

capabilities overview

Committed to
Total Customer
Satisfaction



ISO 9001 & 14001 CERTIFIED MANAGEMENT SYSTEMS

Chicago White Metal Casting

High-Tech Al, Mg, & Zn Die Castings and
Miniature Multi-slide Zn & ZA-8 Die Cast Parts
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Importance of Early Assistance

CWM's Front-end Services Reduce Die Casting Costs

Important "front-end" contributions to die cast product development programs are offered by Chicago White Metal in design optimization and preproduction prototyping.

Design Refinement/Optimization

Enabled by advanced Magmasoft® process simulation software in-house, rapid analysis of a product's design, tooling

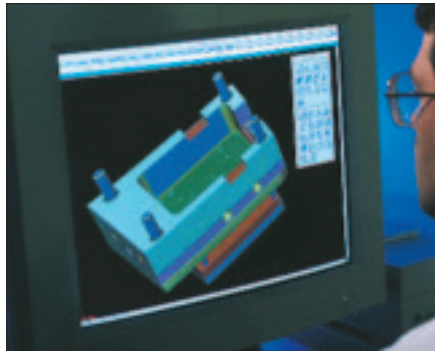


FDM part prototypes, produced in-house, help reduce lead times.

and process variables helps assure first-piece success. Suggested design refinements can result in substantial tooling and production cost savings.

While real-world functional and field testing of a design are best

made with a die cast part, several proven prototyping options are available prior to final tool design and die building.



Magmasoft die flow simulations are used by CWM to optimize tooling designs prior to die-build and help assure first-shot success.

Rapid CNC Machined Prototypes

For parts with highly critical dimensions, larger size or very complex features, machined prototyping is often the OEM engineer's best choice.

CWM's in-house CNC prototyping capability, working directly from the customer's CAD files, can produce precise multiple prototypes in Al, Mg or Zn for a variety of functional tests.

Rapid Plastic Prototypes

FDM prototypes are generated by CWM for every new tooling project to expedite production, shorten lead times and help assure first-piece success.

Working Smarter Makes CWM Your Best Choice for Any Die Casting Project

Because we can work leaner and smarter to produce the most difficult die cast parts cost-efficiently, Chicago White Metal Casting is the best choice for any of your die casting projects:

- Quantities from under 1,000 to millions per year
- Motor housings to the most complex medical & electronic devices
- All of the most widely used alloys: Al, Mg & Zn, and miniature Zn & ZA-8 die cast parts
- Cast-and-trim to cosmetic surface finishes as-cast, plus CNC machining & full contract manufacturing

Let us show you how our skills and technologies can deliver high-precision die cast parts cost efficiently, from cast and trimmed projects to the most intricate housings and components. Visit the CWM website & OEM Resource Center at www.cwmdiecast.com

Die Casting Awards for Excellence to Chicago White Metal in 2009 Unprecedented 4 Awards from International Magnesium Assn. & North American Die Casting Assn.



Mg In-Die Degating: A First IMA: Process Tech Award

Mag support for a self-dimming mirror die cast by CWM without use of a trim die: piece-part costs were significantly reduced plus elimination of the trim die resulted in a 20% die build savings.



Major Die Fill Challenge NADCA: Al Award (2.3 lb)

Al dental workstation baseplate cut-out design features restricted edge-to-edge metal flow. CWM used Magmasoft metal flow simulations to develop the optimum gating design for part integrity.



Flatness Over 20 in. Length NADCA: Mg Award (2.2 lb)

Mg sidewalls for desktop medical imager provided light weight and dimensional accuracy: wall flatness held as-cast to 0.032 in. or less. Proprietary direct injection system eliminates edge gating,



Critical Tolerance Specs NADCA: Al Award (0.14 lb)

This Al self-dimming mirror support won its award based on structural integrity and critical dimensional accuracy. Its ball end tolerance is held to +/-0.1 mm over long production runs.

CWM Objectivity: Solutions in Al, Mg, Zn & Miniature Zn

Because we cast in all of the most widely specified alloys, you're always assured of objective material recommendations for your application.

Advanced Al Process Simulation

The latest Magmasoft metal-flow simulation technology, proprietary injection systems and process-controlled production are delivering aluminum die castings at significantly decreased lead and cycle times with first-piece success.

One of the First Mag Producers

One of the first North American custom die casters to utilize the faster-cycling hot-chamber magnesium process, we have continued to innovate in mag (see story at right).

Pioneer in Thin-wall Zinc Production

CWM pioneered thin-wall zinc die casting, allowing for reduced part weight with no loss in strength. The benefits include space-saving designs and lower material costs.

We offer Miniature Zn & ZA-8 die cast parts: precision multi-slide production for net-shape, flash-free components at very low unit costs and low tooling investment.

Greater design freedom

With over 70 years of commitment to process innovation, Chicago White Metal Casting can offer OEM product engineers greater freedom from design and process constraints to execute the most challenging designs at lower total product costs.



Two of our largest hot-chamber magnesium die casting machines, 650-ton Frechs, can cast 24 in. x 24 in. (60.9 x 60.9 cm) Mg parts using the more cost-efficient hot-chamber process—resulting in closer-toleranced, corrosion-resistant castings at the weight of molded plastic.

North America's Most Experienced Hot-Chamber Magnesium Producer

A pioneer in the introduction of the hot-chamber magnesium die casting process, Chicago White Metal Casting is one of the world's most experienced custom producers of complex hot-chamber magnesium die cast parts.

Small to Large Mg Parts

From the smallest to some of the largest components, CWM offers flexibility for the delivery of lightweight die cast Mg components, offering designers far greater part strength at virtually the same weight as an injection-molded plastic part.

Twelve Frech hot-chamber machines range from 80 tons to 650 tons—two of

among the very largest such machines operating at any custom die caster—making CWM unique in offering this magnesium production capability.

CWM's 650-ton machines (above) provide OEM engineers with the resources for designing parts in the hot-chamber Mg process as large as 24" x 24" (60.96 x 60.96 cm), center gated, weighing up to 7 lbs. (3.18 kg).

Hot-Chamber Mg Advantages

Faster-cycling hot-chamber Mg production offers engineers intricate cast-in detail, reduced porosity—plus longer die casting die life.



Aluminum near-net-shape die castings by CWM were the material-process housing choice for a laser unit used for accurate pipe-laying readouts in rugged construction applications. The "armor-plated" enclosure specs called for high strength and light weight.



Zinc die cast air compressor valve was produced with seven external thread sets cast in place. The high-tech die casting resulted in an 85% unit cost reduction over the six-part aluminum and brass assembly it replaced. Tooling payback was less than 6 months.



Magnesium and elastomer overmold for a fiber optic cable tester is the first known soft-touch overmolding of a complex die cast case. It provided assured EMI shielding and a shock-resistant exterior with high impact strength—superior to plastic at a 20% saving.

Quality, Lean Manufacturing is Job 1— ISO 9001:2008 & 14001:2004 Certified

Comprehensive lean manufacturing programs are in place in all production areas. Quality assurance has moved from production inspection to total management commitment and responsibility in all aspects of defect prevention.

ISO 9001:2008 QA Registration

An ongoing, plant-wide integration of QA programs aims always to detect and exert corrective action continuously and



First-piece accuracy of all complex parts is validated to your specifications prior to production with the most advanced measuring systems.

at the earliest point. This begins with in-house pre-die construction design and process simulations using the advanced MagmaSoft® software system to optimize cost-reduction opportunities.

Achieving Enhanced Casting Results

The procedures include: Machine process settings established through the optimized results of the final die flow simulations; Pre-production capability studies; Incoming material QA monitoring; SPC in-process monitoring to assure control of the manufacturing process; Continuous part quality improvement studies.

During the first and each successive casting run, all critically specified measurements are statistically documented.

The plant-wide audit is a way of life at CWM, as is our investment in one of the industry's strongest preventative maintenance programs. Documentation of Chicago White Metal Casting as a self-certified supplier is available to your company.

Continuing Education Programs

Qualified, well-trained and motivated people are at the heart of any custom production system. CWM management has been committed to an ongoing, comprehensive and company-wide approach to assuring that its employees are equipped to excel.

Continuing classes are held in-plant, on company time on a wide range of subjects, with focus on understanding ISO guidelines and all aspects of procedures which must be followed to prevent defective production.

Vendor Training & Certification

These programs include an ongoing vendor education program aimed at assuring the consistent, certified quality of purchased material and post-casting finishing services affecting all of the final delivered components of CWM.

ISO 14001: Environmental Leadership

Chicago White Metal has received ISO 14001:2004 registration of its environmental management system, the first North American custom die caster so certified. This registration assures that procedures are in place to respond appropriately to environmental emergen-



Achieving zero defects is a primary goal at CWM. Using the latest real-time X-ray imaging enhancement technology, production castings can be examined for hidden porosity—with results captured on videotape for review.

cies and that CWM is minimizing environmental impacts in its day-to-day operations.

CWM is the only custom die caster to receive membership and achievement recognition in the EPA's National Environmental Performance Track. The program signifies that the company has an



outstanding record in going beyond compliance with current laws to protect the nation's air, water and land.

Precision CNC Machining, In-House, When Net-Shape Die Casting Is Not Feasible

Your precision die cast components, produced to tolerances possible only through the die casting process, may require further precision machining to achieve final specified tolerances.

Advanced CNC machining centers and supporting CAD/CAM and QA facilities enable Chicago White Metal to satisfy the most critical final product specifications.

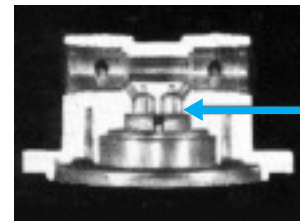
Meeting the Tightest Specs

CWM's finish machining capabilities assure its die casting customers that their post-casting machining requirements can be met without compromise—at minimum costs. Only a CNC machining resource that understands the special machining needs of die cast parts

can meet the most stringent specifications cost-effectively.

Unique Die Cast Part Requirements

There is a major difference between CNC machining of die cast components, especially mag-



nesium, and the machining of non-ferrous stock or of foundry castings. Positional tolerances of ± 0.0025 in. were required.

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CNC Production Machining

Prototype & High-Volume Production

The special skills of CWM's CNC division, combined with ISO 9001 and 14001 certification, qualify for virtually any aspect of your CNC machining requirements:

- CNC prototypes in any metal or machinable plastic
- High-volume CNC production, including screw machining

Advanced machine controls and the latest programming software assures CNC center operation at the fastest processing speeds. The machining department is climate-controlled to eliminate temperature effects on part dimensions.



This in-house CNC machining capability is uniquely suited to the needs of post-die casting machining of complex parts: holding critical dimensions in precise relation to intricately cast features. CWM's facility is equally cost-efficient at CNC prototype and volume part production.

CWM's Contract Manufacturing Unit: Cost-Efficient, Turnkey Production

An increasing number of OEMs are realizing that important process cost reductions can result by utilizing the manufacturing expertise of a contract manufacturer whose business is focused on the efficient production of housings and related components.

Mechanical and Electro-mechanical

Chicago White Metal Casting is providing OEMs with complete manufacturing and assembly solutions for mechanical and electro-mechanical housings and components: from simple sub-assembly projects to comprehensive assemblies. This includes incorporating a full range of non-die cast custom parts produced by CWM partners, as well as procurement of all stock components, with single-source responsibility.



CWM contract assembly work cell



Automated two-sided gasketing is used in this assembly cell for optimum production.

A comprehensive program can include mechanical part prototyping of all custom parts, tooling design and construction, volume production for any process, post-production machining, part surface finishing, and final assembly.

Early involvement of the CWM-CM engineering and management team can result in the elimination of secondary operations and multiple assembly steps.

The manufacturing and purchasing experience of CWM allows our contract manufacturing team to leverage the optimum combination of production and supply services to an OEM's advantage, seamlessly—with single-point responsibility.

Totally Integrated Customer Service

CWM offers one of the most advanced, integrated facilities in North America for product design refinement,

prototyping, die design, die casting production, precision machining and product assembly—for recyclable components and housings in aluminum, magnesium, and zinc alloys.



View Our OEM Resource Center

The CWM website's "OEM Resource Center" features a comprehensive library of OEM case studies, guides and reference resources on die casting design, production and purchasing. Over 70 PDF documents are available to OEMs and independent product designers and engineers by instant download, 24/7.

An On-Demand Webinar section offers OEM mini-seminars for immediate viewing. Visit one of the web's most valuable resources at: cwmdiecast.com/resource.cfm

Arrange a Consultation or Visit

Your CWM Sales-Engineering Representative can informally discuss how CWM precision die casting, miniature die casting, CNC machining and contract assembly can benefit your product programs. They can provide you with helpful literature to aid in more cost-efficient production decisions, or arrange an inspection visit. Call the CWM Sales Dept. at 630-595-4424 or locate your regional representative at:

cwmdiecast.com/salesengrs.htm

