

Dr. Die Cast



Defining the “Perfect” Casting!

(The conversation that every supplier fears but must have in order to survive.)

Throughout my career one conversation that seems to repeat goes something like this, “I’m rejecting your castings because they have porosity... (therefore they must be defective.)” At that point the supplier is in a “defensive position” trying to “fix” a problem (such as shrinkage in a heavy section that is remote from the gate entry) that may never be 100% “solid” when viewed in X-ray or sectioned using destructive testing. After all, the casting has fulfilled its purpose, it was fully functional! Sometimes people lose sight of that fact when they discover the casting has “porosity”!

Defining porosity is something along the order of defining “purity” in a product. “Perfection” whether we are measuring diamonds, shampoo or a cast alloy, our definitions of 100% “pure” or “perfect” depends on the measurement instruments available at the time. In recent history, a scientist discovered DNA. Now it’s a household word. So how does this apply to our industry? It is becoming common practice for “RFQ” (Request for Quotation) packages to consist of nothing more than one or more electronic files that contain the following: The “solid model” of the finished casting, the alloy (aluminum, zinc or magnesium) and the estimated annual volume. What is not included in the above are the “Standards” or “Notes” that in some cases fill up an entire “D size” page. The problem with many of these “Standards or Notes” is that they are frequently “copied” or “boilerplate” verbiage that is not fully understood

by the customer’s designer, purchasing or quality departments and has little relationship to the performance of the assembly where the casting is used. It is imperative for the estimating department and engineers who review and respond to the RFQ’s to ask for clarification of notes and standards. If the customer’s product standards were not provided with the request, the quoting department may need to ask for them in order to fully understand the customer expectations before submitting their quote. Some may view this as an admission of inexperience or ignorance of their industry but in many cases this will help establish a certain level of credibility both during quoting and later during the process development and production.

What are some questions that should be asked when reviewing an RFQ? The following ideas are not exhaustive but may help you develop your own list.

- What types of testing instruments will be used to verify that the casting complies with the specifications?
- Will a hard gage be required? If so, is it included in the capital tooling project?
- Are periodic CMM checks required, if so how often?
- Is destructive testing such as drop or impact tests, proof load, fatigue testing, elongation, etc. required? If so, how often?
- If the electronic model conflicts with the 2D drawing, who wins?

Which version has the final word? (Rounding dimensions from an electronic file can result in significant dimensional shifts on a 2D drawing.)

- What kind of documentation or certification is required with each shipment? Do you have the instrumentation in-house to provide the required certification without a significant capital investment in equipment or additional personnel?
- If X-ray is to be used, are visual standards available? Is the customer using A.S.T.M. standards or have they created their own internal visual and acceptance standards?
 - Do you need to keep hard copies or electronic copies of X-ray inspections? If so, how long do you need to keep them on file? Do they need to see copies of the X-rays?

At some point when you’ve developed a relationship with your customers you need to find out how (and when) their standards were created. Show them that by tailoring the product standard to their application they could reduce their cost and even add tool life by improving the product yield. Who knows, they may even invite you to help them develop the standard and further improve your relationship.

Thank you to all our readers who comment on the articles. I pray that you have a safe, enjoyable and prosperous summer.

Who’s Dr. Die Cast?

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