



Winner, International Magnesium Association Award of Excellence for Magnesium Die Casting

Winner, NADCA International Die Casting Competition Award for Excellence in Mg Die Casting Over 2 lb.

Chicago White Metal Casting

High-Tech Al, Mg, & Zn Die Casting and Miniature 4-Slide Zn & ZA-8 Die Cast Parts

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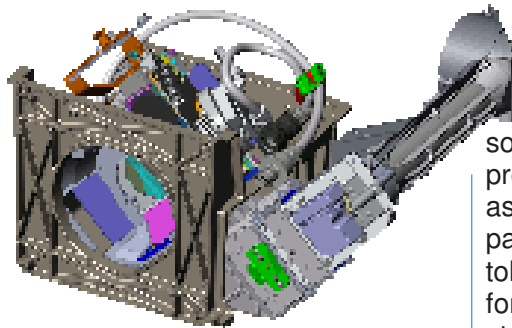
Two-part thixomold digital projector enclosure converted to single CWM die casting for major cost saving Mg Unit Redesign as a Single Die Casting Delivers 40% Unit Cost Saving, 8% Less Weight, Superior Performance

This precision digital projector required a light weight enclosure with high strength and rigidity. The initial design was produced as two magnesium thixomold parts, assembled into one with seven bolts. CWM reviewed the two-piece design and optimized it into a single housing unit for advanced Mg die casting production. Not only did the one-piece die cast design eliminate separate machining and assembly of two former parts, it resulted in a 40% final part cost reduction, a unit weight saving of 8%, and improved dimensional accuracy.

The product designers of an internal enclosure for a precision digital projector took a close examination of a recommendation to make a major change to the enclosure's design. CWM's project engineer presented a redesign opportunity that he felt would have multiple benefits for the digital



Original housing consisted of two thixomold magnesium parts assembled with seven bolts.



CAD model view of the final assembly for the redesigned light engine enclosure. Shows adjacent mated optical arm at right.

projector manufacturer. He suggested changing the design, originally two pieces that were bolted together, and adapting it into a single unit die cast housing. Conversion to a die casting process presented ideal timing to make the change and the projector manufacturer was onboard.

Simplification Challenges Met

Internal features requiring undercuts, necessitated by the former two-part design, would be eliminated in the redesign. While all post-casting machining would be performed on a single component, careful planning was necessary for eight different orientations of the part. Gating of the single casting would be limited to a single side of the part, a challenge in ensuring complete metal flow throughout the new design.

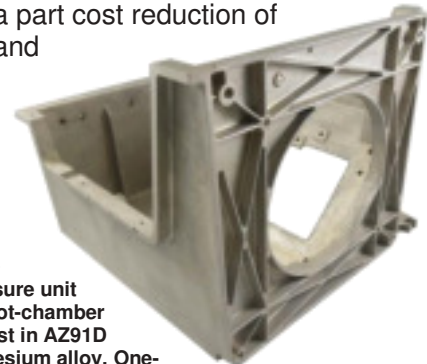
Assuring Optimized Metal Flow

Chicago White Metal Casting employed extensive Magmasoft® process simulations to optimize

critical metal flow in the die casting prior to die construction. These software iterations, along with CWM's precision tool construction standards, assured optimized sound-ness of the part and production of the unit's tight tolerances as-cast, which was required for its highly precise final machining steps. The Magmasoft process flow analysis system for die casting die design is the most advanced software program of its kind currently in use.

Double Award Winner

The die cast enclosure weighs 2.305 lb. (1.044 kg.), an 8% weight reduction compared to the former two-piece unit. With a part cost reduction of 40% and



Single enclosure unit was hot-chamber die cast in AZ91D magnesium alloy. One-piece redesign of housing resulted in reduced unit costs of 40%; unit weight was cut by 8%.

improved dimensional accuracy. The redesign became a winner in both the International Magnesium Association and North American Die Casting Association competitions.

For more on CWM design & production, see our website's "Full Service Capabilities" section. Or contact CWM or your CWM Regional Sales Representative.