Con-Cast Zinc Alloy Bar Stock

Case Histories – Prototyping for Automotive Applications

Power Steering Pump Spacer

The Power Steering Pump Spacer was originally designed as an aluminum die casting, requiring extensive machining of four bosses and two bushing holes per part. To reduce costs, hot chamber ZA-8 die casting alloy was proposed as an alternative material and process due to its high strength and net shape capability, eliminating costly secondary machining operations.

To ensure that ZA-8 would withstand the operating environment, rigorous corrosion and performance testing was required. ZA-8 Continuous-Cast (Con-Cast) bar stock was chosen as the prototyping method. A total of fifteen prototypes were machined, tested, and evaluated successfully. By prototyping, the customer avoided expensive retooling costs if design changes were necessary, which can sometimes make it cost prohibitive to continue the prototyping process.

Machining from Zinc Con-Cast Bar stock was chosen over other prototyping methods due to its availability, short lead time, and similar properties compared to die cast parts. Geometry of the part also allowed for cost effective CNC machining from a 3.5"wide x 0.5" thick flat stock.

A cost savings of $27,000 was realized by machining test parts from Con-Cast Bar Stock over prototyping by die casting using a soft P20 tool steel as the die mold.

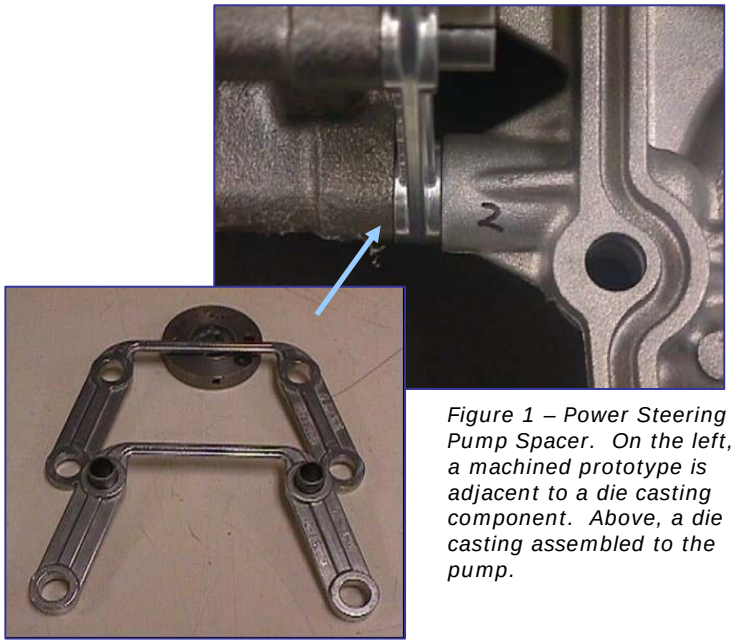

Figure 1 – Power Steering Pump Spacer. On the left, a machined prototype is adjacent to a die casting component. Above, a die casting assembled to the pump.

Emergency Brake Drum

Due to the net shape capability of zinc die casting, the Emergency Brake Drum was considered as a Zamak 3 die casting over the existing aluminum die casting component.

Fifty pieces were machined from a 5" diameter Zamak 3 Con-Cast bar stock for design and testing purposes. Prototyping using Con-Cast stock was chosen for its similar properties to Zamak 3 die cast material and reduced lead time.

Savings associated with prototyping with Zinc Con-Cast Bar Stock was approximately $45,000 compared to a die cast tool made from P20 & a *difference* of 4 weeks lead time.

Figure 2 –Emergency Brake Drum machined from Zamak 3 Con-Cast Bar Stock

These case histories provided by INTERMET

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