

Casting Firm Delivers Rapid Prototype of Magnesium Mirror Mount

Almont, MI—Until recently, **Aristo-Cast, Inc.**, produced investment castings entirely from air-melt alloys, both ferrous and non-ferrous. Although it retains its ability to cast virtually any air-melt alloy, the QS-9000- and ISO 9002-certified company also now has the ability to make investment castings from zinc and magnesium. Aristo-Cast produces castings ranging from low-volume prototypes to high-volume production quantities, while attaining dimensional tolerances of +/- 0.005 inch per inch and surface finishes of 125 RMS max.

In its rapid prototype department, the company utilizes 3D Systems ThermoJet solid object printers to produce rapid prototypes in various grades of plastic. Aristo-Cast can also make wax patterns that enable it to go from concept to metal casting in as little as 48 hours, according to the firm. “Aristo-Cast can produce [rapid prototype] castings for form, fit, and function,” says Jack Ziemba, president. “Our castings can be used in the actual conditions that the production parts will be subjected to.”

A customer of Aristo-Cast, Inc., recently won a contract to supply telescopic, trailer-tow exterior mirrors for an automaker’s full-size pickup truck. Because of the late release of the program, the automaker required a prototype of the mirror within a very short time frame. To accommodate the tight schedule, the automaker’s supplier called upon Aristo-Cast, Inc., to develop a

highly accurate, investment-cast mirror mount that would closely model the structural and physical attributes of the die-cast production part.

The mirror mount casting, which supports the wires and electrical components in the mirror, mounts directly to the truck body. The castings had to be made from magnesium, a material not commonly investment cast that was chosen for its strength and its weight savings of 30% versus aluminum and 60% versus steel. Further complicating production was the intricate, thin-wall nature of the casting.

During a four-week period, Aristo-Cast ran its three, 3D Systems ThermoJet solid object printers 24 hours per day, seven days per week to produce the wax patterns that met all required dimensional and physical

criteria. In total, 19 sets were produced on time, meeting all structural requirements for durability testing and prove-out. According to Ziemba, the reliability of the 3D Systems printers allowed Aristo-Cast to run “lights out” without any equipment down time.

In another rapid prototyping application, Aristo-Cast redesigned all features of a racing sulky. Rather than using solid parts, the company used hollow, thin-wall (0.040-inch to 0.100-inch) investment castings for aerodynamic effects. The mating components, made of sheet metal and tubing, were assembled using high-strength glue instead of welding. According to the company, the design removed substantial weight while maintaining high strength and rigidity.

