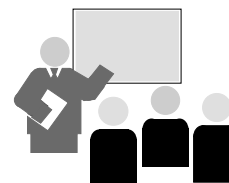




CWM OEM Die Casting Design On-Site Seminar

This custom tailored design seminar can help product designers, engineers, purchasing and QC managers capitalize on today's advanced die casting capabilities to improve performance and lower the costs of your component designs. It can be held on-site at your company location at a date of your choosing, for any number of your personnel.



PRODUCT DESIGN FOR DIE CASTING 1-Day On-Site Seminar

Presented by the Engineering Department of Chicago White Metal Casting

1. Your Seminar Sponsors

This OEM seminar was created by Chicago White Metal Casting based on its depth of experience in aiding OE engineers in executing cost-effective die cast product solutions for a wide range of original equipment, from initial product design and prototyping through post-casting machining and finishing.

2. What This OEM Design Seminar Offers

This customized 1-day seminar can help you optimize your component designs to take advantage of today's advanced die casting technology. It will aid your personnel in designing for more cost-efficient manufacturing and the improved performance of your products. This CWM Seminar:

- Gives a detailed overview of today's advanced die casting production processing, production options, and the design-for-manufacturing factors that can lower part costs and improve the performance of your die cast product designs. This seminar will be customized, as far as practical, to your company's product application requirements.
- Provides each participant a copy of NADCA's updated 176-page "Product Design for Die Casting" Manual, and includes examination of the die casting industry's latest "Product Specification Standards for Die Castings" Manual, 223-page reference guide.
- Provides each participant a copy of CWM's 10-part "Design for Production Solutions" CD-ROM, 16-page "Die Casting Design & Specification Guide," "10 Ways to Reduce the Costs of Die Cast Parts" Bulletin, and 8-page "Quick Guide to Surface Finishing."

3. Who Should Attend

OEM Product Designers, Design & Materials Engineers, Quality Control Managers and OEM Purchasing Specifiers. CWM will provide you with a sample Invitation Message.

4. Seminar Schedule

Plan seminar to run from 9 a.m. to 4 p.m., with breaks for refreshment and lunch. Other timing arrangements can be made.

5. OEM Design Seminar Agenda

The Inherent Efficiencies of Die Casting

The Die Casting Advantage

- Intricate shapes, as cast, with look and feel of metal
- Range of alloy choices
- Built-in EMI shielding, thermal conductivity
- High strength, impact and dent resistance
- Bearing properties, eliminating separate bearings
- Sound dampening properties, pressure tightness
- High quality surface finish, as cast
- Recyclability

Process Technologies & The Latest Developments

New Generation of Die Cast Examples

(Selections based on your application interests)

Die Casting Process Choices: Cold Chamber or Hot Chamber

Cold Chamber Die Casting

Aluminum, Magnesium and ZA-12 & ZA-27 alloys

ADVANTAGES:

- Large, complex parts, with higher pressure required

Hot Chamber Die Casting

Magnesium AZ91, Zinc & ZA-8 alloys

ADVANTAGES:

- Metal temperature control, automatic refill
- Less oxidation, reduced porosity

Die Casting Process Economics

- Optimum cost-effective component production in larger quantities
- Economical at lower volumes if as-cast design can eliminate machining
- As-cast high precision can allow part consolidation, often without post-casting machining
- Die casting alloys have a proven track record backed by decades of continuous use & testing
- Range of tooling investment options

Die Casting Die Tooling Options

- Unit Dies: Choice for lower volumes
- Self-Contained Die options

Estimating Die Casting Costs

Metal Cost (Alloy, melting & reclaim reprocessing)

Production Equipment & Labor Cost Factors

Die Cost (Initial dies & future maintenance)

Post-Casting Machining Operations

Surface Finishing Operations (Options & requirements for cosmetic finishes)

Optimizing The Design Process

- Think function, not form
- Performance should be sufficient, not equal
- Match material properties to performance specifications
- Seek early supplier involvement (ESI)

Benefits of ESI

- Designing for process requirements: Optimizing results
- Custom die caster collaboration to maximize material & process benefits
- Designing costs out of the part before they impact other components

Die Casting Design Considerations

- Fillets, corners, ribs, draft requirements
- Reducing heavy sections, eliminating undercuts
- Addressing parting lines
- Die simplification steps

Conversions from Other Processes to Die Casting

Optimized Die Cast Part Design Examples

(Selections based on your application interests)

Prototyping Techniques for Die Cast Production

- Single cavity “prototype” dies
- Sand casting with machining to final specs
- Plaster molding
- Machining from wrought & sheet stock
- Rapid-prototyping techniques

Planning Ahead for Post-casting Machining & Finishing

Final Overview

Question and Answer Session

CWM DIE CAST PART EXAMPLES tailored to your firm’s interests

- Display of Aluminum, Magnesium & Zinc and miniature zinc die cast parts illustrating a range of cast design features, tolerances, secondary machining and surface finishing for hands-on examination.
- Display includes examination of NADCA’s 223-page “**Product Specification Standards for Die Casting**” Manual and new CWM “**Comprehensive Surface Finishing Portfolio**,” featuring die cast sample plates with applied coatings in all the most widely used surface coatings and finishing alternatives.

6. Your Seminar Leaders

Your seminar leader is an experienced die casting product engineer with a hands-on background in optimizing component designs for die casting production. He brings in-depth experience and an extensive background to the cost-effective design and production of die cast parts.

NOTE TO SEMINAR PLANNERS

Only personnel from your company may attend the seminar.

7. Pricing and Scheduling Arrangements

YOUR SEMINAR COSTS: After contacting CWM to discuss scheduling arrangements, your total seminar costs will be confirmed, including an estimate of airfare, lodging, etc., based on your company location and flight schedules. You can estimate the cost of the required Seminar Printed Material based on your proposed attendance by personnel from your company.

OEM SPEAKER FEES AND EXPENSES

1-Day Customized CWM Design Seminar Fee: (Contact CWM in advance)

Roundtrip Airfare, Lodging, Car Expenses: 1 or 2 nights lodging, airport transport, etc. (*as required*), depending on company location and flight schedules. (To be estimated by CWM)

REQUIRED SEMINAR HANDOUT MATERIAL COSTS (*To be arranged with CWM*)

NADCA "Product Design for Die Casting" Manual:

(Aka) OEM Sourcebook (Seminar text) required for each Seminar Participant, provided by CWM at a CWM discount price of \$45 each (Regular price: \$60).

NADCA "Product Specification Standards for Die Castings" Manual:

Chicago White Metal Casting will provide one copy of the 223-p. Standards Manual to your firm, available for examination at the Seminar, at the CWM discount price of \$75 (Regular price: \$120). Additional copies (OPTIONAL) are available from CWM at the discount price of \$75 each.

CWM "OEM Design & Production Solutions" CD-ROM:

This CD will be provided for each Participant by Chicago White Metal Casting, at no charge.

CWM 16-p "Design & Specification Guide," "10 Ways to Reduce the Costs of Die Cast Parts" Bulletin, and 8-p "Quick Guide to Surface Finishing" will be provided for each Participant by Chicago White Metal Casting, at no charge.

AUDIO/VISUAL REQUIREMENTS: All that is required is an appropriate presentation room for the expected number of attendees, a projection screen, and an LCD projector with PC computer interface.

YOUR PAYMENT: Payment for all seminar costs can be made by check, upon completion of the seminar.

CANCELLATION: Should you require canceling a Seminar, your company will be billed for any non-cancelable charges incurred, such as non-refundable airline tickets and/or text materials shipped in advance.

8. For Further Information or Scheduling Your Seminar

Contact your CWM Sales-Engineering Representative or the CWM Sales Dept. to clear a date. Schedule at least 30 days in advance to assure preferred dates and timely arrival of seminar texts and handouts at your company. To schedule your **On-Site 1-Day CWM OEM Design Seminar**, or for answers to any content, preliminary pricing or scheduling questions, contact Michael Dimitroff, V.P., Sales & Mktg., CWM, at 630-595-4424 (Fax: 630-595-4474 or E-mail: sales@cwmtl.com). *Be sure to forward the Seminar Planning Checklist on next page.*

9. CWM OEM On-Site Design Seminar Planning Checklist

Consult with your CWM Sales-Engineering Representative on the preplanning to insure that all materials that enhance seminar participation arrive at your location prior to your planned seminar date and that the speaker knows in advance the agenda emphasis that you wish him to make in terms of the products your company designs. Your CWM Rep will help facilitate contacts with CWM Sales Dept. and your speaker.

Company Contact: _____ Title: _____

Company Name: _____

Address: _____
(Street Address for UPS shipments of seminar materials)

City/State/Zipcode: _____

Phone: _____ Fax: _____ E-mail: _____

Seminar Date: _____ (as confirmed with you by the CWM Sales Dept.)

MATERIAL TO BE ORDERED FROM CWM:

Suggested Invitation Sheet, for fill-in and reproduction by you and forwarding to company invitees. (We also suggest an E-mail reminder be sent on the day prior to the seminar date).

Types of Sample Die Castings suggested for display during your seminar:

NADCA "Product Design for Die Casting" Manual (176-p Seminar Text)

1 copy required for each seminar participant. CWM discount price of \$45 ea.: _____ copies

NADCA "Product Specification Standards for Die Castings" Manual (223-p)

1 copy suggested for examination purposes. Additional copies (OPTIONAL) are available, at the CWM discount price of \$75 each.: _____ copies

CWM "Comprehensive Surface Finishing Portfolio" (1 copy on loan for examination, no charge)

CWM "OEM Design & Production Solutions" CD-ROM (No charge): _____ copies

CWM "Design & Specification Guide" (16-p) (No charge): _____ copies

"10 Ways to Reduce Costs of Die Cast Parts" Bulletin (6-p) (No charge): _____ copies

CWM "Quick Guide to Surface Finishing" (8-p) (No charge): _____ copies

AGENDA EMPHASIS TO BE COMMUNICATED IN ADVANCE TO SPEAKER:

Mail or fax (630-595-4474) a completed copy of this Checklist to: Attn: Seminar Coordinator,
Chicago White Metal Casting, Rte. 83 & Fairway Dr., Bensenville, IL 60106-1340