



**Winner of the 2009
International Magnesium Assn.
“Award of Excellence”
for Innovation in
Processing Technology**

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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IMA Magnesium Processing Technology Award to CWM

Unique “In-Die De-gating,” 2-Stage Ejection Production Wins ‘09 Mag Award for Chicago White Metal Casting

This die cast support structure for an advanced automatic-dimming rear view automotive mirror is now being produced in a 200-ton high-pressure, hot-chamber Mg die casting machine using “in-die de-gating,” two-stage ejection technology. Borrowed from the miniature zinc die casting process, post-casting operation costs have been significantly reduced.

The electrochromic, automatic-dimming mirror, pioneered by Gentex, makes night-time driving safer by detecting glare and automatically dimming to protect the driver's vision.

For over 20 years, automakers have sought ways to eliminate the distraction and danger caused by nighttime rear view mirror glare. Until Gentex put electrochromic (EC) technology to work in the world's first auto-dimming mirror, a viable, self-operating approach did not exist.

A Move to Mag, with a Challenge

In moving to a lightweight magnesium die casting for their latest EC mirror structural support component, company engineers put forth a unique challenge for the die design and production of their new unit.

There was no question that die cast Mg alloy would more than satisfy all of the strength and rigidity requirements for the part, but Gentex product designers called for a new tooling design that could achieve the cost-saving operation of the high-speed miniature zinc die casting process in a



Mirror-mount support (right) requires critical dimensional accuracy and structural integrity for operation over wide ranges of temperature and humidity. Ball-end tolerance is held to ± 0.1 mm.

larger high-pressure, hot-chamber Mg die casting machine.

Chicago White Metal brought its deep experience in hot-chamber magnesium part design and production, as a North American pioneer in the process, to bear on the project. CWM was joined by another Gentex supplier, Cast Products, with its background in tooling design for miniature zinc die cast parts.

Cost-Saving Part Production

The part's configuration enabled the development of an innovative die design that resulted in the elimination of post-casting trimming operations.

Through a tool design based on proven miniature zinc die casting practice, the two-stage ejection system of the new magnesium die casting die mechanically sepa-

rates the casting from its gates and overflows during the ejection cycle. With this “in-die de-gating” technology used in CWM's machines, a clean die casting can emerge with no final trimming required.

The result is a significant labor cost saving. In addition to the reduction in piece-part costs, there was a substantial cost reduction through the elimination of a complicated two-cavity trim die.

The collaborative effort by the engineers of Gentex and its suppliers brought this new Mg die cast component the International Magnesium Association “Award of Excellence” for Process Innovation in 2009.

For more on CWM's Al, Mg & Zn die casting capabilities, visit its website: www.cwmdiecast.com/ Or contact your CWM Regional Sales Representative.