Dr. Die Cast

Tool Steel and the Small Block Chevy V8

Long run tools vs the annual changeover

According to one source who produced die cast tooling during the 50's and 60's at a time when every model year was distinct from the previous, dies were designed and constructed to last only one year. In contrast, today it's often difficult to tell one model year from another and major powertrain components frequently have a model life of up to 10 years or beyond. Add to that, engines and transmissions and other major components are used across more product lines than was common in the past. This all adds up to increased volumes for the remaining powertrains. Some companies have been able to build a plant or business around a single component of a "part family" such as oil pans and front engine covers.

For those whose interest circles around the automotive industry especially "Detroit Iron", the topic of "classic" cars and engines quickly arises. There are enough die hard enthusiasts who have a favorite from among of the "Big Three" that lots of drinks have been consumed while debating (that's putting it lightly) the pros and cons of the various car models and engines. One such engine that has lots of followers is referred to as the Chevy "Small Block". Since its introduction in the 1955 model year, it was an immediate hit. Throughout the years the basic design is still in use (with lots of technological enhancements). It has evolved from 265 cubic inches (4.3 Liters) and 162 HP to a whopping "special order" 454 cubic inches (7.4 Liters) normally aspirated engine capable of 600 HP.

So what's that got to do with tooling and where die casting is going? By now lots of folks in the die casting industry are hyperventilating after watching the steel and aluminum tariffs unfold. Those who remember the last time an alloy (magnesium) had a tariff applied also remember that some die casting companies closed. There was only one U.S. producer of magnesium alloy and when the price of imported magnesium spiked the lone magnesium producer's orders increased and their price increased. The magnesium die casters were unable to pass the increase along to their (automotive) customers and they closed rather than continue operating at a loss. The auto customers that refused to approve cost increases were then challenged with the task of finding new suppliers to produce those same castings and in some cases paid premiums to the former suppliers to continue operating while they established new suppliers. One wonders if anyone actually weighted the cost of disapproving the requested material cost increases. Did I imagine the above scenario? What I witnessed was the crisis mode of the customers working with the new suppliers as they struggled to get into production with equipment that was smaller (lower tonnage) and less capable than the original producers' machines.

The question is: are you ready to have important discussions with your customers and suppliers in preparation for the application of the tariffs? Will your case be presented in terms of strength or weakness?

The automotive industry needs lighter, more fuel efficient vehicles to achieve the "CAFÉ" (Corporate Average Fuel Economy) standards[1]. Shrinking 5 and 6 passenger vehicles to 2 and 4 passenger vehicles is not the answer. Structural aluminum is currently the best option[2]. The question is how will the components be formed? Are you ready to produce the castings that have yet to be designed and incorporated into those vehicles in the very near future? Do you have the vision to compete incorporating technology that is already developed but still underutilized? I look forward to your feedback.

References:

1. https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EZ7C.PDF?Dockey=P100EZ7C.PDF (See page 6)
2. NADCA 2017 annual "State of the Industry".

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