purchase made by his customer. Perhaps it should be a 50:50 split. Tasks should be viewed in the framework of Partners. Both parties must benefit. Asking your molder to invest in equipment to make him more productive and then immediately insisting on the price reduction before he's been able to pay for the expense might improve your budget but you've just unfairly burdened him. Just like 'keeping him honest' this is a lesson learned very quickly.

Myth # 7. *Supplier Management is the key to your company success.*

A customer can no more manage a supplier than he can control his teenage kids. It's common knowledge that customers have no loyalty and are money-driven. Your suppliers all know your loyalty is as good as your last order. The molder / mold builder started his company because he thought he could run it better his way without the overhead of big business. If you want to manage your supplier base to the point of controlling them, buy them. If not, while their formula for success might not work for you, it works for them. This way you both enjoy a profitable existence.