Furnaces/Energy | Metal Melting & Holding | MAY 2025

DIE CASTING ENGINEER

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THE NORTH AMERICAN DIE CASTING ASSOCIATION (ISSN 0012-253X)

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NADCA
NORTH AMERICAN DIE CASTING ASSOCIATION

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Chairman's Note

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Changing the Balance of International Manufacturing Stategies

April 2, 2025, was declared "Liberation Day" for the U.S., as new universal and reciprocal tariffs were implemented. As I pen this note, I know fully well that changes will happen before this note is published. We are in interesting and ever-changing times. President Trump has made it very clear that he wants to accomplish many things through the tariffs:

- Bring manufacturing back to the USA.
- Respond to unfair trade policies from other countries.
- Increase tax revenue.
- Control migration and drug trafficking.

The U.S. die casting industry has been decimated by the flight of manufacturing to low-cost countries. Industry experts acknowledge that over 100 die casting plants have closed in the last 10 years, and that the majority of tooling used in the U.S. is now manufactured outside of the country. Despite these current circumstances, it is forecasted that worldwide die casting will continue to grow by over 6% each year through 2032. To capture growth, there are actions we can take as an industry:

- Work with the Department of Commerce to make sure your products are covered under HTS codes for tariffs. NADCA can assist in this process and has been diligently updating these lists.
- Work with your government representatives so they understand the impact foreign competition has on our industry (and their voters) to gain support for our positions. NADCA can help organize meetings, plant tours, and other events to help make your voice heard.
- Make your company into a globally competitive powerhouse!

Over the past months, I have had the opportunity to spend time in several NADCA members' die casting plants. It is encouraging to see new investments being made to increase competitiveness through the installation of new melting systems, casting machines, refreshing older machines, use of creative die designs, and adding more machining, finishing, and assembly.

Robots and cobots are being implemented into all areas of manufacturing, beyond the die casting cell. One head of manufacturing stated, "if we are touching a part with a human, we are seeing how we can automate that process." Parts loading/unloading, quality control/inspection, assembly and packaging automation are increasing the plant's throughput without additional labor.

Changing the balance of international manufacturing strategies through tariffs and regulations is presenting new opportunities for U.S. manufacturers. On the journey to be globally competitive, die casters need to use every tool available to reduce labor, lower costs, and increase productivity.

In this month's issue of Die Casting Engineer we are focusing on Furnaces & Energy, Metal Melting & Handling.

Melting and holding metal consumes the most energy within the die cast process and offers the greatest opportunities for carbon footprint reduction and cost savings.

"It is encouraging to see new investments being made by member companies to increase competitiveness."

Andrew Ryzner
Editor
North American Die Casting Association

"Any energy waste that is reduced can free up funds to re-invest in innovation and growth."

Andrew Ryzner

Energy and Reducings its Waste

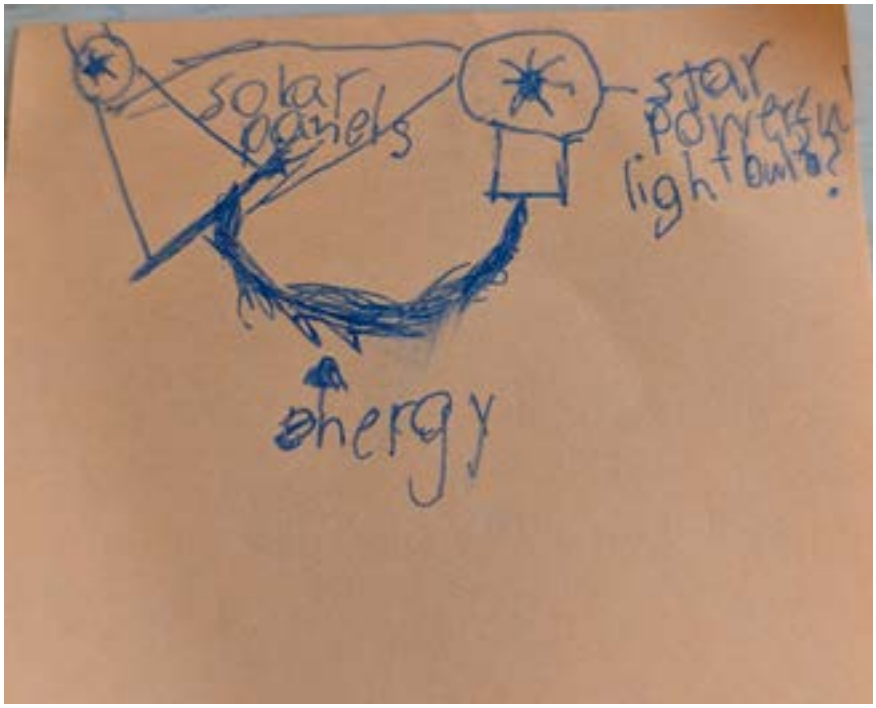
"Dad, I know how to make infinite energy. Let me draw it for you real quick."
- My 9-year old son

Please refer to the drawing he made at the bottom of the page. To my understanding, he wants a star to power a light bulb, both the light from this star and from the light bulb hit solar panels in order to create "infinite energy". I thought it funny how he randomly started talking to me about this right about the time I sat down to write this month because there are a couple articles in here that touch on energy efficiency, using less energy/smarter energy, and recycling. I'm no engineer but I'm not so sure it's as simple as he made it out to be.

Anyway - seems a relatively timly topic considering all that's going on in the country at the moment, what with news of tariffs on seemingly everything and all. Of course, by the time this magazine hits your doorstep, many things will have changed I'm sure. I think that in such uncertain times we must be mindful of how to run everything efficiently - and that means energy efficient. Heck I try to do that in my own house as much as possible as well.

Nothing really innovative being written here I know, because in all times it's always good to strive for energy efficiency. Any energy waste that is reduced can be money saved as well as being able to re-invest in innovation and growth.

Hope you are all doing well. Thanks for reading.



NADCA Reports

NADCA NEWS

Cast Your Company's Future by Hiring an Intern

Arlington Heights, IL - NADCA has a resume database of engineering students looking for summer internships on its website. Please consider hiring an intern and introduce that student to the world of die casting! Students from universities across North American are currently looking for opportunities and many are willing to relocate for the summer.

The database is password protected, so you will need to login to your MyNADCA account for access. Once logged in, to review the available candidates, visit: www.diecasting.org/intern-resumes. Students may be contacted directly, and if you hire a student, let us know, (intern@diecasting.org) so we can limit their contact information.

Students that complete an internship in the die casting industry are eligible to apply for the David Laine Scholarship Program. That program opens for applications August 1. For additional information, visit: www.diecasting.org/scholarship.

Is there a school close to your plant that you would like to pull candidates from? Send a message to the intern@diecasting.org, and we can reach out to the Engineering Department(s) there.

UPCOMING EVENTS

Die Casting Excellence Pours into Milwaukee for 2025 Tabletop

Arlington Heights, IL - Mark your calendars for the 2025 Die Casting Congress & Tabletop, the premier event for die casting professionals, happening from October 7 to 9, 2025, at the Baird Center in Milwaukee, Wisconsin.

This three-day conference offers a unique opportunity to delve into the latest advancements in die casting technology, materials, and processes. Attendees can look forward to insightful Congress sessions led by global experts, an exposition featuring over 120 exhibitors, the International Die Casting Design Competition, and the prestigious Die Casting Industry Awards.

Whether you're aiming to enhance your technical knowledge, explore innovative solutions, or network with industry leaders, this event is a must-attend. Registration opens in Spring 2025, with early bird rates available until June 27. For more details, visit the official event website. www.diecasting.org/congress.

TOOLS & RESOURCES

12th Edition of Product Specification Standards for Die Casting Now Available

Arlington Heights, IL - The newest edition of Product Specification Standards for Die Castings is now available.

This manual covers specification, design and production guidance for both users and manufacturers of conventional high pressure die castings. The manual presents tooling and processes information, alloy properties, standard and precision tolerances, GD&T, design guidelines, quality assurance provisions and more.

Revisions for this edition include: rewrite of the first chapter to focus on an overview of the die casting process; additional information about die technology and sizing; new information about loose inserts; considerations for datum locations; moved around the order of alloy families to cover the more common alloys first; updated alloy reference tables; added P-20 as a possible option for miniature die casting die material; updated casting examples with more recent products; minor typographical errors have been corrected through.

The cost for this essential publication is $70 for Corporate Members, $100 for Individual Members and $140 for Non-Members.

You can order yours by visiting: www.diecasting.org/marketplace and search PUB-402.

Newly Updated for 2025: NADCA's High Integrity Die Casting Standards

Arlington Heights, IL - The Standards for High Integrity and Structural Die Casting Processes has been newly updated for 2025, bringing the latest advancements in die casting technology to the industry.

This essential guide now includes revised alloy property tables, enhanced GD&T guidelines, updated draft specifications, and improved die maintenance protocols. Additionally, new sections on structural quality requirements and simulation best practices provide deeper insights for manufacturers and engineers.

With refreshed imagery and corrections for improved clarity, this 2025 edition is a must-have resource for staying at the forefront of die casting excellence.

Get your copy today! You can order yours by visiting: www.diecasting.org/marketplace and search PUB-207.

Dr. Die Cast

Making Scrap with Perfectly Good Metal

How would I do that? A better question might be, why would I do that? I visited a relatively new plant that had a problem with "hard spots." They damaged tooling daily and did not know why. At the worst, they thought maybe a porosity void in the casting created an interrupted cut that broke the tooling. Are there any readers ready to voice a solution?

What we found was a furnace layout that was nearly impossible to properly clean. The one large access door to the main melt chamber was too close to the wall for a cleaning tool to reach the back wall and/or dredge the floor. When you probed the dip-well, in the words of the supervisors who were probing the bottom of the furnace for the first time, described the floor as feeling like a creek bed. Those were the oxides that were destroying their tooling. They could never be removed with the current layout.

The solution in the above case was painful. Move the entire cell away from the wall by at least two feet, preferably three feet. Fortunately, the aisle was wide enough to get away with it.

Ergonomics, furnace cleaning and long-term maintenance costs. At the other extreme was a plant that had three melter/holders with two dip-wells per furnace. They supported six machines. When I asked the owner how often he replaced the lining in his furnaces he was shocked. He said, "we had never in eighteen years." Then I was the one shocked and insisted on meeting the furnace operator. Let us say, he was less than average height. Why that is important is that I was preparing to install a new, larger capacity furnace. I wanted to ensure that he would be able to properly reach the furnace back walls and floors in order of provide the same level of cleaning he was able to achieve on his current furnaces. The standard that would establish the level to the sill were the current furnaces. When I showed the furnace operator the height I was proposing, he then shared that one of the existing furnaces hurt his shoulder when cleaning it. It was one inch higher than the other two. The sill of the new furnace was then established based on the sill-level of the two that did not hurt his shoulder.

Cleaning a furnace properly not only extends the furnace life but improves the quality of the metal and reduces "melt-loss" below industry standard expectations.

A properly trained furnace operator is an investment in casting quality and reduced long term maintenance costs.

Furnace and Flux suppliers are both great sources for proper furnace cleaning and maintenance training.

Consider having members of your metal melting team attend the one-day NADCA: ED-302-3 "Metal Melting and Handling" course.

Who's Dr. Die Cast?
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NADCA Government Affairs

Global 25% Tariff on Steel, Aluminum Take Effect

At 12:01AM on Wednesday, March 12, 2025, the 25 percent tariffs on steel and aluminum took effect globally on all imports without any country exemptions. The action marks not only return of the full steel and aluminum tariffs under Section 232 of the Trade Expansion Act of 1962 but also increases the tariff rate from 10 percent to 25 percent on all aluminum.

The move to impose tariffs follows a direction in the President's trade policy memo, "America First Trade Policy," which called on the Departments of Commerce and Defense to undertake a "full economic and security review of the United States' industrial and manufacturing base to assess whether it is necessary to initiate investigations to adjust imports" that threaten national security as well as a review of the exclusions and "import adjustment measures" for steel and aluminum imports.

The White House did not grant countries exemptions from the tariffs, with the revocation of all "alternative agreements," such as the exemptions and tariff rate quotas received by Argentina, Australia, Brazil, Canada, Japan, Mexico, South Korea, the European Union, Ukraine, and the United Kingdom. It was also not indicated that the Commerce Department would restart the closed exclusion process, which allowed U.S. importers to request a temporary relief from paying the import tariff.

The 25 percent tariffs also apply to 167 derivatives of steel and 123 aluminum derivatives, except derivative steel products outside of the US from steel "melted and poured" in the U.S. and derivative aluminum articles processed in another country from aluminum articles that were "smelted and cast" in the U.S. These include aluminum mountings and fittings for motor vehicles, metal furniture parts, electric motor parts, parts of bumpers and other parts of motor vehicle power trains. A process to add additional derivatives to the list covered by the 25 percent tariffs will be established by the Commerce Department. This will allow U.S. industry to request the inclusion of additional derivative articles if they can demonstrate that rising imports of these products also threaten U.S. national security.

White House Imposes "Reciprocal" Tariffs

President Trump announced new tariffs on a day which the President referred to as "Liberation Day." On April 2, 2025, Trump announced 10 percent baseline tariffs on all countries as well as higher individualized "reciprocal" tariffs on a host of countries with which the United States has the largest trade deficits. The tariff action was taken under the International Emergency Economic Powers Act following a national emergency declaration by the President, citing national security and economic concerns stemming from persistent annual U.S. goods deficits.

The reciprocal tariffs were calculated by the White House Council of Economic Advisers based on countries' tariff and non-tariff barriers, with the final tariff rate being roughly half of the calculated foreign rate. China's will face 34 percent tariffs, while India will face 26 percent tariffs. The European Union will be hit with 20 percent tariffs, Japan's rate will be 24 percent, Taiwan's 32, Vietnam's 46, and South Korea's 25.

Goods exempt from the reciprocal tariffs include any product covered under the Section 232 steel and aluminum or 232 autos and auto parts tariff actions. Additionally, copper, pharmaceuticals, semiconductors, and lumber articles as well as energy and certain critical minerals are excluded.

The baseline tariff will take effect on April 5, with the reciprocal tariffs entering into force on April 9.

The only countries exempt from the reciprocal tariffs are Canada and Mexico, due to the 25 percent tariff already in place. However, should that tariff action be terminated, then non-USMCA-compliant goods would be subject to a 12 percent reciprocal tariff.

Castings from China Face 79% Tariffs

As of April 9, 2025, aluminum castings imported from China face a 79 percent tariff rate. Since taking office, President Trump imposed an additional 20 percent tariffs on all imports from China under the International Emergency Economic Powers Act (IEEPA). The reciprocal tariffs announced on April 2, which are effective as of April 9, adds another 34 percent to aluminum castings imported from China (HTS 7616.99.5160), for a total of 54 percent of new tariffs on Chinese aluminum castings.

These actions are in addition to the existing 25 percent tariffs under Section 301 that are currently in place. Taken together, the combined Section 301, IEEPA, and reciprocal tariff rate for aluminum castings from China is now 79 percent, in addition to other duties, and fees, required upon import.

Tariffs on USMCA Goods Paused

Following the imposition of tariffs on Canada and Mexico on March 4, President Trump suspended the duties two days later. On March 6, President Trump issued an executive order (EO) amending the newly implemented tariffs allowing all goods from the two countries that enter the U.S. duty-free under the U.S.-Mexico-Canada Agreement (USMCA) to continue to do so. Non-USMCA-compliant goods are subject to the 25 percent tariff, with Canadian energy and energy resources including critical minerals subject to a 10 percent tariff.

While the administration originally said the pause on tariffs on USMCA-complaint goods would only be valid until April 2, no termination date was included in the March 6 EO and the White House has not yet lifted tariff suspension.

Section 232 Tariffs on Autos & Auto Parts Issued

On March 26, 2025, President Trump signed a Presidential Proclamation imposing a 25 percent tariff on automotives and parts, under Section 232 of the Trade Expansion Act of 1962, to address "a critical threat to U.S. national security."

The 25 percent tariff will be applied to all imported passenger vehicles and light trucks as well as key auto parts from all countries. For vehicles that are imported from Canada and Mexico under the United States-Mexico-Canada Agreement (USMCA), the tariff will only apply, however, on the non-U.S. content of the vehicle. Importers must submit documentation to the Secretary of Commerce identifying the amount of U.S. content in each vehicle model imported to be able to apply the tariff only to the non-U.S. content.

For auto parts imported under USMCA, the tariff is currently suspended until the Commerce Department, working with U.S. Customs and Border Protection, "establishes a process to apply the tariff exclusively to the value of the non-U.S. content of such automobile parts."

The Proclamation also directs the Secretary of Commerce to establish a process to identify and include additional auto parts, both by Commerce Department as well as "at the request of a domestic producer of an automobile or automobile parts article, or an industry association representing one or more such producers," where it can be established that the imports of the auto part "threatens to impair the national security."

The tariff on automotives took effect on April 3, while the 25 percent tariff on auto parts takes effect no later than May 3, 2025.

Countries have already begun to respond to the auto tariffs, with Canada announcing on April 3, 2025, that it will impose a 25 percent tariffs on all non-USMCA-compliant auto imports from the U.S. The retaliatory tariffs will not, however, extend to auto parts.

NADCA Files Unfair Trade Practices Comments

On March 11, NADCA submitted formal comments to the Office of the United States Trade Representative (USTR) on "Reviewing and Identifying Unfair Trade Practices and Initiating All Necessary Actions to Investigate Harm From Non-Reciprocal Trade Arrangements."

The USTR has been conducting a review of trade policies and practices from other nations to recommend remedies to such practices to the President. This initiative is in response to directives outlined in the "America First Trade Policy" memorandum and the "Reciprocal Trade and Tariffs" memorandum. In its call for comments from stakeholders to aid the review, USTR requested detailed information on a country-by-country basis to help in identifying any unfair trade practices by other countries and to initiate all necessary actions to investigate the impact on the United States resulting from any non-reciprocal trade arrangements.

In its comments, NADCA stated that the current trade practices by countries such as China, Mexico, and India have posed significant challenges to U.S manufacturers, including die casters. "American manufacturers, including those in the die casting industry, find themselves at a competitive disadvantage, facing low-priced imports that affect domestic sales. This situation is influenced by various subsidies and state backing, which allow companies to offer products at prices below market value," the comments indicated.

Following the review, USTR, the Commerce Department, and other relevant agencies will take all necessary actions, pursuant to their respective legal authorities, to investigate the impact on the United States from any non-reciprocal trade arrangements implemented by trading partners. Subsequently, these agencies will submit a comprehensive report to the President outlining any proposed remedies.

U.S. Small Businesses Exempt from BOI Reporting

U.S. small businesses are no longer required to file beneficial ownership information (BOI) under the Corporate Transparency Act (CTA). On March 21, 2025, the Financial Crimes Enforcement Network (FinCEN) and Treasury Department announced that U.S. companies and U.S. persons are not required to file beneficial ownership information reports (BOIRs) under the CTA.

An interim final rule, published in the Federal Register on March 26, 2025, revises the regulatory definition of "reporting company" to include only those entities formed under the law of a foreign country and registered to do business in any U.S. State or Tribal jurisdiction. The FinCEN notice states, "Through this interim final rule, all entities created in the United States — including those previously known as 'domestic reporting companies' — and their beneficial owners will be exempt from the requirement to report BOI to FinCEN."

Enacted by Congress in 2020, the CTA requires companies earning $5 million or less in revenue and employing twenty or fewer individuals to file beneficial ownership reports, which include contact information of owners along with copies of their IDs, with the Financial Crimes Enforcement Network (FinCEN) of the Department of the Treasury.

EPA Launches Deregulation Initiatives

On March 12, 2025, the U.S. Environmental Protection Agency (EPA) announced its intention to review or rescind over 30 environmental regulations. This significant deregulation effort, described by Administrator Lee Zeldin as "the greatest and most consequential day of deregulation in U.S. history," aims to reduce compliance costs, promote energy and industrial growth, and grant more authority to states.

The EPA highlighted several key regulations under consideration, including:

- Revisiting the Biden-era rule on limiting CO2 emissions from power plants
- Reassessing the National Ambient Quality Standards (NAAQS) for fine particulate matter ($PM_{2.5}$)
- Reevaluating emission standards for cars and trucks
- Overhauling the social cost of carbon (SCC) metric used in EPA decision-making
- Terminating the Biden-era Good Neighbor Plan for ozone, which imposed federal limits on smog-forming emissions across state boundaries
- Reconsidering the mandatory greenhouse gas (GHG) Reporting Program

Notably, the EPA will also reevaluate the 2009 Greenhouse Gas Endangerment Finding, which determined that greenhouse gases (GHGs) pose risks to public health and the environment. The Clean Air Act (CAA) mandates that the EPA regulate air pollutants if they are found to "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." This finding provides the EPA with the legal authority to regulate GHGs and has served as the basis for numerous GHG regulations.

Additionally, the EPA announced on March 12 that it will collaborate with the U.S. Army Corps of Engineers to review the definition of "waters of the United States" (WOTUS) following the Supreme Court's Sackett decision, which narrowed the interpretation of navigable waters under the Clean Water Act (CWA). The agencies have stated that they "will move quickly to ensure that a revised definition follows the law, reduces red tape, cuts overall permitting costs, and lowers the cost of doing business in communities across the country while protecting the nation's navigable waters from pollution." The EPA and Army Corps of Engineers will hold a series of six listening sessions in April and May 2025 as well as accept comments on key aspects of the definition of WOTUS through April 23, 2025.

White House Rescinds NEPA Regulation

The White House has revoked its National Environmental Policy Act (NEPA) rule following President Trump's executive order. On February 25, 2025, the Council on Environmental Quality (CEQ) issued guidance for agencies to follow their own NEPA regulations.

This decision comes after two court rulings that concluded the CEQ lacks authority to establish binding NEPA rules. In a November 2024 decision, the D.C. Circuit Court of Appeals concluded that the CEQ lacks statutory power to create NEPA regulations, asserting that the "CEQ regulations, which claim to dictate how all federal agencies must comply with the National Environmental Policy Act, are ultra vires," meaning they exceed legal authority and are unenforceable. Similarly, the District Court for the District of North Dakota vacated the Biden Administration's Phase 2 NEPA rules on February 3, 2025.

The interim final rule revoking the NEPA implementing regulations takes effect on April 11, 2025.

TCE Implementation Delayed

The Environmental Protection Agency (EPA) issued a notification on April 2, 2025, further delaying the effective date of the final risk management rule for trichloroethylene (TCE) issued under Section 6(a) of the Toxic Substances Control Act (TSCA). The regulation, titled "Trichloroethylene (TCE); Regulation Under the Toxic Substances Control Act (TSCA)," was published on December 17, 2024, and was originally set to go into effect on January 16, 2025, before legal action stayed implementation of the regulation.

The EPA first delayed the effective date of the regulation in a final rule issued on January 28, 2025, in response to a Presidential Memorandum issued on January 20, 2025, entitled "Regulatory Freeze Pending Review," which ordered federal departments and agencies to consider postponing for 60 days the effective date for "any rules that have been published in the Federal Register, or any rules that have been issued in any manner but have not taken effect, for the purpose of reviewing any questions of fact, law, and policy that the rules may raise."

That final rule delayed the effective date of the TCE regulation until March 21, 2025. With the April 2 notification, the rule is further delayed for 90 days, pending judicial review, until June 20, 2025.

The new TCE rule essentially bans TCE, with a prohibition on the manufacture, import, processing, and distribution of TCE for all applications, including its use as a solvent in industrial cleaning and degreasing.

Industry 4.0: Accelerating Your Foundry's Performance Through Digitization

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The Smart Foundry System

Imagine a foundry environment where operational data arrives in real time as it is generated. Instead of reacting retroactively to failures, picture using this data to prevent and preempt such issues. How much effort is currently expended daily to manage these complexities? How much more could be accomplished if these challenges did not occur every day? This scenario exemplifies just one of the numerous advantages of a smart foundry system. Empowered by real-time analytics and data, smart foundries can leverage this information to derive actionable insights, ensuring equipment consistently operates at peak performance.

Capturing this data and deriving insight remains exceptionally challenging. It necessitates integrating operational technology (OT) with information technology (IT), tying together various original equipment manufacturers (OEM), synchronizing events and variables, and ensuring data veracity for a variety of stakeholders. By implementing a unified, vendor-agnostic, cloud-based data analytics system, many of these obstacles can be overcome. Foundries adopting such systems have reported up to a 15% reduction in downtime, 25% increase in efficiency, and 10% decrease in scrap. Harnessing data to pinpoint bottlenecks, establish operator benchmarks, schedule maintenance, automate production reporting, and manage process parameters represents just a fraction of what is achievable with a smart foundry system.

Industry 4.0 in the Foundry Space

The foundry industry, traditionally characterized by manual processes and empirical knowledge, has undergone significant evolution over the past century. In its preliminary stages, foundries relied heavily on the expertise of skilled artisans to craft high-quality metal castings. Quality assurance primarily involved visual inspections and manual measurements to ensure both integrity and precision. However, the introduction of computer technology in the mid to late 20th century marked a pivotal turning point for foundry operations.

The advent of computer-aided design (CAD) and computer-aided manufacturing (CAM) in the 1960s, followed by their integration into the foundry sector during the 1980s and 1990s, precipitated a profound transformation. These technological advancements revolutionized production methodologies, enabling foundries to adopt more precise and efficient design and manufacturing processes. With CAD and CAM tools, foundries gained the ability to simulate casting procedures, predict potential defects, and optimize production parameters before commencing manufacturing. This heralded the onset of data-driven, decision-making practices within the foundry industry, ushering in an era of enhanced operational control and strategic foresight.

Industry 4.0 has sparked significant changes in the foundry sector, ushering in smart foundries that leverage cyber-physical systems, the Internet of Things (IoT), and advanced data analytics. These technologies enable real-time monitoring and optimization of production processes, reducing downtime and increasing efficiency. Software is enabling foundries to achieve substantial operational improvements. By integrating existing PLC logic with advanced analytics, it is able to monitor various aspects of the foundry process, offering insights into machine performance and process parameters. This data-driven approach helps foundries preemptively address issues, thus minimizing costly downtime.

Industry 4.0 fundamentally revolves around establishing a robust data foundation. At its core, this industrial paradigm leverages the Internet of Things to enable pervasive data acquisition from diverse sources. The breadth and depth of data collection in Industry 4.0 facilitates comprehensive insights and informed decision-making. Over extended periods and with expansive datasets, the reliability and richness of extracted information increase significantly. Moreover, the ability to uncover nuanced conclusions that would otherwise remain obscure becomes feasible through extensive data analysis. This method not only enhances data collection reliability but also simplifies the ingestion, management, and reporting of input parameters and real-time metrics. Even rudimentary algorithms can yield remarkably pertinent insights, illustrating the transformative potential of Industry 4.0 in enhancing operational efficiency and strategic foresight.

Embracing Industry 4.0 not only allows enterprises to derive actionable insights but also enables them to pose and answer increasingly complex questions through data interrogation. The iterative process of querying data leads to the discovery of new insights, continually expanding the scope of knowledge and operational optimization. This iterative question and answer cycle underscores the profound advantage of Industry 4.0. Since implementing this methodology, Roberts Sinto, in collaboration with BEET, has observed significant downtime reductions and efficiency gains for their clients. By enabling predictive maintenance and production optimization through the use of advanced data

analysis, their results illustrate how Industry 4.0 technologies can drive efficiency, reliability, and productivity in the foundry industry through intelligent data utilization.

As the foundry industry continues to evolve, the next phase of transformation is expected to be propelled by Generative Artificial Intelligence (GenAI). GenAI represents a significant leap forward in artificial intelligence capabilities, enabling machines to not only analyze and optimize existing processes, but also autonomously generate new solutions and innovations. In the context of foundries, it has the potential to revolutionize several key areas, with one of the most promising being in the design and optimization of the casting process. GenAI algorithms can analyze vast amounts of data from past production runs to identify optimal process parameters for new casting designs. This capability will lead to significant reductions in trial-and-error iterations, resulting in faster time-to-market for new products.

GenAI's initial deployment focuses on initiating data interrogation, starting to ask critical questions of the data. This approach enhances predictive maintenance by refining models to predict machine failures more accurately through continuous learning from new data. Additionally, by analyzing data from various inspection points across production processes, GenAI improves defect detection, reduces scrap rates, and elevates quality standards. Moreover, it has the ability to integrate seamlessly with IoT devices and robotics to enable fully autonomous foundry operations. These self-optimizing systems monitor and adjust production processes in real time, responding autonomously to changing demands and material supplies, thereby maximizing efficiency and flexibility without requiring human intervention.

The foundry industry is on the cusp of a new era driven by data. Building upon the foundation of Industry 4.0 technologies, GenAI promises to introduce new levels of innovation and efficiency. As foundries continue to embrace these advancing technologies, they will be well-positioned to meet the demands of an increasingly competitive and dynamic market. The integration of GenAI is the next logical step in the ongoing digital transformation of the industry, paving the way for a future where smart, autonomous foundries are the norm rather than the exception.

Case Studies

Roberts Sinto and BEET have conducted multiple case studies showcasing the benefits of a smart foundry system. The following analyses will delve into specific examples where these technologies have made substantial impacts on productivity and profitability within their respective foundry operations.

Case Study: Root Cause Analysis with OEM Remote Support

Objective

When a manufacturer experiences a machine failure or degradation, the first line of defense is to use in-house maintenance teams. If they are unable to resolve the issue, the next step is to involve the service and support teams of the machine manufacturer. This is never a fast or inexpensive solution. The support visit is subject to the availability of a technician, who is often scheduled months in advance. The customer also bears the full cost of travel expense, travel time, and on-site productive hours, plus, any lost revenue from the machine that is not producing. To increase resolution times, Roberts Sinto utilizes Industry 4.0 solutions and cloud data to support clients remotely.

A client's machine encountered intermittent instances of an extended cycle time, causing production output to be reduced and missed delivery dates. The client's maintenance team was unable to pinpoint the cause of the longer than normal cycles because of the intermittent nature of the issue. Compounding that was the inability of the operator to clearly state the position of the machine when the slowdown occurred. This made the maintenance technicians' job almost impossible. After exhausting in-house capabilities, the client reached out to Roberts Sinto, (the OEM) to provide support. The OEM conducted standard phone support but was unable to solve the issue through questioning the maintenance team due to the same reasons above. Typically, the next step would be to send a service technician on-site to the client. However, in this case, the client had deployed the Industry 4.0 platform provided by Roberts Sinto. The platform captures historical cycle time data for each individual movement of machines. It also collects data related to faults and alarms, further providing a robust picture of machine health. Through remote support, the primary objective was to systematically identify the specific timing and locations of these slowdowns and to enable the formulation of targeted strategies to enact necessary adjustments or maintenance interventions for the purpose of mitigation and prevention of these instances.

Approach

To solve the issue in a systematic approach, after initial troubleshooting with the on-site maintenance team, the OEM remote service technician accessed the machine's historical performance data. The technician's first step was to review the data and find over machine cycle times that were longer than normal. The client was able to direct the service technician to a shift that they knew would contain long cycle times. Once the technician identified a suspect grouping of cycles, he investigated the breakdown of the cycle time into its separate components. The data immediately highlighted the offending machine movement that caused the intermittent slow down (Shown in Figure 1). The next step was to identify any other issues that may be present by analyzing the surrounding movements and reviewing the historical fault messages. This helped the technician rule out other root causes based on an informal decision tree.

Resolution

After identifying the operation that was causing the slow down, the OEM technician was able to collaborate with the customer technician to identify a missed cylinder switch that would not trigger the interlock with the handling system. They identified this switch because they used the controls drawings and PLC programming to review the surrounding logic for the specific movement pointed

***Figure 1** – Sequence of operations.*

out by the data. Once the switch was set correctly, the machine performed as designed. New performance baselines and tolerance thresholds were established, designed not only to proactively notify the client of any potential future issues, but also to ensure ongoing operational efficiency and reliability of the suspect movement. Additionally, methods were implemented to analyze and document the most critical overcycle movements, facilitating the formation of advanced baselines.

The remote support, coupled with historical cloud data, allowed for a much faster resolution to the problem than traditional methods would allow. The customer was also able to save a significant amount of money by not requiring a service visit to be scheduled. An issue that could have taken days, weeks, or months to resolve was completed in a matter of hours. The remote support got the customer back into production at the designed rate.

Case Study: Proactive Maintenance Based on Trending Data

Objective

A foundry needed to reduce its downtime and improve the average time between failures. They wanted to leverage trending data to drive maintenance and mitigate machine failures before they occurred, thereby preventing costly downtime. By integrating Industry 4.0 technologies such as IoT sensors, advanced data analytics, and machine learning algorithms, the foundry continuously monitored the performance and condition of critical machinery. The real-time collection and analysis of data enabled the identification of patterns and anomalies that preceded equipment malfunctions. Maintenance teams were alerted to potential issues, allowing for timely interventions that addressed problems before they led to operational disruptions. This predictive maintenance approach not only extended the lifespan of machinery but also optimized the allocation of resources, reduced unscheduled maintenance, and enhanced overall production efficiency. By minimizing unexpected breakdowns, the foundry maintained a steady production flow, met delivery schedules, and reduced operational costs. This proactive maintenance strategy drove significant improvements in the foundry's reliability, productivity, and competitiveness in the market.

Approach

The approach to implementing and utilizing trending data in the foundry involved several detailed steps, ensuring a comprehensive and effective predictive maintenance strategy. Initially, the maintenance and operation teams deployed an Industry 4.0 platform, integrating it with the foundry's existing machinery and systems. This platform facilitated the real-time collection of a vast array of telemetry data from various sensors installed on critical equipment. Over a designated period, the teams collected and analyzed this data to establish baseline performance metrics for each machine.

Once the baselines were set, they began generating detailed reports on the telemetry data, focusing particularly on individual machine movement cycle times. These cycle times were crucial indicators of machine health, revealing insights into areas that might require maintenance attention. When the teams observed trends, spikes, or anomalies in the data, they promptly created work orders to have maintenance personnel investigate these issues during regularly scheduled non-production times. This scheduling ensured that any potential disruptions were addressed without affecting the production schedule.

If an investigation revealed an underlying issue, the necessary repairs were made immediately, during the non-production times. Post-repair, the maintenance teams closely monitored the specific movements in question to verify that the fix effectively resolved the problem. Continuous monitoring and validation were integral to confirming the success of the intervention and ensuring the ongoing

***Figure 2** – Example of trending data before and after.*

reliability of the machinery. This systematic and data-driven approach not only improved machine uptime and reduced unexpected breakdowns but also fostered a culture of proactive maintenance and continuous improvement within the foundry.

Resolution

The results of the maintenance initiative and the systematic approach described previously were notably positive. Over the first three months of the assessment period, the client observed a sustained 5% enhancement in throughput for their molding machine. This immediate improvement was a direct consequence of timely maintenance interventions and the effective use of real-time data analytics. Additionally, the client noted a progressive monthly improvement in throughput, averaging a 7% increase. This steady upward trend underscored the continuous benefits derived from the implementation of the Industry 4.0 platform.

The consistent performance gains highlighted the significant contribution of predictive maintenance to operational efficiency and output optimization. By preemptively addressing potential machine issues, the foundry minimized unexpected downtimes and maintained a smooth production flow. This approach not only improved the reliability and longevity of the equipment but also optimized the overall production process, resulting in higher productivity levels.

Furthermore, the detailed analysis and targeted interventions helped the maintenance teams to better understand the intricacies of machine operations and refine their maintenance practices continuously. This initiative fostered a culture of data-driven decision-making, where insights from telemetry data guided maintenance actions, leading to sustained operational improvements. Overall, the successful implementation of this proactive maintenance approach demonstrated its substantial impact on enhancing the foundry's efficiency, productivity, and competitiveness.

Case Study: Cycle Time Optimization and Standard Establishment

Objective

When dealing with legacy equipment, having an Industry 4.0 solution that is controller agnostic is important to

***Figure 3** – Cycle time comparison dashboard.*

achieve a true digital transformation. A client wanted to optimize cycle time and establish standards for 21 identical machines. The client had outdated PLC architecture, causing difficulty with capturing data for more than one cycle at a time, in concurrence with a dynamic production schedule that included frequent changes to machine settings due to multiple models, dies, and part types. Since the client had no historical information available to tune or return the equipment to optimal settings, OEE dropped below 70% and jobs per hour produced were off target by a value of 39.

Approach

By conducting maintenance campaigns and identifying machines where optimizations efforts would apply, actions were taken to maximize benefits of the study. Utilizing a commercial off-the-shelf Industry 4.0 platform, BEET, was able to be deployed on the aging PLC architecture. visualize time discrepancies in the client's lube cycle programs and develop standards by pinpointing the programming differences for the exact same application. The client was also able to see what the casting parameter settings were when the die/ machine combination was optimized, and those were leveraged to drive consistent set up criteria machine to machine. When a setting could not be achieved, that drove additional maintenance activities.

Resolution

From 09.01.2020 to 11.01.2020, jobs per hour increased by a value of 27 and OEE was increased by 10%. The client now had clearly defined motion baselines, captured, and utilized in ePVS to hold optimal performance, to use as a historical dataset to detect adjustments to settings. Over the course of three months, this saved the client nearly $1M annually.

Looking Forward

Industry 4.0 represents a pivotal advancement driving industries towards real-time, data-driven analytics. Within the dynamic foundry sector, the imperative to adopt Industry 4.0 technologies is becoming increasingly urgent. As these technologies evolve towards GenAI, enterprises must look towards proactively embracing these advancements. Industry 4.0 establishes the fundamental framework for future developments, urging enterprises not to lag behind but rather to lay the groundwork for a robust, data-centric operational ecosystem. By initiating preparations now, businesses can strategically position themselves to seamlessly integrate forthcoming GenAI technologies as they become standardized across the industry landscape. Embracing Industry 4.0 now ensures companies are not only prepared for the future but are actively shaping it, leveraging data-driven insights to stay ahead in the competitive foundry industry.

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Achieving 100% Recycled Aluminum in Die Casting Applications

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Abstract

Recycling aluminum uses only about 5% of the energy needed for primary aluminum production. Current aluminum die castings for structural applications in the transportation industries are made of primary alloys with strict control on impurity elements such as iron. Increasing the use of aluminum scrap in die casting applications (structural and non-structural) will lead to significant savings of energy and reduction of CO_2 emissions. This paper provides an overview of a project sponsored by The REMADE (Reducing EMbodied-Energy And Decreasing Emissions) Institute. The goal of this project is to achieve 100% use of recycled aluminum in die casting applications by realizing the following two objectives: 1) substitute 100% secondary materials for primary alloys (e.g., EZCast and Aural-2) in structural die castings with no degradation in properties; and 2) improve the mechanical properties of the current secondary alloys (e.g., A380 and A383) for non-structural applications. Based on an integrated computational materials engineering (ICME) approach, the project scope includes: 1) thermodynamic assessment of impurity neutralization modeling; 2) CALPHAD (CALculation of PHAse Diagrams)-based alloy design using secondary aluminum; 3) ICME tool development for high pressure die casting and heat treatment; 4) Experimental validation of new alloys (microstructure and mechanical properties) and simulation tools; and 5) technology transition and training in the domestic die casting industry to strive for 100% use of recycled aluminum in die casting.

Introduction

Die casting, also called high pressure die casting (HPDC), is the dominant process for making aluminum castings compared to sand and permanent mold casting processes (see Figure 1).[1] The total U.S. aluminum die casting shipments for 2019 were estimated to be 3.12 billion pounds.[1] However, current aluminum casting industry uses limited amount of secondary alloys, largely due to high impurities such as Fe and Zn in scrap aluminum.[2] There are two types of die cast alloys: 1) primary alloys (e.g., EZCast and Aural-2) for structural applications where less than 10% scrap (secondary alloy) can be used; and 2) secondary alloys (e.g., A380 and A383) with limited mechanical properties which are used only for non-structural applications.

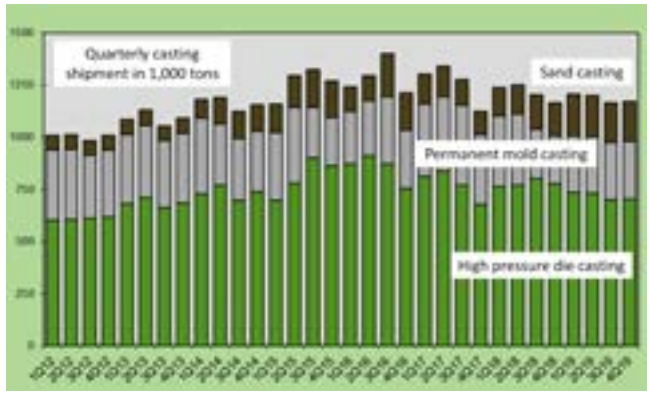


***Figure 1** – Quarterly U.S. aluminum casting shipment data by casting method from Q1 of 2012 through Q4 of 2019. Source: The Aluminum Association.[1]*

Manufacturing accounts for about 25% of the energy consumption in the United States. To help reduce the energy consumption and emissions, the US Department of Energy (DOE) has supported "The REMADE Institute", a public–private partnership launched in 2017. One of the objectives of REMADE is to increase manufacturing energy efficiency and reduce embodied energy in materials (metals, polymers, electronic waste, and fibers).[3] This paper provides an overview of a project, titled "achieving 100% recycled aluminum in die casting applications", sponsored by REMADE and participated by The Ohio State University, Alcoa, Audubon Metals, Ford Motor Company, CompuTherm, and North American Die Casting Association.

Project Goal and Objectives

To achieve the project goal of 100% recycled aluminum in die casting applications (which would greatly contribute to the REMADE goal of 30% reduction of primary feedstock use and 30% increase in secondary feedstock use in manufacturing operations), the following two problems need to be solved:

1. For structural die cast alloys, the high impurity Fe and Zn levels in aluminum scrap need to be neutralized by other alloying elements. Other impurities also need to be refined.
2. For non-structural secondary die cast alloys with limited mechanical properties, research is needed to improve ductility, monotonic and fatigue strengths of these alloys via modification of microstructure

(primarily the silicon and intermetallic phases), using micro-alloying and/or heat treatment. The improved performance of these secondary alloys will expand their use into more products including semi-structural applications.

Therefore, the following two objectives were set up for the project:

1. Substitute 100% secondary materials for primary alloys (e.g., EZCast and Aural-2) in structural die castings with no degradation in properties; and
2. improve the mechanical properties of the current secondary alloys (e.g., A380 and A383) for non-structural applications.

As shown in Figure 2, an integrated computational materials engineering (ICME) framework, linking computational alloy design, casting process simulation, microstructure simulation to mechanical property prediction and experimental validation, will be used to achieve the above goal and objectives.

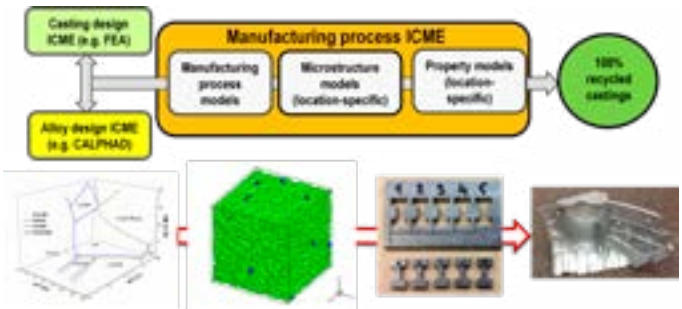


***Figure 2** – Integrated computational materials engineering (ICME) framework for casting development.*

Specifically, the project includes the following tasks:

1. Thermodynamic modeling and validation of impurity neutralization, microstructure refining and melt/flux interactions in aluminum alloys.
2. CALPHAD (CALculation of PHAse Diagrams)-based alloy design using secondary aluminum alloys.
3. ICME tool development for high pressure die casting and heat treatment of secondary aluminum alloys.
4. Experimental validation of new secondary alloys (microstructure and mechanical properties) and simulation tools.

Thermodynamic Modeling

The role of Sr and solidification rate on the formation of Fe-intermetallic phases was investigated in Al-9Si-0.6Fe-0.35Mg-(0.1-0.3)Mn alloys, and the results are summarized in Figure 3.[4-6] Additions of 60 ppm and 200 ppm of Sr refine the Si needles from coarse flake-like morphology to lamellar structure and influence the formation of needle shaped AlFeSi phase. In Sr modified alloys, the needle shaped AlFeSi phase is identified as δ-Al_3FeSi_2 intermetallic with an Fe-to-Si ratio of 1:2, and this morphology is mostly unaffected by the slow cooling conditions (1.5°C/s). However, at a fastest solidification rate of 60°C/s, 60 ppm of Sr addition was found unexpectedly to significantly reduce the length of needle shaped δ-AlFeSi phase (average length of 3-5 μm) confined within the eutectic regions. Increasing Sr to 200 ppm increases the needle length of δ-Al_3FeSi_2 phases ranging over 10 μm and up to 50 μm. Based on CALPHAD simulations and experimental observations, the mechanisms of Sr additions affecting the formation of δ-phase have been discussed in detail. The refinement effect of δ-Al_3FeSi_2 phase at 60 ppm of Sr was attributed to the tendency of Sr poisoning the nucleation sites a delaying their formation temperature. On the other hand, due to an increased fraction of Al_2Si_2Sr phase at 200 ppm Sr, early nucleation of δ-Al_3FeSi_2 phases is favored and unrestricted growth results in long and branched δ-phase needles. For recycled alloys containing up to 0.6%Fe, 60 ppm of Sr addition combined with a higher solidification rate offers best refinement of needle shaped eutectic Si and δ-Al_3FeSi_2 phases.

Alloy Design and Die Casting

Based on the above thermodynamic simulation results, two structural alloys, RS-1 (containing 0.5%Fe) and RS-2 (containing 0.6%Fe), have been designed with microalloying elements Mn, Cr and Sr (see Table 1 for compositions). Three non-structural alloys, NS-1, NS-2 and NS-3, have also been designed with a base composition Al-7Si-0.4Mg-1.8Cu-0.9Zn-1Fe and some microalloying elements (see Table 2 for compositions). It should be noted that the base composition for non-structural alloys have higher Mg but lower Cu content than A380 to reduce cost (no/minimal Cu addition) and environmental impact (eliminating chlorination step of Mg removal) during recycling.

The above experimental alloys (made from 100% scrap aluminum by Audubon Metals), along with EZCast C611 (baseline for structural alloys, supplied by Alcoa) and A380 (baseline for non-structural alloy, supplied by Audubon Metals), were die cast for property evaluation. A 280-ton LK die casting machine (Figure 4a), equipped with a Fondarex vacuum unit located at the Center for Design and Manufacturing Excellence (CDME) at The Ohio State University (OSU), was used for the die casting experiments. An experimental casting design was used (Figure 4b), which includes test plates of 2, 3, and 5mm thicknesses and an ASTM standard round tensile bar with a gauge diameter of 6 mm. Vacuum-assisted die casting process (with vacuum level in the die cavity set at 85 mbar) was used to produce test specimens with minimal gas porosity caused by entrapped air. The die was pre-heated to 200 °C, while the shot sleeve temperature was set at 270 °C. The molten metal of 680 - 730 °C (depending on the alloy) was transported to the shot sleeve using a robotic ladling arm (Rimrock, Columbus, OH) equipped with a boron nitride coated steel ladle. The low die temperature (200 °C) was used to enhance cooling rate for refined microstructure. For each alloy, about 400 lbs. of melt was used to make at least 100 shots (see Figure 4c for an example casting) for testing and evaluation.

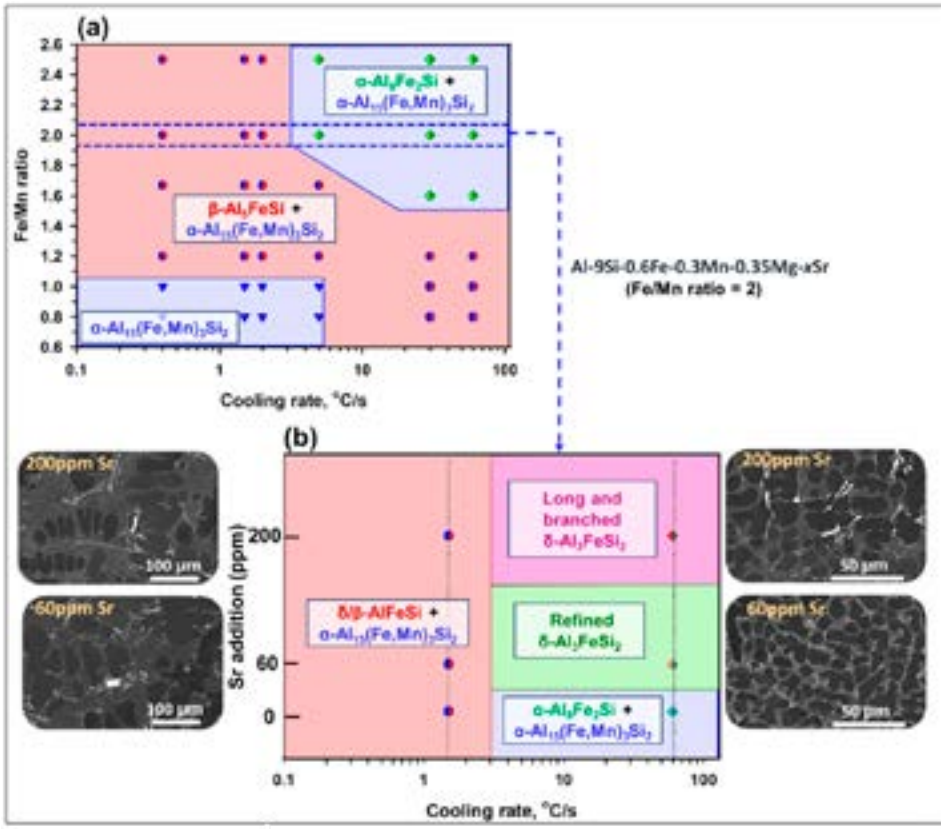
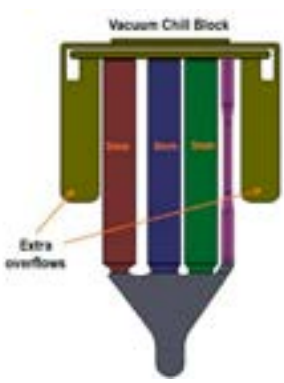


***Figure 3** – Phase formation map of Fe-based intermetallics reported previously for (a) Al-9Si-0.35 Mg-xFe-xMn alloys (adapted from [4]) and (b) for the present work updated with Sr addition at Fe-to-Mn ratio of 2 in the same casting conditions [5].*

(a) 280 ton die casting machine



(b) Specimen die design

(c) Example casting

***Figure 4** – Die casting trials of recycled aluminum alloys and baseline alloys at Ohio State University.*

Mechanical Properties

Table 1 shows the major compositions and tensile properties of recycled structural die cast alloys)). For structural alloys, both RS-1 (0.5Fe) and RS-2 (0.6Fe) alloys have shown similar ductility (around 10% elongation), slightly higher yield and ultimate tensile strengths than those the baseline EZCast 611 alloy, but at significantly higher Fe content (0.5-0.6%) accommodating 100% scrap aluminum in RS-1 and RS-2 alloys.

Table 2 shows the major compositions and tensile properties of recycled non-structural die cast alloys (in comparison with baseline A380 alloy). For non-structural alloys, NS-1, NS-2 and NS-3 alloys show slight increases in elongation and similar strength levels, compared with the baseline A380 alloy. It should be noted that NS-1, NS-2 and NS-3 alloys have higher Mg but lower Cu content compared to A380. Those recycled alloys would eliminate the de-Mg operation (using chlorine gas) and save Cu additions during the recycling process, thus, have lower cost and as well as being more environmentally friendly.

It should be pointed out that the properties (Tables 1 and 2) obtained from die cast test specimens still need to be further validated in component-level testing, which will be conducted in a future project led by industrial partners of this project.

Integrated Computational Materials Engineering (ICME)

Casting simulation is being increasingly used in the manufacturing industry as part of product development process based on computer-aided design (CAD), computer-aided engineering (CAE), and computer-aided manufacturing (CAM). Integrated Computational Materials Engineering (ICME) is a relatively new approach that has started to show significant benefits in reducing cost and time to design and deploy new materials and products, including castings. According to a United States National Research Council study [7], ICME is defined as "the integration of materials information, captured in computational tools, with engineering product performance analysis and manufacturing-process simulation."

In this project, an ICME approach [8] is used to connect thermodynamic modeling, alloy design, casting process

***Table 1** – Major compositions and mechanical properties of recycled structural die cast alloys (in comparison with baseline EZCast C611 alloy).*

Alloy	Temper	% Elongation	YS (MPa)	UTS (MPa)	Sample
RS-1 (Al-9Si-0.3Mg-0.3Cu-0.5Fe + microalloying)	F	7.42	123	273	Round (6 mm)
	F	7.45	96	292	Plate (3 mm)
	T7*	10.1	103	214	Plate (3 mm)
RS-2 (Al-7Si-0.3Mg-0.5Cu-0.6Fe + microalloying)	F	7.6	125	275	Plate (3 mm)
	T7*	9.8	117	219	Plate (3 mm)
EZCast C611 (Al-7Si-0.2Mg-0.1Fe)	F	7.9	105	228	Round (6 mm)
	F	8.9	99	235	Plate (3 mm)

**T7 Heat treatment procedure: 490°C for 48 min followed by forced air quench to 80-100°C, 230°C for 96 min followed by natural air cooling.*

***Table 2** – Major compositions and mechanical properties of recycled non-structural die cast alloys (in comparison with baseline A380 alloy).*

Alloy	% Elongation	YS (MPa)	UTS (MPa)	Sample
NS-1 (Al-7Si-0.4Mg-1.8Cu-0.9Zn-1Fe + microalloying 1)	2.5	161	273	Plate (3 mm)
	3.4	160	288	Plate (5 mm)
	2.2	148	259	Round (6 mm)
NS-2 (Al-7Si-0.4Mg-1.8Cu-0.9Zn-1Fe + microalloying 2)	4	130	266	Plate (3 mm)
	4.4	128	266	Plate (5 mm)
NS-3 (Al-7Si-0.4Mg-1.8Cu-0.9Zn-1Fe + microalloying 3)	3.0	161	277	Plate (3 mm)
	4.0	155	294	Plate (5 mm)
	3.7	142	272	Round (6 mm)
A380 (Al-9Si-0.1Mg-3.4Cu-1Zn-0.9Fe-0.3Mn-0.04Cr)	2.1	151	236	Plate (3 mm)
	2.5	144	228	Plate (5 mm)
	2.7	136	281	Round (6 mm)

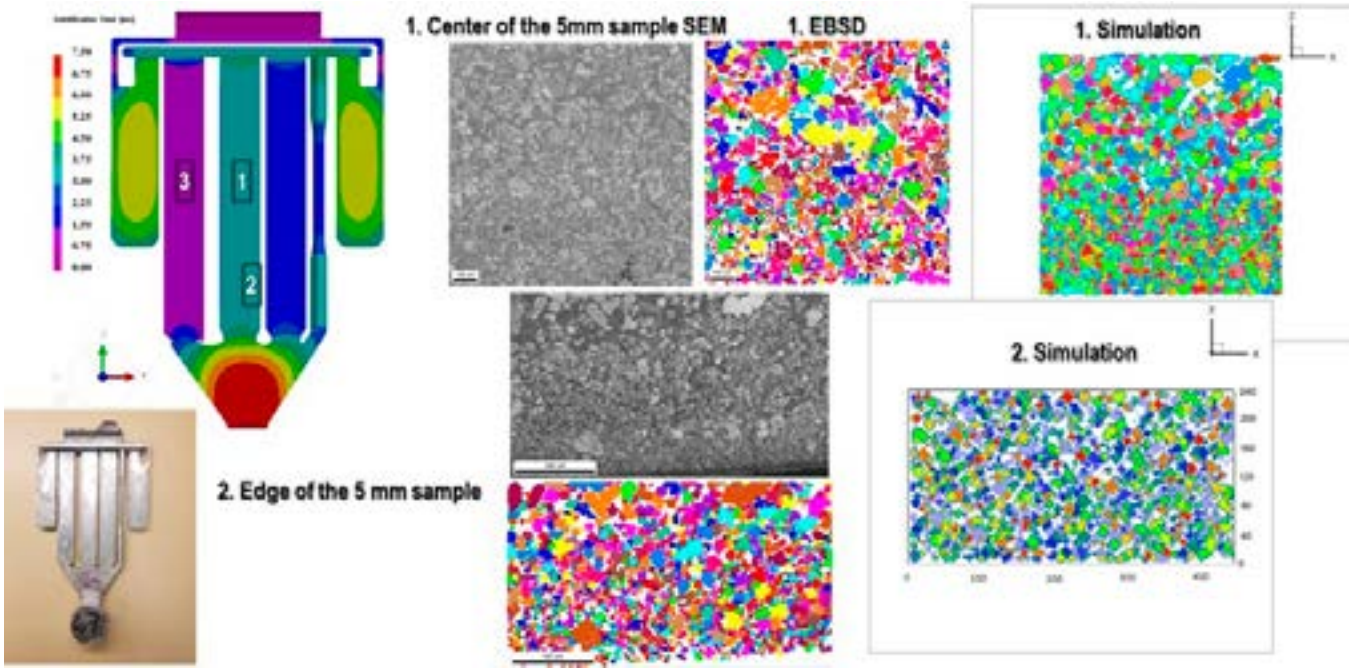


***Figure 5** - Three-dimensional solidification microstructure model for developed and validated for high-pressure die casting of multi-component Al alloys.*

simulation, microstructure simulation to mechanical property prediction and experimental validation. Figure 5 shows a three-dimensional solidification microstructure model developed and validated for high-pressure die casting of multi-component Al alloys. The ICME tools played a key role in alloy design and HPDC process optimization of secondary alloy development in this project.

Acknowledgments

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Navigating Change: Highlights from Our Recent Die Casting Conference

Melisa Ryzner, CMP, CMM, Education & Meetings Manager
North American Die Casting Association
Arlington Heights, Illinois

The recent Die Casting Executive Conference brought together industry leaders, experts, and stakeholders to discuss key developments shaping the future of die casting. Attendees explored critical topics such as policy changes, automation, AI-driven manufacturing, and risk management strategies, gaining valuable insights to navigate the evolving landscape of the industry.

A highlight of the event was a keynote from Chad Hymas, who shared his powerful story of overcoming adversity after a life-altering accident. His message on the importance of paying attention in life and embracing challenges resonated deeply with attendees, leaving a lasting impact on both personal and professional perspectives.

The conference continued with an in-depth analysis of the first 100 days of Donald Trump's second administration. Led by NADCA's lobbyist, Omar S. Nashashibi, the session covered trade policies, tariffs, energy initiatives, and immigration reforms that impact the die casting sector. The discussion highlighted expected shifts in trade with Mexico and allies, potential trade wars, and the anticipated timeline for tax reforms. Attendees left with a clearer understanding of how these developments could create both opportunities and disruptions in 2025 and beyond.

The next session provided a comprehensive look at the external forces shaping the die casting industry. Drawing insights from NADCA's 2024 benchmarking studies and Wipfli's 2025 Manufacturing Pulse Study, presenters explored emerging industry trends and regulatory shifts. Attendees gained practical strategies to adapt to market changes and enhance business performance, ensuring long-term sustainability in an increasingly volatile environment.

Securing the Future: Property and Casualty Strategies for Die Casters' Risk Management remains a priority for die casters, and this session addressed the latest trends in property and casualty insurance. Industry experts outlined common coverage pitfalls and introduced innovative solutions designed to mitigate risks. The presentation emphasized the importance of proactively assessing policies to ensure long-term protection and stability for die casting businesses.

Kicking off Tuesday we had a session titled: Municipal Market Update. This session provided an update on the U.S. municipal market, highlighting current economic conditions and potential investment opportunities. Attendees gained insights into how municipal policies and financial trends may impact their operations and future growth.

The sessions on Tuesday concluded with a highly interactive roundtable discussion on automation investments. Industry professionals and integrators shared real-world applications of the latest automation techniques, discussing successes and challenges. Attendees engaged in a lively Q&A session, exchanging ideas on optimizing automation in die casting operations.

Casting Perfection: Manufacturing Analytics and AI's Role in Modern Die Casting Artificial intelligence continues to transform manufacturing, and this session explored its impact on die casting operations. Experts shared practical guidance on data preparation, key performance indicators (KPIs), and implementation strategies to maximize return on investment. Real-world case studies demonstrated how AI adoption has driven efficiency improvements and exceeded ROI expectations.

NADCA's Research & Development initiatives are driving advancements in die casting technology. This session covered several key projects, including die cast tooling development for steel castings, copper integration for improved thermal conductivity in aluminum die casting, and energy consumption benchmarking for die casting facilities. These innovations are set to enhance efficiency and competitiveness within the industry.

With a packed agenda and invaluable networking opportunities, the Die Casting Conference reaffirmed its role as a premier event for industry professionals. One attendee described it as "flawless" and "by far the most professional, informative, motivational, and enjoyable" event they had attended, adding that "the attention to detail was very evident" and that the "entire flow of the event was perfect." Another remarked, "Looking forward to Clearwater Beach in 2026." Attendees praised the event for its insightful discussions and practical takeaways, with many highlighting the AI and automation sessions as particularly impactful. The engaging roundtable discussions and networking sessions also provided a valuable platform for collaboration and knowledge sharing. Attendees left equipped with actionable strategies, new perspectives, and a deeper understanding of the trends shaping the future of die casting. We look forward to continuing these important discussions in future events.

Save the Date

Die Casting Executive Conference

March 1-4, 2026

Sandpearl Resort
Clearwater Beach, Florida

Photo credit: Athena Catlett & Tim Fenner

2025 Exhibitor Spotlight

Absolute Haitian Die Casting Systems 118

33 Southgate Street
Worcester, MA 01610
United States
P: (508) 792-4305
www.absolutehaitiandiecastingsystems.com

Haitian Die Casting is one of the industry leaders in cold chamber die casting and magnesium molding. Haitian Die Casting has the capacity to produce up to 4,000 machines annually from 180 to 8,800 tons of force. Absolute Haitian Die Casting Systems is the official distributer of Haitian Die Casting machinery for the United States and Canadian markets. As part of the Absolute Group of Companies, Absolute Haitian Die Casting Systems provides industry leading sales and support. Our headquarters is located in Worcester, MA and we have additional technical centers in Ohio and South Carolina.

Allied Metal Company 202

2059 S Canal St
Chicago, IL 60616
United States
P: (312) 225-2800
www.alliedmetalcompany.com

We are a family-owned secondary aluminum alloy and zinc alloy manufacturer. We will be celebrating 75 years of business and same family ownership in 2027! We have recently moved all of our manufacturing under one roof in Chattanooga, TN. We bring 72 years of experience and expertise to help our customers get the correct material and chemistry they need for the parts they make.

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United States
P: (419) 467-5727
www.asddayton.com

BOHLER 233

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United States
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When the job is tough, customers turn to BÖHLER Steels – exclusively represented by EDRO in the USA. Böhler prides itself on providing complete solutions with industry leading grades W360 (highest thermal stability and wear-resistance), W350 (large deep cavities), W403 (heat checking resistance), and W302 (premium H-13). Additionally, we offer full additive manufacturing services from design to part, and superior eifeler coatings that include Crosal-plus and Duplex-Tigral. No matter what the situation calls for, BÖHLER is here.

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P: (269) 208-3867
www.brondolin-na.com

Brondolin SRL , located near Milano, Italy is an industry leader in the manufacturing of Shot End Components for the Die Casting Industry and its products are distributed by Brondolin NA in North America. Established in 1968, Brondolin's state of the art machining factory also has its own Heat Treatment and Nitriding facility nearby, so they are able to produce the highest quality products by controlling the manufacturing process start to finish in house. Check us out for our latest technological advances at Brondolin.it.

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Die Casting Machines and systems made by BuhlerPrince are ideal for the most varied processes. Whether you are interested in aluminum, magnesium, zinc, vacuum, structural or engine block processes – BuhlerPrince has the right solution. BuhlerPrince supports customers throughout the life-cycle of their equipment with global services including process optimization, flow simulations, remanufacturing, retrofits and upgrades.

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P: (317) 872-3882
www.castec-inc.com

As a company, we specialize in the manufacturing of core pins, inserts, and other key components in die casting molds. Our latest technologies in additive manufacturing and our award winning surface coating to prolong your tool life.

Castool Tooling Systems 328

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Uxbridge, ON L9P 1R1
Canada
P: (905) 852-0121
www.castool.com

Any die caster knows how to produce large, thin , convoluted aluminum castings for the automotive industry. It is already being done quite satisfactorily and profitably in large quantities. There are no secrets. Knowing how to do it and actually doing it, however, are two very different things. When theory is finally replaced by reality, the most fundamental precept of die casting can be found in the old adage: a chain is only as strong as its weakest link.
All Castool products promote energy conservation and are environmentally friendly.

Chem-Trend, LP 402

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Howell, MI 48843-3947
United States
P: (517) 302-2962
www.chemtrend.com

At Chem-Trend, we are not simply a supplier. We are a visionary, working alongside you to create solutions that help you today, while forging the way to the future. It starts with our people, who begin each day focused on your business, your challenge, and your success. Die cast solutions have been a part of Chem-Trend since day one. As conditions continue to become more demanding, efficiency becomes more crucial, and materials become even more premium, we work alongside our customers to uncover every possibility.

Diehl Tool Steel 134

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Cincinnati, OH 45217
United States
P: (513) 242-8900
www.diehlsteel.com

Diehl Tool Steel is a fully integrated distributor of specialty tool steels, powder metals, aluminum, carbon and stainless alloys. Diehl Tool Steel is the largest distributor of Yasugi® Specialy Steel proprietary grades in North America and a wholly owned division of Proterial Business Group. Diehl Tool Steel processes orders to exact customer specifications.

DME Company 304

29111 Stephenson Highway
Madison Heights, MI 48071
United States
P: (800) 626-6653
www. DME.net

For over 80 years, DME has been the backbone of the die casting industry, providing unparalleled support and innovation. Our commitment to die casters is stronger than ever, offering a wide range of standard and engineered products, along with cutting-edge aftermarket solutions.
Through our eSTORE, available 24/7, members gain access to a full catalog of innovative components and resources designed to enhance production capabilities. By registering for the DME eSTORE, you're not just getting products – you're partnering with a leader in the field. We make it easy to order what you need when you need it, ensuring you stay ahead in the ever-evolving world of die casting.
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Dynamo Inc 116

7-107 Kyoei Street
Seto, Aichi 489-0984
P: 708 261 6492
https://dynamoinc.us/

We are a leading Japanese manufacturer specializing in jet-cooled core pins and mold components for the high-pressure die-casting industry. We efficiently serve users worldwide with a global presence spanning plants in Japan and Vietnam, alongside sales offices in Germany, North America, Mexico, and China.
Our die-cast die components, including jet-cooled core pins, cascades, inserts, bore cores, and water jackets, exemplify our commitment to quality and innovation. Supported by sister companies Nihonseiki Co., LTD. and Tooling Innovation, Inc., we offer complete molds and additive manufacturing products. These utilize HTC45 die steel powder, boasting equivalence to SKD61 (H-13), high thermal conductivity, low thermal expansion, and improved component life through conformal cooling.

EcoShot Inc. 310

5524 Fortune Circle S, Suite F
Indianapolis, IN 46241
United States
P: (317) 912-4498
www.ecoshotinc.com

EcoShot (formerly RYOEI USA) is a full-service industrial automation provider specializing in die-casting that supplies state-of-the-art products and services for OEMs. Our automation systems include die spray systems, sorting equipment, pallet changers, material handling systems, equipment inspection, and much more.

Ellwood Specialty Metals – USA 206

499 Honey Bee Ln
New Castle, PA 16105
United States
P: (800) 932-2188
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ELLWOOD Specialty Metals Group is the leading tool steel and aluminum distributor for use in die casting dies, plastic molds, forging dies, and many other tooling applications. Our steel and aluminum grades are used to produce parts for automobiles, trucks, aircraft, and consumer products across North America. The variety of our steel products include hot work tool steels, plastic mold steels, cold work tool steels, forging die steels, stainless grades, and heavy plates. We also offer a comprehensive portfolio of aluminum cast, rolled, forged, and extruded products for various industries.

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Based in Santa Fe, New Mexico USA, Flow Science has been a pioneer in CFD software development for over 40 years. Our company mission is to provide our customers with best-in-class flow modeling software and exceptional technical training and support services. The FLOW-3D family of products offer highly accurate and versatile CFD solutions to meet the unique challenges of manufacturing in the 21st century.

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With the increasing demand of high-quality and complex die-cast parts for E-mobility and MEGA / GIGA- Castings, Fondarex created a complete solution for an integrated system.
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United States
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www.frechusa.com

Die Casting Systems by the Frech Group offer customers improved productivity we the smart application of the die casting industries leading technologies. Die Casting cells are built to last and simple to operate with intuitive controls and flexible interfaces. The Frech Group also includes important market brands like Robamat, Meltec, VDS, Spesima, and Frech ZPF.

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P: (330) 562-1440
www.godfreywing.com

Godfrey & Wing vacuum impregnation technology is engineered to overcome your porosity challenges. We enable you to meet OEM requirements, ensure the quality of your components, and the integrity of your bottom line. As a U.S. based company with industry leading equipment options for in-house impregnation, mil-standard approved sealants for any application, and a vast network of service centers, make or buy, we have you covered. Casting impregnation done, Simply Better.

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P: (269) 429-5555
www.hansoninternational.com

Hanson International specializes in the design, build, sample, and inspection of precision molds and high pressure die cast dies - primarily for the automotive industry. Hanson's campus is located in Saint Joseph, Michigan, and provides the die cast industry with the finest, most efficiently designed and long-lasting tooling available. Hanson's single source assurance and single point of contact approach guarantees outstanding service and support from design to delivery.

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P: (800) 543-0425
www.hillandgriffith.com

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IECI SRL 239

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United States
P: +39 393 43 23 841
www.iecionline.com

IECI, leading company in the field of temperature control of molds, is an Italian manufacturing firm operating in the sector of aluminum die casting. Our organization was born in 1972 in Passirano, in the province of Brescia (Italy); in these almost 50 years of history it could establish itself as a brand of complete reliability, robustness and high precision.

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Induction can heat and melt aluminum at very high efficiency rates with very low metal losses as compared to gas or oil-fueled furnaces, which can emit a large amount of carbon dioxide. As we go green, we help our customers meet their decarbonization initiatives through our induction furnaces. With over 70 years of experience, we can be your answer to reducing your carbon footprint. Visit Inductotherm.com to learn more.

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United States
P: (616) 249-1525
www.industrialinnovations.com

International Mold Steel 224

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United States
P: (859) 342-6000
www.imsteel.com

International Mold Steel (IMS) supports the die casting community with NADCA certified grades DH31-EX™ and DHA™-World. These technologically advanced die steels can provide longer tool life, better part quality and lower total cost per part. IMS offers close collaboration with customers on steel selection, production process, machining, polishing, welding, coating and heat treatment.

J&S Chemical Corp 101

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United States
P: (770) 720-8100
www.jschemical.com

USA-based J&S Chemical is a leading manufacturer of specialty lubricants for the die casting industry. J&S Chemical's business philosophy is to create value for their customers by developing high quality, high performing, value added products. Substantial investment in R&D as well as their Technical Service Team, working on-site with their customers, is driving new product developments. Many of their brands are product leaders in the industry such as, TurboCast® (die release agents and liquid plunger lubricants), ShotBeads® (solid plunger lubricants) and TurboTrim™ (trimming fluids).

Lethiguel USA 110

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www.lethiguelusa.com

Lethiguel USA, formerly Midland Technologies, designs/manufactures thermal and vacuum technology solutions. We offer a complete line of immersion heaters to melt/hold non-ferrous metals, jet cooling systems to reduce scrap/cycle time and vacuum systems that monitor die cavity vacuum levels during casting. The Midland name lives on as our brand for chill blocks and jet coolers – both standard and custom designs. We have Europe and US manufacturing facilities and technical staff supporting our solutions.

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Lindberg/MPH is an industry leader in industrial melting and holding furnaces. Each furnace is designed to be low maintenance and energy efficient. Choose from a variety of custom options and sizes to meet your process and facility requirements. Available configurations include dry hearth, wet hearth, stack melter, and crucible or pot designs. Lindberg/MPH industrial melting furnaces are commonly used for aluminum or zinc and are also used for copper, lead, brass, bronze, and other materials. Our experienced engineers work closely with you to design industrial melting furnaces that meet your specifications.

MAGMA Foundry Technologies Inc. 323

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magmasoft.com

MAGMA stands for robust and innovative casting solutions as well as a strong partnership with the metal casting industry. MAGMA's product portfolio based on Autonomous Engineering™ leads to robust and cost effective solutions in component design, tooling lay-out and production. The application of the MAGMA APPROACH, combined with MAGMA's comprehensive commitment to customer support, competent engineering services and educational offerings through the MAGMAacademy, offers a unique and systematic methodology for optimization and problem-solving in metal casting processes. This allows our customers to effectively integrate and use MAGMA's tools to achieve significant technical benefits and cost savings in their organizations.

NovaCast USA Inc. 338

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P: (630) 450-1647
www.novacastusa.com

The innovative casting process simulation tool that helps you work faster, easier and achieve more accurate castings. NovaFlow&Solid simulates mold filling and solidification and also contains much more than that and it really gives you the possibility to simulate the casting production that you dream to have. We want you to be able to find solutions faster and more accurate than before and it should be easy to learn to use the program.

OEE Companies 216

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P: (612) 440-5714
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OEE Companies supplies tooling, tooling components and peripheral equipment for high pressure die casters.

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- Custom shot end components
- Standard ejector pins, die springs and consumables
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Phygen's XVD surface enhancement reduces soldering, erosive die wear and minimizes heat checking on core pins and dies with a one-of-kind improved PVD process. Phygen solutions offer extended die life and improved ""as cast"" part quality for your most demanding needs and has been a leader in innovation and research advances the die casting industry. Phygen offers tailored solutions and personal customer service.

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Prolong Surface Technologies is the exclusive provider of SOLVENITE & MAXXSHOT for Die Cast Tooling. Prolong's treatments are proven to increase Die-Life. Tools run longer, require less Maintenance and die lube, saving time and money! Owned and Operated by Die Cast Experts who understand how to handle precision tooling. Any block size, fastest turnaround. SOLVENITE & MAXXSHOT fight Heat Check, Solder & Washout. Increase Shot Count and Die-Life with Prolong!

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Pyrotek® is a global manufacturing leader and technology innovator, engineering advanced systems and delivering experienced consulting services to the aluminum industry. Pyrotek has global resources and dependable local support in more than 35 countries with over 80 locations. Pyrotek's foundry team helps aluminum die casters and foundries improve metal quality and overall operational safety and performance with integrated systems for melting, metal holding, transfer, treatment, and casting.

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With a comprehensive product range and unrivalled process expertise and experience, Quaker Houghton provides the complete solution to improving your die casting performance, including DieCast iQ, an end-to-end intelligent die casting solution. We cover all your die casting needs from die release agents, plunger lubricants, application equipment, quench agents, trim lubricants, and ladle coatings to porosity sealing, metal removal fluids, greases, and fire resistant hydraulic fluids.

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REGLOPLAS is a global leader in the production of temperature control equipment and solutions for the plastics, die casting, food, and other temperature-critical industries. The company is a significant contributor to these industries' continued efficiency and quality advancements. Stringent and diverse customer requirements are met by highly specialized teams in development, production, and international sales. Regloplas owns and runs plants in Switzerland, Germany, France, the United States, and China. Additionally, the company collaborates with a global network of independent representatives in over 50 countries. The company, which was founded in 1961, is family-owned and employs 200 employees worldwide.

SAPP Inc. 321

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WWW.SAPPGROUP.COM

Established in Brescia, Italy in 1957, SAPP manufactures large to ultra large die-casting dies and components for leading powertrain and structural aluminum and magnesium foundries around the world. SAPP has manufacturing facilities worldwide with sites located in Northern Italy, Eastern Europe and the United States. With a dedicated sampling center with die cast machines from 1,600 to 4,000 tons and a vast understanding of die cast process, SAPP is your optimum choice as a casting project development partner for you next large die cast part program.

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Sinto America, Inc. is the North American group of companies of Sintokogio, Ltd., a worldwide family of companies with an international reputation for excellence in the manufacturing industry. Sinto offers innovative, top-class solutions to meet the various needs of customers and industries all over the globe. Sinto America, Inc. and its operating companies are dedicated to providing superior customer service by offering practical, cost effective and technologically advanced equipment and service solutions to a variety of industries throughout North America.

SIR Robotics Inc 306

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SIR Robotics is a Global Robotic System Integrator with more than 3,000 applications installed worldwide, providing robotic solutions to the foundry industry since 1984. From simple tending and handling units up to grinding / cutting /degating systems, SIR's unique aim is to identify the idea, the solution and the technology needed to ROBOTIZE your technological process.

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StrikoWestofen 405

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For 60+ years, StrikoWestofen has been a global leader in manufacturing melting furnaces for the light metal casting industry. Providing energy-efficient solutions for die-, gravity, sand, and low-pressure casting. Our flagship products including the StrikoMelter PurEfficiency® is the most energy efficient solution on the market while the Westomat® Duo delivers higher productivity in less space. Additionally, our IIoT solution, Monitizer® maximizes casting line uptime by gathering historical to real-time data and improves metal supply productivity.

Swiss Steel USA, Inc. 105

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Carol Stream, IL 60188-1828
United States
P: (800) 323-1233
www.swisssteel-group.com/en/group/locations/usa/swiss-steel-usa

Swiss Steel Group with headquarters in Lucerne (Switzerland) is one of the world's leading producers of special steel long products. Thanks to the exclusive use of steel scrap in electric arc furnaces, the Group is one of the most relevant companies in Europe in the circular economy and is among the market leaders in the field of sustainably produced steel - Green Steel. Swiss Steel Group has its own production and distribution entities in over 30 countries and, through its strong local presence, offers a wide range of individual solutions in the fields of engineering steel, stainless steel, and tool steel.

Techmire 128

185 Voyageur
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Canada
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TECHMIRE is the world leader in the design and manufacture of multiple-slide die-casting systems for precision components in zinc, lead and magnesium alloys, including:
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- training of customers' operators and maintenance personnel
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Techmire provides cost-effective solutions to manufacturers of die cast components to cast complex parts with faster cycle speed, higher material utilization and superior part quality.

The Schaefer Group Inc 109

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United States
P: (937) 253-3342
www.theschaefergroup.com

Uddeholm USA 227

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Elgin, IL 60124
United States
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Great process with relentless repeatability is the cornerstone of successful die casters. Visi-Trak has been building rugged, upgradable, process monitoring and closed loop hydraulic control systems for 50 years so you can access the process insight you need to control your toughest die casting problems. Today we continue to innovate with human-machine interface (HMI) software (process/casting traceability and production reporting), non-contact die temperature monitoring and web-based access to critical production data. Bring us your biggest challenges today!

voestalpine Additive Manufacturing Centers – North America — 231

11869 Cutten Road
Houston, TX 77066
United States
P: (800) 638-2520
www.voestalpine.com/highperformancemetals/canada/en/services/additive-manufacturing

voestalpine Additive Manufacturing Centers (vAMC) are your premier destination for comprehensive Additive Manufacturing (AM) services specializing in die-cast tooling. We collaborate closely with clients to deliver personalized solutions, employing our optimized design, powder, and printing methods complemented by enhanced services like heat treatment and coating. Merging cutting-edge AM expertise with a wealth of die-casting experience, we offer the optimal tooling solution. Our services encompass conformal cooling design, process simulation & consultation, turn-key tooling manufacturing, and efficient spare management.

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P: (740) 382-5600
www.yizumi-hpm.com

Yizumi and Yizumi-HPM are world wide suppliers of high pressure die casting machines and Thixomolding machines. Yizumi-HPM provides Sales, Service, Parts and Engineering in North America. Both Hot Chamber and Cold Chamber Die Castings Machines. Machines range from 100 Ton to 9000 Ton (Metric) for Die Casting Machines and Thixomolding Machines up to 5000 ton (Metric) Complete turn-key solutions are provided. Sales / Parts and Service are provided thru the Iberia, Ohio plant site for both the HPM Legacy Machines and the Yizumi built machines.

Zitai USA - Die Casting Equipment Group — 404

1191 Hilary Lane
Highland Park, IL 60035
United States
(847) 441-8500
https://www.zitai.com/en

2025 Corporate Members

CORPORATE DIE CASTERS

A

A & B Die Casting, a division of Benda Tool & Model Works, Inc.
Hercules, CA

AAM - American Axle & Manufacturing
Detroit, MI

ABCO Die Casters Inc.
Newark, NJ

ACE Precision International, LLC
Marshalltown, IA

Acme Alliance LLC
Northbrook, IL

ADC Aerospace
Buena Park, CA

Advance Die Cast LLC
Milwaukee, WI

Ahresty Wilmington Corp.
Wilmington, OH

Aludyne - Pierceton Plant
Pierceton, IN

Alupress LLC
Laurens, SC

Anderson Die Casting Co.
Englewood, CO

Anderton Castings De Monterrey
Apodaca NL

Anderton Castings LLC
Troy, TX

Apex Aluminum Die Casting Co.
Piqua, OH

Astronics PECO Inc.
Clackamas, OR

Auto Cast Inc.
Grandville, MI

B

Blue Ridge Pressure Castings
Lehighton, PA

Bocar US, Inc.
Huntsville, AL

Boyd Allenton, LLC
Allenton, WI

Bridgeport Fittings, LLC a Division of NSI Industries
Stratford, CT

C

C Palmer Die Casting Inc.
Oakland, MD

Caldwell Casting Company
Cambridge, MD

California Die Casting Inc.
Ontario, CA

Canimex Incorporated
Drummondville, QC, Canada

Cascade Die Casting Group - Atlantic
High Point, NC

Cascade Die Casting Group - Great Lakes
Sparta, MI

Cascade Die Casting Group - Group Services/ Corp. HQ
Grand Rapids, MI

Cascade Die Casting Group Inc. - Mid-State
Grand Rapids, MI

Cast Products Inc.
Norridge, IL

Cast Specialties Inc.
Warrensville Heights, OH

Centracore de Mexico
Guanjuato, Mexico

Centrifugal Castings*
Milwaukee, WI

Chicago White Metal Casting Inc.
Bensenville, IL

CMP Group Ltd.
Delta, BC, Canada

CompX Security Products
Grayslake, IL

Consolidated Metco Inc.
Clackamas, OR

Cosma Casting Michigan, Cosma International, Magna International
Battle Creek, MI

Craft Die Casting Corporation*
Chicago, IL

D

Dart Casting, Inc.
Alsip, IL

DeCardy Diecasting Co.
Chicago, IL

Deco Products Co.
Decorah, IA

DyCast Specialties Corp.
Starbuck, MN

Dyersville Die Cast
Dyersville, IA

Dynacast International, LLC - Elgin Plant
Elgin, IL

Dynacast International, LLC - Germantown Plant
Germantown, WI

Dynacast International, LLC - Global Headquarters
Charlotte, NC

Dynacast International, LLC - Lake Forest Plant
Lake Forest, CA

Dynacast Limited
Peterborough, ON, Canada

Dynacast Mexico SA De CV
Obispo, Cuautitlan, Mexico

E

Empire Die Casting
Macedonia, OH

F

FabCast Solutions SRL De CV*
San Luis Potosí Mexico

Falcon Lakeside Manufacturing
Eau Claire, MI

FCA Canada, Inc. - Etobicoke Casting Plant
Toronto, ON, Canada

Fielding Mfg.-Zinc Diecasting Inc.
Cranston, RI

Fort Recovery Industries Inc.
Fort Recovery, OH

FT Precision
Fredericktown, OH

G

G & M Die Casting Co. Inc.
Wood Dale, IL

General Die Casters Inc.
Twinsburg, OH

General Motors Corporation - Bedford Casting Operations
Bedford, IN

General Motors Corporation - R&D Technical Center
Warren, MI

GF Casting Solutions*
Augusta, GA

Gibbs Die Casting Corporation
Henderson, KY

Gnutti Carlo Canada Ltd. Light Metals Division
Huron Park, ON, Canada

Greenfield Industries Inc.
Freeport, NY

H

Heritage Die Casting Co.
Denver, CO

HF Manufacturing*
Union, MO

Honda De Mexico - Celaya Engine Plant
Celaya, Mexico

Honda De Mexico - Transmissions
Celaya, Mexico

Honda Development Manufacturing of America - Alabama Auto Plant - ALDC
Lincoln, AL

Honda Development Manufacturing of America - Anna Engine Plant: ALDC
Anna, OH

Honda Development Manufacturing of America - Auto Development Center: Aluminum Division
Raymond, OH

Honda Development Manufacturing of America - Production Engineering
Anna, OH

Honda Development Manufacturing of America - TMPG: ALDC
Tallapoosa, GA

Honda Development Manufacturing of America - TMPO: ALDC
Russells Point, OH

Honda North America - Purchasing
Marysville, OH

Honda of Canada Mfg. Inc. - Engine Plant: ALDC
Alliston, ON, Canada

Honda Power Equipment - Aluminum Die Cast
Swepsonville, NC

Hyatt Die Cast & Engineering Corporation
Cypress, CA

Hyundai Wia Mexico*
Nuevo Leon, Mexico

J

J&M Precision Die Casting
Elyria, OH

JTEKT Automotive*
White Pine, TN

K

Kamtek Casting, Inc. - a Division of Magna International
Birmingham, AL

Kason Industries Inc.
Shenandoah, GA

Kinetic Die Casting Inc.*
North Hollywood, CA

Kobelt Manufacturing Company Limited
Surrey, BC, Canada

Kwikset Corporation
Denison, TX

L

Lakeside Casting Solutions
Monroe City, MO

Lamar Tool & Die Casting Inc.*
Modesto, CA

Le Sueur Incorporated
Le Sueur, MN

Leech Industries - Division of Leech Holdings, LLC*
Meadville, PA

Linamar Light Metals - Mills River (LLM-MR)
Arden, NC

M

Madison Precision Products
Madison, IN

Madison-Kipp Corp.
Madison, WI

Madison-Kipp Corp. - Richmond
Richmond, IN

Mag-Tec Casting Corp.
Jackson, MI

Marchesi Light Alloy
Jalisco, Mexico

Mercury Castings - Div. of Mercury Marine, WI
Fond Du Lac, WI

Meridian Lightweight Technologies Corporate Head Office
Plymouth, MI

Meridian Lightweight Technologies Inc. - GTC
Strathroy, ON, Canada

Meridian Technologies Inc. - Magnesium Products of America
Eaton Rapids, MI

Meridian Technologies Mexico
Ramos Arizpe, Coahuila, Mexico

Michigan Automotive Compressor, Inc.
Parma, MI

Michigan Die Casting LLC
Dowagiac, MI

Midwest Die Casting Corp.
Milwaukee, WI

Millison Casting Technology LLC*
Sallisaw, OK

Miniature Casting Corp.
Cranston, RI

Mumford Companies - Metal Casting Division
Chicago, IL

N

Nebraska Aluminum Castings Inc.
Hastings, NE

Nemak Alabama
Sylacauga, AL

Nemak Kentucky*
Glasgow, KY

Nemak Wisconsin
Sheboygan, WI

New GLDC LLC
Muskegon, MI

Northern Iowa Die Casting Inc.
Lake Park, IA

O

Omni Die Casting Inc.
Massillon, OH

Ozark Die Casting Co.
Saint Clair, MO

P

Pace Industries, Cambridge
North Billerica, MA

Pace Industries, Chihuahua
Chihuahua, Mexico

Pace Industries, Corporate Headquarters
Rochester, MI

Pace Industries, Grafton
Grafton, WI

Pace Industries, Harrison Aluminum
Harrison, AR

Pace Industries, Harrison Zinc
Harrison, AR

Pace Industries, Jackson
Jackson, TN

Pace Industries, Latrobe
Loyalhanna, PA

Pace Industries, Maple Lake
Maple Lake, MN

Pace Industries, Port City
Muskegon, MI

Pace Industries, Saltillo
Saltillo, Mexico

Pacific Die Casting Corporation
Vancouver, WA

PHB - Die Casting Div.
Fairview, PA

PIAD Precision Casting Corporation*
Greensburg, PA

Polaris Inc. *
Monticello, MN

Prestige Casting Inc.
Englewood, CO

Production Castings Inc.
Fenton, MO

Promatek Research Center - a Division of Cosma Part of Magna Intl.
Brampton, ON Canada

R

RCM Industries Inc. - Aallied Die Casting Co. of Franklin Park
Franklin Park, IL

RCM Industries Inc. - Aallied Die Casting Co. of NC
Rutherfordton, NC

RCM Industries Inc. -Corporate Headquarters
Franklin Park, IL

RCM Industries Inc. - Imperial Die Casting Co.
Liberty, SC

RCM Industries Inc. - Inland Die Casting Co.
Wheeling, IL

Rheocast Company, A Division of The Fall River Group, Inc.
Germantown, WI

Ryobi Die Casting Mexico
Irapuato, Guanajuato, Mexico

Ryobi Die Casting USA Inc.
Shelbyville, IN

S

Schlage De Mexico
Baja California, Mexico

SDC Incorporated
Sullivan, MO

Shawnee Specialties Incorporated
Eau Claire, MI

Simalex Manufacturing Company Ltd.
Langley, BC, Canada

SKS Die Casting & Machining Inc.
Alameda, CA

Soldy Manufacturing Company
Schiller Park, IL

SpaceX
Hawthorne, CA

Spartan Light Metal Products Inc.
Sparta, IL

Spartan Light Metal Products LLC
Hannibal, MO

Spartan Light Metal Products -Corporate Office
Hannibal, MO

Spartan Light Metal Products LLC
Mexico, MO

Spartan Light Metal Products - LMP Plant
Mexico, MO

Stellantis - Kokomo Casting Plant
Yorktown, IN

STRATTEC Component Solutions
Milwaukee, WI

Sundaram - Clayton Limited
Deerfield, IN

T

TAC Manufacturing Incorporated
Jackson, MI

Team Industries - Detroit Lakes
Detroit Lakes, MN

Technical Die-Casting Inc.
Winona, MN

TESLA Motors
Lathrop, CA

Top Die Casting Company
South Beloit, IL

TRU Die Cast Corp.
New Troy, MI

Twin City Die Castings Co.
Minneapolis, MN

Twin City Die Castings Co.
Monticello, MN

Twin City Die Castings Co.
Watertown, SD

Twinsburg Manufacturing Facility, a Division of AAM
Twinsburg, OH

W

Walker Die Casting
Lewisburg, TN

Whitehead Die Casting Inc.
Gainesville, GA

Y

Yamada North America
South Charleston, OH

CORPORATE OEM

H

Humanscale Corporation *
Piscataway, NJ

R

Robert Bosch *
Guadalajara, Jalisco, Mexico

CORPORATE SUPPLIERS

A

AarKel Tool & Die Inc.
Wallaceburg, ON, Canada

Absolute Machinery Corporation
Worcester, MA

Alcoa USA Corp.
Alcoa, TN

Allied Metal Co.
Chicago, IL

Anviloy By Astaras Inc.
Largo, FL

Audubon Metals LLC
Henderson, KY

Automation Systems & Design
Dayton, OH

B

B & L Information Systems Inc.
Bridgman, MI

Badger Metal Tech Inc.
Jackson, WI

Bedford Machine & Tool Inc.
Bedford, IN

BGH Specialty Steel*
Macedonia, OH

Bholster Tech*
Toronto, ON, Canada

Blue Ridge Community College
Flat Rock, NC

Bodycote Thermal Processing Inc.
Sturtevant, WI

BOLE Machinery *
Stow, OH

BOHLER
Walnut, CA

Brach Machine
Batavia, NY

Brondolin North America
Benton Harbor, MI

BuhlerPrince Inc.
Holland, MI

C

Cal-Miser Aluminum Systems Inc.
Rock Island, IL

Castec Corporation
Indianapolis, IN

Castool Heat Treat
Newmarket, ON, Canada

Castool Tooling Systems
Uxbridge, ON, Canada

Chem-Trend Ltd. Partnership
Howell, MI

Colosio Die-Casting Machines & Accessories
Minneapolis, MN

Conticast Hormesa LLC
Weston, FL

Cottingham & Butler
Dubuque, IA

Custom Alloy Sales, Inc.
City of Industry, CA

D

Daido Steel Co. Ltd.
Hebron, KY

Daiichi Jitsugyo (America) Inc.
Wood Dale, IL

Delaware Dynamics LLC*
Muncie, IN

Die Cast Press Manufacturing Co.
Paw Paw, MI

Diehl Tool Steel
Cincinnati, OH

Die-Pro LLC
Sheboygan Falls, WI

DieTech & Engineering Inc.
Grand Rapids, MI

DISA Group
LaGrange, GA

DME Company
Madison Heights, MI

DTP Diecast Solutions LLC
Florence, AL

Dynamo Inc.
LaGrange, IL

E

Eastern Alloys Inc.
Maybrook, NY

EcoShot, Inc.
Indianapolis, IN

EKK, Inc.
Farmington Hills, MI

Ellwood Specialty Steel
New Castle, PA

Exco Engineering
Newmarket, ON, Canada

F

Fill USA, Inc. *
Plymouth, MI

Finkl Steel
Chicago, IL

Finkl Steel - Sorel
St-Joseph-De-Sorel, QC, Canada

Fisa North America Inc.
Elk Grove Village, IL

Flow Science
Santa Fe, NM

FONDAREX USA
Schoolcraft, MI

Frech USA Inc.
Michigan City, IN

Fremar Industries
Brunswick, OH

G

General Die & Engineering Inc.*
Grand Rapids, MI

Godfrey & Wing Inc.
Aurora, OH

H

HA International, LLC
Westmont, IL

Hanson International *
Saint Joseph, MI

H Gerber Consulting
Evanston, IL

Henkel Corporation
Madison Heights, MI

Herco, LLC
Auburn Hills, MI

High Temperature Systems Inc.
Chagrin Falls, OH

Hildreth Mfg LLC
Marion, OH

Hill & Griffith Co.
Cincinnati, OH

HTS International Corporation
Knoxville, TN

I

IDRA North America
Kokomo, IN

IECI Srl
Haltom City, TX

Imperial Zinc Corp. &
Imperial Aluminum Corp.
Chicago, IL

Inductotherm Corp.
Rancocas, NJ

Industrial Innovations
Grandville, MI

Italpresse Gauss
Lagrange, GA

J

J&S Chemical Corp.
Canton, GA

K

Kind Specialty Alloys LLC
Youngstown, OH

Kirby Metal Recycling
Clinton, MD

L

LaFrance Manufacturing Co.
Maryland Heights, MO

LK World
Edinburgh, IN

Lethiguel USA
Rogers, MN

LiCON Mt LP
Dexter, MI

LIFT - American Lightweight Materials
Manufacturing Innovation Institute*
Detroit, MI

Lincoln Electric Automation
Columbus, OH

Lindberg MPH
Riverside, MI

Luke Engineering & Manufacturing Co.
Wadsworth, OH

M

M & I Machine
Benton Harbor, MI

MAGMA Foundry Technologies Inc.
Schaumburg, IL

Mangas-AarKel Tool and Engineering Inc.
Muscle Shoals, AL

Meitler Consulting Inc.
Tonganoxie, KS

Metal Conversions Ltd.
Mansfield, OH

Metal Mechanics Inc.
Schoolcraft, MI

Metalworks Recycle-Reload, LLC
Bowling Green, KY

Mokon
Buffalo, NY

MORESCO USA Inc.
Fountain Inn, SC

N

New Brunswick Plating Inc.
New Brunswick, NJ

Nexthermal Corporation
Battle Creek, MI

Norican Group
LaGrange, GA

Novacast Solutions USA Inc.
Naperville, IL

O

OEE Companies
North Oaks, MN

Oerlikon Balzers Coating USA
Rock Hill, SC

The Oilgear Company*
Traverse City, MI

P

Patterson Mold & Tool
Saint Charles, MO

Paulo
Saint Louis, MO

PCS Company
Fraser, MI

Phygen Coatings Inc.
Minneapolis, MN

PremierMetals *
Highland Park, IL

Progressive Components
Wauconda, IL

Prolong Surface Technologies
West Chicago, IL

Pyrotek Inc.
Columbia City, IN

Q

Quaker Houghton
Dayton, OH

R

Regloplas Corporation
Sodus, MI

Rochester Aluminum Smelting Canada Ltd.
Concord, ON, Canada

Rohde Brothers, Inc.*
Plymouth, WI

Rosler Metal Finishing USA LLC*
Battle Creek, MI

S

Sandvik Machining Solutions AB*
Mebane, NC

Sanji Industries
Celina, OH

Sanyo Special Steel USA Inc.
New York, NY

SAPP Inc.
Edinburgh, IN

The Schaefer Group Inc.
Dayton, OH

Shibaura Machine Company, America
Elk Grove Village, IL

SIJ Metal Ravne - SIJ Americas
Hazlet, NJ

Sinto America
Grand Ledge, MI

SIR Robotics, Inc.*
Sacramento, CA

Socitec US LLC*
Broadview, IL

Spectro Alloys Corp.
Rosemount, MN

Storvik Group*
Tempe, AZ

Stotek Inc. *
Pewaukee, WI

StrikoWestofen America
Kalamazoo, MI

Sun Metalon
Cambridge, MA

Sun Steel Treating, Inc.
South Lyon, MI

Superior Aluminum Alloys
New Haven, IN

Swiss Steel Canada, Inc.
Mississauga, ON, Canada

Swiss Steel USA, Inc.
Carol Stream, IL

T

Techmire
Pointe-Claire, QC, Canada

Therm-Tech of Waukesha
Waukesha, WI

Titus Group / Titus Technologies*
Columbia City, IN

TOYO Machine America, LLC
The Villages, FL

Transmet Corporation*
Columbus, OH

Trebi North America Inc.*
Muncie, IN

Tvarit GmbH *
Ottawa, IL

U

UBE Machinery Inc.
Ann Arbor, MI

Uddeholm USA
Elgin, IL

Ultraseal America Inc.
Ann Arbor, MI

United Tool and Mold*
Liberty, SC

V

Valor Alloys, LLC
Houston, TX

Visi-Trak Worldwide LLC
Valley View, OH

voestalpine Additive Manufacturing Centre Ltd.
Mississauga, ON, Canada

voestalpine Eifeler Coatings Technology
Saint Charles, IL

voestalpine High Performance Metals Corp.
Elgin, IL

W

The Wasmer Company*
Sheboygan, WI

Wheelabrator Group
LaGrange, GA

Y

YIZUMI-HPM Corp.
Iberia, OH

Yushiro Manufacturing America, Inc.
Shelbyville, IN

Z

Zeman Tool & MFG*
Waukesha, WI

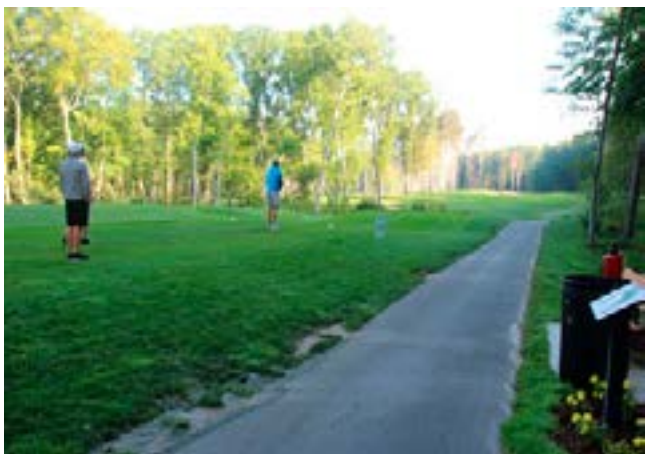
Zitai USA - Die Casting Equipment Group
Highland Park, IL

*New Corporate Member Companies

Chapter News & New Members

Chapter 3 - Michigan

August 16 started with a bang! A thunderstorm rolled through and relocated registration, doughnuts, and coffee to the pavilion. The storm cleared by tee off time, and 192 golfers had a great day! Golfers from all over came to West Michigan to help support our Chapter. At 8:30 (right on time) the parade of golf carts scattered around four of the five courses to their designated tee boxes. Mulligans and helpful tosses ensured that everyone had a great time! The night before was capped off with our long-standing Vendor Night / Reception at the "back bar" at Gippers Sports Bar, where any company that sponsored a hole was able to display their information.



***Chapter 3** – Golfers Enjoy the sunshine, just like they have done for many, many years.*

The Sponsors!

The golf outing was supported by Major event sponsors, meal sponsors, keg sponsors, and many hole sponsors, Chapter 3 appreciates their dedication and support of our Chapter, and our industry. The outing would not be possible without them. Due to the exceptionally generous support, the outing affords us the ability to support our die casters via; underwriting two to three NADCA classes a year for chapter members, awarding scholarships to our chapter's member's dependent students, continue funding of our endowment for future scholarships at WMU, support the chapters participation in the NADCA Washington Conference which reports our chapter's issues to Congress, and allows our chapter to offer complementary business / dinner meetings for all chapter members. Please refer to our NADCA Chapter 3 website www.nadcachapter3.org for specific details regarding our scholarship program, as well as a complete list of our many wonderful sponsors.

***Chapter 3** – Golfers Enjoy one of the many tough holes at Saskatoon Golf Club in Alto Michigan.*

New Members: *Demitrios Cortez; Andrew DeVries, Cascade Die Casting Group - Great Lakes; Anna Donaldson, Diane Moss, both with The Oilgear Company; Haley Hamstra; Wenjun Li, Meridian Technologies Inc. - Magnesium Products of America; Sam Riggs*

Chapter 5 - Chicago

Chapter 5 NADCA Event Recap – State of the Industry

Chapter 5 of the North American Die Casting Association held its State of the Industry meeting at Wildwood Tavern in Schaumburg, Illinois. The evening featured a fantastic dinner and an insightful presentation by NADCA President Mike Meyer.

Mike provided a comprehensive overview of the current economic landscape and shared valuable insights into what we may expect in the coming years. He also highlighted the critical resources NADCA offers to help members navigate the ongoing economic restructuring. A key topic of discussion was the potential impact of tariffs on our industry—a timely and important conversation for all in attendance.

As we move through 2025, the information shared will be an asset to all of us in the die casting community.

Looking ahead, mark your calendars: NADCA will host a training on Die Casting Defects on May 21, 2025, presented and instructed by Paul Brancaleon. More details to follow.

New Members: *Serleaf Barry, Charles H. Goldfuss, both with Northern Iowa Die Casting Inc.; Walt Noonan, Jr., Leahy-Wolf Lubricants; Edgar Salinas, Craft Die Casting Incorporated*

Chapter 6 - Cleveland

NADCA Chapter 6 held our first gathering of the year on February 18th in Fairlawn, Ohio. We were fortunate enough to be joined by Paul Brancaleon, NADCA's Executive Director of Research, Education, and Marketing. Paul presented the State of the North American Die Casting Industry to our group. The presentation was very informative and Paul fielded questions from the audience to bring even more clarity to subject matter. We were all very pleased and encouraged by seeing new faces at our meeting. We welcome anyone that would like to attend our events throughout the year and recommend that you contact Leo Gruber of General Die Casters, Inc (lgruber@generaldie.com) in order to be put on our mailing list for future get-togethers.

***Chapter 6** – Attendees enjoy sitting down with NADCA's Paul Brancaleon after his State of the Industry presentation.*

Chapter 6 will hold its annual Golf outing on Thursday June 19th, 2025 at Coppertop Golf Club in Valley City, Ohio. Probably our most popular event of the year, the Golf Outing is an excellent opportunity to trade your steel toed boots for golf spikes and enjoy the company and camaraderie of those in our shared industry. The format is an 18 hole four man scramble with continental breakfast, lunch and dinner provided. There will also be individual hole challenges with prizes and all participants will receive a door prize. Anyone who would like to participate is welcome to attend. Please reach out to Todd Jackovitz (tjackovitz@generaldie.com) to receive information on how to sign up.

Chapter 7 - New York

Please visit www.diecasting.org and click on Chapters under the Become a Member tab for details on upcoming events.

New Members: *Robert Hoover, East Penn Manufacturing*

Chapter 10 - Ontario

Please visit www.diecasting.org and click on Chapters under the Become a Member tab for details on upcoming events.

New Members: *Richard Myers, 1 Source Design Ltd.; Mark Valdmanis, Brukar Inc.*

Chapter 12 - Wisconsin

On February 13th, Chapter 12 hosted a 'State of the Industry' talk by Beau Glim, Project Manager for NADCA. The meeting was at Delafield Brewhaus and was attended by 23 chapter members representing both die cast foundries and suppliers to the industry. There was chapter networking and dinner ahead of the talk.

***Chapter 12** – Beau Glim, Project Manager for NADCA, reviewed the State of the Industry for die casting at Chapter 12's February meeting.*

***Chapter 12** – Chapter networking and dinner before the State of the Industry talk.*

Beau provided a thorough review of current socioeconomic trends influencing the industry such as the new US government administration's regulations and trade policies. Beau also discussed speculation for the North American economy and major end markets to predict growth or decline in the die casting industry. The presentation sparked some great questions and discussions in the group.

Upcoming events for Chapter 12 include a Spring Seminar in May. Details of these events as they are finalized can be found at: www.nadca12.org.

New Members: *Craig Bahr, Rohde Brothers, Inc.; Connor J. Buchanan, Tri-State Industries; Mitchell Hainstock; Todd Hammond, Erik Johnsen, Rudy McCormick, Rohde Brothers, Inc.; Michaelle Nourse, Timothy Wasmer, The Wasmer Company*

Chapter 14 - S. Ohio

As promised a great talk and tour was presented by the gracious staff at the Schaefer Group. Special thanks to Jeff Zurface for the informative info session, and to Vicki Priaulx for handling the details of the visit and the fine dining provided by her caterer.

***Chapter 14** – A warm welcome was provided to Chapter 14 by the Schaefer Team.*

***Chapter 14** – Attendees mingle with one another before the BBQ buffet dinner.*

A nice group pushed through Ohio's bad cold and flu system and made the drive to the Schaefer Group's beautiful new building. The attendees were awarded for their attendance via an excellent BBQ buffet dinner compliments of the Schaefer Group.

***Chapter 14** – Jeff Zurface, National Sales Manager, provided the agenda for the evening's events along with an informative session on the Schaefer Group's latest technology offerings.*

Chapter 14 - *Guests were provided with an informative, and impressive tour of the Schaefer's group newer and larger facility.*

Chapter 14 held their March session at Smith's Boathouse Restaurant. NADCA's own Beau Glim made the trip down from Arlington Heights to educate our Chaper on NADCA's State of the Industry.

Chapter 14 - *NADCA's Beau Glim gives the State of the Industry presentation.*

Group discussions started on slide one and continued throughout Beau's talk. In fact we forced him to go over his time allotment. We even had the lights flickered in our meeting room as the restaurant was wanting to close-LOL!

Chapter 14 - *Picture of the appreciative, but chatty audience.*

Chapter 14 - *L-R- Scott Frens Fort Recovery Industries, NADCA Speaker Beau Glim, Kristopher Hoffman Buhler, David White D and S Consulting LLC, Monte Swigart Eco-Shot INC; not shown but in attendance: Pat Zimmerman.*

Chapter 14 looks forward to you joining us for our annual golf outing at Pipestone Golf Course on June 5th. For more golf outing information contact Scott Frens at Fort Recovery Industries, Inc. @ scottf@fortrecoveryindustries.com.

Chapter 15 - Southeastern

On March 31, the Aloft Greenville in Greenville, SC, hosted a successful chapter event featuring the State of the Die Casting Industry presentation, delivered by NADCA Project Manager, Beau Glim. This marked the first chapter event in the area in several years, drawing a strong turnout of industry professionals eager to reconnect and gain insight into current trends and projections within the die casting sector. The evening fostered great energy and engagement, with attendees actively participating in a gamified portion of the presentation—where a few lucky winners took home prizes.

Chapter 15 - *Beau Glim gives his State of the Industy presentation.*

In addition to the informative session, guests enjoyed a dinner that offered further opportunities for networking and conversation. The positive response to the event signaled a strong interest in revitalizing chapter activity in the region. Building on this momentum, plans are already underway to bring a technical course to the Chapter 15 area

later this year, continuing to support professional development and industry connection for local members.

New Members: *Neel Kumar, Sandvik Additive Manufacturing; Institute of Mechanical Industry Information (EBSCO)*

Chapter 16 - Minnesota

Please visit www.diecasting.org and click on Chapters under the Become a Member tab for details on upcoming events.

New Members: *Larry Coats, Northern Iowa Die Casting Inc.*

Chapter 17 - St. Louis

March 26th was a wonderful day for Chapter 17!! We started the day with Educational Seminar Thermal Design and Control presented by National's Paul Brancaleon. We appreciate Paul's time and effort very much. In the evening we hosted our bi-annual Supplier's Night. Nearly 150 members, guests and suppliers convened to make this edition one of our best ever. The Chapter 17 Board is grateful for the wonderful turnout, and we especially thank the suppliers that set up product and service displays. It was nice to have National's Athena Catlett in attendance. Special congratulations to Chapter 17 Chairman Jeff Chism, Finkl Steel for his induction into the Chapter 17 Hall of Fame. Jeff has been the chairman for several years and is spearheading our robust return after all the Covid nonsense. Congratulations on a well-deserved honor Jeff and thank you for your efforts!

Please watch your email for invitations to upcoming events: Sporting Clays shoot on Friday, June 7th at Blackhawk in St. Charles County and the Alan Loeffelman Memorial Golf Outing on Friday, September 20th at Crescent Farms Golf Club in Eureka, MO.

New Members: *Garrett Christian Lange, Missouri University of Science and Technology; Christian Mendoza, Millison Casting Technology LLC*

Chapter 25 - Indiana

Please visit www.diecasting.org and click on Chapters under the Become a Member tab for details on upcoming events.

New Members: *Scott Brown Eldon Cantu, Jack Hewitt all with Ryobi Die Casting USA Inc.*

Chapter 30 - Los Angeles

The 2025 NADCA Chapter 30 Vendors Night was held at Rio Hondo Golf and Event Center (Downey, CA) on March 13th. Over 120 attendees participated in the successful event. The 2024 NADCA Chapter 30 Distinguished Service Award was bestowed on Steve Dathe of Benda Tool/A&B Die Casting (Hercules, CA). The evening also served as the annual meeting for the chapter. The event is co-hosted with the California Chapter of AFS and funds raised at the event help local metal casting students.

***Chapter 30** – NADCA Chapter 30 Vendors Night.*

***Chapter 30** – NADCA Chapter 30 Chair Shane Leggett from Hyatt Die Cast with award recipient Steve Dathe.*

Chapter 30 *- Award Recipient Steve Dathe with Shane Leggett and James Simonelli.*

Chapter 30 *- Vendors Night Group Photo with Award Recipient Steve Dathe.*

New Members: *Dana Chin, Glenair Incorporated; Kyle Davis, Whelen Engineering; Juan Francisco Rodriguez Montelongo, Meridian Technologies Mexico; Bob Thomas, Kinetic Die Casting Inc.*

Industry News

BARODA'S LAKESHORE DIE CAST ACQUIRES TIGMASTER

Baroda, MI - Baroda-based Tigmaster Company is changing hands. The longstanding provider of welding, fabrication, and machining services has been purchased by Lakeshore Die Cast owner Adam Schaller of Baroda.

According to the sale announcement, Tigmaster Co. was founded in 1981 by Jeff Sukupchak and began as a small welding service provider to the local tool and die industry. Over the decades, the company expanded its capabilities to include welding, fabrication, precision sheet metal, custom cutting, and machining.

They moved to their current location in 1985 and have since added on six times. They are currently a 42,800 square foot modern fabrication house equipped with a full range of CNC-programmable equipment.

With more than 40 employees, Tigmaster is seen as a cornerstone of the Baroda business community.

Schaller is currently the owner of Lakeshore Die Cast, a local leader in aluminum and zinc die casting. Lakeshore Die Cast was founded in 1959 by Oscar Zilke. Company control transitioned to the Schaller family in 1979.

The acquisition of Tigmaster is said to add to Lakeshore Die Cast's capabilities and solidify its position as a key player in the region's manufacturing sector.

RAM MOUNTS TO OPEN NEW DIE CASTING AND POWDER COATING FACILITY IN WASHINGTON

Seattle, WA - RAM Mounts has announced plans to open a new 60,000-square-foot manufacturing facility in Kelso, Washington. The company, which specializes in rugged mounting solutions, has invested in this new facility to focus on aluminum die casting and powder coating. This expansion is a direct response to increasing demand and aims to enhance production efficiency.

The Seattle facilities, previously home to the die casting and powder coating operations, will now feature advanced fabrication capabilities, such as CNC laser cutting, laser welding, CNC press braking, and CNC pipe bending machines. According to the company, these upgrades will expand RAM Mounts' product range while ensuring continued precision and durability.

In a recent quote, Jeff Carnevali, President and CEO of RAM Mounts, said, "We are thrilled to expand our operations in both Kelso and Seattle, bringing jobs to the areas and allowing us to better serve our customers as we continue growing. These new buildings provide much-needed space for increased production and demonstrate our commitment to the community and our employees."

Chad Remmers, COO of RAM Mounts, added, "We're proud to be a part of the Kelso and Seattle communities and look forward to continuing our investment in these areas by creating jobs for local residents."

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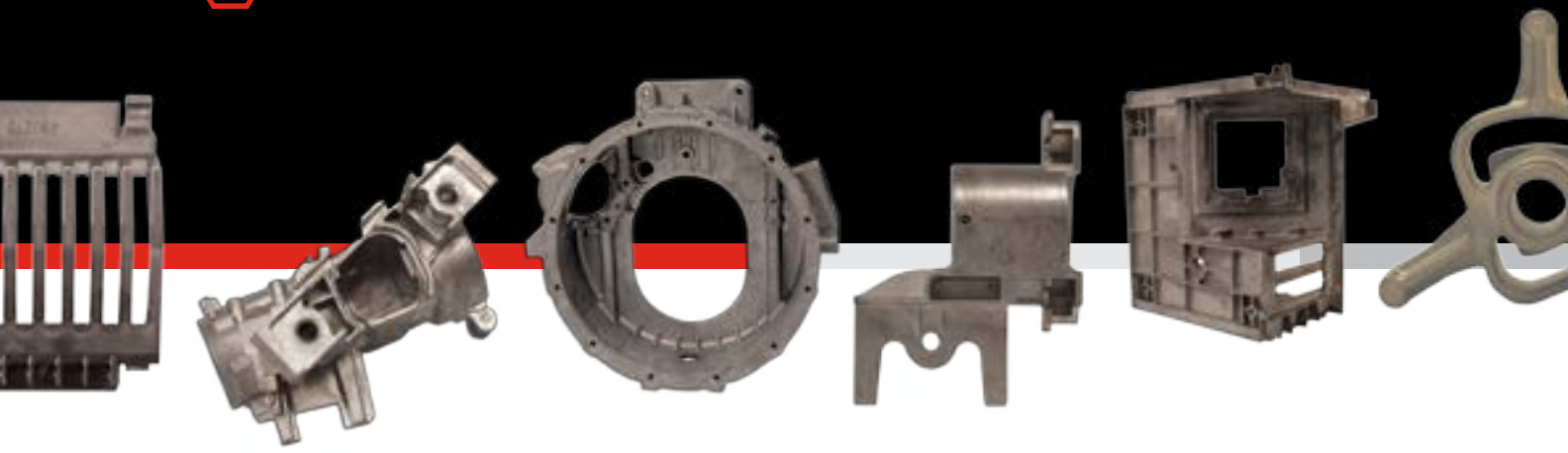

NORTH AMERICAN DIE CASTING ASSOCIATION

Corporate Membership

The North American Die Casting Association (NADCA) is the sole trade and professional society of the die casting industry. Membership consists of both corporate and individual members from over 1000 companies located in every geographic region of the United States, Canada and Mexico.

Why do so many companies invest in NADCA Corporate Membership?

- To Stay Current on News/Technology
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- Visibility to OEMs
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NADCA
North American Die Casting Association
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www.diecasting.org

People in Die Casting

NADCA Remembers

Robert A. Hauch Sr.
1935 -2025

Robert A. "Bob" Hauch Sr., 89, of Benton Harbor passed away on Tuesday, March 11, 2025, at Corewell Health Merlin & Carolyn Hanson Hospice Center, Stevensville. Those wishing to leave an online condolence may do so at www.starks-menchinger.com.

Bob was born on May 19, 1935, in New Troy, to Adolph and Caroline (Hebner) Hauch. Before graduation from Berrien Springs High School, Bob began working at Shrader's Grocery Store as a bag boy; this is where he met his future wife, Patricia "Pat" James. The two eventually married on April 6, 1956, in Clemons, Ga. Bob proudly served our country by enlisting in the U.S. Army during the Korean War.

Professionally, Bob started his employment in the Die Cast industry by working at Duwell as a drafting engineer. In 1969, he and his family moved to Tennessee, and he worked for Walker Die Cast for two years. They relocated to Stevensville where he began working for Precision Tool & Die and later Premiere Tool & Die in Berrien Springs. Bob later bought into United Die Cast in Baroda and then shortly after he started his own business in Benton Harbor called Product Research & Development (PR+D) which he owned for 30 years before he sold it. Not quite ready for retirement, Bob developed another business, Molten Enterprise, which he and his son ran until they dissolved the company, having Bob retire at 80 years old.

When he wasn't working or starting businesses, Bob enjoyed driving around in his little red collectable convertible, camping as a family, golfing at Blossom Trails and Lake Michigan Hills, fishing up north and spending time at the St. Joseph-Lincoln Senior Center, where he won first place in the 2024 golf league at Pebblewood Golf Course in Bridgman. He was a former member and past president of the Congregation of the Good Shepherd Lutheran Church and past Boy's Pioneer Scout Leader at St. Paul's Lutheran Church. He was a proud member of Trinity Lutheran Church and American Legion Post 105 in Benton Harbor.

Bob is survived by his son, Robert Hauch Jr.; brother, Lee (Susan) Hauch; and nephew, Harry (Cheryl) Hauch Jr. He was preceded in death by his parents: Adolph and Caroline; loving wife of 66 years, Pat; son, Terry Hauch; and brother, Harry (Barbara) Hauch Sr.

Got Some News? We'd Love to Hear It!

Do you have some interesting industry news or promotions within your company that you would like to announce?

Send it over! Industry news and announcements are always welcome and encouraged.

Best of all, it's free!

Send your news or announcements to
Athena Catlett - catlett@diecasting.org

New Products, Services & Solutions

Maximize Tool Performance with Castool Heat Treat — Precision You Can Trust

When it comes to heat treatment and nitriding, precision isn't optional—it's everything. At Castool Heat Treat, we specialize in unlocking the full potential of your tooling through advanced in-house heat treatment and nitriding services, especially for large and complex tooling like gigacasting inserts over 6,000 lbs.

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But we don't stop there. Our nitriding process further enhances tool performance, increasing surface hardness and wear resistance to significantly extend tool life. Each treatment is fine-tuned and monitored in real-time—ensuring the right nitride layer thickness, a uniform white layer, and a robust diffusion zone, all customized to your tool's exact requirements.

What sets Castool apart? Everything is done in-house—from heat treatment and nitriding to full metallurgical inspection. This gives you faster turnaround times, reduced risk of failure, and total confidence in every tool you send us.

Whether you need precision treatment for extrusion, die casting, or gigacasting tools, Castool Heat Treat delivers quality, consistency, and performance at a level others simply can't match.

Partner with Castool and experience tooling that performs better, lasts longer, and gives your operation a true competitive edge.

Ready to elevate your tooling? Contact Castool Heat Treat sales@castool.com.

Don't See Your Company's Products in DCE?

All NADCA Corporate Members are allowed one complimentary listing per issue and NADCA Individual Members may submit one free listing per year. For all others, there is a small fee. Don't delay, submit today! Visit www.diecasting.org/dce/products to learn how to put your company's new products, services and solutions in print.

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Classified advertisements are accepted for publication in *DIE CASTING ENGINEER* for sale of equipment and notice of services and employment available or wanted. The net rate is $60 per inch or fraction thereof (for NADCA members, individual and corporate) and $70 per inch for all others, in the $2^1/_8$ in. wide column, payable with order. Please make remittance payable to *DIE CASTING ENGINEER*, and send with copy to: NADCA, 3250 N. Arlington Heights Rd., Ste. 101, Arlington Heights, IL 60004. Contact Athena Catlett at 847.808.3153 or email catlett@diecasting.org.

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