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DIE CASTING ENGINEER

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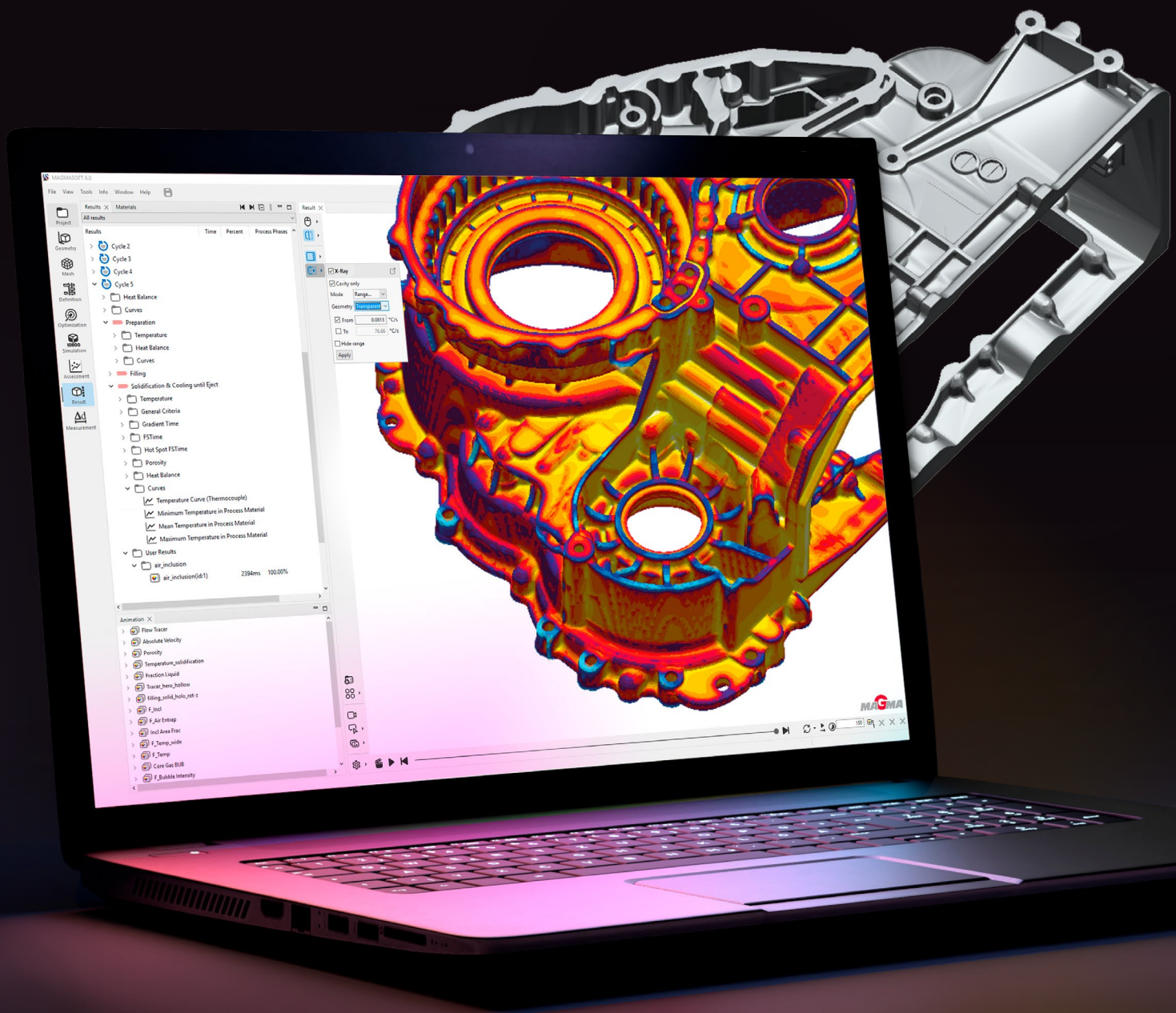

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NADCA
NORTH AMERICAN DIE CASTING ASSOCIATION

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FEATURES

DEPARTMENTS

PUBLISHER
Mike Meyer

EDITOR
Andrew Ryzner

ADVERTISING & PROMOTIONS MANAGER
Athena Catlett, DES

EDUCATION & MEETINGS MANAGER
Melisa Ryzner, CMP, CMM

EXECUTIVE OFFICES
3250 N. Arlington Heights Rd., Suite 101
Arlington Heights, Illinois 60004

Phone: 847.279.0001
Fax: 847.279.0002
Email: dce@diecasting.org
Web site: www.diecasting.org/dce

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Chairman's Note

2025 Will Be a Year of Fresh Opportunities and Challenges

Mark Los, *Key Account Executive*
BuhlerPrince, Inc.
NADCA Chairman
mark.los@buhlergroup.com

Happy New Year! Welcome to another year full of fresh opportunities and challenges!

The changing global political and economic climate will certainly have an impact on NADCA's members and the industries we serve. Changes in the USA economic and regulatory environment could bring new opportunities for North American manufacturing.

Proposed economic policy changes have included a wide-ranging list of potential pro-business initiatives including lower corporate tax rates, reinstating R&D tax credits, bonus depreciation, auto loan interest deductions, removal of state and local tax caps for deductibility, no tax on tips or over time, and of course tariffs, to name a few.

As always, Congress will need to develop the tax laws to support some of these proposals, while others will be enacted via executive order, but expect a fiscal environment that is designed to support USA businesses.

Proposed energy policy changes will be designed to lower energy costs through increased supply and end some of the "Green New Deal" regulatory directives and mandates.

The challenge for the industry will be this: How do we navigate the policy shifts implemented today and yet remain prepared for policy pendulum swings in the future? Making the right decisions in a "VUCA" world will be a challenge for all leaders.

Leadership needs to clearly understand the changing policies, the implications for their businesses, and a plan to win in a game with changing rules.

New directions for economic policies such as tax laws will change the return on investment calculations for new equipment. Is now the time to invest in equipment/process modernization?

Tariffs may change your business's sourcing strategies as well as your customer's sourcing strategies. Is now the time to expand market reach into industries that are looking for new sources due to the cost impact of tariffs? Are there previously lost business opportunities or ignored market segments now worth revisiting?

Successful corporate strategies in 2025 will require a clear understanding of the changing environment and a nimble decision-making process to take advantage of the new opportunities presented by our changing economic and political landscape.

One of the benefits that NADCA offers to its members through our Government Affairs activities is being a voice for the die casting industry in Washington, D.C. Policymakers, regulators, and lawmakers face decisions every day that affect manufacturers of all sizes and in every sector. NADCA works with members of Congress, senior agency officials, and the White House to ensure die casters are represented when policymakers take action. Regular updates are provided to members to help them understand proposed government actions that affect our businesses. Join the webinars and attend the chapter visits presented by NADCA to stay current on these issues.

Also consider attending the next NADCA Government Affairs annual briefing in Washington D.C. from June 10-11, 2025.

"One of the benefits that NADCA offers to its members through our Government Affairs activities is being a voice for the die casting industry."

Andrew Ryzner
Editor
North American Die Casting Association

"With the administration change, we look for new challenges and opportunities in the coming years."

2025 and Beyond - Challenges and Opportunities

Greetings readers of Die Casting Engineer - Happy Holidays and a Happy New Year to you all. As with how it goes every four years, with a change in United States administration brings new challenges and new opportunities for businesses around the country. It's a good thing this issue is timely like that because it includes NADCA's State of the Die Casting Industry (SOI) report.

As is stated in the SOI, several policies will be subject to change in the new year and beyond. Some of these will include:

- Regulations - Examples include many OSHA regulations such as the workplace proposed heat rules that we've been talking about.
- Energy & Environment - Electric vehicles, ICE standards, etc.
- Workforce Education - Apprenticeships, funding to states, student loan forgiveness.
- Tax Policy - Corporate tax rates, deficit spending, overtime tax, etc.
- Trade & Tariffs - Possible tariffs on Mexico, Canada, China, etc. This was one that everyone surely heard about during the campaigns.

These and many other issues with be up for change and debate as the next four years go on.

Hopefully all of NADCA's chapters around the country have noticed the uptick in NADCA headquarters activity at their events this year. From presentations to just helping out by attending other things like golf outings, NADCA has made an increased effort to come out and spend time with you all - whether it's to present new educational materials or just to network and socialize. For instance, I recently attended Chapter 5's "Casino Night" and had an absolute blast socializing with the members who were in attendance.

Look for more of this as we enter 2025. NADCA exists for our members and we would like to do our best to support them throughout and year and around the country.

Happy New Year and I hope your 2025 is awesome.

Thank you to all NADCA members for your continuing support.

NADCA Reports

NADCA NEWS

Complete NADCA's Satisfaction Survey for your Chance to Win a $100 Visa Gift Card

Arlington Heights, IL - NADCA strives to assist you in overcoming some of the challenges you face in the die casting industry. We are committed to promoting industry awareness, advocating domestic growth in the global marketplace and creating greater exposure for our members.

NADCA has created a survey that will give us a better idea of how we can improve/maintain the quality of services and other aspects of NADCA membership.

Those that take the time to respond will be entered into a drawing to receive a $100 Visa gift card. Three gift cards will be given away!

The deadline to submit your response is January 31, 2024. Please scan the QR code below to complete the survey.

Scan here

NADCA Awards 10 Students David Laine Memorial Scholarships

Arlington Heights, IL - NADCA's David Laine Memorial Scholarship has awarded more than $25,500 to 10 undergraduate students across North America for 2023. The scholarship program was established in 1975 and its main objectives are: to provide financial assistance and encouragement to students who are interested in careers in the die casting industry; to foster and improve engineering education in die casting technology; and, to stimulate awareness of and interest in the die casting process.

The scholarship is awarded every year to applicants that have worked internships or co-ops in the die casting industry. Students reported that they gained experience in die design and maintenance, customer service, quality control, building work relationships between different departments, maintenance, robot and PLC programing (and more). The Laine winners will be highlighted in a more in-depth story in an upcoming issue of DCE.

Nine of the ten scholarship winners worked internships at NADCA Corporate Member companies! If your company is interested in learning more about the process of hiring an intern, we may be able to put you in touch with a colleague that you can speak to. Contact intern@diecasting.org.

NADCA Seeks Student Resumes for Intern Program

Arlington Heights, IL - NADCA offers internship and scholarship opportunities to college engineering students, and is asking you to help spread the word. The association is currently gathering resumes for its Intern Program, which will be promoted to die casting industry executives and HR departments across North America.

Students should visit: https://www.diecasting.org/students for additional information about NADCA scholarships and internship help. Applications are due by January 31, however, NADCA will continue to post applications as they are received.

Interested companies will have access to the password-protected resume database in February, and can contact students directly.

Please help share this information about these opportunities to any engineering students (or families with engineering students) that you may know. To learn more about the David Laine Intern & Scholarship Program, visit: www.diecasting.org/scholarship.

Safety Award Program Open for Applications on February 1

Arlington Heights, IL - NADCA's annual Safety Award Program is accepting applications starting February 1. Only NADCA Corporate Members manufacturing plants are eligible for this program. Awards are given for Perfect and Outstanding Safety Records for die casting companies and suppliers to the industry. NADCA has also developed the Progress Award for Safety Improvements for any company that has shown a 25% improvement in safety standard as compared to the previous year.

Applications are accepted through the end of the month, and companies will be notified of their award status by the end of March. Winning companies will be highlighted in Die Casting Engineer magazine and recognized at this year's Die Casting Congress & Tabletop, October 7-9, 2025, in Milwaukee, Wisconsin.

Applications must be received by midnight on February 28, so gather those records and apply soon! To find the program criteria and entry form, please visit: www.diecasting.org/safety_award.

UPCOMING EVENTS

Back to the East Coast – Marco Island Welcomes NADCA Execs

Arlington Heights, IL - NADCA is excited to announce that the 2025 Executive Conference will be held at the Hilton Marco Island on February 22-26, 2025 in Marco Island, Florida.

The Die Casting Executive Conference is an annual event that provides timely information on marketplace, government, industry and business trends that impact the die casting industry. Leaders and executives from die shops have an opportunity to gain insights that can help improve operations and profitability as well as benefit from networking with peers.

To register or for more information visit: www.diecasting.org/exec.

Dr. Die Cast

Creating a Stable Process in Die Casting

We all desire process success when we start up our machines. Whether you just set a brand-new die or you are restarting after a weekend, we want and need for the process to deliver the same quality we expect every day.

For starters: Basics.

Have a (Pre-flight) startup check list. Airplane pilots have checklists and we would volunteer to take a later flight if we noticed our pilots just rolled down the jet bridge and fired up the engines.

If it is a new die, did we check to be sure there are no missing ejector pins, core pins or other significant details? It has happened! I started up a new die once (without doing an inspection and the first shot stuck because the center core had been left out)! Are the in-gates and overflow gates cut to specification? A tool shop cut the ejector half runners to specification. But they did not cut the in-gates in the cover-half. It only made a runner on the first shot. On another occasion the overflow gates were left out and it only made a ghost of a part on the first shot. You really do need vents to make a complete casting. That tool shop would have benefitted from a check list.

Once the die is set, there are dozens of water line connections, die spray nozzles to aim and adjust. Having an S.O.P. of always connecting the "in-lines" on the operator side of the die could be the worst choice for the casting quality. Sometimes connecting all the cold water to the lower half of the die creates a flash problem. Other times, using the pre-heated water from the lower half of the die connected to the in-lines at the top of the die will warm up a cold cavity and balance the die temperature.

When you are ready to start production, you will want to capture as much data as possible. Computer process monitoring systems such as Visi-Trak can record much more than we could ever do manually. We can see repeatability and/or drifting trends that can predict either consistent quality or random defects.

How much data is enough? Some OEM monitoring systems only record a "rolling 1,000 shots". Depending on the size and cycle time of the machine, you could miss significant anomalies that would destroy your quality rating. When we first started capturing 100% of the shot-data we found that one machine was creating a 569 PPM defect level. By identifying that weakness in the hydraulic circuit, we were able to modify the machine and create a stable process.

Are you struggling to achieve your customer's PPM targets? Consider enrolling in one of NADCA's classes such as EC-410 Process Control and EC-430 Process Monitoring.

Who's Dr. Die Cast?
Robert P. McClintic
Die Casting Consultant

Bob McClintic & Associates
523 Lincoln Lawns Dr. NW
Walker, MI 49534

RMcClintic@ameritech.net
www.drdiecast.com
616.292.0454

NADCA Government Affairs

House China Committee Holds Hearing on Strengthening the Industrial Base

The House Select Committee on the Chinese Communist Party held a hearing on the importance of strengthening the domestic industrial base to counter China, including the need to support and develop the U.S. casting industry.

The hearing, entitled "The Imperative to Strengthen America's Defense Industrial Base and Workforce" held on December 5, 2024, centered around the competition between the United States and the Chinese Communist Party (CCP) and ways for the U.S. to revitalize its defense production capacity, incentivize innovation, and secure its supply chains against exposure to China.

During the hearing, both witnesses and members of the Committee touched on the fact that the only way to counter the competition that China poses is to be strong by having a "robust defense industrial base that deters aggression by our adversaries." Ranking Member Raja Krishnamoorthi (D-IL) highlighted the critical need for the casting industry to be a part of that robust defense industrial base. "Castings…, as well as forgings, are used in over 90% of our key weapons system," Krishnamoorthi stated during the hearing while displaying an aluminum casting supplied by a NADCA member. "It turns out China produces over five times the number of these castings than the US and now DOD says it actually relies on Chinese castings for some of their own weapons systems," he continued. While continuing his questioning, Ranking Member Krishnamoorthi went on to say we need to manufacture all our castings and forgings for defense in the U.S.

Deadline for Comments on Heat Rule Extended

Occupational Safety and Health Administration (OSHA) has extended the deadline to file comments on the proposed rule to address heat hazards in both indoor and outdoor work environments. The proposed rule, published on August 30 after being announced by OSHA in July 2024, outlines the requirements for employers when the heat index reaches 80°F or higher. Originally due on December 30, 2024, OSHA will now accept comments through January 14, 2025.

The rule applies to all indoor workplaces where the heat index hits the "initial heat trigger" of 80°F, with an exception for workplaces where employee exposure at or above this threshold occurs for short durations, specifically 15 minutes or less per hour. The proposed standards mandate that all covered employers with more than 10 employees develop a heat injury and illness prevention plan (HIIPP). This plan should detail the policies and procedures necessary to comply with the standard at the worksite.

Employers are required to identify areas in the workplace where employees might be exposed to temperatures at or above the initial heat trigger and to monitor the heat index or wet bulb globe temperature as close as possible to those areas. Upon reaching the initial heat trigger, employers must implement control measures, including providing cool drinking water, break areas with air conditioning or increased air movement, acclimatization for new or returning employees after an absence of more than 14 days, and paid rest breaks if necessary. Additional controls must be implemented for each work area when the initial heat trigger is reached, such as increased air movement (e.g., fans), air conditioning, or other measures to reduce exposure to radiant heat sources.

The proposed standard also includes a "high heat trigger" of a heat index of 90°F or higher, under which additional control measures would be required. These measures include mandatory rest breaks, continual observation by supervisors or the use of a buddy system for symptoms of heat-related illness, and warning signs and an alert system to inform employees of the high heat danger.

NADCA believes that a nationwide indoor heat rule is unnecessary for improving the safety of employees in the die casting industry and the agency should exempt industries such as die casting that without heat cannot manufacture a product.

Sources in Washington, D.C. expect the incoming Trump administration to make reviewing the OSHA heat proposed rule one of their top OSHA regulatory priorities and could take action to slow or stop the final rulemaking.

Court Strikes Down Overtime Rule; DOL Appeals Ruling

The Department of Labor has officially appealed the decision by a federal court in Texas blocking the recently effective overtime rule. On November 15, 2025, U.S. District Judge Sean Jordan for the Eastern District of Texas vacated the rule nationwide, which increased the salary threshold for full-time white-collar exemptions to overtime requirements as well as increased the total annual compensation requirement for "highly compensated employees" (HCE). On November 26, 2024, DOL filed a notice of appeal with the 5th U.S. Circuit Court of

Appeals, the court which recently upheld the DOL's salary basis test when determining overtime eligibility.

The rule, titled "Defining and Delimiting the Exemptions for Executive, Administrative, Professional, Outside Sales, and Computer Employees," which became effective on July 1, 2024, increased the standard salary level threshold for white-collar exemptions to overtime requirements under the Fair Labor Standards Act (FLSA) to $43,888 per year while the annual compensation threshold for highly compensated employees (HCE) increased to $132,964.

Starting January 1, 2025, the standard salary-level threshold was set to further increase to $58,656 per year, and the HCE threshold will rise to $151,164. Then beginning on July 1, 2027, and every three years after, the thresholds would automatically update to align with the 35th percentile of weekly earnings of full-time salaried workers in the lowest-wage Census Region, and the HCE total annual compensation threshold aligns with the annualized weekly earnings of the 85th percentile of full-time salaried workers nationally.

The court's order vacating the rule follows a summary judgment hearing held on November 8, 2024, where Judge Jordan appeared skeptical of DOL's justification for raising the salary thresholds as well as the analysis of the data DOL used to determine the salary levels in the rule. In the decision, Judge Jordan explicitly held that the DOL "exceeded the authority delegated by Congress" by including salary thresholds that effectively replaced the duties test for the executive, administrative, or professional (EAP) overtime exemption to the Fair Labor Standards Act (FLSA).

The court's decision immediately returns the salary level threshold amount for EAP employees to $684 per week ($35,568 annually) and the annual compensation threshold for HCEs to $107,432 annually, first established by Trump in 2019.

FTC Appeals Court Decision Overturning Non-Compete Ban

The Federal Trade Commission's (FTC) has appealed a decision by the Court blocking the enforcement of the new rule banning noncompete agreements. On October 18, 2024, the FTC filed an appeal with the United States District Court for the Northern District of Texas regarding the Court's August 20 decision to block the near-total ban on non-compete, non-disclosure agreements, and non-solicitation agreements in most circumstances.

Judge Ada Brown of the Northern District of Texas found that the FTC had "exceeded its statutory authority" and that the agency lacks the authority to issue "substantive rules" related to competition. The Judge went further, stating that even if the FTC had the authority to adopt the rule, the agency did not adequately justify the ban, calling the action, "arbitrary and capricious." The FTC will have to persuade the Court that both findings are wrong

With the appeal, the decision now is headed to the U.S. Court of Appeals for the Fifth Circuit, and it is expected that may take close to eight months till the Court issues a decision.

Corporate Transparency Act Reporting Requirements Blocked Nationwide

A federal court in Texas has issued a ruling that halts the enforcement of the beneficial ownership reporting requirements outlined in the Corporate Transparency Act (CTA). On December 3, 2024, Judge Amos L. Mazzant III from the U.S. District Court for the Eastern District of Texas granted a nationwide preliminary injunction, expressing concerns over the law's constitutionality and its potential negative effects on small businesses.

The CTA, enacted by Congress in 2020, mandates that companies earning $5 million or less in revenue and employing twenty or fewer individuals must file beneficial ownership reports with the Financial Crimes Enforcement Network (FinCEN) of the Department of the Treasury.

In his ruling, Judge Mazzant indicated that the reporting of beneficial ownership information was likely unconstitutional and warned that mandatory compliance could cause significant and irreversible harm to these companies. "The fact that a company is a company does not confer upon Congress infinite authority to regulate them in every aspect—particularly not under the CTA, which does not explicitly regulate commerce," Judge Mazzant remarked in his opinion.

Since taking effect on January 1, 2024, the CTA requires most domestic entities formed or registered to operate within the U.S., including corporations and limited liability companies, to provide ownership information to the government. For most entities, the deadline to submit these reports is set for January 1, 2025. In the case, Texas Top Cop Shop v Garland et al., the court enjoined the CTA nationwide allowing for a nationwide injunction, finding that "[existing] reporting companies need not comply with the CTA's January 1, 2025, BOI reporting deadline."

DOD Releases Final CMMC Rule

The Department of Defense formally published the final rule for the Cybersecurity Maturity Model Certification (CMMC) 2.0 program on October 15, 2024, setting updated cyber protection standards for companies in the defense industrial base (DIB). The CMMC is a unifying standard and new certification model that applies to DIB contractors, ensuring they properly protect sensitive information. It combines various cybersecurity standards, such as NIST SP 800-171, NIST SP 800-53, ISO 27001, and ISO 27032, as well as best practices across multiple maturity levels - from basic cyber hygiene to advanced.

In September 2020, the CMMC 1.0 model was established under an interim rule. This was followed by an internal review initiated by the Department in March 2021, which drew on over 850 public comments on the interim DFARS rule. Building on this feedback, the Department announced CMMC 2.0 in November 2021 - an updated

program with a streamlined structure of three compliance levels, reduced assessment costs, and added flexibility compared to the original CMMC requirements.

The CMMC program is based on a tiered cybersecurity framework that requires defense contractors handling controlled unclassified information (CUI) or federal contract information (FCI) to meet one of three compliance levels, depending on the sensitivity of the data. The new CMMC 2.0 model streamlines the previous five-level structure down to just three levels, simplifying the compliance process for small and medium-sized contractors. The final rule establishes these three progressively sophisticated levels based on the type of information involved:

- Level 1 | 15 requirements (aligned with FAR 52.204-21) with annual self-assessment & annual affirmation
- Level 2 | 110 requirements (aligned with NIST SP 800-171) with triennial third-party assessment & annual affirmation (triennial self-assessment & annual affirmation for select programs)
- Level 3 | 134 requirements (based on NIST SP 800-171 and 800-172) with triennial government-led assessment & annual affirmation

Limited exemptions to the CMMC requirements exist for commercial off-the-shelf (COTS) items as well as items valued under the micro-purchase threshold. The rule also allows DoD program offices to grant Plans of Action & Milestones (POA&Ms) for contractors that don't meet every required standard to receive a limited conditional certification. DoD says POA&Ms will be granted for "specific requirements as outlined in the rule to allow a business to obtain conditional certification for 180 days while working to meet the NIST standards."

The CMMC 2.0 rule takes effect on December 16, 2024, but the CMMC requirements will not be included in solicitations and contracts until after the Department of Defense (DoD) finalizes its follow-on Defense Federal Acquisition Regulation Supplement (DFARS) rule to implement the CMMC program. This DFARS rule is expected to be published in early to mid-2025.

Once the DFARS rule is in place, the CMMC 2.0 requirements will be implemented incrementally over four year-long phases. During the initial implementation phases, a majority of the CMMC requirements will only require self-assessment by defense contractors. The DoD expects all defense contractors to reach full CMMC 2.0 compliance within seven years.

U.S. Urging EU to Extend Trade Truce

The Biden Administration is advocating for the European Union to prolong its agreement with the United States regarding the Section 232 tariffs dispute. On October 22, 2024, a representative from the Office of the U.S. Trade Representative (USTR) indicated that the U.S. is requesting the EU to grant additional time beyond the initial 15-month extension to pursue a comprehensive long-term agreement on steel and aluminum trade.

In 2021, the U.S. and EU reached an accord to resolve the Section 232 steel and aluminum dispute, which established a tariff-rate quota system (TRQ). This system permits the EU to export steel and aluminum to the U.S. without duties, with annual limits of approximately 3.3 million metric tons of steel and 384,000 metric tons of aluminum, while also eliminating EU retaliatory tariffs on various U.S. products, including wine, whiskey, and spirits. Furthermore, both parties committed to initiating discussions on a more extensive global framework to tackle overcapacity and promote decarbonization in the steel and aluminum industries.

In December 2023, an agreement was reached to extend the truce until March 2025 for the EU and until December 2025 for the U.S. The USTR is now requesting that the EU align its deadline with that of the U.S., extending it to December 2025.

Treasury Issues Outbound Investment Rule

On November 15, 2024, the Department of the Treasury published final regulations to enforce President Biden's Executive Order 14105 (Outbound Investment Order). This order establishes a framework for regulating U.S. outbound investments that pose national security risks concerning the People's Republic of China, as well as Hong Kong and Macau, particularly in several technology sectors associated with military, intelligence, surveillance, or cyber capabilities.

According to the final regulation, U.S. investments will either be prohibited or subject to notification within three categories of national security technologies: semiconductors and microelectronics; quantum information technologies; and specific artificial intelligence (AI) systems. Prohibited transactions in the semiconductors and microelectronics category include certain fabrication or advanced packaging tools and the design or fabrication of specific advanced integrated circuits. Meanwhile, the design, fabrication, or packaging of integrated circuits not explicitly defined as prohibited will require notification. In the realm of quantum information technologies, the development of quantum computers and the production of any essential components for quantum computers are prohibited.

The rule is set to take effect on January 2, 2025.

SCOTUS Declines to Pause EPA Power Plant Rule

On October 16, 2024, the Supreme Court opted not to suspend the Environmental Protection Agency's (EPA) newly established regulation aimed at reducing greenhouse gas (GHG) emissions from power plants. The Court

dismissed emergency relief requests submitted by West Virginia, Indiana, and 25 other states, as well as various energy companies and industry associations.

The contested regulation, titled "New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule," was issued by the EPA on May 9, 2024. This rule targets GHG emissions from the power sector under Section 111 of the Clean Air Act, regulating existing fossil fuel-fired steam generating plants and new or reconstructed combustion turbines, primarily those powered by natural gas. It mandates the implementation of various GHG reduction strategies, including carbon capture and sequestration/storage in certain scenarios.

Opponents of the EPA regulation contend that the carbon capture requirement is not feasible on a large commercial scale and contradicts the Clean Air Act, which necessitates that the EPA identify the "best system of emission reduction" that is "adequately demonstrated." They also assert that the rule infringes upon the "major questions doctrine," referencing the Supreme Court's 2022 ruling in West Virginia v. EPA, which invalidated the Clean Power Plan initiated during the Obama administration. The Court determined that the Clean Air Act did not grant the EPA such "unprecedented power over American industry." The challengers maintain that this situation is similar, as the rule effectively aims to compel the closure of coal-fired power plants.

The concise order rejecting the request to suspend the rule did not provide the complete rationale of the justices. In a statement within the order, Justice Brett Kavanaugh, joined by Justice Neil Gorsuch, remarked that while the petitioners had demonstrated a significant likelihood of success on the merits regarding at least some of their challenges to the Environmental Protection Agency's rule, the risk of irreparable harm was minimal since compliance efforts would not commence until June 2025, and the litigation is progressing swiftly in the lower court. Additionally, the order noted that Justice Clarence Thomas would have supported granting the stay to temporarily prevent the EPA from enforcing the rule.

Oral arguments in the lower court, the U.S. Court of Appeals for the District of Columbia Circuit, began on December 6, 2024.

Federal Court Rejects CEQ NEPA Rulemaking Power

In a recent ruling, the D.C. Circuit Court of Appeals has determined that the White House does not possess the authority to implement rules under the National Environmental Protection Act (NEPA). The three-judge panel's decision, issued on November 12, 2024, concluded that the White House Council on Environmental Quality (CEQ) lacks the statutory power to create NEPA regulations, thereby overturning a long-standing precedent established by an executive order from President Jimmy Carter in May 1977. This order instructed the CEQ to formulate NEPA regulations and mandated that federal agencies adhere to these regulations unless explicitly prohibited by law.

Although NEPA does not explicitly grant rulemaking authority, the executive order from 1977 directed the CEQ to develop regulations and required compliance from federal agencies. In a previous challenge, the Supreme Court ruled in 1979 that "CEQ's interpretation of NEPA is entitled to substantial deference."

In the 2-1 ruling of Marin Audubon Society v. Federal Aviation Administration, the court acknowledged the 1977 Andrus v. Sierra Club Supreme Court opinion but ultimately dismissed it, stating that the earlier decision lacked legal analysis and that references to deference were rendered obsolete by the Supreme Court's recent Loper Bright ruling, which overturned Chevron deference.

The D.C. Circuit's opinion asserted 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 the agency's legal authority and are therefore unenforceable.

This second regulation builds upon the Phase 1 rule that was finalized in April 2022. The Phase 1 rule introduced three fundamental modifications to the National Environmental Policy Act (NEPA). Under this final rule, agencies are once again mandated to evaluate direct, indirect, and cumulative impacts. Additionally, it reinstates the previous definition of a project's "purpose and need," emphasizing that this determination is not solely at the discretion of the applicant. It also clarifies that the Council on Environmental Quality (CEQ) rule serves as a baseline, rather than a maximum standard, for how agencies should apply NEPA in the assessment of major federal actions.

The finalized Phase 2 rule not only updates procedural requirements but also mandates a more robust consideration of climate change and environmental justice (EJ) during environmental reviews. Agencies are instructed to evaluate the impacts of climate change and to promote the identification of viable alternatives that could mitigate these effects. Moreover, the rule stipulates that projects demonstrating only "significant, long-lasting positive impacts" will be exempt from the requirement of an environmental impact statement. Agencies are also tasked with considering, analyzing, and addressing the effects on communities facing environmental justice issues.

While this ruling does not invalidate the Phase 1 or Phase 2 NEPA regulations, it does pave the way for increased legal challenges to existing NEPA rules and establishes a precedent indicating that the CEQ may lack the statutory authority to issue future NEPA regulations.

2024 State of the Die Casting Industry

Paul Brancaleon
North American Die Casting Association
Arlington Heights, Illinois

Mike Meyer
North American Die Casting Association
Arlington Heights, Illinois

Andrew Ryzner
North American Die Casting Association
Arlington Heights, Illinois

Introduction

The year 2024 presented a landscape of both opportunities and significant risks. Companies are grappling with ongoing economic volatility, including inflationary pressures, fluctuating supply chain costs, and rising interest rates, which are affecting profitability and growth potential. Geopolitical instability and trade uncertainties are also reshaping global markets, requiring businesses to navigate shifting regulations and adapt to new geopolitical dynamics. Additionally, businesses are under increasing pressure to adopt sustainable practices in response to growing environmental concerns and consumer demand for corporate responsibility. In this environment, agility, strategic foresight, and effective risk management will be crucial for businesses to thrive and stay competitive. The United States has completed an election cycle, and the voters have selected the next administration. The mandate on dealing with immigration, and the economy were the top issues.

For the North American Die Casting Association (NADCA), the top markets are automotive, appliances, lighting, plumbing fixtures, & computer equipment for aluminum, magnesium and zinc alloys. The 2024 markets were mixed with die casters & suppliers showing both positive sales increases and negative sales decreases.

For suppliers the forecasts they are reporting are slightly negative to positive 5%. 30% of the die casters that responded to the board barometer are forecasting a reduction in sales from 5% to 20% for 2025. While 70% of respondents are forecasting from the same to up 20% in sales for 2025. Once again, there is a mixture of somewhat negative forecast to very positive forecast for 2025.

The Presidential Election Result and Its Impact on Policy

The presidential election was one of the most closely watched elections in recent history. Vice President Kamala Harris was on the ballot for the Democratic party and former President Donald Trump was the nominee for the Republican party. The final outcome was that Donald Trump secured the election with a total electoral college vote of 312 to Kamala Harris' total of 226. Donald Trump also secured the popular vote with 76 million votes to 74 million votes for Kamala Harris.

The election was decided on a few top issues, 63% of voters rated the economy as not good or poor. So, the economy and how voters felt financially played a large part in this election. 70% of voters said the country was on the wrong track and wanted a change in leadership and direction. One other top issue is immigration. The border states are no longer Texas, New Mexico and California, because due to the massive amount of people that have crossed the border and are now spread out to every sanctuary state and city, the entire nation is now a border state. This amount of immigration is straining city and state budgets, putting a strain on schools, healthcare and social systems. So, the Trump message of economy, inflation and immigration swayed more voters to his cause. Several swing states also voted in favor of Trump.

In light of the election results, several policies will be up for change and review in the new administration. A list of those are:

- **REGULATIONS** like the Congressional Review Act, Overtime Rule Exemption Level, OSHA Third-party worker walkaround, OSHA indoor, outdoor workplace proposed heat rule, FTC/NLRB Non-compete, NDA rule, NLRB "Fair Choice" union election rule will be reviewed and revised as the new administration take office in January 2025.
- **ENERGY and ENVIRONMENT** will be part of the new administration's agenda. Looking at the Inflation Reduction Act – partial repeal, Fossil Fuel Expansion - expand production, LNG Exports, Electric Vehicles - reverse ICE efficiency standards, - Climate Change - Possible withdrawal from Paris Climate Agreement.
- **WORKFORCE EDUCATION** - Registered Apprenticeships redefining awards to registered unions, Emphasize Registered Apprenticeships in Contracts Exec Order, De-emphasize DEI, Funding to States, Student Loan Forgiveness, Industry-specific workforce emphasis.
- **TAX POLICY** - Overall Tax Code - Lowering 21% C-Corporate Rate, - Expiring 199a pass through deduction, R&D Expensing; 100% Depreciation – retroactive to 2022 or 2023 with 100% expensing, Debt Ceiling, Deficit Spending will be addressed, Trump Campaign Promise - No tax on Overtime, No Tax on Tips.
- **TRADE & TARIFFS** - Possible tariffs on Mexico and Canada, U.S.-Canada-Mexico Agreement (USMCA) renegotiation during the Trump term - July 1, 2026, review of agreement will likely result in changes; focus on Chinese transshipment through and investment in Mexico, Section 301 Tariffs on China - Expanded use of Section 301 Tariffs.

- **GEOPOLITICS** - A stronger, more independent EU, Decrease reliance on U.S. defense industrial base, Increased use of tariffs overseas, Potential retaliatory tariffs from EU on USA for the 232 tariffs, Review of global trade agreements/pacts.

U.S. Congress Results and Policy

The Senate results show that Republicans took control of the Senate with 53 Republican seats to 47 Democrat seats. There were many significant wins/losses on both sides of the aisle. With Indiana, Michigan, Ohio, Pennsylvania, Texas and Wisconsin being significant wins and losses that will have significance to manufacturing across the United States. With the Republicans having the majority they will control the appropriations, armed services, commerce-science- & transportation, energy & natural resources, finance, health-education-labor-pensions.

US House of Representatives

The Republicans in the House of Representatives, at the time of this writing maintain a slim majority of 219 Republican seats to 213 Democrat seats. There are still 3 races that need to be called. With the Republicans having the majority they will control the appropriations, armed services, education & workforce, energy & commerce, ways & means and the "China Committee".

When Congress Returns...

Congress returned back in November where new member freshman orientation has begun to take place. By the time of this article's delivery to readers, federal funding will have expired on December 20, 2024. Lame duck priorities include what to do with that expiration date (perhaps an extension into 2025), defense policy (NDAA), farm bill, with robust tax and trade provisions less likely to be discussed/decided.

Heat Rule is Coming

Heat rule is, as many of us know, already an emphasis program. These include items such as: a written heat injury and illness prevention program (HIIPP), identifying heat hazards for employees, monitoring, engineering controls, provisions for drinking water and breaks to rest from the heat, a designated "cool down area", training of supervisors and employees and a designated individual to oversee and implemeent the HIIPP. Of note is the "rule of 20 percent" for building heat tolerance. New employees are to work only 20 percent of the normal day on their first day, and increase by 20 on subsequent days until the employee is working a normal (100%) schedule. This is to acclimatize new employees to hot environments.

There are 5 Small Business Advocacy Review Panels (SBAR Panels) involved, including: foundries, roofers, cemeteries, restaurants, line workers, landscapers, water parks, and more. The most commen statment being given is that "we are already addressing these issues - do not create a blanket rule". The report is currently being analyzed, with the best guess of some results by March or April of 2025.

Macro-Economics & Manufacturing

There are many issues and considerations in the coming years as we move into a new administration in the United States. As technology advances, so must we. Here are some points to consider as we move into 2025 and beyond:

1. **Embracing the Potential of Artificial Intelligence (AI), Automation, and Technology**
   Technological advancements are exciting, and it is wise to experiment. But, as you integrate new technology into your business operations, aim to preserve the human touch and find ways to stand out among the sea of robots.

2. **Protecting Your Business from Cyberattacks**
   Be proactive. Don't wait until something terrible happens to address cybersecurity. Educate yourself on best practices and available resources, invest in firewalls and encryption, and train employees to avoid phishing scams and data breaches. Performing regular security audits and building partnerships with cybersecurity firms can also help you protect sensitive customer and employee information.

3. **Attracting and Retaining Talent Amid Evolving Expectations**
   Strategic human resource management is not optional. It is necessary for any business hoping to gain a competitive edge in the talent marketplace. Companies that wish to grow and scale must consider the type of organization needed and how it might evolve. Only then can you craft strategies for hiring the people you need and supporting them.

4. **Upskilling and Reskilling the Workforce**
   Aging workforce, retirements, lack of training has created a skills gap in many industries. By 2025, upskilling and reskilling will be central to business strategy.

   Forward-thinking organizations will prioritize learning and development programs, partnering with educational institutions and leveraging online platforms to create accessible, ongoing training opportunities for employees.

5. **Protecting Your Business from Economic and Environmental Volatility**
   These concerns affect big and small companies alike, but smaller businesses are typically more agile and creative and can use this opportunity to gain an edge.

6. **Managing the Effects of Political Uncertainty and Tension**
   Staying compliant will require agility and foresight, especially for those engaged with or dependent upon

major tech ecosystems. Track regulations and policies closely and prepare to adjust as circumstances change.

7. **Remote and Hybrid Work Models Become Standard**
Hybrid and remote work models will be normalized across industries. Organizations will be focused on creating flexible work environments, emphasizing employee well-being, and providing resources for remote productivity.

8. **Rise of the Circular Economy**
A circular approach emphasizes reducing waste by reusing, repairing, and recycling products and materials.

9. **Reshoring**
In 2025, there will be a stronger push toward reshoring, with companies investing in local manufacturing to reduce dependence on overseas suppliers. Reshoring allows for faster response times, reduced environmental impact, and resilience against global shocks.

   Industries that rely on critical components or have high shipping costs will particularly benefit from a localized approach. This trend will be complemented by advancements in 3D printing and automation, which allow for cost-effective local production at scale.

Economic Challenges

Under the Biden administration, the U.S. manufacturing sector has faced a mix of challenges, many of which were exacerbated by the COVID-19 pandemic and global supply chain disruptions. While the administration has prioritized reviving American manufacturing through initiatives like the "Buy American" executive orders and efforts to boost domestic production of critical technologies, issues such as rising material costs, labor shortages, and logistical bottlenecks have persisted. Additionally, manufacturers are grappling with the pressures of transitioning to greener and more sustainable production processes in line with the administration's climate goals, which often require significant investment. Tariffs and trade tensions, particularly with China, have also created uncertainty in global supply chains, making it harder for manufacturers to secure materials and components. Despite efforts to foster innovation and infrastructure improvements, the sector continues to struggle with competitiveness in an increasingly complex global market, highlighting the need for more targeted solutions to address both short-term disruptions and long-term structural changes.

Geopolitical Concerns

With the new administration, there are of course many things that can and will affect all of our economies around the world. These include the potential of tariffs on Canada, potential tariffs on Mexico, if there will be a resolution of the Ukraine/Russia conflict, climate related events like EV/ICE and Netzero, and more.

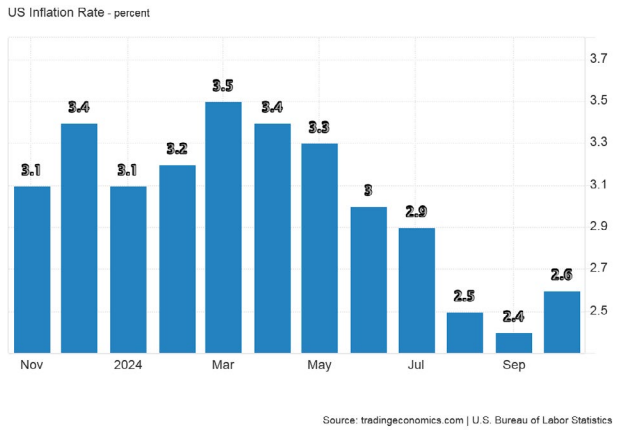


***Figure 1** – US inflation rate up to and including October 2024.*

The annual inflation rate in the US accelerated to 2.6% in October 2024, up from 2.4% in September which was the lowest rate since February 2021, and in line with market expectations. It marks the first increase in inflation in seven months, as energy costs declined less (-4.9% vs -6.8%), mainly due to gasoline (-12.2% vs -15.3%) and fuel oil (-20.8% vs -22.4%) while natural gas prices rose 2%, the same as in September. Also, inflation for shelter steadied at 4.9%. On the other hand, inflation slowed for food (2.1% vs 2.3%) and transportation (8.2% vs 8.5%) and prices continued to fall for new vehicles (-1.3% vs -1.3%) and used cars and trucks (-3.4% vs -5.1%). On a monthly basis, CPI rose by 0.2%, consistent with the previous three months, also matching forecasts. The index for shelter rose 0.4%, accounting for over half of the monthly increase. Meanwhile, core inflation remained steady at 3.3% as expected, with monthly core inflation also holding at 0.3%, the same as in September.

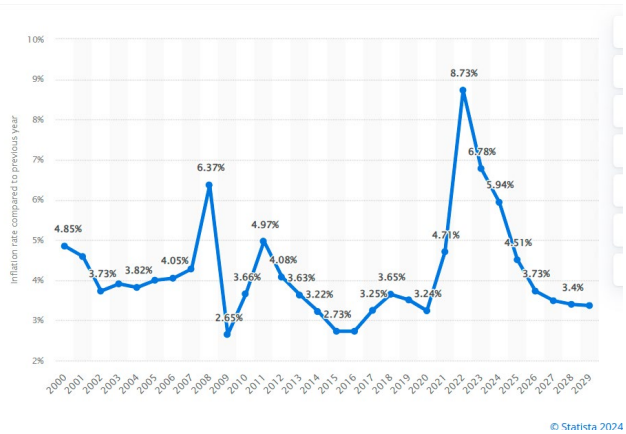


***Figure 2** – Global inflation rate forecast to 2029.*

The figure above shows the global inflation rate as forecast into the year 2029. The projection for 2025 is 4.51%. You can see the spike having happened in 2022 with the rates being predicted to fall in the coming years - all happening post-pandemic.

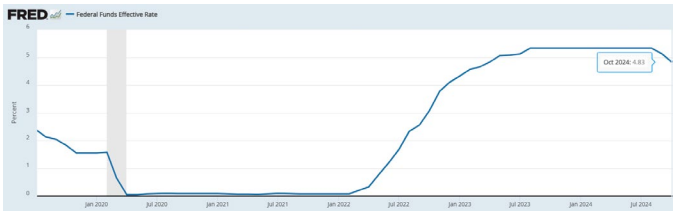


***Figure 3** - Effective federal funds rate: January 2022 - .08% to October 2024 - 4.83%. Possible rate softening in 2025.*

Most expect the Federal Open Market Committee to cut interest rates in 2025. However, the question remains how much and how fast. Fixed income market futures project that short-term interest rates could fall in 2025 perhaps as low as 3%. Alternatively given certain economic data, rates could remain relatively close to the current band of 4.5% to 4.75%.

If the jobs market were to weaken rapidly, causing recession fears to surface, then interest rates could end 2025 close to 3%. If the jobs market remained robust, the cuts are still probable, but rates will likely remain closer to 4% and more attention will be given to inflation trends. The path interest rates ultimately take will depend on incoming economic data. Still, it is most likely that interest rates continue to trend down from their current 4.% to 4.75% range, but the pace of that decline is in question for the year ahead.

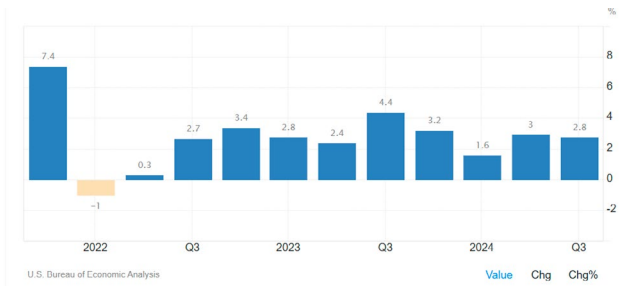


***Figure 4** - US GDP growth rate - Q3 2024.*

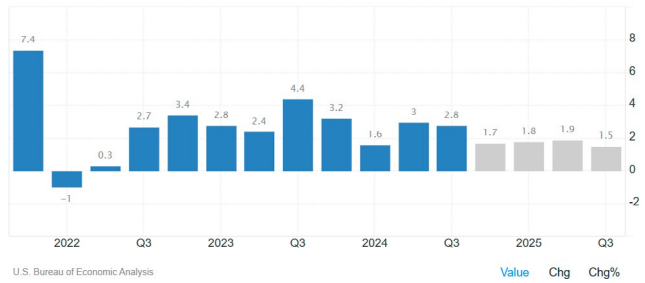


***Figure 5** - US GDP forecast.*

The US economy expanded an annualized 2.8% in Q3 2024, below 3% in Q2 and forecasts of 3%, the advance estimate from the BEA showed. Personal spending increased at the fastest pace since Q1 2023 (3.7% vs 2.8% in Q2), boosted by a 6% surge in consumption of goods (6% vs 3%) and a robust spending on services (2.6% vs 2.7%), mostly prescription drugs, motor vehicles and parts, outpatient services and food services and accommodations.

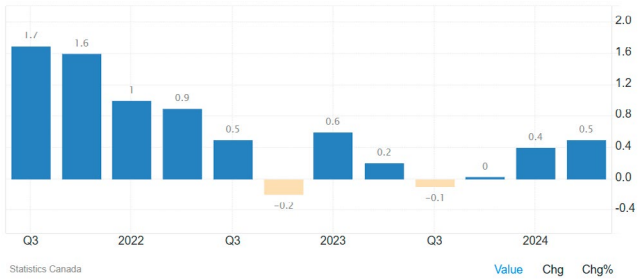


***Figure 6** - Canada GDP growth rate.*

The Canadian economy advanced by 0.5% in the second quarter of 2024, following a 0.4% rise in the previous period marking its second consecutive quarter of expansion. This growth was primarily driven by a 1.5% rise in government spending, fueled by higher wages, and a rebound in federal, provincial, and territorial government purchases of goods and services, which had previously declined. Business investment in machinery and equipment surged by 6.5%, led by increased spending on aircraft and transportation equipment. In contrast, household spending slowed to 0.2% in Q2, down from 0.9% in Q1, as higher spending on services (+0.5%) was offset by reduced purchases of goods (-0.2%). Exports and housing investment both declined, by 0.4% and 1.9% respectively.

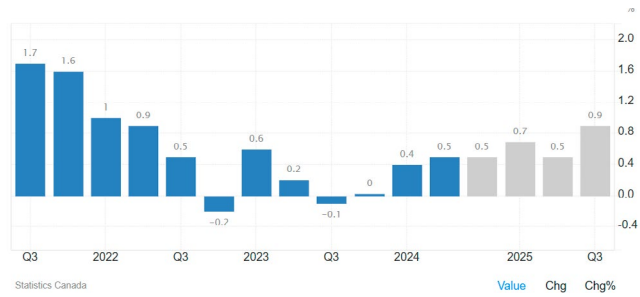


***Figure 7** - Canada GDP forecast.*

The GDP in Canada expanded 0.50 percent in the second quarter of 2024 over the previous quarter. GDP growth rate in Canada is expected to be 0.50 percent by the end of this quarter, according to Trading Economics global macro models and analysts' expectations. In the long-term, the Canada GDP Growth Rate is projected to trend around 1.00 percent in 2025 and 0.80 percent in 2026, according to our econometric models.

Canada's economy is diversified and highly developed. Foreign trade is responsible for about 45 percent of the nation's GDP and the United States is by far the largest trade partner. On the expenditure side, household consumption is the main component of GDP and accounts for 58 percent of its total use, followed by gross fixed capital formation (22 percent) and government expenditure (19 percent). Exports of goods and services account for 32 percent of GDP while imports account for 33 percent, subtracting 1 percent of total GDP. Non-profit institutions serving households' final consumption expenditure and investment in inventories account for the remaining 2 percent.

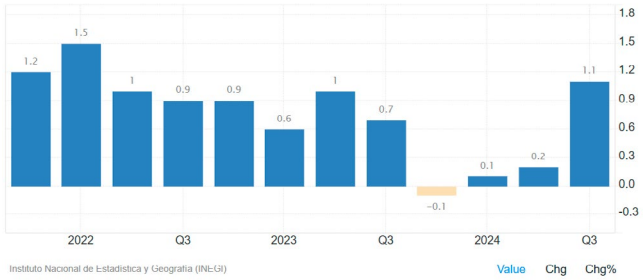


***Figure 8** - Mexico GDP growth rate.*

The Mexican GDP expanded by 1.1% from the previous quarter in the three months ending in September of 2024, accelerating sharply from the 0.2% increase in the earlier period and ahead of the preliminary estimate of 1%, surpassing the initial market expectations of a 0.8% rise. It was the sharpest pace of expansion since the first quarter of 2022, adding leeway for the Bank of Mexico to cut its interest rate at a moderate pace to maintain its fight against inflation.

Growth was led by the sharp rebound for primary activities (4.9% vs -0.2% in Q2). Additionally, output accelerated for both secondary (0.9% vs 0.3%) and tertiary (1.1% vs 0.1%) activities. From the previous year, the Mexican GDP expanded by 1.6%.

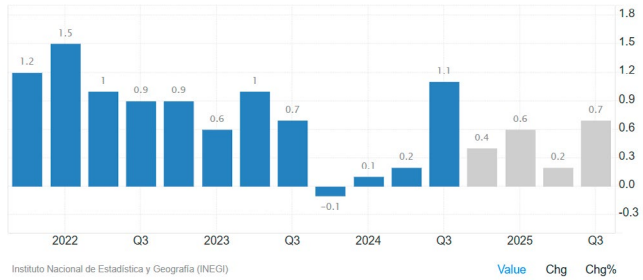


***Figure 9** - Mexico GDP forecast.*

The GDP in Mexico expanded 1.10 percent in the third quarter of 2024 over the previous quarter. GDP Growth Rate in Mexico is expected to be 0.40 percent by the end of this quarter, according to Trading Economics global macro models and analysts' expectations. In the long-term, the Mexico GDP Growth Rate is projected to trend around 1.00 percent in 2025 and 0.80 percent in 2026, according to the econometric models.

In Mexico, services account for 62 percent of total GDP. The biggest segments within services are: wholesale and retail trade (16 percent); real estate (10 percent); transport, warehousing and communications (7 percent) and financial services and insurance (6 percent). Industry constitutes 18 percent of output and the largest segments within this sector are: automobile industry (4 percent of total GDP) and food industry (3.8 percent). The remaining share is divided by: construction, water, gas and electricity distribution (8 percent), mining (5 percent), government (4 percent) and agriculture, forestry, fishing and hunting (3 percent).

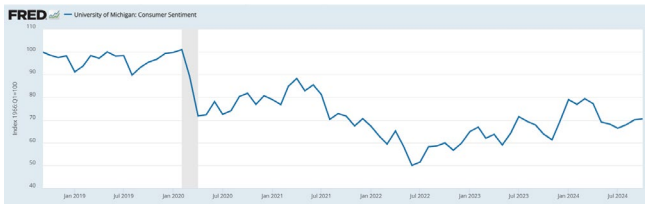


***Figure 10** - Consumer sentiment -how optimistic consumers are with their finances and the overall state of the economy.*

Consumer sentiment remains an issue. After a small rise around the early parts of 2024, sentiment shows another drop in the middle of 2024. It is struggling to return to pre-pandemic levels as can be seen in January 2020 on this chart.

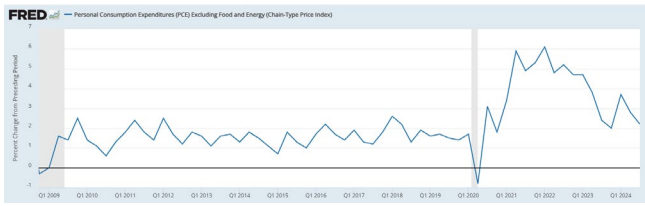


***Figure 11** - Personal consumption - what people in the United States are paying for items.*

People in the United States have paid more for items in the post-pandemic world and the numbers continue to hover somewhere above the pre-pandemic levels.

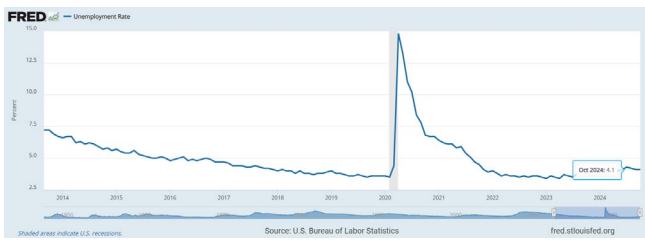


***Figure 12** - October 2024 unemployment at 4.1%.*

The unemployment rate in the United States was at 4.1% in October of 2024, remaining unchanged from the three-month low in the prior month, and aligned with market expectations. The number of unemployed individuals was broadly unchanged at 7 million. Among those without employment, permanent job losers rose slightly to 1.8 million, while temporary layoffs were little changed at 846 thousand. In turn, long-term unemployment was little changed from the previous month at 1.6 million. In the meantime, the labor force participation rate eased by 0.1 percentage points to 62.6%. Source: U.S. Bureau of Labor Statistics.

Percentage of Respondents Positive About Their Own Company's Outlook	Overall Facts About the Survey
62.9% (Q2: 71.9%) Small Manufacturers: 61.8% Medium-Sized Manufacturers: 65.9% Large Manufacturers: 58.9%	Number of Responses: 294 In the Field: Sept. 5–20, 2024 Small Manufacturers: 76 responses (25.9%) Medium-Sized Manufacturers: 123 responses (41.8%) Large Manufacturers: 90 responses (30.6%) Undisclosed: 5 (1.7%)
Expected Growth Rate for SALES Over the Next 12 Months ↑ 1.6% (Q2: ↑ 2.2%)	**Expected Growth Rate for PRODUCTION Over the Next 12 Months** ↑ 1.6% (Q2: ↑ 2.0%)
Expected Growth Rate for FULL-TIME EMPLOYMENT Over the Next 12 Months ↑ 0.3% (Q2: ↑ 0.9%)	**Expected Growth Rate for EMPLOYEE WAGES Over the Next 12 Months** ↑ 2.7% (Q2: ↑ 2.8%)
Expected Growth Rate for CAPITAL INVESTMENTS Over the Next 12 Months ↑ 0.7% (Q2: ↑ 1.3%)	**Expected Growth Rate for EXPORTS Over the Next 12 Months** ↑ 0.4% (Q2: ↑ 0.4%)
Expected Growth Rate for PRICES OF COMPANY'S PRODUCTS Over the Next 12 Months ↑ 1.9% (Q2: ↑ 2.0%)	**Expected Growth Rate for RAW MATERIAL PRICES AND OTHER INPUT COSTS Over the Next 12 Months** ↑ 2.7% (Q2: ↑ 2.8%)
Expected Growth Rate for INVENTORIES Over the Next 12 Months ↓ 0.9% (Q2: ↓ 1.0%)	

***Figure 13** – NAM Outlook survey from the third quarter of 2024.*

The chart above summarizes the manufacturers outlook for the coming year based on data from the National Association of Manufacturers. Of note is that costs and wages are expected to rise in the coming months and year.

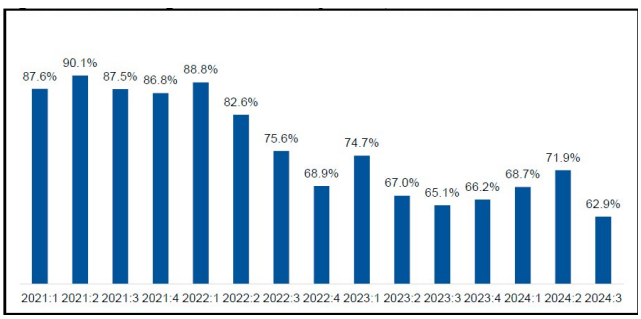


***Figure 14** – NAM manufacturing CEO outlook, Q3 2024.*

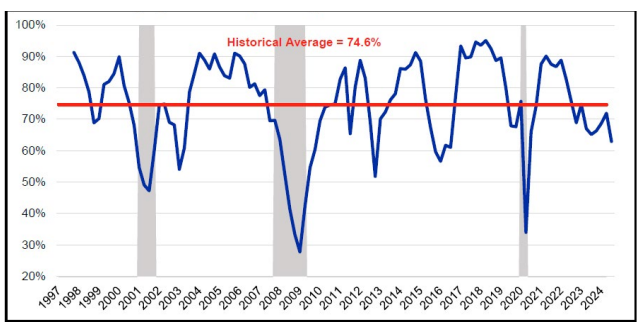
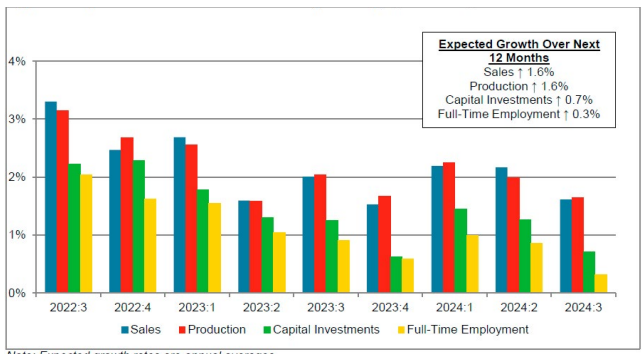


***Figure 15** – Manufacturing business outlook by quarter – Q4 1997–Q3 2024. Recessions highlighted in gray. We are still below historic averages.*

***Figure 16** – Manufacturing CEO's rate challenges, Q3 2024. Primary current business challenges.*

As shown in figure 16, challenges rated by manufacturing CEOs are some of the same as we have seen for years. The top mentions being domestic economy and sales, rising healthcare and insurance costs, and an unfavorable business climate because of taxes, regulations and so on. Another issue we have seen is not only attracting but retaining a quality workforce.



Note: Expected growth rates are annual averages.

***Figure 17** – Expected growth of manufacturing activity. The growth rates are annual averages.*

End Market Analysis

There are several markets served by die casting. For several years, end markets have included lawn and garden equipment, hand and power tools, telecommunication devices, computers and business equipment, plumbing, medical devices, sports and recreation equipment, aerospace, and others.

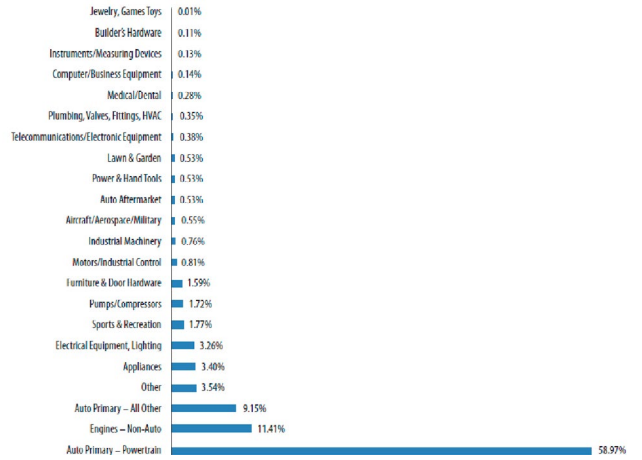


***Figure 18** – Aluminum die casting markets. Automotive continue to be he top market for die casting.*

More recently, opportunities to serve the robotics and the renewable energy industries have increased. However, for several years, the top 2 markets, comprising about 75% of all shipments, have remained the automotive market and the housing market. At approximately 68% of the shipments, automotive is the top market for aluminum die casting followed by housing at approximately 9% of shipments.

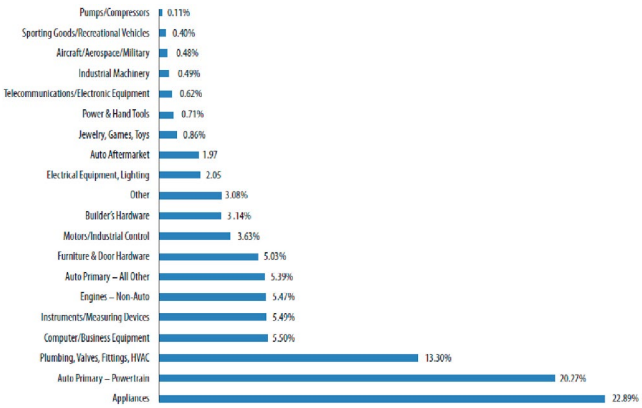


***Figure 19** – Zinc die casting markets. Housing as the top market for zinc.*

At approximately 45% of shipments, housing is the top market for zinc die casting followed by automotive at about 26% of the shipments. With automotive and housing comprising the bulk of all die casting shipments, the sales and sales forecast information below is focused on these two markets.

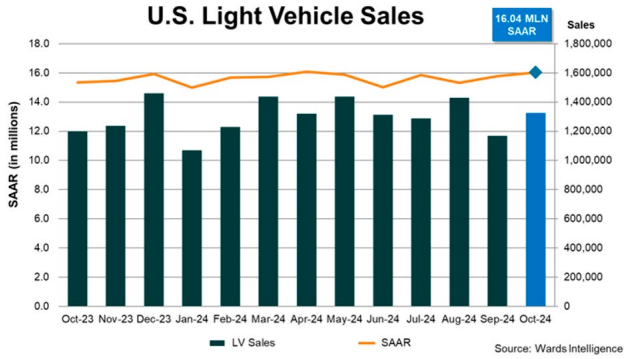


***Figure 20** – Monthly SAAR light vehicle sales.*

Labor-related plant shutdowns in the U.S. that covered the latter half of September and most of October negatively impacted deliveries in November. Combined sales of the vehicles impacted by shutdowns fell 15% year-over-year in November. If those vehicles had matched year-ago results, sales would have totaled 15.9 million-unit SAAR.

In 2024, the United States is expected to sell around 15.7 million light-duty vehicles. Here are some other insights into light vehicle sales in the US in 2024:

Factors affecting sales:

- Economic and political uncertainty, high interest rates, and high vehicle prices have all contributed to a dip in sales in the third quarter. However, affordability is improving, and some are optimistic about the outlook for the industry.

- **Electric vehicle sales**
  - Battery electric vehicle (BEV) sales are expected to increase by 8% compared to 2023. The BEV share of sales has been above 8% every month since June.
- **Automakers**
  - Honda and Ford are expected to post growth in 2024, while others such as Stellantis, Toyota, and BMW are predicted to face declines.
- **Inventory**
  - Inventory levels have been consistently rising in the fall over the past two years.
- **November sales**
  - S&P Global Mobility expects light vehicle sales to be up 6% in November from a year ago. The share of battery electric vehicles is expected to reach 8.7% in November.

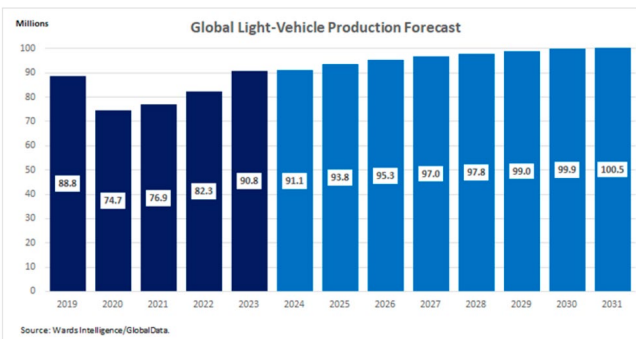


***Figure 21** – Global light vehicle forecast all the way up to the year 2031.*

After strong gains in the past three years, production growth will slow in 2024 as inventory rises faster than sales. A stronger global economy will boost demand, as well as production in 2025, but that will be followed with lukewarm annual growth in sales and output through 2031.

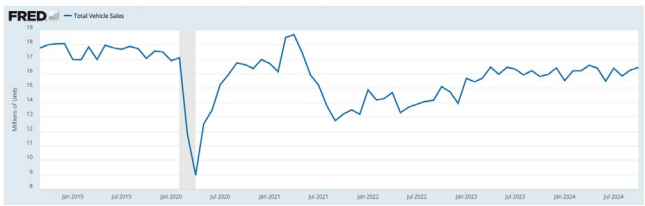


***Figure 22** - Historical vehicle sales. Rates remain fairly consistent but below pre-pandemic levels.*

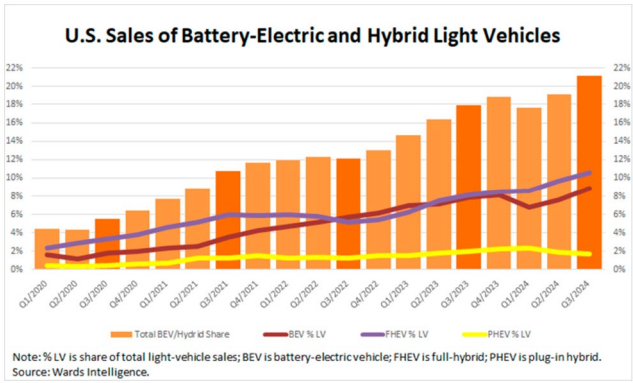


***Figure 23** - EV sales through Q3 2024.*

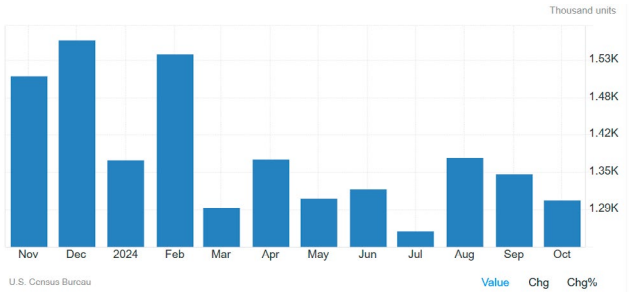


***Figure 24** - Monthly SAAR new privately-owned housing starts.*

Housing starts in the United States fell by 3.1% to 1.311 million in October 2024, compared to a downwardly revised 1.353 million in September and below forecasts of 1.33 million as construction activity fell sharply in the South due to hurricanes. Still, at the forefront of a broader trend, housing starts continue to face challenges amidst an increasing inventory of new homes for sale and mortgage rates nearing 7%. Starts of single-family homes plunged 6.9%, equivalent to an annualized rate of 0.97 million while starts for houses with five units or more were up by 9.8% to 0.326 million.

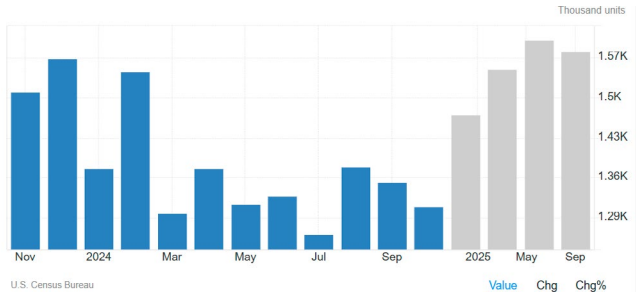


***Figure 25** - Housing starts forecast.*

Housing Starts in the United States decreased to 1311 Thousand units in October from 1353 Thousand units in September of 2024. Housing Starts in the United States is expected to be 1470.00 Thousand units by the end of this quarter, according to Trading Economics global macro models and analysts expectations.

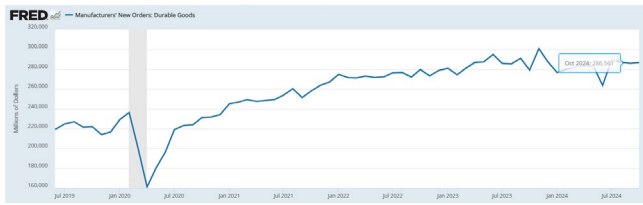


***Figure 26** - Appliances tied to housing.*

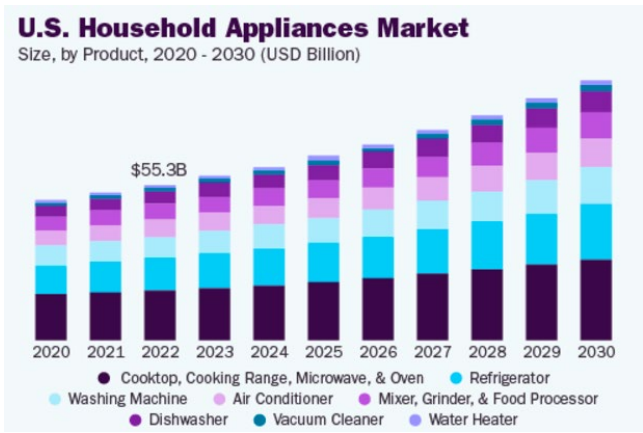


***Figure 27** - Household appliances market with predictions for the future.*

The market will grow due to various growth drivers such as an increase in single-person households, an increase in disposable income, an increase in the number of smart homes, an increase in the millennial population, an increase in online sales of small household appliances, an increase in the demand for smart sensors, an increase in the demand for energy optimization, and so on.

Trade and Supply Chains

Under the new administration, tariffs on China are expected to increase in 2025 and 2026 on certain goods. Electric vehicle tariffs are to increase to 100%. The alloy tool steel tariff is increasing to 25%.

There is a process happening regarding machine tariff exclusions. The office of the United States Trade Representative is establishing an exclusion process to suspend tariffs.

US importers may request a temporary exclusion. Classified under chapters 84 and 85 of the Harmonized Tariff Schedule (HTS), some exclusions have been proposed. If granted, they will be given out on a rolling basis only through May 31, 2025.

Increased Tariffs on China

This action comes in response to a 4-year review of Section 301 tariffs. On January 1, 2025 and January 1, 2026, tariffs increase on certain goods. As said earlier in the article, electric vehicles tariffs increase to 100% by September 27. Steel & aluminum tariff rates increase to 25% and the same is true for zinc, chromium, tungsten and cobalt ores up to 25%. Medical gloves and permanent magnets increase to 25% in the year 2026.

Imports

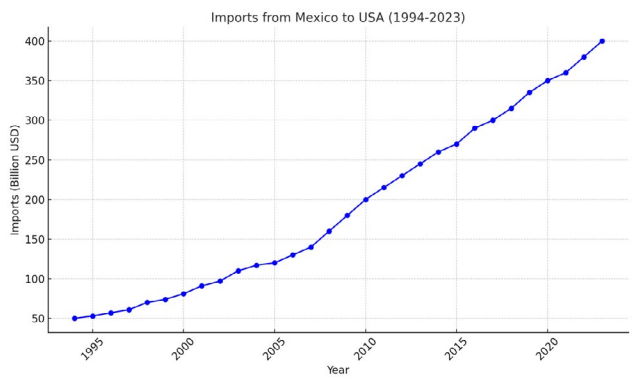


***Figure 28** - Imports from Mexico are increasing.*

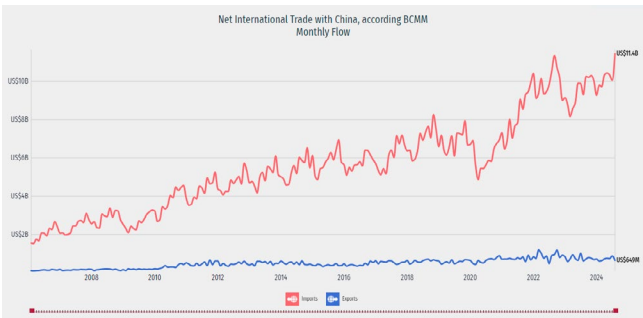


***Figure 29** - Shipments from China to Mexico are on the rise.*

There is growing concern over increased Chinese investment in Mexico. Transshipment is being used by China to Mexico in order to avoid tariffs. The United States-Mexico-Canada (USMCA) Trade Agreement will be under a six-year review coming in July 2026. Domestic consultations are already being held ahead of this review. These reviews could lead to changes in the agreement. While the entirety of the US plan has not yet been developed, initiatives that are being talked about in Washington include changes to the automotive industry rules of origin, changes in forced labor import prohibitions, new restrictions on Chinese companies in North America, and trying to resolve USMCA implementation disputes. The USTR is already conducting a review of the automotive provisions. Parties involved could extend the USMCA for another 16 years or they may not agree, which would lead to an annual review of the USMCA.

Conclusions

The U.S. economy in 2024 reflects a mix of resilience and challenges. While key indicators like employment rates and consumer spending suggest steady economic activity, consumer sentiment, persistent inflationary pressures, higher interest rates, and global economic uncertainty continue to weigh on growth. Policymakers are navigating a delicate balance between sustaining economic momentum and curbing inflation, while businesses and households adapt to tighter financial conditions. Looking ahead, the trajectory of the U.S. economy will depend on the effectiveness of monetary and fiscal policies, as well as external factors such as geopolitical stability and global trade dynamics. Overall, the outlook remains cautiously optimistic, with opportunities for innovation and investment driving long-term growth prospects.

Other issues that are of note for the coming administration include the following:

- Wars in Gaza, Israel, Lebanon and the Ukraine continue to be troubling and lead to instability in the EU and worldwide.
- Trade and tariffs are tools, and "weapons", that can and should be used prudently and judiciously.
- Our elected officials need to work for the common good of the American people and accomplish these tasks expeditiously. To be in office and not get much done is a waste of time and effort on both sides.
- Inflation and GDP forecasts of the United States, Canada and Mexico are favorable, and the three countries must work together to strengthen the USMCA for our mutual benefit.
- The trend of nearshoring in Mexico has to be dealt with. Asian countries are continuing to look to circumvent the trade barriers and need to manufacture in Mexico for North America.

The coming months and next years when the new administration comes in will have a lot on their plate to work for the common good of the American people. Let us hope that there are actions taken that work for our collective benefit, and are a net-positive for North America.

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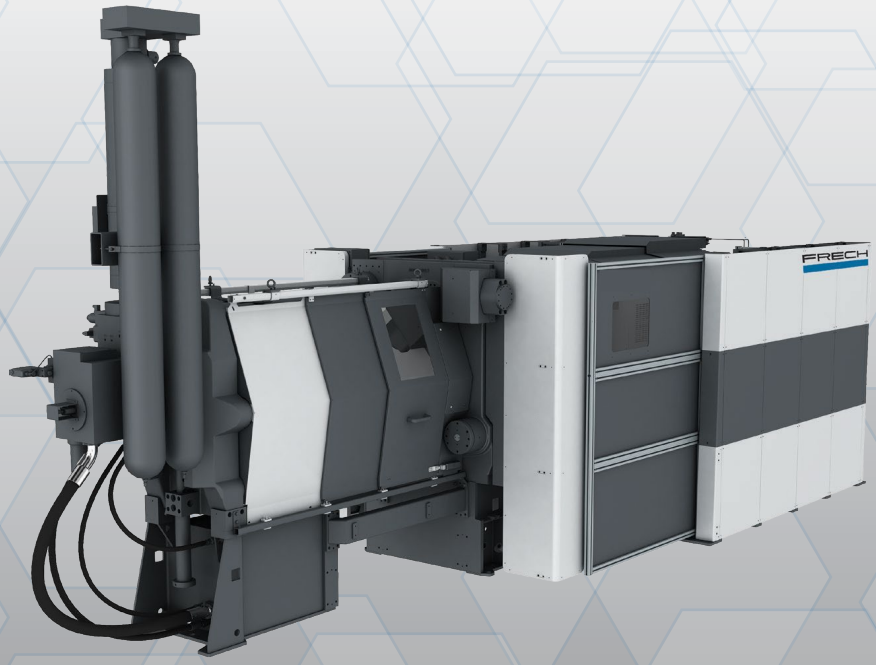

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Confronting the Challenges of Gigapress Tooling for Large-Scale Castings

Shah Imani
Castool Tooling Systems
Uxbridge, Ontario, Canada

Paul Robbins
Castool Tooling Systems
Uxbridge, Ontario, Canada

Abstract

Gigacasting tooling is much larger in both diameter and length, specifically designed to manage high volumes of aluminum alloy for structural uses. Despite their size, users seek cycle times similar to those of smaller castings. This paper highlights several essential components: the shot sleeve, plunger system, lubrication, distributor, and venting.

The shot sleeve, which requires thermal control, must be made from high-quality single-melt material and undergo appropriate heat treatment for toughness, along with nitration for wear resistance. These sleeves can exceed 20 inches (500 mm) in diameter and 85 inches (2150 mm) in length, and only a few ovens can uniformly heat and quench them at the necessary rates. Typically, a pour insert, made from high-temperature wear-resistant steel with a protective coating, is used to safeguard the shot sleeve and reduce costs.

The plunger, which can be more than 12 inches (300 mm) in diameter, needs to maintain dimensional stability throughout the cycle while quickly solidifying the biscuit at the end of the stroke. Rapid solidification of the runner material is essential so that the robot can securely grab the casting without causing damage. This can be facilitated with a printed insert or a cooled ring at the end of the shot sleeve, while the distributor also aids in solidifying this area. It is vital to apply lubricant to the plunger and sleeve interfaces without compromising casting quality, aiming to use the least amount necessary.

Reliability is paramount for these large machines. Because vacuum valves can lead to downtime, chill vents are the preferred method for venting Gigacastings. Ultimately, the goal for Gigacasting, like any casting process, is to achieve "Better Castings Faster."

Introduction

The automotive industry is increasingly utilizing large casting machines, known as Gigapress, to produce car bodies using just a few sizable cast components. One manufacturer of these machines reports partnerships with around six automakers employing this method. Recently, numerous automakers have invested heavily in developing casting techniques and alloys to create larger parts, significantly streamlining production; in some instances, a single cast component can replace more than 70 individual parts in a vehicle.

In the past, the largest die casting machines had clamping forces ranging from 3,000 to 4,000 tons and shot sleeves with internal diameters of 6 to 7 inches (150 to 180 mm). Nowadays, machines with capacities exceeding 6,000 tons and 9-inch (250 mm) internal diameter sleeves are available. Additionally, 9,000-ton presses with 12-inch (350 mm) internal diameter sleeves are now being used.

It is vital to maintain a plunger-to-shot sleeve clearance of no more than 0.004 inches (0.10 mm); exceeding this can result in excessive wear or allow the alloy to escape as "flash" or blow-by. This clearance is not constant; at the beginning of the casting cycle, the sleeve is hot while the plunger tip is cold. As the plunger advances, its tip heats up and expands, while the interior diameter of the sleeve contracts due to insufficient heat penetration. If the initial clearance is too tight, it can prevent the alloy from leaking past the plunger tip, potentially causing the plunger to seize in the sleeve before completing its stroke, a risk that increases with longer sleeves. Additionally, maintaining a consistent layer of lubricant inside longer sleeves poses challenges. Relying on a high-viscosity lubricant at the pour end, hoping it will reach the sleeve's end, is ineffective and can lead to defects in the cast parts. The optimal approach involves using well-designed equipment to apply minimal lubricant precisely where needed.[1]

This paper will discuss several essential components: shot sleeve, plunger system, lubrication, distributor, and venting. It will also include a simulation study of various cooling rings at the die end of the large shot sleeve, analyzing their thermal and mechanical conditions. These insights will improve the understanding of the thermomechanical behavior of larger tooling in the die casting process, addressing the challenges of producing larger parts.

Shot Sleeve

The performance of three large shot sleeve designs, each with an internal diameter (ID) of 12.6 in (320 mm), was assessed. Figure 1 illustrates the design and materials of the three shot sleeves, which feature different cooling rings on the die side. The shot sleeves are referred to as 3D Printed Banana, Conduct Donut, and Original Design. The 3D Printed Banana sleeve uses maraging steel with a Tuff temper material insert on the die side. The Conduct Donut design incorporates a donut-shaped cooling ring made of Conduct material, paired with an H13 material insert. In contrast, the Original Design consists of an H13 material body and insert without any cooling ring. The thermal and mechanical properties of these materials are

detailed in Table 1.

***Table 1** – Thermal and mechanical properties of various steel materials.*

Steel material	Strength [MPa]	Toughness (J)	Thermal Conductivity (W/m°C)
ConDuct	1000	100	42
H13	1300	25	24
Tuff Temper	1400	30	30
Maraging steel	1350	20	26

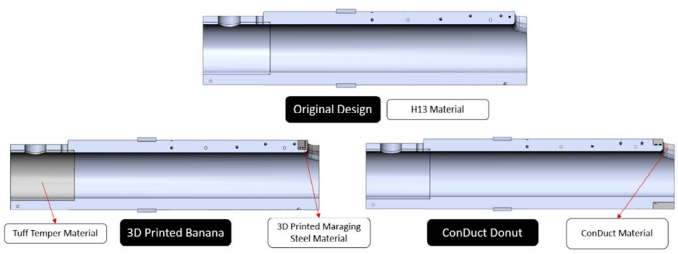

***Figure 1** – Three large shot sleeve designs: Original design, 3D printed banana, and ConDuct donut sleeve.*

Transient thermal simulations were performed using SolidWorks flow simulation software. Subsequently, static analysis was conducted at specific intervals to evaluate stresses, deformations, and deflections. An in-house C++ program was developed to define the complex transient boundary conditions arising from the interaction between molten aluminum and the internal diameter of the sleeve.

Three casting cycles were simulated to achieve a more precise temperature distribution, with the results from the final cycle utilized for analysis. To ensure a valid comparison among the different sleeves, the cycle time and processing conditions were kept consistent across all simulations. Water and oil coolants were used as thermal regulation and cooling systems integrated into the sleeves, as shown in Figure 2.

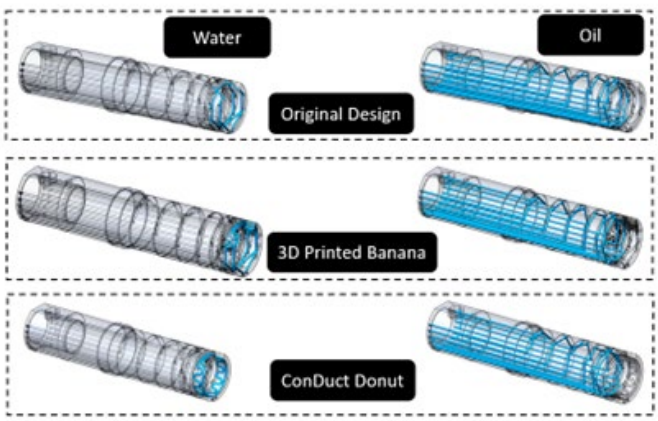

***Figure 2** – Oil and water coolant circulating through the sleeves during the process.*

The thermal analysis results indicated that the ConDuct donut sleeve outperforms the other sleeves in cooling the biscuit area. Figure 3 illustrates the temperature distribution of the sleeves as molten aluminum is forced through them into the die. The thermal conductivity of the ConDuct material is significantly higher than that of maraging steel and H13 material, allowing the sleeve at the die side to maintain a lower temperature. This improvement enhances the cooling efficiency of the biscuit area and shortens the cooling cycle time, ultimately increasing productivity.

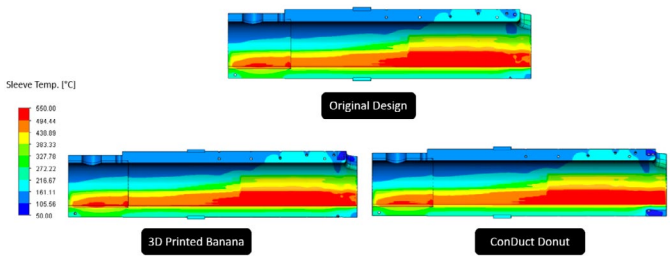

***Figure 3** – Temperature distribution of various shot sleeves.*

Figure 4 displays the temperature cooling throughout the process. Two probes are positioned at the die side of the shot sleeves to record the temperature history during operation. The results indicate that the cooling rate of the ConDuct donut sleeve is considerably higher at both locations compared to the other sleeves.

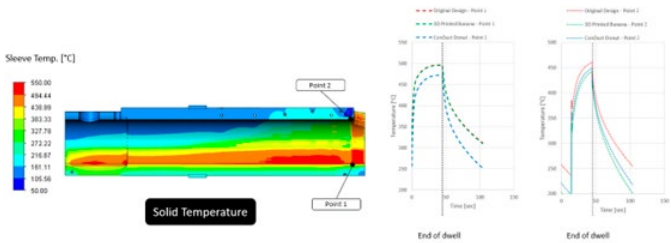

***Figure 4** – Temperature records of locations on the die side of the shot sleeves throughout the process.*

The static analysis was performed at the conclusion of the shot time step to assess the stress levels of various shot sleeve designs. Additionally, the deformation of the shot sleeve, known as the banana effect, was measured. The simulation results (Figure 5) revealed that the stress level in the ConDuct donut sleeve was 7% lower than that of the original sleeve in the gating area. Furthermore, the stress in the internal diameter area of the ConDuct donut sleeve was reduced by 5% compared to the original design. However, the deformation and banana effect of the ConDuct donut sleeve were slightly greater than those of the other sleeves.

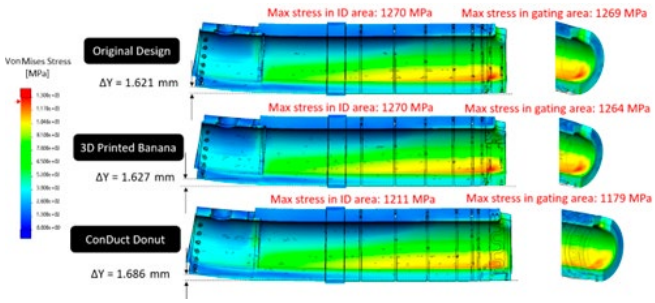

***Figure 5** – The stress and deformation results of various shot sleeves.*

Plunger System

The outer shape of the plunger tip has remained consistent over time. All plungers incorporate water cooling to effectively cool the tip face, especially during the dwell or solidification phases. Figure 6 shows six different plunger designs. Traditional solid tips are crafted as a single piece with an internal cooling cavity. Due to the lack of support for the inner walls, the material must be strong enough to maintain rigidity during operation. The Allper Ring Plunger (ARP) features a copper tip and a steel holder, taking advantage of copper's high conductivity to efficiently draw heat away from the molten aluminum, facilitating the solidification of the casting.

The recently introduced Castool Ring Plunger (CRP) tips share a similar design to the ARP but utilize a stronger ConDuct tip. The CRP incorporates complex cooling channels within the tip face to improve coolant contact. In contrast, the Allper Modular Plunger (AMP) has a flat tip face on both sides with simple cooling grooves on the front of the holder. The modular AMP design allows for different materials to be used for the body and the tip face; in the AMP design shown in Figure 6, the body is made from a soft copper alloy, while the tip face is constructed from ConDuct.

The Additive Manufacturing Plunger (AM1) and AM2 tips are conceptual designs that feature intricate internal cooling channels to maximize coolant contact. These channels in AM1 and AM2 cannot be created using traditional machining techniques, requiring the use of additive manufacturing methods. Material selection for AM1 and AM2 depends on the strength requirements for each design and the materials suitable for the specific manufacturing processes. For example, Laser Powder Bed Fusion (LPBF) is recommended for producing the AM1 tip from maraging steel, while Ultrasonic Additive Manufacturing (UAM) is suggested for the AM2 tip made of H13 steel.

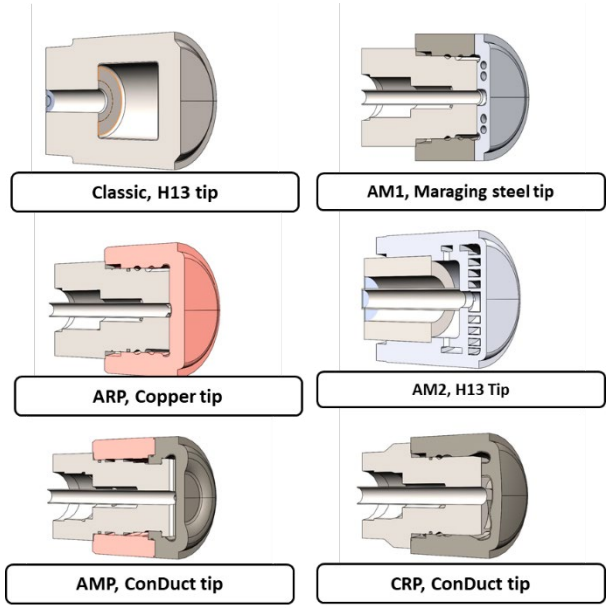

***Figure 6** – Various plunger tip designs and materials.*

Computational Fluid Dynamics (CFD) simulations were performed on various plunger tip designs to evaluate their efficiency and durability. Different materials were used in some designs to examine how material choice influences performance. Figure 7 depicts the effects of design and material on biscuit solidification and tip temperature for nine distinct plunger tip designs. The reported solidified thickness represents the minimum thickness of the solidified layer at the end of the dwell time, indicating the weakest point of that layer.

In Figure 7, water pressure was kept constant across all simulations, leading to different flow rates for each design due to variations in friction and cooling channel configurations. For example, the CRP design achieved the highest water flow rate (80 L/min) under the same pressure, while the ARP tip had the lowest flow rate. The primary factor affecting the solidification rate of the biscuit appears to be the conductivity of the tip material; all copper tips exhibited high solidification rates, whereas tips made of H13 and Maraging steel showed significantly lower rates. Nonetheless, the greater strength of steel allows for more complex designs, such as AM1 and AM2. Cases 1, 2, and 3 were included to demonstrate the thermal effects of the tip material while keeping dimensions constant; otherwise, changing the material would require dimensional adjustments to account for differences in mechanical and thermophysical properties. For instance, switching from steel to copper (which is softer) would necessitate increasing the thickness of the tip face to ensure adequate strength. The more expensive additively manufactured tips (7 and 8) did not provide significant improvements in cooling performance. The AM1 tip made of Maraging steel offered less cooling effectiveness than the ARP and CRP ConDuct tips, while the AM2 tip made of H13 showed some cooling improvement but sacrificed structural strength due to its design features[2].

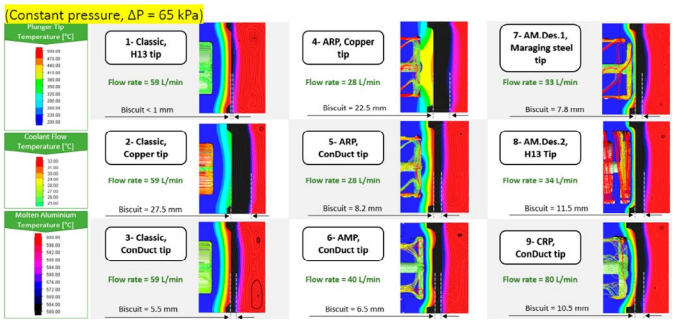

***Figure 7** – The solidification of the biscuit (shown by the black layer), along with the temperatures at the tip and of the coolant water at the end of the dwell time, were measured with a constant water pressure of ΔP = 65 kPa at the tip. The water flow rate for each scenario is also included.*

Lubrication

Plunger lubricants play a vital role in die casting systems by improving metal castability, reducing porosity, and enhancing injection efficiency. They help prolong the lifespan of the shot sleeve and plunger by decreasing friction and forming an insulating layer between the tooling and molten aluminum. If the lubricant is washed away, direct contact with the die can result in the formation of aluminum-iron alloys, leading to tooling failure. Lubricants can be categorized as dry or wet, with oil-based options—such as mineral, vegetable, or synthetic—being common, often supplemented with additives like graphite or Boron Nitride. An effective lubricant should be compatible with the materials, form a robust film, adequately cover surfaces, and not release harmful gases. Additionally, it should be cost-effective, have a high flash point, and be environmentally friendly. It is crucial to use only the necessary amount of lubricant, as excess can compromise casting quality and contribute to pollution. Non-metallic substances should be avoided to prevent porosity, with ALS192 (synthetic, Boron Nitride) and CLS200 (vegetable-based) being the most widely used lubricants. ALS192 has high viscosity but requires preheating, while CLS200, with lower viscosity and a higher flash point, helps minimize fume production[2].

***Table 2** – Physical properties of the lubricants.*

Property	ALS192	CLS200
Kinematic Viscosity (at 40°C/104°F)	930 mm²/s	35 mm²/s
Flash point	270°C (518°F)	290°C (554°F)
Boiling point	305°C (281°F)	325°C (617°F)

A plunger rod lubrication system equipped with a splash guard enhances safety and extends the lifespan of tooling components for long shot sleeves. It delivers a precise amount of lubricant specifically to the die-end bore of the shot sleeve before the plunger retracts.

Castool's shot sleeve/plunger lubrication system is designed to improve safety and increase the durability of tooling components by applying lubricant only where it is needed. For small to medium shot sleeves, the system utilizes the bolt-on Allper Lube-Drop (ALD) or a machined slot and lubrication channel to dispense lubricant on top of the plunger ring. For longer shot sleeves, the Castool Rod Lube (CRL) system provides a small amount of lubricant to the die-end bore of the shot sleeve before the plunger returns. This system can operate independently or in conjunction with the ALD. The main point is that lubricant should be applied sparingly to avoid unnecessary expenses and workplace contamination, as well as to prevent non-metallic substances from interfering with the casting process. Lubricant should only be applied where necessary, since excess use can lead to increased costs and pollution. Thus, lubrication should be minimized, and steps should be taken to prevent any non-metallic materials from entering the mold.

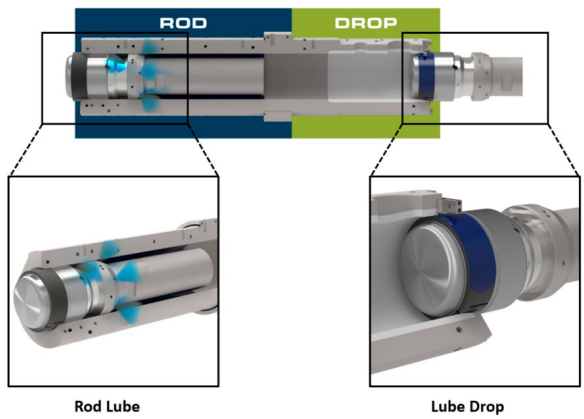

***Figure 8** – Various lubrication methods.*

***Table 3** – Suggested lubrication methods according to shot sleeve size.*

Shot sleeve size	Recommended method
Small diameter	Lube Drop
Medium diameter	Lube Drop or Rod Lube (preferred)
Large diameter	Lube Drop and Rod Lube

Distributor

This section examines the performance of three shot blocks or distributors made from various materials and designs. The study focused on the thermal and mechanical performance of distributors made from 3D printed maraging steel with conformal channels, ConDuct, and H13 materials. Figure 9 illustrates the layout of the cooling channels within the distributors. Water coolant flows through these channels, enhancing the cooling efficiency of the distributors.

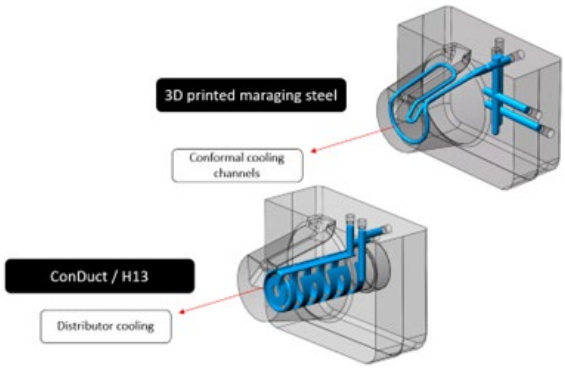

***Figure 9** – Schematic of cooling channels within the shot blocks.*

A CFD thermal simulation was performed to evaluate the cooling performance and solidification of molten aluminum during the dwell time. The solidus point for aluminum alloy is defined at 560 °C. The areas shown in black represent the solidified biscuit, as illustrated in Figure 10. It was noted that the distributor design made from ConDuct material has a greater heat extraction capacity, as indicated in Table 4. This is attributed to the significantly higher thermal conductivity of ConDuct compared to other materials.

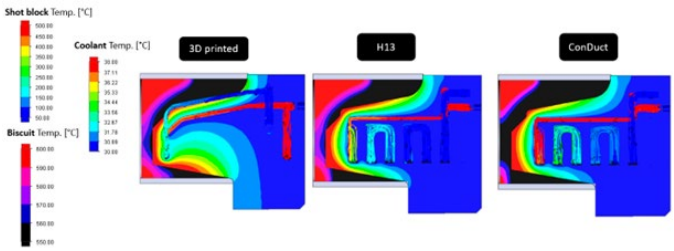

***Figure 10** – Temperature distribution of distributors at the end of dwell time.*

***Table 4** – Comparison of heat extraction capacity of various distributors.*

Distributors	Heat extraction capacity
3D printed maraging steel	778 KJ
H13	475 KJ
ConDuct	985 KJ

Static analysis was performed to assess the stress levels in each distributor, incorporating the thermal analysis results as boundary conditions. Figure 11 displays the von Mises stress levels for each distributor. The highest stress levels were noted in the 3D printed distributor. In contrast, utilizing the ConDuct distributor could lead to a 46% reduction in stress compared to the 3D printed version.

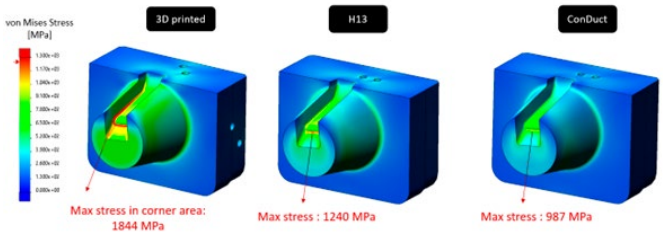

***Figure 11** – The stress level of various distributors.*

Venting

In cold chamber die casting, the alloy is injected into the mold cavity at high pressure and speed, often trapping small amounts of air and gases within the casting. For structural castings, those subjected to heat treatment, or castings sensitive to porosity, these air or gas inclusions can result in rejections, adversely impacting the die caster's profits. In today's competitive market, this preventable issue is not acceptable. To mitigate this, a vacuum is applied to both the shot sleeve and the mold cavity, maintained until the injection cycle is complete, effectively eliminating nearly all air from the mold. A proper vacuum allows the alloy to fill complex shapes and enables a smooth merging of the molten metal front. However, a significant challenge with vacuum systems is the downtime associated with vacuum valves, which have numerous moving parts and are prone to failure. The costs, maintenance, and downtime related to vacuum valves can be considerable. In contrast, a well-designed copper chill vent, which has superior thermal conductivity, features no moving parts and does not require additional water cooling or ejector pins. Figure 12 illustrates a copper chill vent that operates without these additional requirements. A common problem for die casters is unplanned downtime, which forces casting to halt before the scheduled production run is complete[3].

***Figure 12** – Copper chill vent requires no water cooling and ejector.*

Summary and Conclusion

This paper explored several critical components, including the shot sleeve, plunger system, lubrication, distributor,

and venting. It also included a simulation study of different cooling rings at the die end of the large shot sleeve, concentrating on their thermal and mechanical properties. Additionally, various plunger tip designs were simulated to assess their cooling efficiency and the solidification process in the biscuit area. Simulations of different distributors with cooling channels were also conducted to evaluate their thermal and mechanical performance. These insights aim to enhance the understanding of the thermomechanical behavior of larger tooling in the die casting process, addressing the challenges of producing larger components.

The following conclusions can be drawn from the paper:

1. The thermal analysis results showed that the ConDuct donut sleeve outperforms other sleeves in cooling the biscuit area. The simulations indicated that the stress level in the gating area of the ConDuct donut sleeve was 7% lower than that of the original sleeve, and the stress in the inner diameter (ID) area decreased by 5% compared to the original design.
2. The more expensive additively manufactured tips did not lead to significant improvements in cooling performance. The AM1 tip, made from Maraging steel, was less effective in cooling than the ARP and CRP ConDuct tips, while the AM2 tip, made from H13, showed some cooling improvement but compromised structural strength due to its design.
3. Effective lubrication depends on using only the necessary amount and applying it precisely where needed. A plunger rod lubrication system with a splash guard enhances safety and extends the lifespan of tooling components for long shot sleeves by delivering a precise amount of lubricant to the die-end bore of the shot sleeve before the plunger retracts.
4. The thermal analysis indicated that the distributor made from conductive material has superior heat extraction capability. Furthermore, static analysis revealed that the 3D printed distributor experiences the highest stress levels. Using the ConDuct distributor could reduce stress by 46% compared to the 3D printed version.
5. A good vacuum aids the alloy in filling complex shapes and allows the molten metal front to merge seamlessly. However, a major challenge with vacuum systems is the downtime associated with vacuum valves, which have many moving parts and are prone to failure. The costs, maintenance, and downtime linked to these valves can be significant. In contrast, a well-designed copper chill vent, which has higher thermal conductivity, contains no moving parts and does not require additional water cooling or ejector pins.

Acknowledgments

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References

1. *Y. Mahmoodkhani, P. Rahnama, and P. Robbins, "Bigger Castings, Bigger Problems: A thermo-mechanical simulation study with a focus on the effect of shot sleeve size", DIE CASTING ENGINEER, September 2022, pp. 10–14.*
2. *Y. Mahmoodkhani, P. Rahnama, and P. Robbins, "Plunger Tip Evolution in the Die Casting Industry: Material, Design, and Lubrication", DIE CASTING ENGINEER, May 2022, pp. 10–17.*
3. *P. Robbins, "Plunger System for Silafont", DIE CASTING ENGINEER, September 2014, pp. 10–17.*

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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

Gibbs Die Casting Corporation
Henderson, KY

Gnutti Carlo Canada Ltd. - Light Metals Div.
Ljunghall, 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

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

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

Troy Design & Manufacturing*
Plymouth, MI

TRU Die Cast Corp.
New Troy, MI

TVT Die Casting Die Casting & Manufacturing
Portland, OR

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

Canmet MATERIALS - Natural Resources Canada
Hamilton, ON, Canada

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

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
Pine Brook, NJ

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

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

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

Socitec US LLC*
Broadview, IL

Spectro Alloys Corp.
Rosemount, MN

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

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

Wheelabrator Group
LaGrange, GA

Wollin USA
Plymouth, MI

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

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

New Members: *Friedrich Dallinger, Matthias Gamisch, Marc Perberschlager, all from Fill USA, Inc.; Eric E. Henkelman, Franklin Metal Trading Corporation; Doug Kukulis, General Die & Engineering Inc.; Matthew Thavis, Chem-Trend, LP; James J. Vance, General Die & Engineering Inc.*

Chapter 5 - Chicago

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

New Members: *Michael W. Miller, PremierMetals, Inc.*

Chapter 6 - Cleveland

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

New Members: *Chris Sullivan, Molten Metal Equipment Innovations; Shirly Zhao, BOLE Machinery*

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: *Gerardo Alvarado, Maria Guadalupe Barrera, David Montano, Daniel Rivera, Gabriel Romero, Jr., Stephen Ward, all from Humanscale Corporation*

Chapter 10 - Ontario

Topic of the Presentation:
Developing Solutions for Large-scale Die Casting Challenges in a Small-scale R&D Environment

Our May Speaker and Virtual Presenter was Alexandre Gariépy, National Research Council Canada.

On May 16, the NADCA Ontario-Quebec chapter 10 hosted a dinner-conference in Montreal, QC. Thirteen members joined in-person, with twelve more members joining online. This was the 5th presentation of a series that focused on the challenges and solutions for giga-casting. After four presentations since October 2023 by industrial stakeholders involved in different machine and tooling aspects (L.K. Machinery, Bühler, Castool and Cana-Datum), the presentation by the National Research Council Canada (NRC), a research and technology organization of the Government of Canada, brought the perspective of a small-scale R&D laboratory on developing solutions for large-scale requirements.

The NRC is one of three public research and development organizations in Canada, with the Centre de Métallurgie du Québec and CanmetMATERIALS, operating high-pressure vacuum die casting facilities. The NRC's 530-ton die casting machine capacity stands in the middle of the group, yet is at least an order of magnitude smaller than the 8000-ton-plus machines now involved in structural giga-casting.

The speaker, Alexandre Gariépy from the NRC's Aluminium Technology Center, first briefly introduced the experimental, numerical, and modelling capabilities in manufacturing that are leveraged in projects within the METALTec industrial R&D group that are also supported by partners such as the Canadian Office for Energy Research and Development or Quebec's Centre de Recherche et Développement de l'Aluminium. The presentation then focused on how the NRC's digitalization efforts can contribute to solving the potential industrialization challenges for large, high-integrity castings with a specific focus on their ductility requirement.

Since 2019, the NRC has focused its die casting R&D on digitalization for structural applications. They introduced a server and edge computer, a SCADA system (on the Ignition® platform), a SQL database, a data collection system, optical imaging, and layers of Python® codes throughout the foundry facility to collect and organize rich data and progressively replace the incumbent Excel workbooks. Leveraging a die block originally built by Cana-Datum for 200-mm-long, thin-walled plates, the group has also introduced a range of inserts to introduce specific features trying to replicate the difficulties of large-scale castings, as well as serving as a platform for sensor development.

One question of interest in recent projects was the predictability of tensile elongation in specimens machined from prototype castings, with the end goal of finding solutions to control its dispersion. Using short series of a few hundred castings, the first application was the correlation between microstructure and ductility; this was the topic of a paper at the 2022 NADCA Congress. Using advanced image analysis, the primary aluminium, external solidification products, eutectic, porosity, and intermetallics distributions were quantified close to the fractures across a range of wall

thicknesses. Machine learning led to a good predictability of yield strength based on microstructure characteristics, but predictability of tensile ductility was much more challenging, likely due to the localized nature of detrimental features. The second application, closer to an industrial framework, was trying to identify correlations between process data and measured ductility. In this case, 600 tensile specimens were machined and tested from 100 prototype castings in relatively steady conditions. For each of these castings, traceable process data including native outputs from the DCM and vacuum unit, as well as many additional metrics coming from added sensors and/or analyses related to temperatures, lubricants, and ladle state, was available. Again, multiple machine learning regression algorithms were tested in an attempt to establish links, but the correlations remained poor; this is consistent with the observed, non-systematic spread of ductility within each individual casting even at a relatively small scale.

***Chapter 10** - Alexandre gives his presentation as chapter members pay attention.*

Rich process data is also the basis for NRC's process simulation activities. One challenge with die casting simulation is the sheer number of individual coefficients, or even functions, that need to be set to quantify the magnitude of the flow, thermal and solidification phenomena governing the process. Furthermore, for some key values such as the heat transfer between the melt and the die that drives heat loss during filling, a wide range of values spanning orders of magnitude have been reported in the literature, which certainly plays a role in interpreting the results. The instrumented cell provides extensive data that can be used to independently calibrate specific aspects of the simulations, towards a continuously more refined digital twin of the process. The NRC's latest focus was on the peripherals that are currently less widely accounted, which will be the topic of a paper submitted for this Fall's Congress & Exposition.

While creative approaches could replicate to some extent the challenges of long, intricate flow paths in giga-castings at a much smaller scale and previous 4000-ton-range structural applications provide companies with good background data, the ability to fill large cavities - and perhaps even more importantly the quality that can reliably be achieved throughout the part - is in the end proven at the expensive "giga" scale. De-risking large, costly tooling certainly goes through process modelling. Similarly, running the process can benefit from advanced data collection and analytics. In both cases, these are areas the NRC has been and is still working on, developing and testing data management infrastructures, algorithms, and models at small scale, and looking to scale them up in collaboration with industry and other R&D organizations to contribute to the continued competitiveness of Canadian and North American die casters.

***Chapter 10** - Attendees listen in to the presentation.*

Chapter 12 - Wisconsin

On October 22, Chapter 12 held our annual meeting and fall event at Delafield Brewhaus in Delafield, WI. The event included networking, a dinner, officer elections, and a fantastic talk.

A special thanks to Angela Cox, Theresa Walley, and David Blondheim for serving on the 2024 Chapter 12 board. Jesse Barron will continue on the board for 2025, serving as the Chairperson. Those elected and being added to the board for 2025 include: Aaron Kostuch as Vice-Chair, JJ Tikusis as Treasurer, and Sean Frank as Secretary. Congratulations to Aaron, JJ, and Sean!

After the Chapter 12 elections, the meeting was turned over to Omar Nashashibi, founder of Inside Beltway, a nonpartisan lobbying and strategic consulting firm in Washington, D.C. Omar's talk was entitled "Taxes, Trade, Regulations: Why Elections Matter". The timing of Omar's talk could not be more perfect with the overall election a few short weeks from the meeting. Omar provided a lot of insight into what is occurring in Washington, D.C. and the direct impact it has on foundries. It was a great and insightful talk.

***Chapter 12** - Omar starting his great talk on Taxes, Trade, and Regulation.*

***Chapter 12** - A special thanks to our outgoing Chairperson, Angela Cox.*

Looking forward to 2025, Chapter 12 will have our State of the Industry talk, a Spring Seminar, and a Spring meeting. Details for these invents can be found at our chapters' website: www.nadca12.org.

Chapter 14 - S. Ohio

Chapter 14's leadership team consisting of Monte Swigart, Scott Frens, Bryan Dahms and Rob De Neff held a meeting in September 2024 to discuss the NADCA Chapter 14 2025 schedule. Special attention was paid to selecting today's relevant topics and tours that would be interesting to our chapter members.

The agreed to following topics and corresponding dates for presentation/participation will be as follows:

- **Tuesday, January 14th**
  Presenter: "REAL Alloys", Cleveland, OH.
  Topic: "Latest in Ingot Production Technology".
  I asked REAL for an overview of how recycling, commercial and residential plays a part. Discussions breakouts could include EPA directives, Green Initiatives and Carbon Credits etc.

- **Tuesday, February 11th**
  Presenter: Schaefer Furnaces, Dayton,OH.
  This session will take place onsite at Schaefer furnaces new facility located at 1300 Grange Hall Road Dayton, OH 45430

- **Tuesday, March 11th**
  Presenter: NADCA Corporate Beau Glim
  Topic: State of the Industry R3.
  I am calling this session R3 as Beau will have 3 months of 2025 data that he will use to update the original presentation.

- **Tuesday, April 8th**
  OPEN: Let us know if you have requests for a topic or tour. If not the next event will be the Golf Outing.

- **Thursday, June 5th**
  Golf Outing at Pipestone Golf Club 2050 Benner Road, Miamisburg, OH

Watch your inbox for our official e-mailing of the 2025 tech session season. As always these mailings will detail the technical session topics, speakers and meeting locations.

We look forward to sharing a fun and educational 2025 program with our Chapter 14 membership.

Happy Holidays to you all. Looking forward to seeing you in 2025.

New Members: *Mirko Mabellini, Colosio USA Inc.*

Chapter 15 - Southeastern

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

New Members: *Jeff Rudd, Mangas-AarKel Tool and Engineering Inc.*

Chapter 16 - Minnesota

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

Chapter 17 - St. Louis

Please mark your calendars and plan on joining us at the First Membership Meeting of 2025! The meeting will be held on Tuesday, January 21st @ 5:00 PM at MOE'S In Washington, Missouri. Our guest speaker for this meeting will be Mike Meyer, NADCA National President and our Topic will be the State of the Die Cast Industry. A question-and-answer session will follow the discussion. This is a great opportunity for food, fun and fellowship, and meet our NADCA National President.

If you wish to attend, please email Kevin Voss at KVOSS@htdinc.com. We hope to see you!

New Members: *Chris Drinnon, JTEKT Automotive - Morristown Plant; Jake Svezia, Production Castings, Inc.; Adam Yager, Lakeside Casting Solutions*

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: *Daniel Anderson, IDRA North America Inc.*

Chapter 30 - Los Angeles

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

New Members: *Rani Macavinta, Swarco McCain Inc.*

International Members: *Engin Kilinc, Habas Auto; Akshay Hareshbhai Pansuriya, Jay Khodal Metal; Jorge Alberto Rodriguez Palma, Robert Bosch LLC*

Industry News

RHEOCAST REBRANDS TO FALL RIVER DIE CAST

Fall River Die Cast
The Fall River Group, Inc

Germantown, WI – Rheocast Company, a manufacturer of aluminum and brass high pressure die castings, has rebranded to Fall River Die Cast effective January 1, 2025.

"We've changed the company's name for several strategic reasons," says Charlie Wright, Jr., VP of Operations, Board Chair, and third-generation member of the ownership family. "Our new name better reflects the company's membership in our holding company The Fall River Group, Inc., as a division along with its sister company, Fall River Foundry."

According to Wright, the two casting divisions are a growing, financially strong, independent family-owned sand foundry, die caster, and machining company that will continue to lead the non-ferrous sand and die casting industries.

John Cleary, a die casting industry expert with more than 40 years of experience, joined the team as Operations Manager over two years ago. "John has been instrumental in spearheading our operational transformation to a modern, competitive, state-of-the-art die caster," says Wright.

Cleary and Wright are executing an aggressive five-year growth and investment strategy that they say is going according to plan. Fall River Die Cast secured two new significant customers in 2024, and the team is working to onboard the business now by building new tooling and completing samples for customer approval. The new business is expected to be online by March 2025 and represents a significant 50% growth in revenue.

As part of this strategy, the company has invested heavily in the operation by automating die casting cells with advanced robotics and by installing an efficient, centralized aluminum melting system. "It's incredibly rewarding to see what we've been able to accomplish in such a short amount of time," says Cleary.

Wright and Cleary now have plans to invest in a new 1,200 ton Yizumi-HPM Leap die casting cell to further enhance the company's growing capabilities. The machine will use artificial intelligence to perfect casting shot profiles, allowing Fall River Die Cast to make higher quality castings at more competitive prices.

Cleary says, "We are working hard to transform this company into a major player in the American die casting industry and are assembling the best team in the business right now to help execute our vision."

The company hopes the name change demonstrates this new direction within the marketplace. Wright adds, "It's a very exciting time for us. We've been producing die castings since 1977, and together as a team we are building the foundation for the next 50 years of growth."

FRECH WINS AWARD FOR USE OF THE VACURAL® DIE CASTING METHOD IN MANUFACTURING COMPLEX LIGHTWEIGHT COMPONENTS

As a member of a project consortium of renowned and leading companies and institutions, Oskar Frech GmbH + Co. KG has won the "IMA-Award of Excellence for Processes."

Novel methodology in designing an ultra-light gearbox cover for the electrical drive train of a passenger vehicle was recognized. The quality of the casting was increased and an additional weight reduction of 34 percent was achieved by using an improved Vacural® die casting method from FRECH.

This honors FRECH's comprehensive expertise in innovative die casting solutions for developing lightweight structures in connection with electric mobility.

"We are thankful to our partners for their excellent collaboration," said Dr. Thomas Franco, Chief Technology Officer of Oskar Frech GmbH + Co. KG.

FRECH was recognized as a member of a project consortium of renowned and leading companies and institutions. With the project "InDrutec-E," this consortium has taken on the mission of taking over technological leadership in the field of die casting of lightweight metal alloys through innovative developments, including in the field of electromobility. The project consortium developed a design methodology for ultra-light gearbox covers of the electrical drive train for passenger vehicles. This provides an additional lightweight construction potential of 15 to 35 percent in bearing applications such as housings and covers, through the use of magnesium.

SUN METALON ANNOUNCES RELOCATION OF HEADQUARTERS TO ILLINOIS

Wood Dale, IL – SUN METALON INC., recently announced the immediate relocation of its corporate headquarters from Cambridge, Massachusetts, to Wood Dale, Illinois.

The growing billion-dollar global metal recycling market is driven by increasing environmental awareness and expanding demand for metal scrap as a recycled raw material. SUN METALON's electromagnetic technology can cut CO2 emissions and reduce energy consumption by up to 85% compared to existing methods for heating and purifying metal chips and swarf, while also enhancing safety

and quality. This technology can revitalize various types of metal wastes into higher-value resources, revolutionizing the metal manufacturing industry, which accounts for more than 10% of global CO2 emissions, and realizing clean and sustainable production.

"Relocating our world headquarters near Chicago positions our company closer to key foundry, die casting, smelting, and machining clients involved in automotive, construction machinery, heavy industry, and steel manufacturing, allowing us to deliver exceptional service and support to those who need it most," said Kazuhiko Nishioka, CEO of SUN METALON.

3D PRINTING SUPPORTS THE AUTOMOTIVE LARGE-SCALE CASTING TREND

3D printing is becoming more useful for making production parts for cars, as seen but the use of 3D-printed control arms on the upcoming Ferrari F80 supercar. But the technology plays an important role in making large-scale castings practical for mass production.

That's according to Jon Walker, key account manager at EOS, a leader in manufacturing and 3D printing. He says that the automotive industry's interest in large-scale castings and its interest in 3DP is similar. "It aligns with the stuff we talk about in 3DP, which is part consolidation," he said. "You have something that had to be four or five separate tools or four or five separate parts to be welded and finished and consolidate it to one."

While the two manufacturing techniques might sometimes be positioned as competitors, 3DP supports large-scale castings because of the need for inserts in the casting die that create the right shape.

"I have seen pictures of die-casting tools where you can walk through them," said Walker. "It is like standing in the jaws of a megalodon in the museum to show how big the shark is!"

The parts that come out of such huge dies are equally impressive. "Think how much time it saves, making one large tool and reducing downstream assembly," he said. "It can just go to the next step faster. There is much less finishing work involved. Those are huge quantifiable savings. Any time you can take something that was three components or six or ten and get it down to one monolithic part, you do it."

Of course, if it was easy to do this, large-scale, high-pressure die casting would have happened a lot sooner. "Bigger tools create new challenges," Walker observed. "New challenges create the opportunity to use 3DP inserts."

People in Die Casting

Mick Nallen and Satyen Prabhu
Inductotherm Group Co-Leaders

Inductotherm Group is proud to announce the appointment of Mick Nallen and Satyen Prabhu as Co-Leaders, effective July 1, 2024. This strategic move is part of our ongoing commitment to fostering innovative leadership and ensuring the continued success of our company.

Mick Nallen, a veteran of the industry with 32 years at Inductotherm Group, has a proven track record of driving operational excellence and strategic growth in North America and the Asia Pacific region.

"The fundamentals of our organization still hold true today. We are entrepreneurial at heart. We are responsive. But, most important, we are customer-driven," says Mr. Nallen.

Satyen Prabhu, a seasoned industry veteran with 37 years at Inductotherm Group, brings vast experience in fostering the exchange of best practices and induction technologies across Group companies, significantly bolstering our global organizational strength.

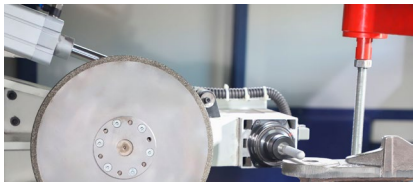
Mr. Prabhu emphasized, "To effectively serve our customers, Inductotherm Group maintains a global yet locally responsive presence, leveraging manufacturing facilities in multiple countries alongside local sales and service teams to deliver swift and reliable support."

"We are extremely pleased to have Mick Nallen and Satyen Prabhu take on the roles of Co-Leaders," said Virginia Rowan Smith, Chairman of Inductotherm Group. "Their combined experience and forward-thinking approach are perfectly aligned with our mission to deliver innovative induction technologies and exceptional value to our customers. We are confident that their leadership will drive our company to new heights."

As Co-Leaders, Mr. Nallen, and Mr. Prabhu will carry on our founder's legacy of emphasizing the importance of responsive customer service delivered by a reliable company which can react quickly without compromising good decision making. They will work closely to develop and implement strategies that enhance our product offerings, expand our global teams' local presence, and reinforce our commitment to excellence in the thermal processing industry. Their leadership will ensure that Inductotherm Group continues to thrive and evolve in a rapidly changing market.

New Products, Services & Solutions

DISA GRIND: Revolutionizing Grinding for Non-Iron Foundries



DISA, a Norican technology, introduces DISA GRIND, an automated grinding solution tailored for your foundry to produce the best casting from aluminum to other alloys. This innovation benefits manufacturers of automotive parts, medical devices, and intricate computer components by delivering fast, precise, and clean finishing.

Why DISA GRIND?

Manual grinding is labor-intensive, inconsistent, and poses safety risks, making it hard to find skilled workers. DISA GRIND automates the process, ensuring consistent quality, higher productivity, and a safer, cleaner workspace. It's easy to program with an intuitive touchscreen and handheld control, ideal for frequent casting changes and short production runs.

Versatility and Efficiency

Available in two sizes, DISA GRIND accommodates castings up to 2,645 lbs. (1,200kg), effortlessly grinding alloys like aluminum, steel, bronze, and copper. With pallet-loading options, it supports long production runs, cutting labor needs further. Its compact design requires no special foundation and offers minimal maintenance, ensuring reduced downtime and lower operational costs.

Transform Your Foundry

DISA GRIND addresses key foundry challenges: slow, inconsistent manual grinding, and labor shortages. By combining advanced automation with user-friendly controls, it enhances efficiency and ROI, making automated grinding accessible for foundries of all sizes.

"DISA GRIND is the solution our customers asked for," says Bo Wolff Haugbølle, Vice President OEM Sales at DISA. "It delivers consistent quality, higher productivity, and fast ROI."

Elevate your grinding operations with DISA GRIND—better for your team, better for your business.

Read the story at:
https://tinyurl.com/mwjun3nj

Revolutionize Aluminum Transport with Safe-T Ladle

StrikoWestofen's Safe-T-Ladle is a cutting-edge solution for molten aluminum transport, prioritizing safety, efficiency, and metal quality. By aligning the pouring spout with the axis of rotation, it ensures a consistent aluminum stream during pouring, eliminating the need for forklift operator adjustments.

Safety takes center stage with premium multi-layer insulation to maintain low skin temperatures and reduce heat exposure. A tight-fitting lid minimizes heat loss and contains metal splashes during transport. This design also enhances metal quality by eliminating the need for super-heating before transfer, making operations safer and more energy efficient. Trusted by foundries worldwide for over a decade, the Safe-T-Ladle delivers reliable results while saving energy.

Key Features:

• **Simplified Operations**: Eliminates the need for forklift rotating attachments, with hydraulic controls powered directly by the forklift battery. Adjustable tilting speeds help meet diverse operational requirements.

• **Enhanced Safety:** Insulated spouts and lids protect operators, while low-skin temperatures ensure a safe working environment.

• **Energy Efficiency:** Drastically reduce heat loss to as little as 1°C per minute, minimizing the need to "super-heat" your metal before filling and with reduced oxide formation.

• **Customizable Design:** Tailor the Safe-T-Ladle to your specific needs with adjustable dimensions, pouring tube lengths, lid options, and paint colors!

Upgrade your aluminum transport process with the Safe-T-Ladle's performance, safety, and simplicity. It's the essential tool for modern foundries seeking operational excellence.

For more information and technical data contact our team here or at Striko.Sales.NA@noricangroup.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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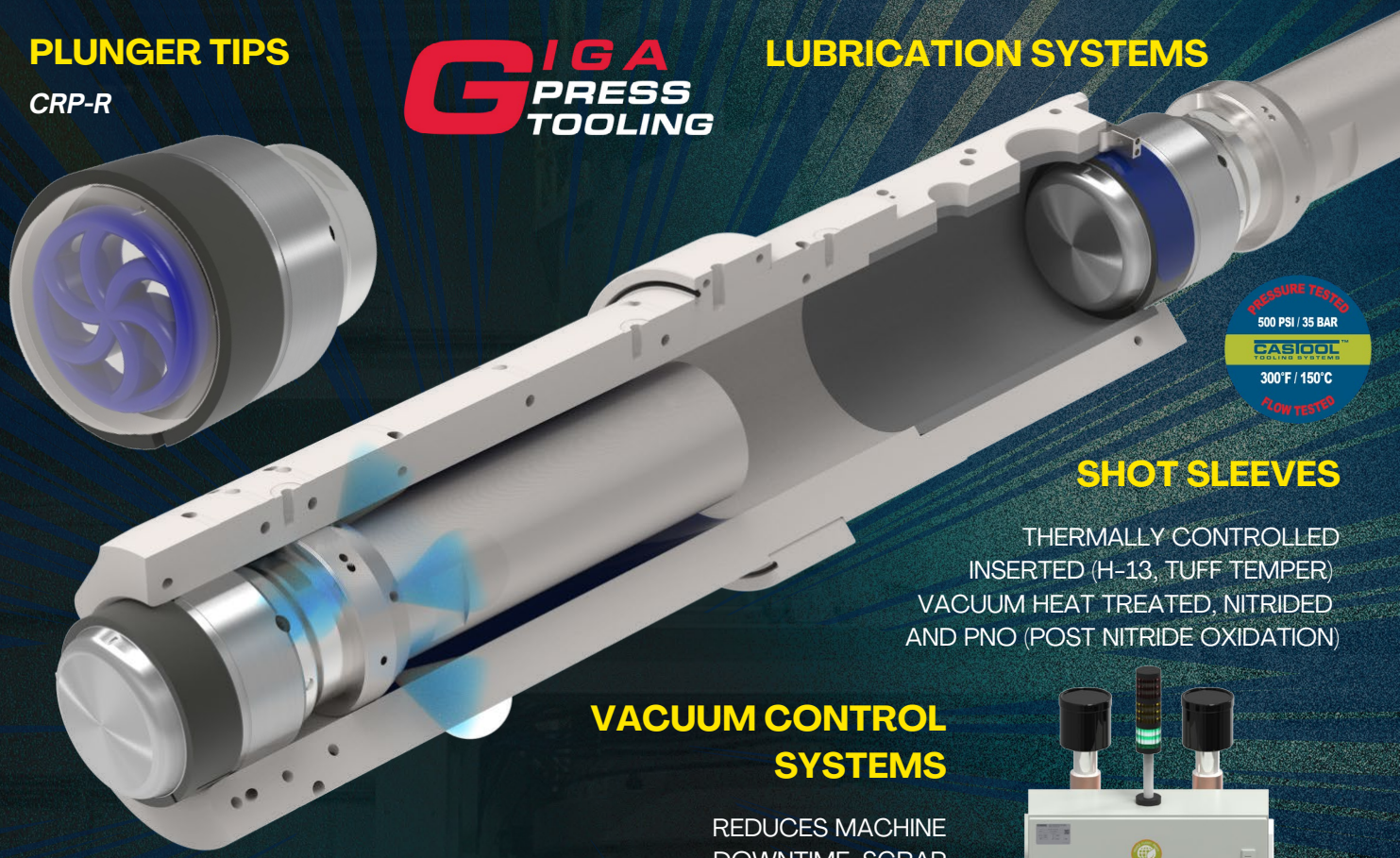

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