

# INDUSTRY BEST PRACTICES

Best practices are a set of guidelines, ethics, or ideas that represent the most efficient or prudent course of action in a given business situation.

2024 - 2025

## Chapter 3

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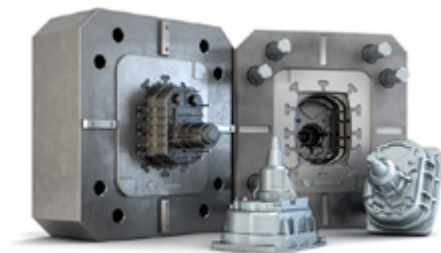


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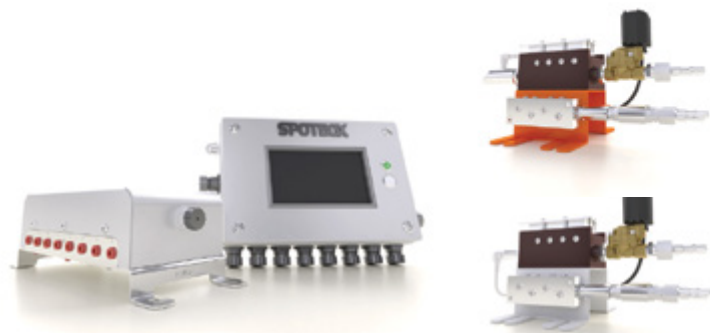
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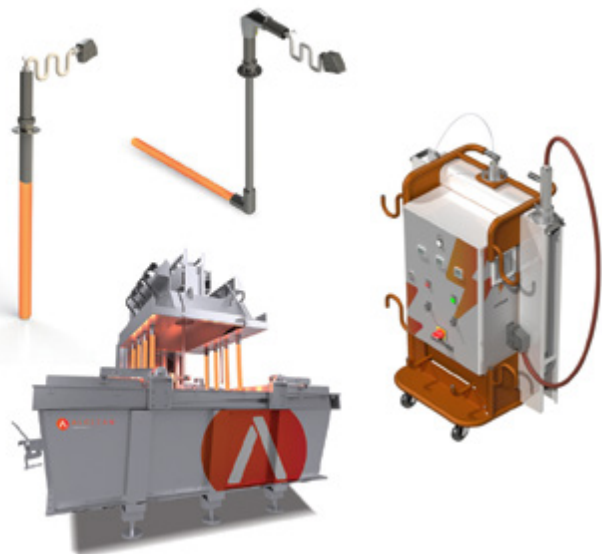
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**NADCA**



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### About the Cover Art

The NADCA Chapter 3 Member Directory cover art for 2024-2025 is designed to the theme of "Industry Best Practices". The notes that are pinned to the corkboard include key words that describe the best practices that the industry strives for. Peeking out from behind the header is the actual definition of "Best Practices".

### Editorial Information

The NADCA Chapter 3 Member Directory is a nonprofit publication, developed annually by the Chapter 3 Board Members. Advertising proceeds benefit Chapter 3 members, future, and current die casting professionals via free chapter dinner meetings, educational classes, scholarship awards, and much more.

Every effort has been made to avoid errors, misspellings, and omissions. If an error comes to your attention, please accept our sincere apologies and notify us so we may correct it in future issues.

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**NADCA**  
CHAIRPERSON

**As a Chapter, Our Goal is to:**

- Advance the science of die casting through education and research.
- Provide knowledge and application to the projects of our industry.
- Support the study and development of best practices related to die casting.
- Provide, evaluate and exchange information related to Safety, engineering, metallurgy and mechanics in the industry.
- Educate, train and recruit young people into the field of die casting.

The Chapter theme for 2024 is **"Best Practices"**. Our intent is to provide a ground level view of each of the topics below:

1. Metal Cleanliness & Furnace Tending
2. Spray Technologies & Thermal Imaging
3. Shop Cleanliness/5S How to Start and Maintain
4. Operator Training, Quality Control at Cast Center, and/or Safety (VR?)

**Chapter Meetings**

Our dinner meetings are a great way to learn about industry related topics as well as connect with other industry professionals. We have moved our meetings downtown Grand Rapids for easy access for all. Pizza, drinks and education, what a great way to learn. Please check the website for dates and locations. [www.nadchapter3.org](http://www.nadchapter3.org)

**Golf Outing**

Once again, we want to say thank you to our Golf Outing duo, Steve Barendse and Steve Rikkers for putting together a successful event. We use 100% of the golf proceeds to support education of our industry piers as well as awarding college scholarships to students in our industry.

**Upcoming 2024 Events**

The NADCA Die Casting Congress and Expo is scheduled for September 30 through October 2 in Indianapolis, IN. We would encourage everyone to attend the NADCA event if possible. Chapter 3 has also scheduled a Vendor Night/Reception on August 15 to be followed by our Golf Outing, August 16th. Please see [www.nadchapter3.org](http://www.nadchapter3.org) for details and signup.

**Membership Directory**

We feel this directory is one of the best resources for local Die Casters and Suppliers. Under the guidance of Steve Rikkers, Rob McInerney, and their team, the Chapter 3 Board Members would like to say Thank You for advertising. Your company support helps the chapter's educational efforts. All information is located on the NADCA chapter website. [www.nadchapter3.org](http://www.nadchapter3.org)

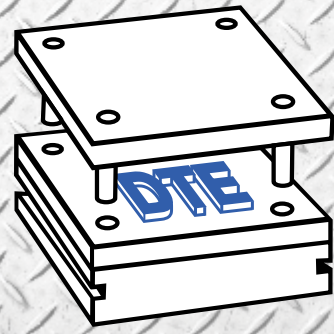
Thank you for your continued support,

**Todd Ikerd**  
NADCA Chapter 3 Chairperson



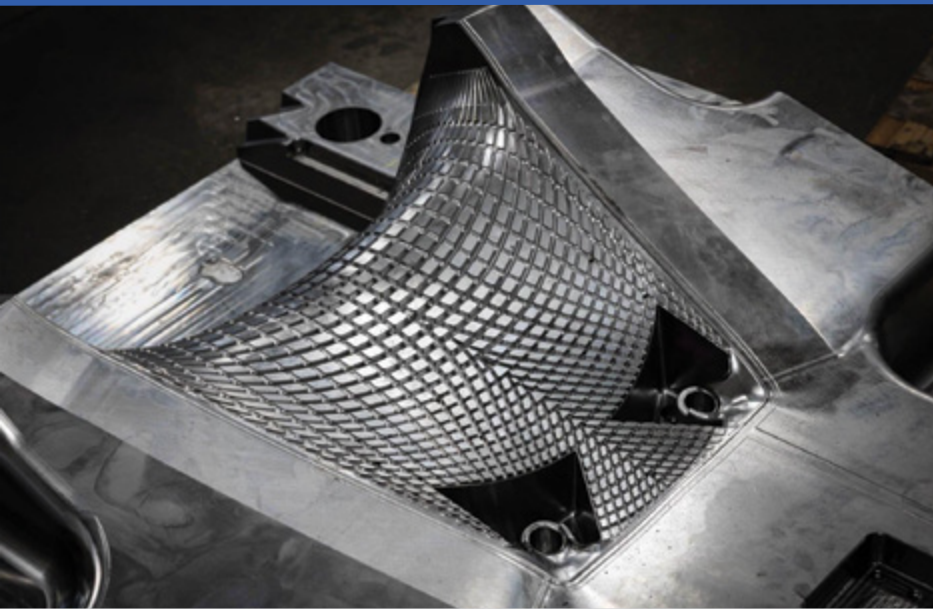
**Todd Ikerd**  
NADCA Chapter 3 Chairperson

*"Thank you for making this year's events for Chapter 3 successful. The reason we take the time to educate, collaborate and provide fun activities, is to help the companies within the chapter become better suited for the die cast challenges ahead."*

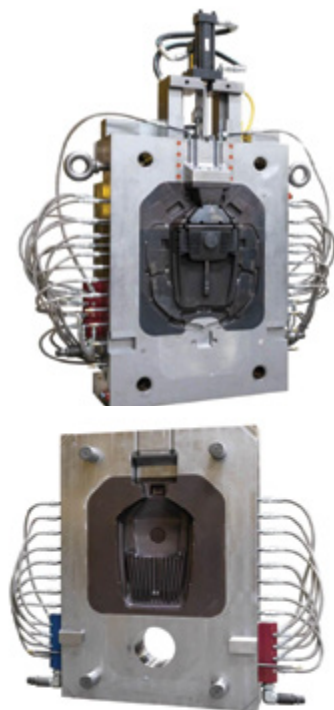


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## STATE OF THE DIE CASTING INDUSTRY

**Mike Meyer**  
NADCA  
Arlington Heights, Illinois

**Andrew Ryzner**  
NADCA  
Arlington Heights, Illinois



Figure 1 - President Biden Signing Legislation into Law.

### Introduction

As we leave 2023 and enter 2024, there are reasons to be cautious from an economic standpoint. The Russia/Ukraine Conflict is still lingering on, and the conflict in the Middle East continues with no apparent quick ending. Interest rates continue to be high, but housing starts appear to be holding strong. Our industry, and the rest of the US economy, has softened slightly from historical highs. Throw in a presidential election in 2024, that appears to be identical to 2020, and most citizens are less optimistic than a year ago. With all that said, most believe our economy will remain relatively stable in the first two quarters of 2024, and then start to tick up in Q3.

### The Biden Administration

As we near the end of Biden's term in the presidency, the top priorities as of November 2023 include:

- Control Covid 19
- Economic Relief
- Climate Change
- Immigration Reform
- Racial Equity
- Infrastructure
- Health Care
- Restoring America's Global Standing

Climate change priorities in more detail include the pushing of electric vehicles, have a 100% clean energy economy, and reach net-zero emissions by the year 2050. Infrastructure has a focus of \$2 billion targeting a climatefocused plan, an overhaul of green energy, new roads and bridges and expanding broadband.

The administration has listed its accomplishments as follows:

- More Americans working than ever before
- Lowering costs of families' everyday expenses
- Making more in America
- Rescued our Economy
- Changed the course of the Pandemic
- Protected Marriage for LGBTQI+
- Rallied the World to support Ukraine
- Successful missions against ISIS & Al Qaeda

### Overtime Proposed Rule

The overtime proposed rule expansion update public comment period closed on November 7, 2023. Once the Labor Department issues a final rule, it will take effect after 60 days time. The proposed rule increases time and a half eligibility for salaried EAPs from \$35,568 to \$55,068. The final rule could increase that threshold to \$60,209.

#### 1. What are the estimated costs, benefits, and transfers of the proposed rule?

The Department estimates that in year 1, the proposed rule would impose \$1.2 billion of direct costs on employers, including \$427.2 million in regulatory familiarization costs, \$240.8 million in adjustment costs, and \$539.9 million in managerial costs. The Department estimated that the proposed rule would result in year 1 income transfer of \$1.2 billion from employers to employees, predominantly from new overtime premiums, or pay raises to maintain the exempt status of some affected employees. Beyond these wage transfers, the proposal could reduce the risk of misclassification, increase worker productivity, reduce employee turnover, and increase personal time for workers.

#### 2. How many employees would be impacted by the proposed salary level increase?

In the first year, the Department estimates that 3.4 million workers exempt under the current regulations who earn at least the current weekly salary level of \$684, but less than the proposed salary level of \$1,059 would, without some intervening action by their employers, become newly entitled to overtime protection under the FLSA.

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Similarly, the Department estimates that an additional 248,900 workers who earn at least \$107,432 per year (the current HCE total annual compensation level) and who meet the minimal HCE duties test but not the standard duties test, would, without some intervening action by employers, become eligible for overtime if the HCE total annual compensation level were increased to the proposed level of \$143,988 per year.

The proposed guidance explains the legal standards and employer liability applicable to harassment claims under the federal employment discrimination laws enforced by the EEOC. These laws protect covered employees from harassment based on race, color, religion, sex (including sexual orientation, transgender status, and pregnancy), national origin, disability, age (40 and older) or genetic information.

Specifically, it provides numerous updated examples to reflect a wide range of scenarios, incorporates updates throughout on current case law on workplace harassment, and addresses the proliferation of digital technology and how social media postings and other online content can contribute to a hostile work environment.

### Tariffs and Trade

#### Section 232 Tariffs

Japan and the UK have a tariff rate quota system in place - no tariffs until a quota is reached. The frequency is semiannual for aluminum and quarterly for steel. The EU has a quota deal it is working on to replace with a carbon-based tariff. The US and EU are likely imposing tariffs on excess steel and aluminum imports from non-market economies such as China.

#### Carbon-based Tariffs

The US wants to impose tariffs on carbon-intense imports as the EU Carbon Border Adjustment Mechanism reporting started on October 1, 2023. US talks with the EU could potentially lead to a 2024 carbon tariff start date.

#### Section 301 China Tariffs

There is a 25% tariff on over 6,800 Chinese imports; and 10% on 3,200 imports remain. The Biden administration should be concluding their review of tariff policy by December 31, 2023. It is unlikely that all tariffs are lifted, but they could allow for an exclusion process for some imports.

### Heat Rule is Coming

Another thing we do know is that a heat rule is coming. An emphasis program already exists, adding to that will be a written heat injury and illness prevention program. Heat hazards must be identified for employees, a cool down area and provisions for drinking water and rest breaks, and acclimatization rules. Supervisors and employees should be trained, and have a designated individual to oversee and implement the HIIPP.

Five SBAR (Small Business Advocacy Review) Panels included participants from: foundries, roofers, cemeteries, restaurants, line workers, landscapers, water parks, and so on. The most comment statement from each is: "We are already addressing this, do not create a blanket rule." The rule is likely to have more direction by the end of the year.

### Monthly US Exports

Exports from the United States increased by \$4.1 billion over a month to \$256 billion in August 2023, the highest level in five months, boosted by a \$3.1 rise in goods sales. Shipments of industrial supplies and materials increased \$2.7 billion, mostly crude oil (up \$1.5 billion) and fuel oil (up \$0.5 billion). Meanwhile, capital goods exports surged by \$1.1 billion, driven by increased shipments of computer accessories (up by \$0.5 billion) and semiconductors (up by \$0.3 billion). Consumer goods exports saw a \$1.0 billion rise, with pharmaceutical preparations increasing \$0.4 billion. Overseas sales of automotive vehicles, parts, and engines saw a decline of \$1.4 billion, with passenger cars dropping by \$0.8 billion, and trucks, buses, and special purpose vehicles decreasing by \$0.5 billion.

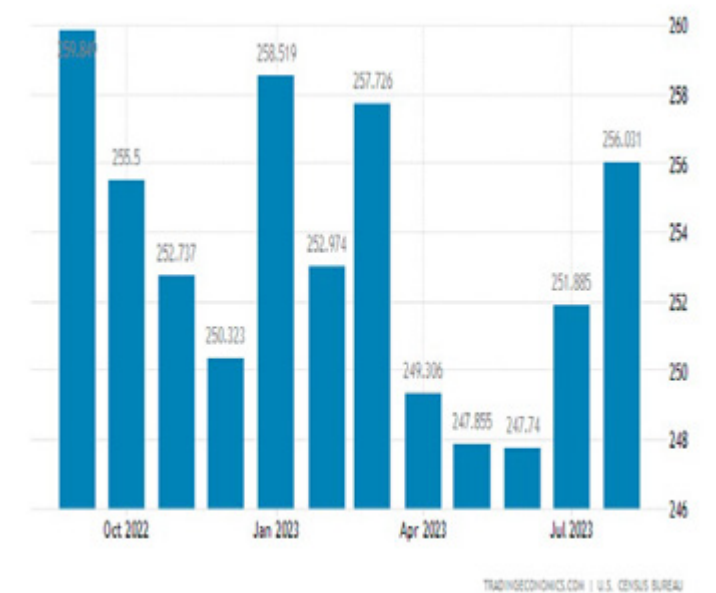


Figure 1 - Monthly US Exports - September 2022 - August 2023.

### Macro-Economics & Manufacturing Economic Challenges

Manufacturing activity remains robust, especially demand, with the U.S. and global economy continuing to rebound from the sizable declines in spring 2020. Real GDP and manufacturing production now exceed pre-pandemic levels, which is encouraging. And yet, significant challenges remain, including supply chain disruptions, worker shortages and soaring costs. In addition, the delta variant of COVID-19 is spreading rapidly in many markets, resulting in renewed restric-

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tions and dampening activity, particularly in the hard-hit service sector, which is struggling to regain a sense of normalcy and recovery. There have been many challenges posed by the pandemic. We will look at some of the impact COVID-19 has had on the economy, manufacturers and the die casting industry.

Supply chain problems persist, factory floor capacity remains diminished, consumer needs and spending patterns have changed, and the biggest factor—a once-in-a-century pandemic—remains a potent global force whose resurgence is uncertain and one whose remaining effects have yet to be realized.

Geopolitical concerns such as climate-related events, the Russia/Ukraine conflict, the ramp up to the US presidential race, attacks in the middle east, and so on, have the ability to affect the US and global economy.



Figure 2 - Global inflation rate from 2000-2022, with forecasts until 2028. (Percent change from previous year.)

The US economy expanded an annualized 4.9% in the third quarter of 2023, the most since the last quarter of 2021, above market forecasts of 4.3% and a 2.1% expansion in Q2, the advance estimate showed. Consumer spending rose 4%, the most since Q4 2021 (vs 0.8% in Q2 2023), led by consumption of housing and utilities, health care, financial services and insurance, food services and accommodations and non-durable goods (led by prescription drugs), recreational goods and vehicles.

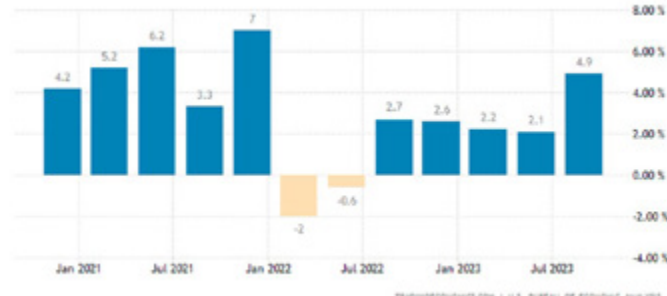


Figure 3 - US GDP growth rate.

GDP Annual Growth Rate in the United States is expected to be 0.30 percent by the end of this quarter, according to Trading Economics global macro models and analysts expectations. In the long-term, the United States

GDP Annual Growth Rate is projected to trend around 0.10 percent in 2024 and 1.10 percent in 2025, according to our econometric models.

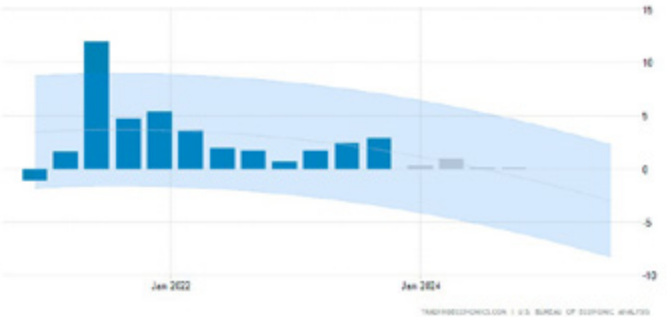


Figure 4 - US GDP forecast.

The Gross Domestic Product (GDP) in Canada expanded 1.12 percent in the second quarter of 2023 over the same quarter of the previous year. GDP Annual Growth Rate in Canada averaged 3.04 percent from 1962 until 2023, reaching an all time high of 12.10 percent in the second quarter of 2021 and a record low of -12.20 percent in the second quarter of 2020.

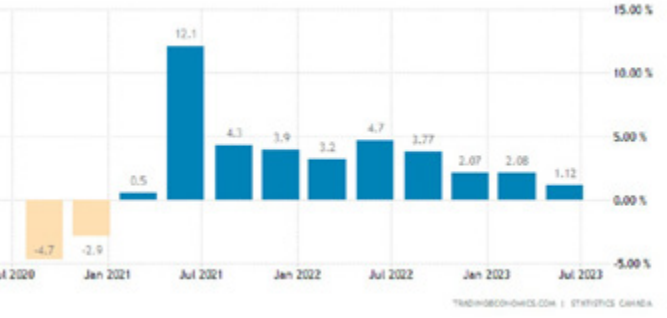


Figure 5 - Canada GDP growth rate.

GDP Annual Growth Rate in Canada is expected to be 0.80 percent by the end of this quarter, according to Trading Economics global macro models and analysts expectations. In the long-term, the Canada GDP Annual Growth Rate is projected to trend around 0.30 percent in 2024 and 2.00 percent in 2025, according to our econometric models.

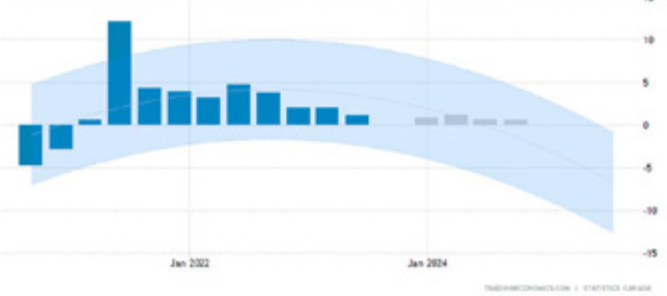


Figure 6 - Canada GDP forecast.

Mexico's gross domestic product expanded by 3.3% from a year earlier in the third quarter of 2023, beating market expectations of 3.2% and notching ten consecutive quarters of positive yearly growth, following the 3.6% expansion from the earlier quarter.



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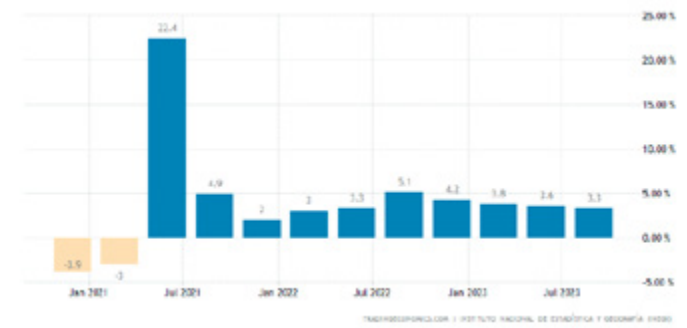


Figure 7 - Mexico GDP growth rate.

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 0.50 percent in 2023, according to our econometric models.

In the long-term, the Mexico GDP Annual Growth Rate is projected to trend around 1.60 percent in 2024 and 1.80 percent in 2025, according to our econometric models.

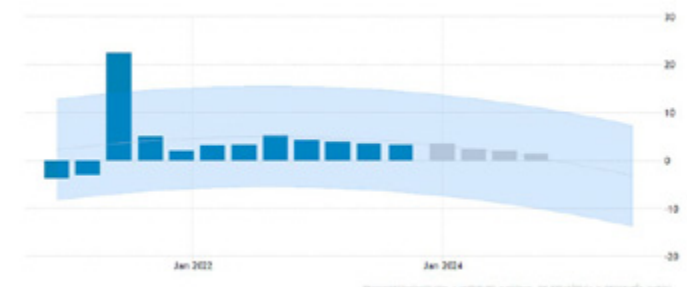


Figure 8 - Mexico GDP forecast.

Short-run and long-run expectations for economic conditions remained relatively flat, and consumers remain relatively tentative about the trajectory of the economy.

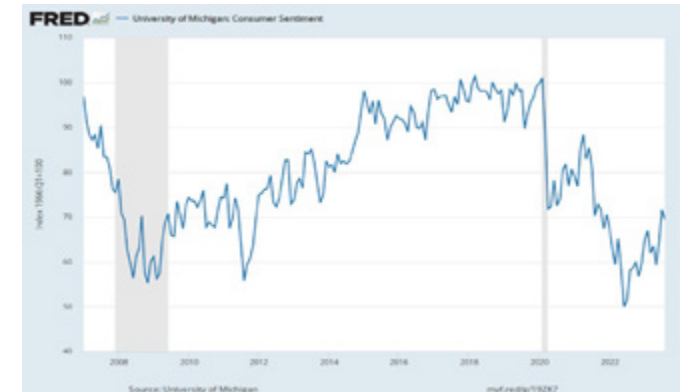


Figure 9 - Consumer sentiment dropping.

Overall employment in late 2019 was a 50-year record low of 3.5% Feb'20. COVID-19 caused an increase

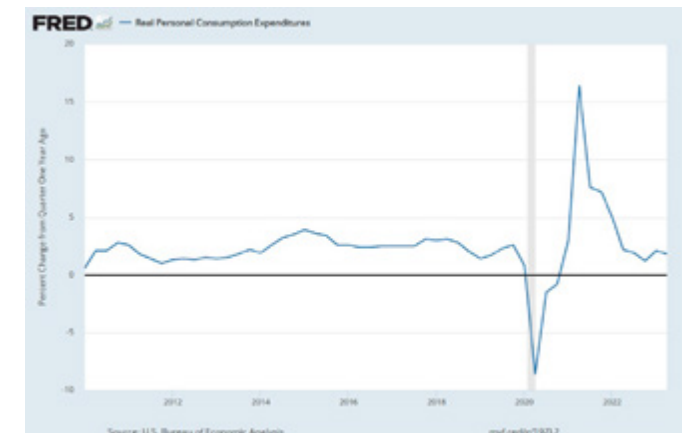


Figure 10 - Personal consumption remains somewhat positive, but not at 2021 levels.

to 14.8% in April 2020 impacting millions of workers. After the sharp rise in April 2020, unemployment declined to 6.3% in January '21, 5.9% in October '21 and 4.0% in January 2022. U.S. Unemployment rate is 3.9% as of October 2023. The unemployment rate reaches 4.1 percent by the end of 2023 and 4.7 percent by the end of 2024 before falling slightly. (Knoema.com)

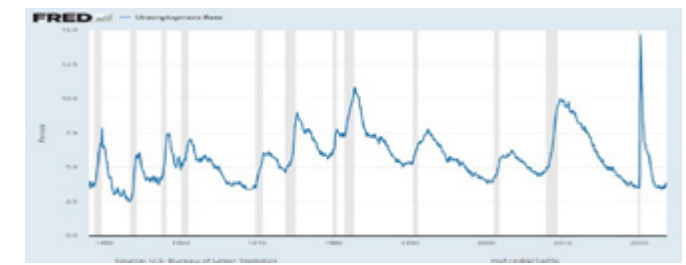


Figure 11 - October 2023 unemployment at 3.9%.

Capacity had changed from 79.57% in November 2018 to 75.56% in February 2020. Falling to 60.96% in April 2020, capacity increased to 75.8% in Jan 2021 and is trending down to 77.88% for September 2023.



Figure 12 - Manufacturing capacity use at 77.88%.

## NAM Manufacturing CEO Outlook

The NAM manufacturing business outlook by quarter has been somewhat consistent in 2023, but not at 2021 and early 2022 levels.



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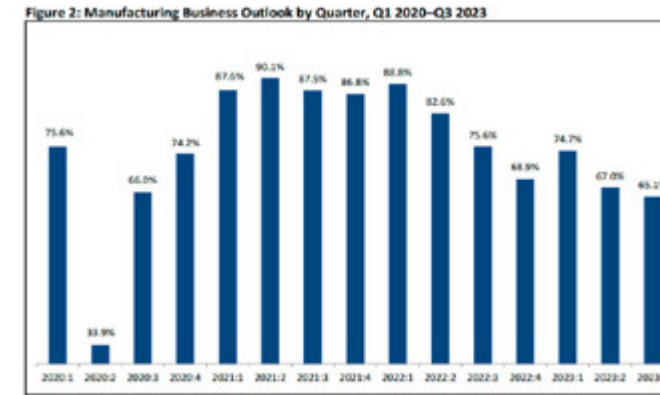


Figure 13 - Business outlook by quarter, percentage characterized current business as somewhat or very positive.

When asked if the US will experience a recession in the next 12 months, 42.2% of respondents said yes, 30.3% were uncertain, and 27.5% said no.

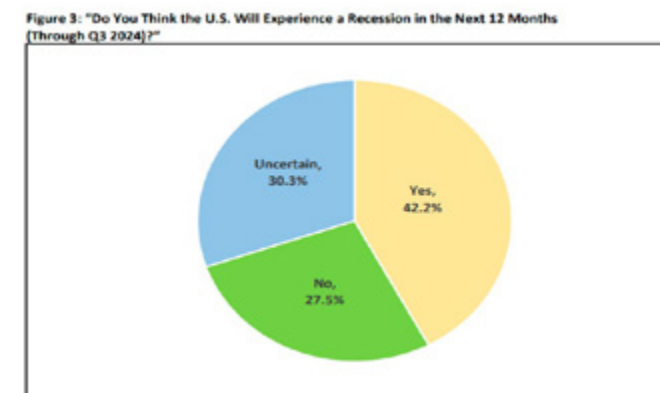


Figure 14 - NAM: Will the US economy sink into a recession?

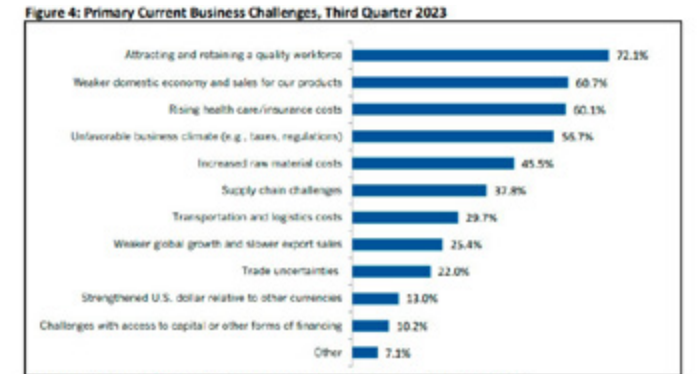


Figure 16 - Manufacturing CEOs rate challenges, Q3 2023.

When asked about labor disputes and contract negotiations impacting business, there is a sentiment of at the very least mild concern for this.

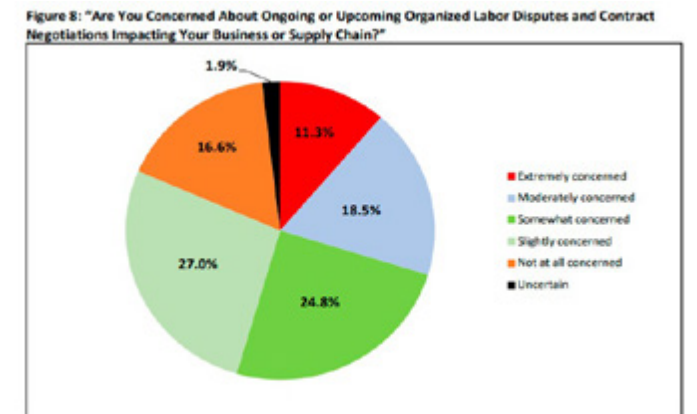


Figure 17 - CEOs asked about strikes and their potential effect on business.

Expected growth was slightly up from Q2 2023 to Q3 2023 but not by much. We are still off from 2022 levels as can be seen in the next graphic.

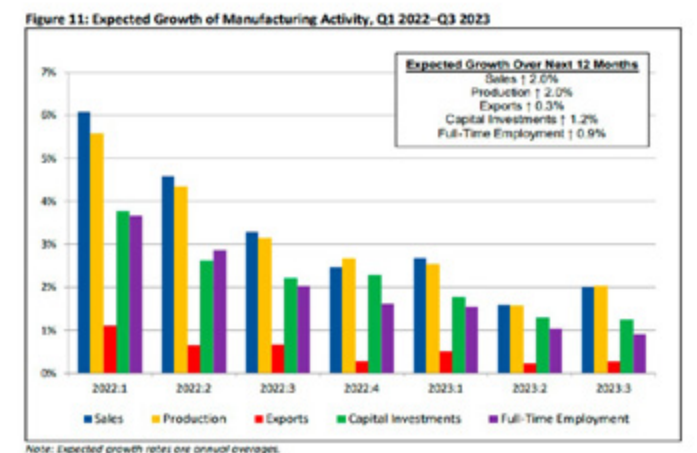


Figure 18 - Expected growth rates are annual averages.



Figure 15 - Recessions are highlighted in gray shading.

Manufacturing CEOs were also asked about their challenges as of Q3 of 2023. Some of the usual answers showed up as most popular, including: attracting and retaining a quality workforce, weaker domestic economy and sales for our products, rising healthcare & insurance costs, and an unfavorable business climate.

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<p><b>Percentage of Respondents Positive About Their Own Company's Outlook</b>  <b>65.1% – Lowest Since Q2 2020 (or Q3 2016 Excluding the Pandemic)</b>  <i>(June: 67.0%)</i></p> <p>Small Manufacturers: <b>63.6%</b>  <i>(June: 67.2%)</i></p> <p>Medium-Sized Manufacturers: <b>62.9%</b>  <i>(June: 68.6%)</i></p> <p>Large Manufacturers: <b>68.3%</b>  <i>(June: 64.8%)</i></p>	<p><b>Overall Facts About the Survey</b>                  Number of Responses: 323*                  In the Field: Aug. 17–31, 2023</p> <p>Small Manufacturers: 53 responses (16.4%)                  Medium-Sized Manufacturers: 143 responses (44.3%)                  Large Manufacturers: 126 responses (39.0%)                  * One respondent did not state firm size.</p>
<p><b>Expected Growth Rate for SALES Over the Next 12 Months</b>  <b>↑ 2.0%</b>  <i>(June: ↑ 1.6%)</i></p>	<p><b>Expected Growth Rate for PRODUCTION Over the Next 12 Months</b>  <b>↑ 2.0%</b>  <i>(June: ↑ 1.6%)</i></p>
<p><b>Expected Growth Rate for FULL-TIME EMPLOYMENT Over the Next 12 Months</b>  <b>↑ 0.9% – Lowest Since Q3 2020 (or Q4 2019 Excluding the Pandemic)</b>  <i>(June: ↑ 1.0%)</i></p>	<p><b>Expected Growth Rate for EMPLOYEE WAGES Over the Next 12 Months</b>  <b>↑ 2.7% – Lowest Since Q1 2021</b>  <i>(June: ↑ 2.9%)</i></p>
<p><b>Expected Growth Rate for CAPITAL INVESTMENTS Over the Next 12 Months</b>  <b>↑ 1.2% – Lowest Since Q3 2020 (or Q4 2019 Excluding the Pandemic)</b>  <i>(June: ↑ 1.3%)</i></p>	<p><b>Expected Growth Rate for EXPORTS Over the Next 12 Months</b>  <b>↑ 0.3%</b>  <i>(June: ↑ 0.2%)</i></p>
<p><b>Expected Growth Rate for PRICES OF COMPANY'S PRODUCTS Over the Next 12 Months</b>  <b>↑ 1.7% – Lowest Since Q3 2020</b>  <i>(June: ↑ 1.9%)</i></p>	<p><b>Expected Growth Rate for RAW MATERIAL PRICES AND OTHER INPUT COSTS Over the Next 12 Months</b>  <b>↑ 2.1% – Remaining the Lowest Since Q3 2020</b>  <i>(June: ↑ 2.1%)</i></p>
<p><b>Expected Growth Rate for INVENTORIES Over the Next 12 Months</b>  <b>↓ 1.8%</b>  <i>(June: ↓ 2.0%)</i></p>	<p><b>Expected Growth Rate for HEALTH INSURANCE COSTS Over the Next 12 Months</b>  <b>↑ 7.2%</b>  <i>(June: ↑ 7.0%)</i></p>

Figure 19 - Summary of the NAM manufacturers' outlook survey.

## 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. 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.

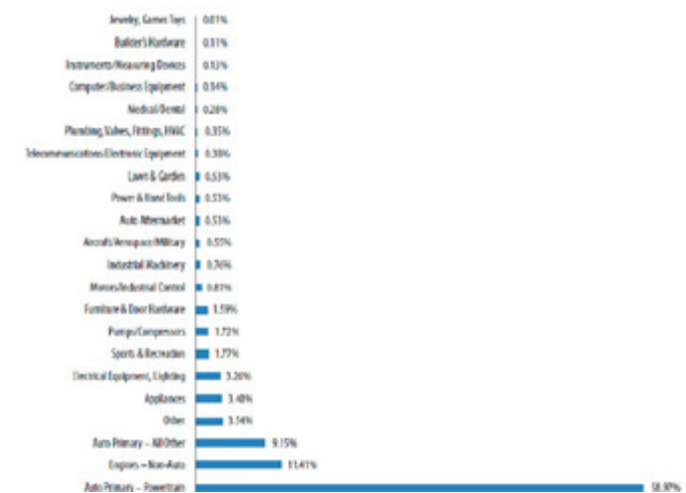


Figure 20 - Automotive and housing remain the top 2 aluminum markets.

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.

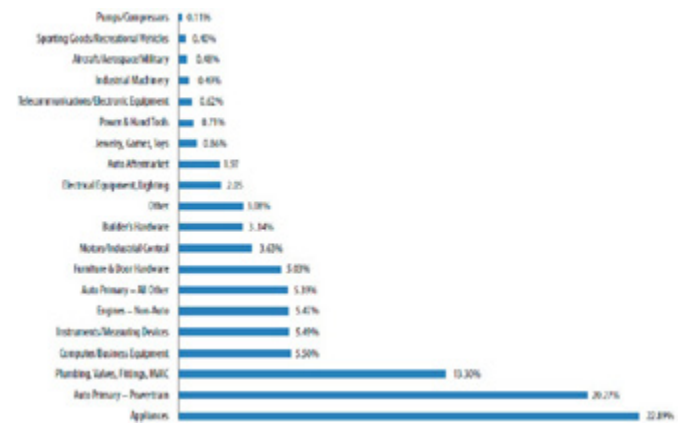


Figure 21 - The top market for zinc is housing.

### Monthly SAAR Light Vehicle Sales

October's results were below expectations, apparently due to weakness at the end of the month. Most automakers finished below mid-month projections for each, thus the industry's overall weaker results can't be blamed on underestimating the impacts to Ford, GM and Stellantis from the strike-related plant shut-downs. The results also show that other automakers did not benefit from losses at the Detroit 3. Still, most manufacturers recorded year-over-year gains and the industry posted its 14th straight increase.

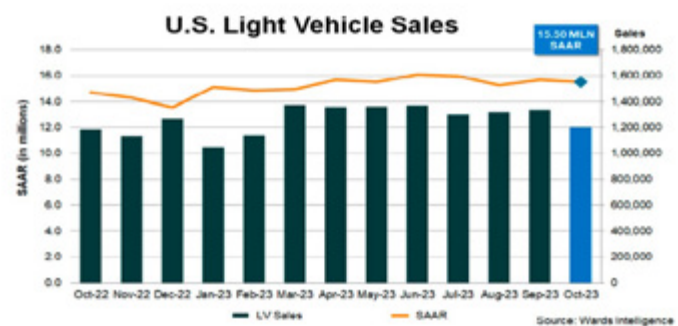


Figure 22 - Light vehicle sales Oct 2022 - Oct 2023.

### Monthly SAAR New Privately-Owned Housing Starts

Housing starts in the US surged 9.8% from a month earlier to a seasonally adjusted annualized rate of 1.45 million in February of 2023, the highest in five months, and way above market forecasts of 1.31 million, in a sign that some confidence may have returned to the housing market, although mortgage rates and inflation remain elevated. Single-family housing starts were up

1.1% to 830 thousand and starts for units in buildings with five units or more surged 24.1% to 608 thousand, the highest since April last year. Starts soared in the Midwest (70.3% to 201 thousand), the West (16.8% to 347 thousand), and the South (2.2% to 796 thousand) but fell in the Northeast (-16.5% to 106 thousand). Compared to February 2022 however, housing starts were 18.4% lower. In January, housing starts were revised higher to 1.321 million from an early estimate of 1.309 million, but remaining the lowest since June of 2020. (Source: U.S. Census Bureau)

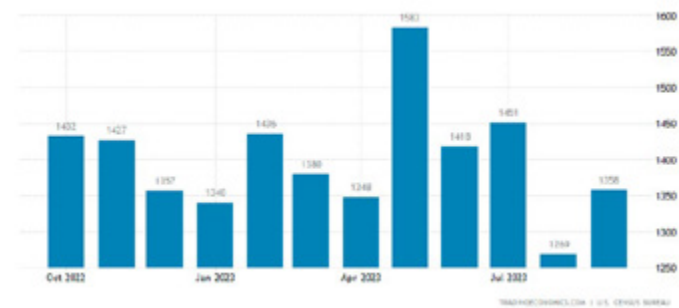


Figure 23 - Housing starts in the US rose by 7% month-over-month to a seasonally adjusted annualized rate of 1.36 million in September of 2023, rebounding from the upwardly revised, three-year low of 1.27 million from the previous month, but missing estimates of a sharper 1.38 million starts.

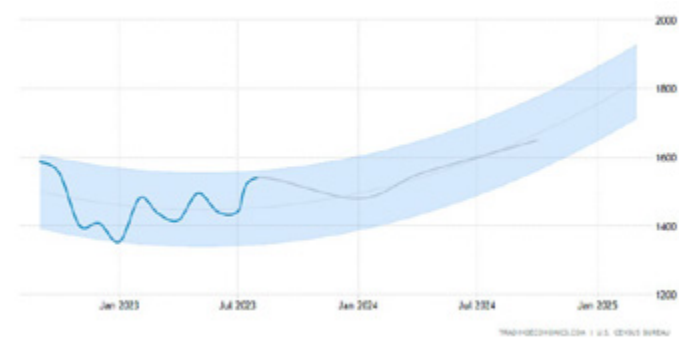


Figure 24 - Strong housing starts are forecasted.

### NADCA's Most Recent Board Barometer

The following questions were asked to NADCA's board and answered as seen in the following figures.

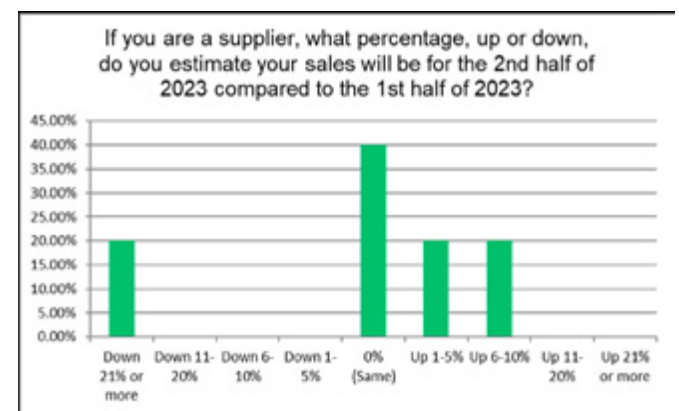


Figure 25 - Suppliers comparing sales estimates from the first and second halves of 2023.



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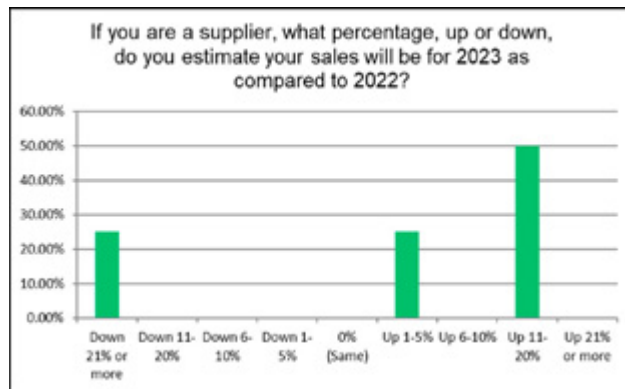


Figure 26 - Suppliers comparing sales from all of 2022 vs 2023.

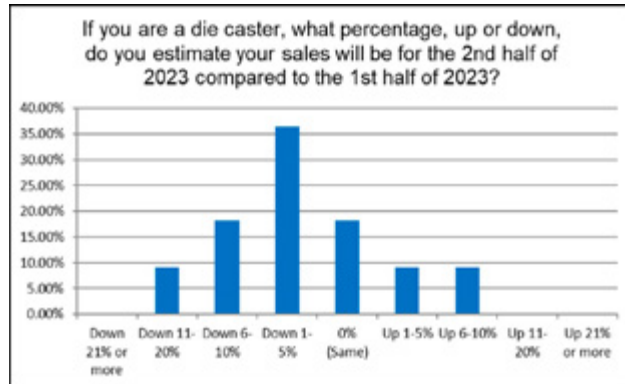


Figure 27 - Die casters comparing sales estimates from the first and second halves of 2023.

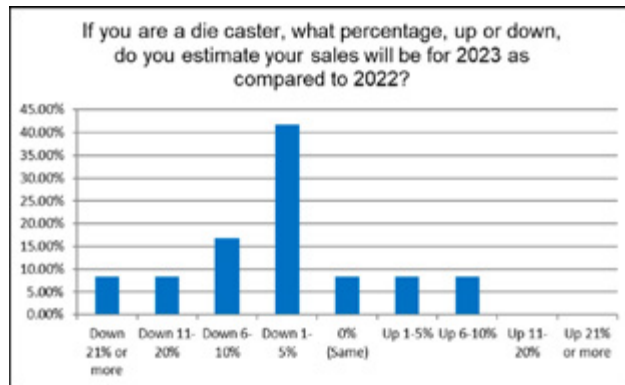


Figure 28 - Die casters comparing sales from all of 2022 vs 2023.

### NADCA's Most Recent Business Barometer

NADCA asked companies some of the following questions in its most recent business barometer survey.

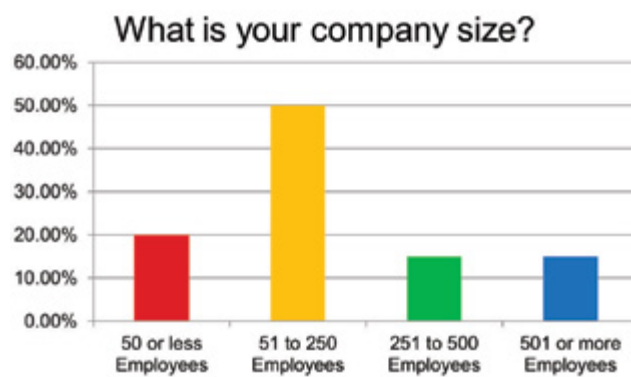


Figure 29 - Size of companies surveyed.

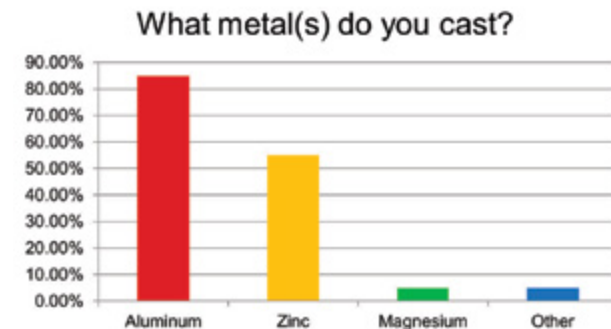


Figure 30 - Metals cast.

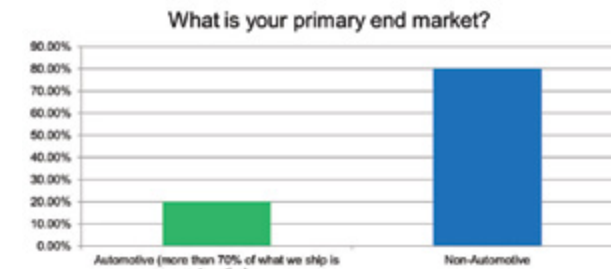


Figure 31 - End markets.

Overall shipments were down 13% in Q3'23 as compared to Q2'23. Aluminum shipments were down 19%, zinc shipments down 7%, and magnesium shipments were down 23% in Q3'23 compared to Q2'23. Automotive shipments were down 25% and non-automotive shipments were down 5% in Q3'23.

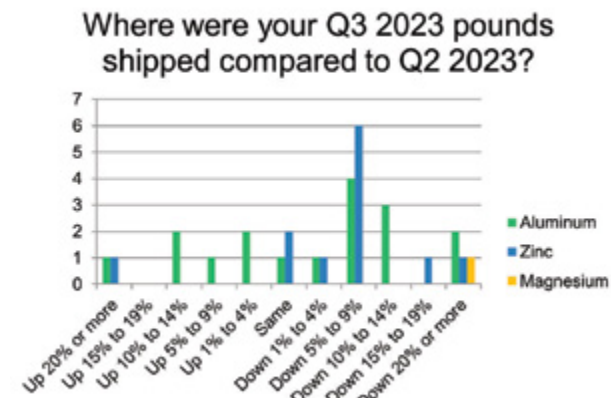


Figure 32 - Shipments Q3 2023 vs Q2 2023.

Overall shipments are currently forecast to be down 9% in 2023 compared to 2022. Automotive shipments are forecast to be down 13% and non-automotive down 4% in 2023 compared to 2022.



Figure 33 - 2023 shipment forecast vs 2022.

58% of the respondents report that quoting was up, 26% report about the same level of quoting, and 16% report that quoting was down in Q3 2023 as compared to the same time last year. Overall, quoting of new jobs was up a slight 2.2% in Q3 2023 as compared to Q3 2022. Automotive was up 2% and Non-automotive was up 3%.

### How was quoting new jobs in Q3 2023 compared to same time last year?

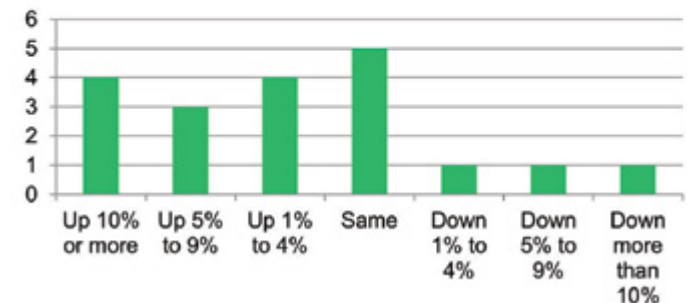


Figure 34 - Quoting Q3 2022 vs Q3 2023.

30% of the respondents report that new die builds were up, 50% report about the same, and 20% report that new die builds were down in Q3 2023 as compared to Q3 2022. Overall, new die builds were up 2% as compared to the same time last year. Automotive was up 2% and non-automotive up 2%.

### How were new die builds in Q3 2023 compared to same time last year?

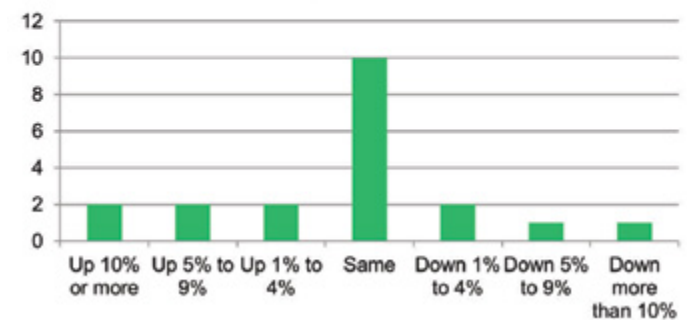


Figure 35 - New die builds Q2 2023 vs Q3 2023.

For capacity use, overall Q3 average was 55%. Calculated by taking the number of machines and multiplying by 1440 hours (12 weeks for the quarter times 120 hours/week), then divide by total up-time hours for the quarter.

Overall average energy cost for Q3'23 was \$0.25/lb shipped. Automotive average energy cost for Q'3 was \$0.16/lb. Non-automotive average energy cost for Q'3 was \$0.29/lb.

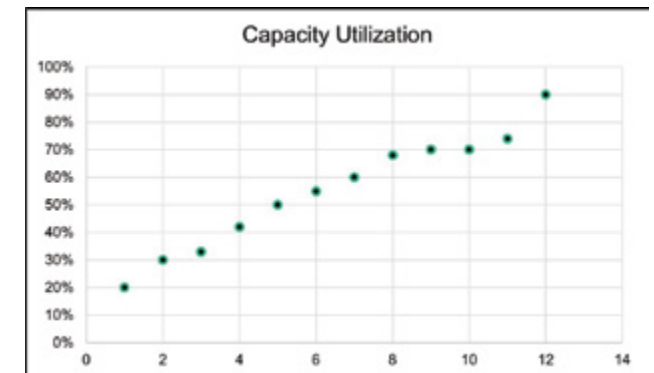


Figure 36 - Capacity use in 3rd quarter 2023.

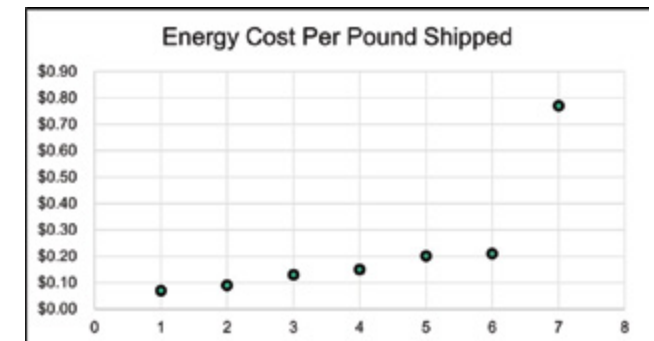


Figure 37 - Energy cost in 3rd quarter 2023.

### Q3 2023 Barometer Summary

Overall shipments were down 13% in Q3'23 as compared to Q2'23:

- Aluminum: Down 19%
- Zinc: Down 11%
- Magnesium: Down 23%

Shipments are forecast to be down 9% in 2023 compared to 2022.

Quoting of new jobs in Q3'23 was overall up 2.2% as compared to Q3'22. New die builds were up 1.5% in Q3'23 as compared to Q3'22. The average number of dies built in Q3'23 was 6 per company. Capacity utilization for Q3'23 was an average of 55%. Average energy cost in Q3'23 was \$0.25/lb shipped.

### Conclusions

Despite many headwinds, the US economy has remained resilient. Wars in the middle east and Ukraine remain troubling, and overall our elected officials are not getting much done. Business is off by 15 to 20% compared to recent highs.

It appears the economy in 2024 will start a little softer than recent records economic highs. Forecasts of production of 15+ million vehicles are encouraging, but we all would welcome 16 or 17 million. While there has been a strong push towards EVs, the pace of that growth is much less than forecasted just a year ago. Housing starts would be stronger if interest rates would come down, but significant declines are not forecasted for 2024. It will be important to be nimble and react appropriately to market trends in 2024.

## CHAPTER 3 OBJECTIVES

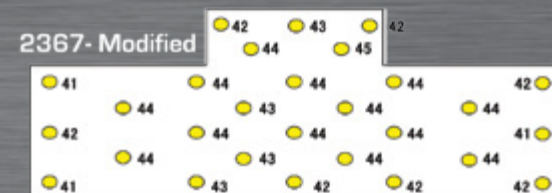
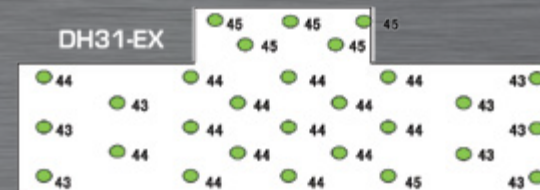
The purpose and objectives of the Chapter shall be as follows:

- To advance the science of die casting and the utilization of die casting through education and research.
- To advance the knowledge and application of the science of die casting, and to institute and participate in projects for the attainment of the result.
- To support and stimulate the study and development of the theory and practice of die casting and related sciences, including engineering, metallurgy, physics, chemistry, and mechanics.
- To accumulate and disseminate authoritative scientific information relating to the development of die casting including the process, design, application, testing, and finishing as may be available through research, field experience, and special study.
- To provide, evaluate, and exchange information related to safety in the die casting industry, including its industrial hygiene, physical, and mechanical aspects.
- Educate, train, and recruit young people into the discipline of die-casting.
- The Chapter can manifest these objectives through the presentation of speakers on subjects of interest to the membership, social events where technical persons may be drawn together, acting as a conduit for scholarship awards, the presentation of technical seminars, and other activities that may enhance the objectives of the North American Die Casting Association.

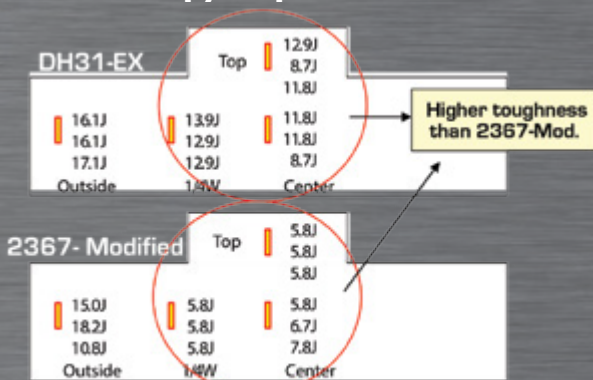
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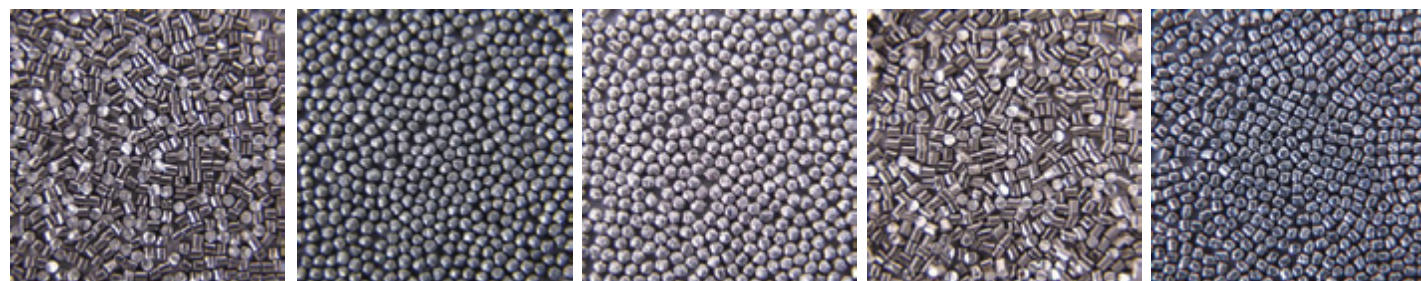

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Atkins	Jason	Pace Industries <i>Port City 1</i>	Muskegon	(231) 777-3941	jason.atkins@paceind.com
Badarinath	Vikram	Nexthermal Corporation	Battle Creek	(269) 964-0271	marketing@nexthermal.com
Badovinac	Mark	Cascade Die Casting Group <i>Great Lakes</i>	Sparta	(616) 887-1771	
Baker	Vanessa	EKK, Inc.	Farmington Hills	(248) 624-9957	vbaker@ekkin.com
Baleja	Mark	Metal Marks Consulting, LLC.	Traverse City	(330) 788-2437	mmc4metal@outlook.com
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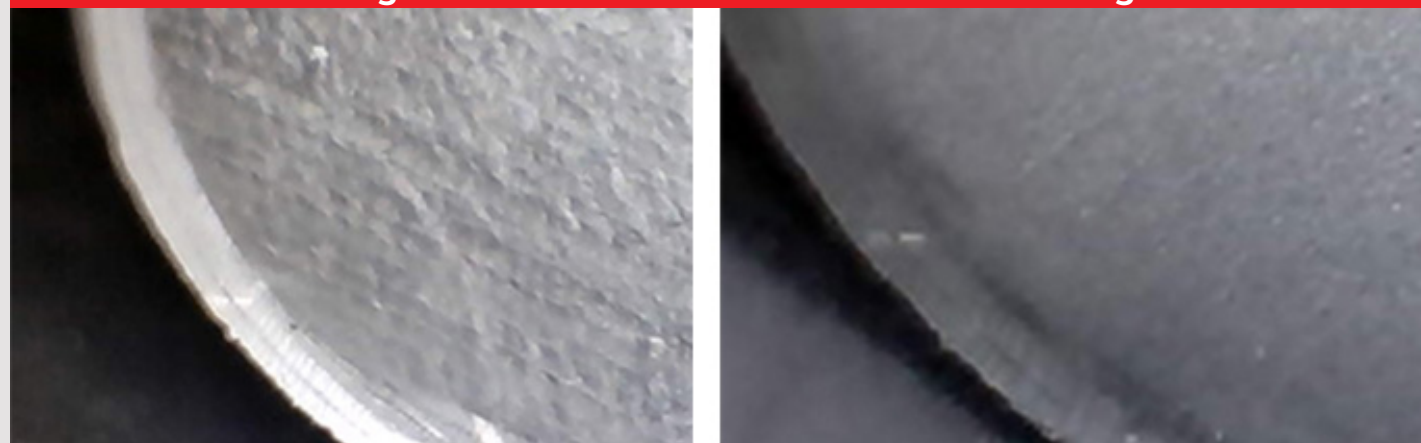
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Bodnar	Andrew	Brondolin North America	Benton Harbor	(269) 208-3867	info@brondolin-na.com
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Bolliger	Remo	Regloplas Corporation	Sodus	(269) 428-1100	r.bolliger@regloplas.com
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Cobb	John	UBE Machinery, Inc.	Perrysburg	(734) 741-7000	jcobb@ubemachinery.com
Cohan	Kurt	The Schaefer Group, Inc.	Perrysburg	(419) 897-2883	kurt.cohan@theschaefergroup.com
Colegrove	Joseph	New GLDC, LLC.	Muskegon	(231) 726-4002	jcolegrove@gldiecast.com
Concha	Leonardo	Pace Industries <i>Corporate Headquarters</i>	Novi	1-888-DIE-CAST	leonardo.concha@paceind.com
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De Jong	Benjamin	BuhlerPrince, Inc.	Holland	(616) 394-8248	ben.dejong@buhlerprince.com
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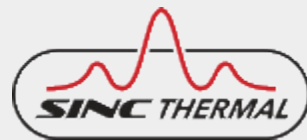
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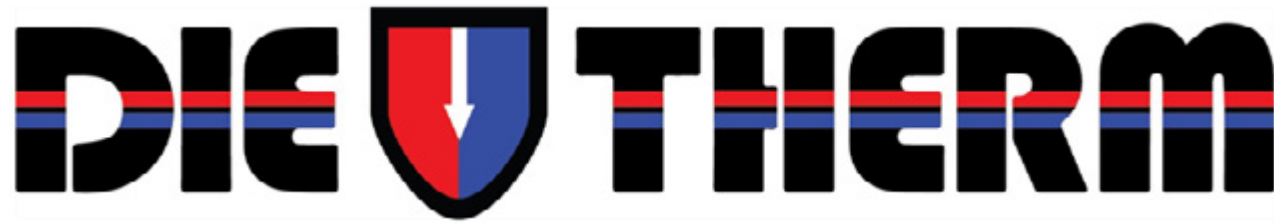


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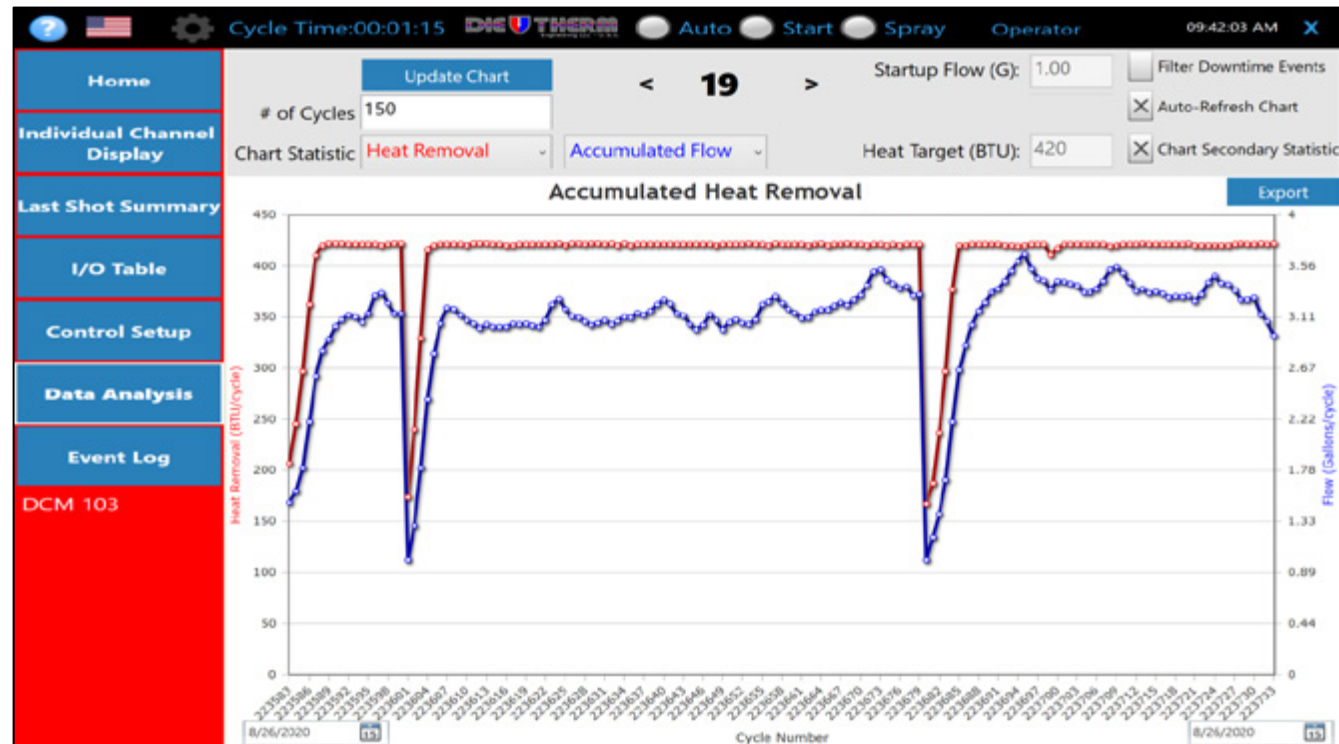
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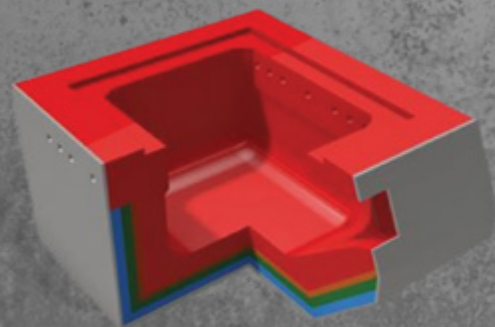
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Pienta	Jeffrey	TAC Manufacturing Incorporated	Jackson	(517) 789-7000	jpienta@tramgroup.com
Platte	Curtis	BuhlerPrince, Inc.	Holland	(616) 394-8248	curtis.platte@buhlergroup.com
Porter	Michael	BuhlerPrince, Inc.	Holland	(616) 394-8248	michaeljporter@comcast.net
Prevost	Sean	Innovation Central High School	Grand Rapids		seanmjprevost@gmail.com
Prucha	Thomas	MetalMorphosis, LLC.	Rochester	(810) 423-7564	tprucha@sbcglobal.net
Purcell	Matthew	Cascade Die Casting Group <i>Group Services/Corporate Headquarters</i>	Grand Rapids		mpurcell@cascade-cdc.com
Purchell	Matthew	Ferris State University	Grand Rapids		purcelm@ferris.edu
Quintana	Luis	BuhlerPrince, Inc.	Holland	(616) 394-8248	luis.quintana@buhlergroup.com
Quirk	Steven	Cascade Die Casting Group <i>Great Lakes</i>	Sparta	(616) 887-1771	squirk@cascade-cdc.com
Ramesh	Abhiram	Chrysler World Headquarters & Technology Center	Auburn Hills	(800) 334-9200	abhiram.ramesh@stellantis.com
Ramos	Carlos	Chrysler World Headquarters & Technology Center	Shelby Township	(800) 334-9200	carlos.ramos2@stellantis.com
Reed	Chris	Aludyne <i>Clarksville Plant</i>	Clarksville	(931) 552-4011	christopher.reed@aludyne.com
Reeves	Martin	Fontec-global, LLC.	Holland	(636) 327-5777	reeves2013m@gmail.com



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2024 - 2025

Last	First	Company	City	Phone	Email
Reifschneider	Daniel	Accu Die & Mold, Inc.	Stevensville	(269) 465-4020	danr@accu-die.com
Remler	Robert	Ultraseal America, Inc.	Long Grove	(734) 945-7210	bremler@ultrasealamerica.com
Ried	Peter	Ried and Associates, LLC.	Portage	(269) 327-3097	pried_imagineer@netzero.net
Rikkers	Steve	Allied Mineral Products	Sparta	(614) 876-0244	steve.rikkers@alliedmin.com
Risetter	David	Shawnee Specialties, Inc.	Eau Claire	(269) 461-6931	drisetter@shawneeinc.com
Rookus	Tom	Traverse City Products	Fife Lake	(616) 394-8230	trookus@tcproducts.net
Rose	Sheila	TRU Die Cast Corporation	New Troy	(269) 426-3361	sheila@trudiecast.com
Rovere	Massimo	Cosma Casting Michigan Cosma International, Magna International	Battle Creek	(269) 966-4900	massimo.rovere@magna.com
Rozema	Phil	BuhlerPrince, Inc.	Holland	(616) 394-8248	phil.rozema@buhlerprince.com
Rudnik	Paul	Plansee USA, LLC.	Saline		paul.rudnik@plansee.com
Ryner	Cory	Consultant	Plymouth		rynerc@gmail.com
Ryzner	Melisa	NADCA	Arlington Heights	(847) 279-0001	education@diecasting.org
Sant	Frank	Falcon Lakeside Manufacturing	Eau Claire	(269) 429-6193	frank.sant@falconlakeside.com
Sarver	Matt		Caledonia		mattsarver80@gmail.com
Scharpe	Thomas	Henkel Corporation	Cape Coral	(866) 332-7024	thomas.scharpe@henkel.com
Scholtens	Harry	Laserax	Novi	(418) 780-7324	hscholtens@laserax.com
Schroeder	Allen	Mag-Tec Casting Corporation	Jackson	(517) 789-8505	allen@mag-teccasting.com
Schroeder	Chad	Mag-Tec Casting	Jackson		chad@mag-teccasting.com
Schroeder	Matthew	Mag-Tec Casting Corporation	Jackson	(517) 789-8505	matt@mag-teccasting.com
Scott	Sam	Industrial Innovations, Inc.	Grandville	(616) 214-3036	sscott@industrialinnovations.com
Selan	Gerald	Hildreth Manufacturing, LLC.	Marion	(740) 375-5832	g.selan@hildrethmfg.com
Sell	Peter	ItalPresseGauss	Lagrange	(706) 443-8232	peter.sell@noricangroup.com
Servies	Scott	Fischer Tool & Die Corporation	Temperance	(734) 847-4788	sservies@fischertool.com
Settineri	Samuel	Eaton	Marshall		samuelsettineri@eaton.com
Sexton	Dale	New GLDC, LLC.	Muskegon	(231) 726-4002	dsexton@gldiecast.com
Shafiei	Mehdi	Metalsa	Novi	(770) 548-0712	mehdi.shafiei@metalsa.com
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**2024 - 2025**

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Shreve	Michelle	Shawnee Specialties, Inc.	Eau Claire	(269) 461-6931	mshreve@shawneeinc.com
Silva	Rene	ItalPresseGauss	Lagrange	(706) 443-8232	rene.silva@noricangroup.com
Simmons	Scott	Henkel Corporation Adhesives Technologies	Madison Heights	(866) 332-7024	scott.simmons@henkel.com
Slade	Rick	United Technical	Whitmore Lake		rslade@unitedtechllc.com
Smidt	Ronald	Die Cast Press Manufacturing Co.	Paw Paw	(269) 657-6060	ron@diecastpress.com
Smith	Andy	Sun Steel Treating, Inc.	South Lyon	(877) 471-0840	asmith@sunsteeltreating.com
Smith	David	Auto Cast, Inc.	Grandville		dsmith@autocastinc.com
Smith	Kennith	Die Cast Press Manufacturing Co.	Paw Paw	(269) 657-6060	ken@diecastpress.com
Smith	Kevin	AAM - American Axle & Manufacturing	Detroit	(313) 758-2000	kevin.smith@aam.com
Smith	Robert	JudCo Manufacturing	Walled Lake	(313) 489-0770	
Smith	Ryan	BuhlerPrince, Inc.	Holland	(616) 394-8248	ryan1.smith@buhlergroup.com
Smith	Tim	Eaton Cummins Automated Transmission Technologies	Galesburg		timothssmith@eaton.com
Snyder	Michael	Midwest Prod Spec, Inc.	Muskegon	(231) 767-9942	mpsi-muskegon@hotmail.com
Song	Charles	Sunocs, LLC.	Valparaiso	(732) 686-6197	csong@sunocs.com
Soulliere	Chase	Purdue University	Angola		cfsoulli@purdue.edu
Spearritt	Todd	Quality Mold & Engineering, Inc.	Baroda	(269) 422-2137	tspearritt@quality-molds.com
Spiegel	David		Riverview		spiegeld@hvsc.net
Spierenburg	Steve	BuhlerPrince, Inc.	Holland		steve.spierenburg@buhlerprince.com
Stargel	Lance	Honda Development Manufacturing of America - Alabama Auto Plant - ALDC	Lincoln	(205) 355-5000	lance_stargel@na.honda.com
Starook	Bruce	Frech USA	Michigan City	(219) 874-2812	bstarook@frechusa.com
Starook	Matthew		Grand Haven		gtx18@sbcglobal.net
Sullivan	Kyle	Century Sun Metal Treating	Traverse City	(231) 941-7800	ksullivan32792@yahoo.com
Surch	Brian	Smart Coast	Muskegon		briansurch@thesmartcoast.com
Tagliabue	Giorgio	Brondolin North America	Benton Harbor	(269) 208-3867	william.tagliabue@brondolin.it
Terry	Chris	ACE Precision International, LLC.	Saint Joseph	(641) 753-6520	cterry@intl-ace.com
Thomas	Tim	Michigan Automotive Compressor, Inc.	Parma	(517) 622-7000	thomast@michauto.com
Thompson	Beth	DME Company	Madison Heights	(248) 544-5748	dme@dme.net



# MEMBERSHIP ROSTER

2024 - 2025

Last	First	Company	City	Phone	Email
Torres	Enrique	BuhlerPrince, Inc.	Holland	(616) 394-8248	enrique.torres@buhlergroup.com
Torrey	Donald	Hill and Griffith Company	Saint Joseph	(513) 921-1075	dtorrey13@comcast.net
TREJO	EDUARDO	EATON	Galesburg		eduardotrejoescalona@eaton.com
Van Slambrouck	John	Century Sun Metal Treating	Hudsonville	(800) 800-5806	jvanslambrouck@centinc.com
VanDyken	Chad	BuhlerPrince, Inc.	Holland	(616) 394-8248	chad.vandyken@buhlergroup.com
Veenstra	Jon	Castool Tooling Systems	Uxbridge	(905) 852-0121	jon.veenstra@castool.com
Vosburgh	Kurt	Wollin USA	Plymouth	(800) 245-9232	kurt_vosburgh@wollinusa.com
Wallace	Randy	Ritchey Metals Company, Inc.	Angola	(260) 668-3407	randy.wallace@midwestmetalexchange.com
Walters	Jeff	Frech USA	Michigan City	(219) 874-2812	jwalters@frechusa.com
Waltz	Shawn	Western Michigan University	Kalamazoo		shawn.t.waltz@wmich.edu
Wanders	Debra	Die Cast Press Manufacturing Co.	Paw Paw	(269) 657-6060	debra@diecastpress.com
Wang	Yucong	General Motors Corporation <i>R&amp;D Technical Center</i>	Warren	(248) 606-4886	yucong.wang@gm.com
Warner	Jeff	BuhlerPrince, Inc.	Holland	(616) 394-8248	jeff.warner@buhlerprince.com
Warnick	Keith	JKW International, LLC.	Ferndale	(248) 881-6836	keith@keithwarnick.com
Wawrzyniak	William	Precision Die Cast, Inc.	Kimball	(810) 294-5170	bill@precisiondiecast.com
Weber	Garrett	Gentex Corporation	Zeeland		garrett.weber@gentex.com
Weible	Cameron	Aludyne <i>Pierceton Plant</i>	Pierceton	(574) 594-9681	cam.weible@aludyne.com
Weich	Heath	Hanson International	Saint Joseph	(269) 429-5555	hweich@hansoninternational.com
Weiler	Jonathan	Meridian Lightweight Technologies Inc. <i>Global Technology Center</i>	Strathroy	(519) 246-9600	jweiler@meridian-mag.com
Weiss	Mark	Metropolitan Alloys Corporation	Detroit	(313) 366-4444 x212	mweiss@metroalloys.com
Wells	Landon		Vanderbilt		huntfishlovelife@gmail.com
Weston	Michael	Michigan Die Casting, LLC.	Dowagiac	(269) 471-7715	mweston@michigandiecasting.com
Wheeler	Jeff	Nexthermal Corporation	Battle Creek	(269) 964-0271	j.wheeler@nexthermal.com
Whicker	Joel	Chem-Trend, LP	Howell	(517) 545-7980	jwhicker@chemtrend.com
Whitaker	Dennis	Falcon Lakeside Manufacturing	Eau Claire	(269) 429-6193	dwhitaker@falconlakeside.com
Wiegerink	Gerrit		Holland	(616) 994-2954	wiegerink@gmail.com
Wiegerink	Tanner		Holland		tannerwiegerink@gmail.com

Last	First	Company	City	Phone	Email
Wilkerson	Curt	Wilkast, Inc.	Grand Rapids		curt@wilkast.com
Wilkerson	Emma		Ada		erwilkerson4@gmail.com
Wilkerson	Thomas	Wilkast, Inc.	Grand Rapids	(616) 281-2850	tom@wilkast.com
Williams	Gary	Centracore, LLC.	Saint Clair	(586) 776-5500	gwilliams@centracore.com
Wilson	William	Mag-Tec Casting Corporation	Jackson	(517) 789-8505	bill@mag-teccasting.com
Wisdom	John	Pace Industries <i>Corporate Headquarters</i>	Novi	1-888-DIE-CAST	john.wisdom@paceind.com
Withers	Christopher	LiCON MT LP	Dexter	(734) 426-2240	christopher.withers@licon.com
Wolf	Dave	Ellwood Specialty Steel	Grandville	(800) 932-2188	dwolf@elwd.com
Xu	Gordon	AAM - American Axle & Manufacturing	Detroit	(313) 758-2000	gordon.xu@aam.com
Yacklich	Joseph	Shawnee Specialties, Inc.	Eau Claire	(269) 461-6931	jyacklich@shawneeinc.com
Yakim	Jeffery	Cosma Casting Michigan Cosma International, Magna International	Battle Creek	(269) 966-4900	jeffery.yakim@magna.com
Young	Robert	Cascade Die Casting Group <i>Great Lakes</i>	Sparta	(616) 887-1771	ryoung@cascade-cdc.com
Zaller	Charles	Aluminum & Zinc Metal Sales, Inc.	Monroe	(734) 241-2404	czaller@prodigy.net
Zech	Gary	Oerlikon Balzers Coating USA, Inc.			gzech@dnfmold.com
Zecman	Kurt	Pegasus Industries, Inc.	Redford	(313) 937-3350	kurt@pegasustcs.com
Zheng	Li	Gil-Mar Mfg	Walled Lake	(517) 316-5299	lizheng@ltu.edu
		University of Michigan (WT Cox Information Services)	Ann Arbor		

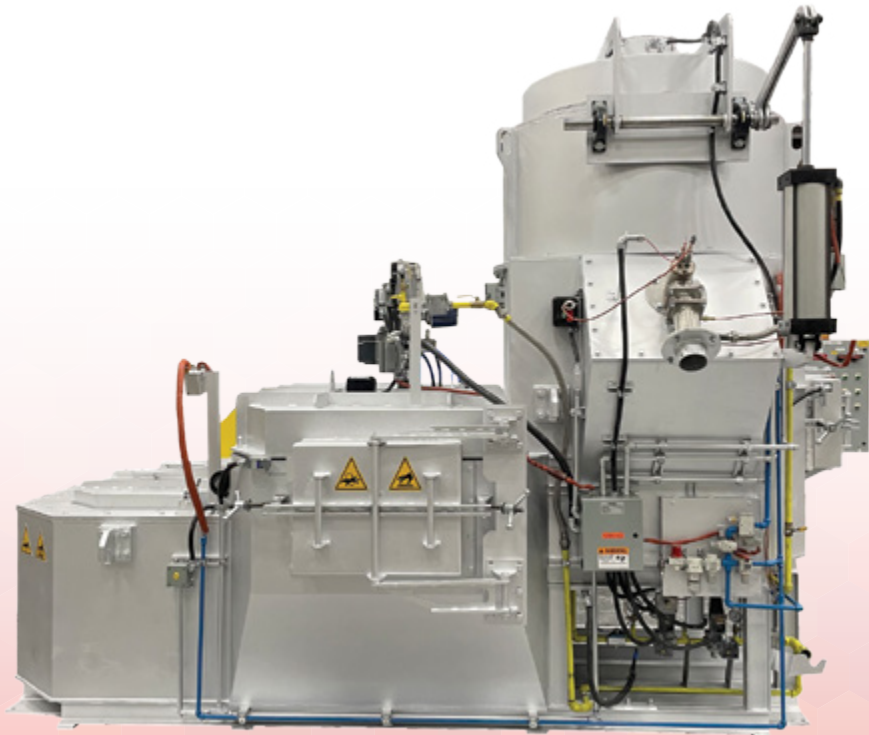
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It is with great excitement that NADCA Chapter 3 is pleased to announce the following scholarships for 2024. Through this program we have been able to award \$15,000 in financial aid through 7 scholarships this year. These scholarships reflect our ongoing commitment to supporting education and fostering local talent within the high pressure die casting community.

We are pleased to also announce that we were also able to provide additional support to our NADCA Chapter 3 Endowment at Western Michigan University. Through our efforts we have been able to provide an additional \$5,000 to this effort.

The success of our Scholarship and Endowment programs would not be possible without the generous support of our sponsors, benefactors, and participants in events like this Directory, our yearly Golf Outing, or Dinner Meeting Sponsors. Your contributions and dedication have enabled us to provide valuable opportunities for students and professionals pursuing excellence in our industry.



### Jitatman Gajaria

Jitatman (Jeet) is studying Manufacturing Engineering at Western Michigan University, with a Minor in Metal Casting. He is expected to graduate in April of 2024. Jeet interns as a Process Engineering Intern with Magna Cosma Castings. He works in the Process and Manufacturing Engineering Departments working on Industry 4.0 Projects, Process improvement, and Quality/Machine Troubleshooting. Jeet has interest in HPDC Casting Simulation, Tooling Design, and Industry 4.0.

*He is a 1st time recipient of this scholarship, and a multi-year recipient of the WMU NADCA Chapter 3 Endowment.*



*Photo: Jeet receiving his Scholarship Award Certificate from Steve Quirk, NADCA Chapter 3 Scholarship Chair*



*Photo: Shantanu receiving his Scholarship Award Certificate from Steve Quirk, NADCA Chapter 3 Scholarship Chair*

### Shantanu Phalke

Shantanu is a graduate assistant at Western Michigan University, pursuing his Master's in Mechanical Engineering. His graduate work is related to foundry research, specifically sand and die casting. He has a publication on his die-casting in a-box (DCIB) project titled DCIB 4.0 - An Educational Tool. Shantanu has previously interned at Mercury Marine and is currently an intern with Magna CCMI as an Industry 4.0 engineer intern.

*Shantanu is a 1st time recipient of this scholarship.*

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## Matthew Purcell

Matthew is from Grand Rapids, MI, and is a senior studying Product Design Engineering at Ferris State University. He will graduate in the summer of 2024. Matthew is currently employed by Cascade Die Casting as a Cad Designer in their Simulation Department. Matthew states that “Upon graduation, I plan to continue working in the industry and further develop my die casting knowledge.”

Matthew is a 2nd time recipient of this scholarship.



Photo: Jason receiving his Scholarship Award Certificate from Steve Quirk, NADCA Chapter 3 Scholarship Chair

## Jason Los

Jason is pursuing an MBA from the Seidman College of Business of Grand Valley State University, Allendale. He is expected to graduate in the spring of 2024. Jason currently is a Director of Operations within Steelcase, he is responsible for all aspects of planning, sourcing, manufacturing, and logistics for the Steelcase Mid-Market (SMB) business segment. As a part of this role, he is responsible for the global supply chain for high-pressure castings within the Mid-Market segment. Additionally, Jason is an alumnus of the Buhler group, where he held many roles serving the high pressure die casting industry over 15 years.

Jason is a 2nd time recipient of this scholarship.



Photo: Matthew receiving his Scholarship Award Certificate from Steve Quirk, NADCA Chapter 3 Scholarship Chair

# SCHOLARSHIP AWARD WINNERS

# 2024

## Harris Spungen

Harris is from Grand Rapids, MI, and is currently studying Computer Engineering at Grand Valley State University, Allendale. He has an expected graduation date in 2024. Harris currently has an internship at BuhlerPrince. During his time with BuhlerPrince he has helped with the develop and fine-tuning of software for operating die-cast machines.

Harris is a 2nd time recipient of this scholarship.



Photo: Harris receiving his Scholarship Award Certificate from Steve Quirk, NADCA Chapter 3 Scholarship Chair

## Erickson Carpenter

Erickson is from Grand Rapids, MI, and is a junior completing a major in Mechanical Engineering with a minor in Mathematics at Grand Valley State University. He is employed by Whirlwind Engineering, a leader in innovative process technologies including powder handling, powder sifting, conveying, and singulation of all varieties of dry, granular, and cohesive products. He has been involved in production, assembly, customer testing, service, inventory, statistical analysis, and drawing. Erickson is eager to start his mechanical engineering co-op at BühlerPrince, a company specializing in die casting machinery.

Erickson is a 1st time recipient of this scholarship.



Photo: Erickson Carpenter

## Brennan Neitzel

Brennan Neitzel is from Weston, WI, and is a junior studying Electrical Engineering at Grand Valley State University, while being a collegiate swimmer. He is employed by BuhlerPrince Inc. where he is an electrical and controls engineer. His work includes designing new machines based on customer quotes, updating and troubleshooting software, and designing new electrical schematics.

Brennan is a 1st time recipient of this scholarship.



Photo: Brandon Neitzel

For scholarship information or questions for any of the above programs, please email:  
Steve Quirk (Scholarship Chair) | [quirk@cascade-cdc.com](mailto:quirk@cascade-cdc.com)



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CHAPTER 3

# NADCA GOLF OUTING

# 2023

## The Day

August 18 dawned bright and clear as 192 people from all over came to West Michigan to help support our scholarship efforts. The day started with registration, coffee, and doughnuts. A parade of golf carts scattered around the course to our designated spots. Play began at 8:30. Mulligans and helpful tosses insured that everyone had a great time!

## The Sponsors

From major event sponsors to meal sponsors, keg sponsors, and the many companies that sponsored holes, we appreciate your dedication to supporting our Chapter specifically, and our Industry as a whole. This outing allows us to provide complimentary meals at our dinner meetings, as well as providing major scholarship assistance to students pursuing a career in Die Casting.

Please see our NADCA Chapter 3 website for specific details regarding our scholarship program, as well as a complete list of our many wonderful sponsors!

**2024 Golf Outing Date:**

**August 16, 2024**

Register your foursome at:

<https://nadca-chapter-3-golf-outing.perfectgolfevent.com/>



# 2024 GOLF OUTING

## SPONSORSHIP OPPORTUNITIES

Due to your exceptionally generous support in the past outings, we would like to offer the following sponsorship opportunities to our die casting supporters.

Please remember, your donations allow our chapter to fully underwrite two to three NADCA classes every year for chapter members. Last year we awarded \$15,000 scholarships to our chapter's member's dependent students, contributed \$5,000 to the endowment for future scholarships at WMU, helped underwrite the chapters participation in the NADCA Washington Conference to report our chapter's issues to congress, and allowed our chapter to offer free business meetings for all chapter members.

The List of **Elite Sponsorship** Opportunities are as follows:

<p><b>Golf Towel Sponsor</b> \$4,000</p> <ul style="list-style-type: none"> <li>Company name on golf towels given to each golfer</li> </ul> <p><i>Sponsorship limited to 1 sponsor</i> <b>Deadline:</b> July 6th</p>	<p><b>NADCA Event Sponsor</b> \$3,000</p> <ul style="list-style-type: none"> <li>Logo on large welcoming banner displayed on the clubhouse</li> <li>Contact information on all documents</li> </ul> <p><i>Sponsorship limited to 1 sponsor (includes hole flag sponsorship)</i></p>	<p><b>Rent a Hole Sponsor</b> \$2,000</p> <ul style="list-style-type: none"> <li>Your company can rent an entire hole &amp; provide a hole-in-one contest, putting contest, etc.</li> <li>You will be responsible for staffing any activities at your hole</li> </ul> <p><i>Limited to 2 sponsors</i></p>
<p><b>Dinner Sponsor</b> \$750</p> <ul style="list-style-type: none"> <li>Company logo on a large banner displayed in dining area</li> </ul> <p><i>Sponsorship limited to 9 sponsors</i></p>	<p><b>Vendor Reception Sponsor</b> \$700</p> <ul style="list-style-type: none"> <li>Company logo on a large banner displayed at the venue in recognition of your sponsorship</li> </ul> <p><i>Sponsorship limited to 10 sponsors</i></p>	<p><b>Hole Flag Sponsorship</b> \$500</p> <ul style="list-style-type: none"> <li>Company name on a hole flag (the flags will be yours to keep)</li> <li>Flags will be presented to sponsoring companies after dinner</li> </ul> <p><i>Sponsorship limited to 36 sponsors</i> <b>Deadline:</b> July 6th</p>
<p><b>“Keg at the Turn” Sponsor</b> \$475</p> <ul style="list-style-type: none"> <li>Company logo on a large banner displayed in dining area</li> </ul> <p><i>Sponsorship limited to 18 sponsors</i></p>	<p><b>Breakfast Sponsor</b> \$375</p> <ul style="list-style-type: none"> <li>Company logo on a large banner displayed in dining area</li> </ul> <p><i>Sponsorship limited to 9 sponsors</i></p>	<p><b>Hole Sponsor</b> \$250</p> <ul style="list-style-type: none"> <li>Company name on a tee box on each course</li> </ul> <p><i>Sponsorship limited to 90 sponsors</i></p>
<p><b>Range Ball Sponsor</b> \$200</p> <ul style="list-style-type: none"> <li>Company logo on a large banner displayed in dining area</li> </ul>	<p><b>Product Sponsor</b></p> <ul style="list-style-type: none"> <li>Donate products to be used as raffle prizes or in outing prize bags</li> </ul>	<p><b>Additional sponsorship opportunities available upon request.</b></p>

All sponsors are also mentioned on the rule sheet, sponsor sheet on each table at dinner, and noted on the chapter website.

Please specify sponsorship requested and fill in the amount on your sign-up sheet, on our website, or send in with your check before **July 31, 2024** to allow us time to print all necessary signage.

For more details or to make a donation, please contact:

**Steve Ridders** | srikkers01@alliedmin.com | (616) 291-6912  
**Steve Barendse** | s.barendse@carpenterbrothersinc.com | (231) 288-7081

## TO COMPETE IN 2024

Innovative die casting design entries may be entered in the 2024 Die Casting Design Competition. All award-winning castings will be displayed next year at NADCA's Die Casting Congress & Exposition, September 30 - October 2 in Indianapolis, IN.

The competition is open to die castings from aluminum, magnesium, zinc, semi-solid & squeeze, and other alloy families. Within each category, there are more specific levels: aluminum under 1 pound; aluminum 1-to-10 pounds; aluminum over 10 pounds; aluminum structural; aluminum any size with decorative finish; zinc under 6 ounces/non-electroplated; zinc over 6 ounces/non-electroplated; zinc any size with decorative finish; magnesium over 0.5 pound; and magnesium under 0.5 pound.

Any number of die castings may be entered in the awards competition. Complete and submit a separate entry form for each casting or assembly of castings. As-cast entries are required (post trimming). The metal surface cannot be improved or concealed by tumbling, shot blasting, coating or other surface treatments. NADCA encourages sending secondary processed samples, but these must be in addition to the as-cast parts.

Castings submitted for the competition MUST have approval in writing from the customer allowing NADCA to use the casting(s) in exhibitions and magazine articles. When possible, information and photographs describing the design process will be published in Die Casting Engineer magazine, but because of proprietary reasons, not all information can be shared. Such exceptions should be noted on your entry form.

More information and electronic entry form can be found at [www.diecasting.org/castings/competition](http://www.diecasting.org/castings/competition). All entries must be submitted by June 10, 2024. For more information, contact: Beau Glim at [glim@diecasting.org](mailto:glim@diecasting.org).

# 2023 DIE CASTING AWARD WINNERS

For the last 49 years NADCA has sponsored its International Die Casting Design Competition to showcase outstanding die cast designs, while acknowledging the continuous contribution die casters provide to the manufacturing industry.

Ranging from 0.2 ounces (5.7 grams) to 124 pounds (56.3 kilograms) the 2023 International Die Casting Competition saw a wide range of die castings submitted. Regardless of their size though, the winning castings showed off the ability for high pressure die casting to produce high quality parts with complex geometries. The castings also reduced the cost of the part, many of them by combining multiple parts into one die casting, eliminating the need of assembly operations. By utilizing the advantages of the die casting process the die casters were able to provide for the needs of their customers.

Categories in the competition are grouped by material and include aluminum, magnesium, zinc and other alloy families, including aluminum and magnesium structural die casting. Both custom and captive casters are eligible. For each category, there are four equally weighted criteria: ingenuity of casting and/or product design, overall quality, cost savings as compared to other manufacturing processes, and the part's contribution to expanding the market for die castings. A panel of independent judges, acknowledged experts, with no ties to eligible casters, choose the winners.

NADCA will honor this year's award winners at its 2023 Die Casting Industry Awards Luncheon on Wednesday, September 20 at 12:15 - 2:00 pm EDT during the Die Casting Congress & Tabletop in Grand Rapids, MI. The luncheon is an exceptional opportunity to meet this year's winners and learn more about their innovations.

**Send sample casting(s) to:**  
**NADCA - 2024 Casting Competition**  
3250 N. Arlington Heights Rd., Ste. 101  
Arlington Heights, IL 60004

# ALUMINUM – UNDER 1 LBS

## DYNACAST - LAKE FOREST

**PART:** Top Chassis  
**MATERIAL:** A380  
**WEIGHT:** .14 lbs (63.5 g)  
**END MARKET:** Self Defense

**CASTER AWARD NOMINEES:**  
 Team Lake Forest  
**CUSTOMER:**  
 Axon

### FUNCTION OF PART

Interior chassis for new taser 10 Smart Weapon.

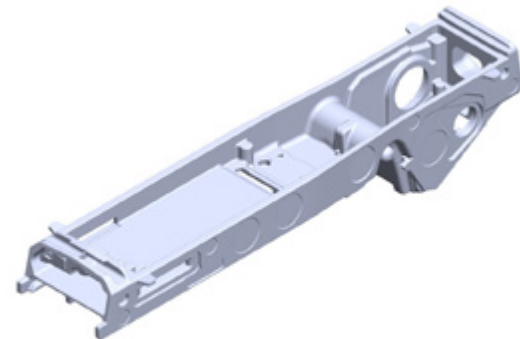
### PREVIOUS PROCESS TO PRODUCE PART

Injection molded plastic.

### ADVANTAGES GAINED

Die casting allowed for thinner wall sections with an increased overall strength. This reduced the total form factor and improved handling capabilities for the end user.

**Dynacast - Lake Forest**  
 25952 Commercentre Dr.  
 Lake Forest, CA 92630  
 USA



# ALUMINUM – 1-10 LBS

## IMPERIAL DIE CASTING, A DIVISION OF RCM INDUSTRIES

**PART:** Purge Reservoir  
**MATERIAL:** A413  
**WEIGHT:** 4.4 lbs (2 kg)  
**END MARKET:** Automotive

**CASTER AWARD NOMINEE:**  
 Devin Tucker

### FUNCTION OF PART

Reservoir for compressed air with integral mounting structure for the air dryer assembly.

### PREVIOUS PROCESS TO PRODUCE PART

Deep draw steel stamping and welding.

### ADVANTAGES GAINED

Cost reduction and inherent corrosion resistance due to material selection. 2-cavity casting tool design takes full advantage of a 944 ton Buhler press, allowing for a significantly reduced piece price. Conformal cooling used on both sides of the tool to improve cycle time.

**Imperial Die Casting,**  
 a division of RCM Industries  
 2249 Old Liberty Rd  
 Liberty, SC 29657  
 USA



# ALUMINUM – OVER 10 LBS

## MERCURY MARINE - MERCURY CASTINGS

**PART:** V10 Engine Block  
**MATERIAL:** AA362.0  
**WEIGHT:** 50.9 lbs (23 kg)  
**END MARKET:** Boating

**CASTER AWARD NOMINEES:**  
 Aron Weiberg, Clay Rasmussen, Nate Peplinski,  
 Josh Cady, Eric Kessenich, Dan Hoffman, Grant  
 Wollersheim, Brian Wallace

### FUNCTION OF PART

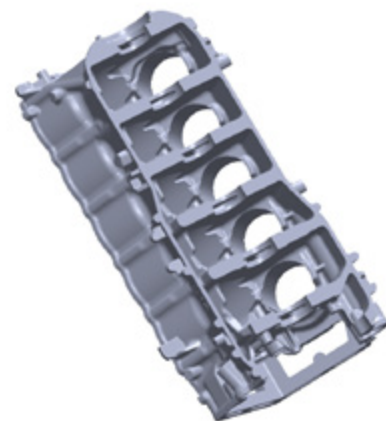
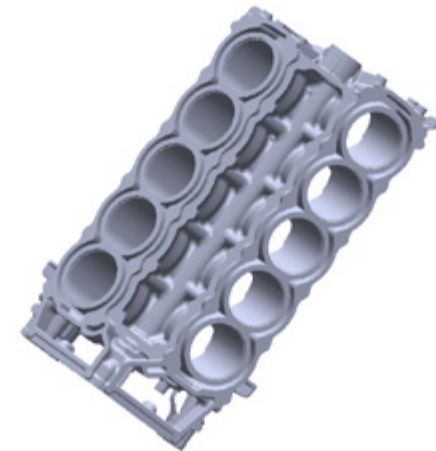
Marine outboard engine block.

### PREVIOUS PROCESS TO PRODUCE PART

Outboard industry's first production V10 naturally aspirated 350 & 400 horsepower offering.

### ADVANTAGES GAINED

Fully automated die cast cell produces castings in a shorter cycle time compared to other high performance block casting methods and serialization (laser engraved barcode) provides full traceability of product from casting to boxed outboard. Iron cylinder liners are robotically inserted and specifically orientated in the die prior to the casting process (Patent No: US 11499499 B1). Bi-level water jackets provide casting separation between oil and water (80mm on outside, 60mm on inside). AA362.0 provides corrosion resistance for marine applications. Eliminated the additional liner machining and insertion processes. Lighter weight compared to other casting methods. Has the same 26-inch mount spacing as the V8 outboards, which maximizes the compatibility with current boat designs and makes them perfect for multi-engine applications or repowering vessels.



**Mercury Marine - Mercury Castings**  
 W6520 Pioneer Road  
 Fond du Lac, WI 54936  
 USA

# ALUMINUM – STRUCTURAL

## SERES AUTOMOBILE CO.,LTD.

**PART:** Rear Floor Frame with Wheel Covers  
**MATERIAL:** Alcoa C611  
**WEIGHT:** 117 lbs (53.2 kg)  
**END MARKET:** Automotive

**CASTER AWARD NOMINEE:**  
 Li Tianliang

### FUNCTION OF PART

Install rear chassis and seats and keep rear body structure safe.

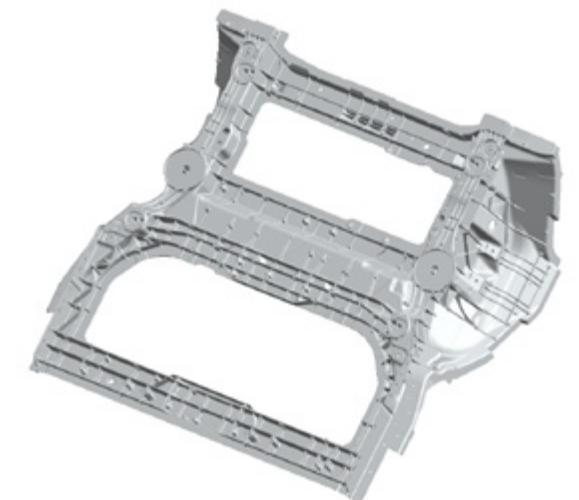
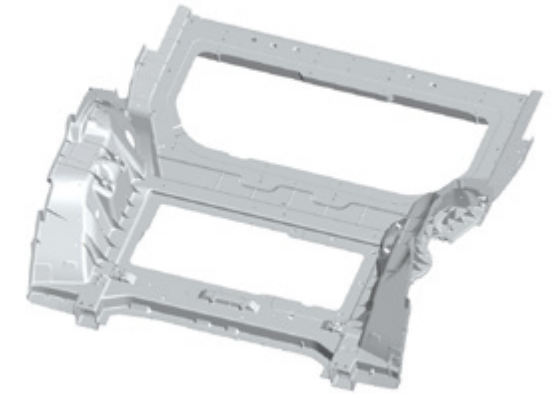
### PREVIOUS PROCESS TO PRODUCE PART

The traditional rear floor structure design is a welded structure with dozens of components (87), such as heat-treated aluminum die-castings, steel stamping components, aluminum extrusion parts, etc.

### ADVANTAGES GAINED

This mega casting is made with a 9000-ton high pressure die casting machine and uses Alcoa C611 heat treatment free alloy. Inner wheel covers are integrated in this rear body casting. Advantages include:

- 1) Integrate more than 87 parts into one single piece casting
- 2) The average elongation exceeds 8%, the yield strength is 120MPa, and the tensile strength is 250MPa
- 3) With this new single piece mega casting, the torsional stiffness of the whole vehicle is increased by 17% compared with the traditional sheet metal solution; the inching stiffness at some important joint locations is increased by an average of 47%; and the rear torsional mode is increased by 21%
- 4) The overall size of mega casting casting is 1630\*1601\*740 mm, the wall thickness of the main surface of the product is 3mm, and the average wall thickness is 3.02mm
- 5) The net weight is only 117 lbs (53.2 kg), which is 28% lighter than traditional technology, helping the vehicle's lightweight level reach the industry-leading level
- 6) The manufacturing cost savings is about 20~30% if the casting is made in-house
- 7) The body development cycle time is reduced by 6 months



**SERES Automobile Co.,Ltd.**  
 No. 618 Liangjiang Avenue,  
 Yubei District, Chongqing  
 Chongqing, Chongqing 400032  
 China

# ALUMINUM – ASSEMBLY

## MICHIGAN DIE CASTING LLC.

**PART:** Battery Enclosure  
**MATERIAL:** A380  
**WEIGHT:** 7.7 lbs. (3.5 kg) Total  
**END MARKET:** Lawn and Garden, Outdoor Power, and Construction Equipment

**CASTER AWARD NOMINEES:**  
 Dave Cheske, Darren Mackey, and Brad Farver  
**CUSTOMER:**  
 Briggs & Stratton Co. / Vanguard

### FUNCTION OF PART

Lithium battery enclosure.

### PREVIOUS PROCESS TO PRODUCE PART

New part for emerging electrification of Outdoor Power and Lawn and Garden Equipment. Normally an enclosure of this type would be an assembly of multiple metal components, typically stamped sheet metal and welded. Briggs & Stratton Co. / Vanguard is the industry leader expanding its lineup of battery products to meet the portable power needs of the construction sector.

### ADVANTAGES GAINED

Die cast aluminum Enclosure design that adds rigidity, durability, and protection to the battery Cell Module Assembly. It also reduces vibration and shock response allowing the pack to withstand abuse, debris, water & dirt. Integrated mounting points make it possible to stack multiple batteries for application needs. Enclosure assembly is part of an all-in-one system, which includes the lithium-ion cells, computerized Battery Management System, and charger. Zero Emissions makes this product great for indoor use and reduces environmental impacts.



**Michigan Die Casting LLC.**  
 51241 M-51 N  
 Dowagiac, MI 49047  
 USA

# MAGNESIUM - OVER .5 LBS

## MERIDIAN LIGHTWEIGHT TECHNOLOGIES

**PART:** Steering Hanger Beam Assembly  
**MATERIAL:** AM60B  
**WEIGHT:** 12 lbs (5.4 kg)  
**END MARKET:** Automotive

**CASTER AWARD NOMINEES:**  
 Sophia Fan, Gerry Wang, Jon Weiler  
**CUSTOMER:** Honda Development & Manufacturing of America, LLC

### FUNCTION OF PART

Holding an optimized balance of support, flexibility, rigidity and safety. Providing Honda with an innovative design and the most economical weight savings and high integrity.

### PREVIOUS PROCESS TO PRODUCE PART

Aluminum/steel hybrid materials made by extrusion and stamping with high investment.

### ADVANTAGES GAINED

Utilizing magnesium die casting reduced the weight by ~25% over the previous manufacturing method. Improvements were also seen in secondary operation reduction, increased stiffness, and energy absorption.

**Meridian Lightweight Technologies**  
 25 MacNab Avenue  
 Strathroy, ON N7G 4H6  
 Canada





# ZINC – UNDER 6 OZ

## LAKESIDE CASTING SOLUTIONS

**PART:** Damper Headpiece  
**MATERIAL:** Zamak 5  
**WEIGHT:** 0.2 oz (5.7 g)  
**END MARKET:** HVAC

**CASTER AWARD NOMINEE:**  
 Dennis Lehenbauer  
**CUSTOMER:**  
 Malco

### FUNCTION OF PART

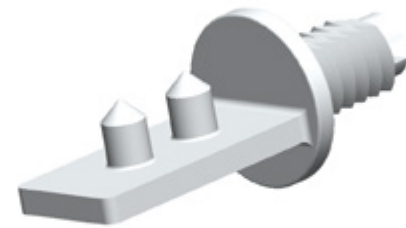
Damper piece in HVAC ductwork that controls air flow. Casting, pierces sheet metal, coined, and then a handle is attached with a locking nut to the cast threads.

### PREVIOUS PROCESS TO PRODUCE PART

Casting was initially cast in a conventional open/shut press with pneumatic shot end. The press and die were inherited with a design that allowed unacceptable porosity in the critical geometry that was needed for piercing the sheet metal. Material was Zamak 3.

### ADVANTAGES GAINED

New die was built to fit into a multi slide press with a hydraulic shot end. This allowed for directly gating into the part geometry that is crucial to reduce porosity for the strength needed to pierce the sheet metal. Using the hydraulic shot end increased the casting density. Alloy was changed to Zamak 5, which increased strength properties sufficiently for the casting to pierce the sheet metal.



**Lakeside Casting Solutions**  
 #2 Lakeside Drive  
 Monroe City, MO 63456  
 USA

# ZINC – OVER 6 OZ

## BRUSCHI S.P.A.

**PART:** Gearbox Housing and Lid  
**MATERIAL:** Zamak 5  
**WEIGHT:** 50 oz (1.4 kg) - Housing/38 oz (1.1 kg) - Lid  
**END MARKET:** Commercial Building

**CASTER AWARD NOMINEE:**  
 Simone Maggiori  
**CUSTOMER:**  
 FAAC s.p.a.

### FUNCTION OF PART

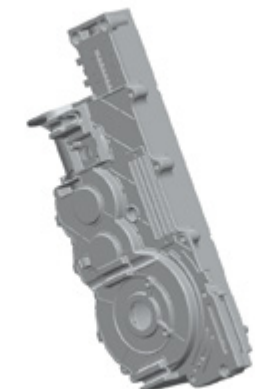
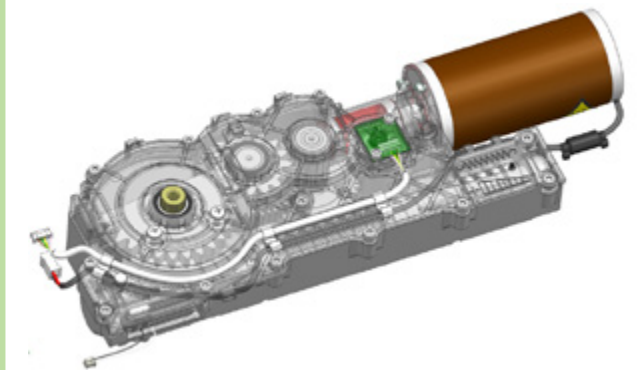
Gearbox for automatic opening system for pedestrian doors.

### PREVIOUS PROCESS TO PRODUCE PART

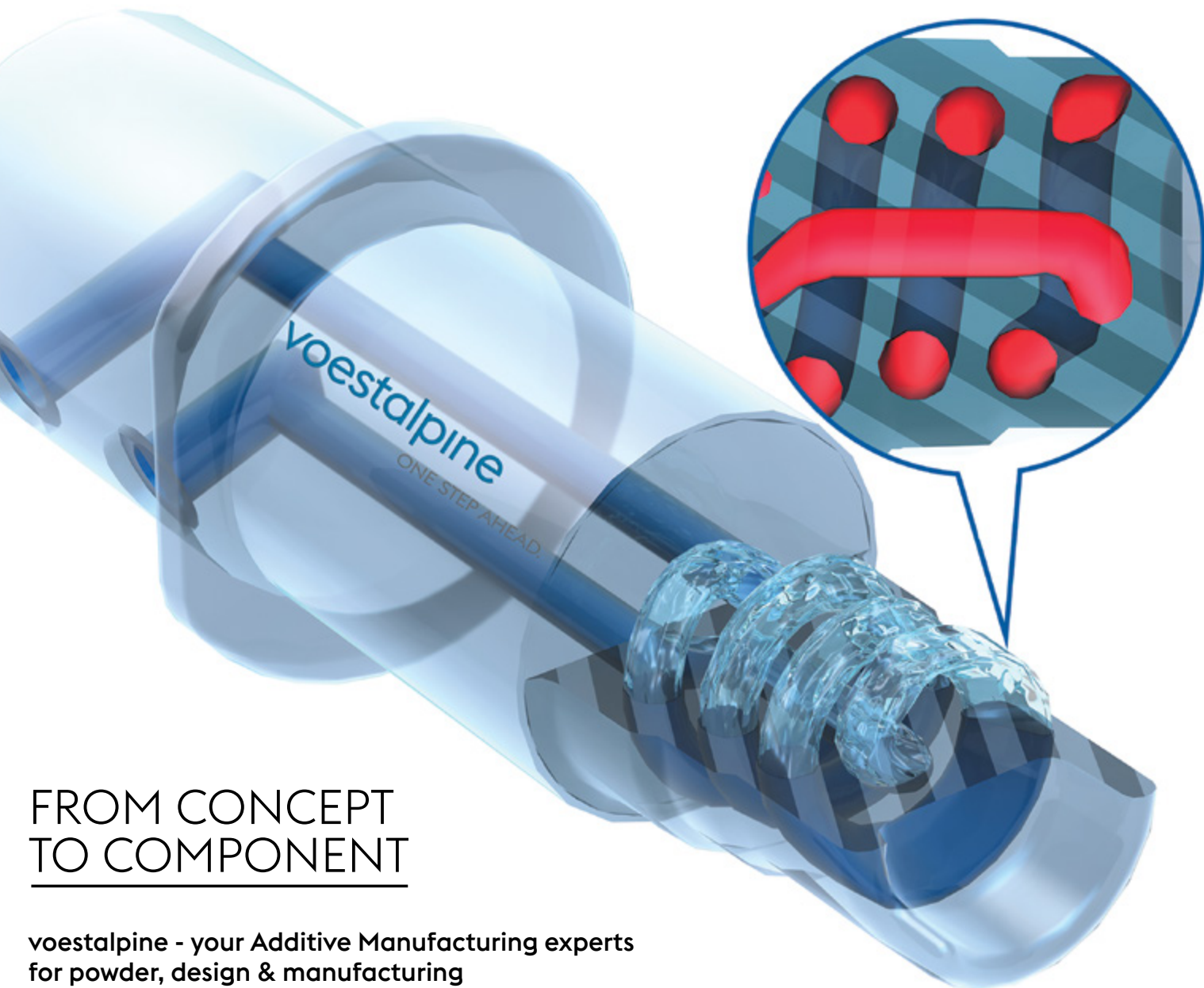
Similar parts made in die cast aluminum alloy.

### ADVANTAGES GAINED

Cooperation with the customer in finding solutions to make the bearing seats directly by die-casting with no machining that means important savings in the production process. Precision in the castings that allowed fitting the parts one another with no machined references. Stability and robustness of the zinc alloy compared to die cast aluminum. The possibility of reducing the wall thicknesses compared to aluminum and therefore the vertical dimensions of the gearbox unit (body and cover assembled). The better definition of the very small details (in particular the hooks for the cables, the seat of the encoder electronic board and the relief engravings). The damping of vibrations and noise offered by Zamak, a particularly interesting requirement for customer application, for use inside buildings.



**Bruschi s.p.a.**  
 Via Mendosio, 26  
 Abbiategrasso, Milan  
 Italy



**2024-2025 BOARD MEMBER INFORMATION**

Position	Name/Company	Phone/Cell	Email
<b>Chairperson</b> <i>Elected 1/24 thru 2024</i>	<b>Todd Ikerd</b> Auto Cast	616-534-4941	tikerd@autocastinc.com
<b>Vice Chairperson</b> <i>Elected 1/24 thru 2024</i>	<b>Steve Ridders</b> Allied Mineral	<b>c:</b> 616-291-6912	steve.ridders@alliedmin.com
<b>Advertising Team</b> <b>Co-Golf Chairperson</b>			
<b>Treasurer</b> <i>Elected 1/24 thru 2025</i>	<b>Phil Rozema</b> BuhlerPrince, Inc.	616-394-8202 <b>c:</b> 616-520-5115	phil.rozema@buhlergroup.com
<b>Secretary, Advertising Team</b> <i>Elected 1/23 thru 2024</i>	<b>Rob McInerney</b>	<b>c:</b> 616-251-8923	robmcinerney@chartermi.net
<b>Education Chairperson</b>	<b>Don Torrey</b> Hill and Griffith	<b>c:</b> 269-208-5770	dtorrey@hillandgriffith.com dtorrey13@comcast.net
<b>Scholarship Chairperson</b> <b>Program Chairperson</b>	<b>Steve Quirk</b> Cascade Die Casting	616-887-1771 <b>c:</b> 815-529-6362	squirk@cascade-cdc.com
<b>Membership Chairperson</b>	<b>Mike Martin</b>	<b>c:</b> 248-520-6581	michaelmartinmm@comcast.net
<b>Co-Golf Chairperson</b>	<b>Steve Barendse</b> Carpenter Brothers, Inc.	800-435-4503 <b>c:</b> 231-288-7081	s.barendse@carpenterbrothersinc.com
<b>Trustee</b> <b>BOG Rep</b>	<b>Bill Berry</b> DTE	616-530-9030	w.berry@dietech-gr.com
<b>Trustee</b>	<b>Jon Burns</b> Martinrea Metals, Inc.	<b>c:</b> 248-260-0243	jonathan.burns@martinrea.com
<b>Trustee</b>	<b>Bob McClintic</b> Bob McClintic & Associates	616-288-5169 <b>c:</b> 616-292-0454	drdiecast@drdiecast.com
<b>Trustee</b>	<b>Bob Worthy</b> The Worthy Company	<b>c:</b> 517-204-6430	bob@worthycompany.com
<b>Trustee</b>	<b>Allen Farley</b> Cascade Die Casting	<b>c:</b> 616-755-5006	afarley@cascade-cdc.com
<b>Trustee</b>	<b>Jeremy DeHoff</b> Cascade Die Casting	<b>c:</b> 231-638-7843	jdehoff@cascade-cdc.com
<b>Trustee</b>	<b>Adam Bruursema</b> Pace Industries	231-777-3941	adam.bruursema@paceind.com
<b>Trustee</b>	<b>Scott Kirkman</b> Die Therm Engineering, LLC.	616-822-4016	skirkman@dietherm.com

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# SCHEDULE OF EVENTS

THEME FOR THE YEAR, "BEST PRACTICES"

**2024**

January	February	March
18 Board Meeting	Publish Directory	8 Board Meeting - DTE
18 Dinner Meeting - Peppino's	15 Board Meeting	
18 John Reynolds - HA International	15 Dinner Meeting - Peppino's	
18 Furnace Tending & Cleaning	15 Brandon Combs - Henkel	
	15 Process Optimization w/ Thermal Imaging	
	18-24 Executive Conference - Scottsdale	
April	May	June
18 Board Meeting	10 Board Meeting - DTE	14 Board Meeting - DTE
18 Dinner Meeting - Peppino's	16 Class - EC-515 Die Casting Defects	Kick Off Golf Outing
18 Scott Kirkman Die Therm Engineering	Golf Registration Open	Western MI Short Course
July	August	September
12 Board Meeting - DTE	9 Board Meeting - DTE	13 Board Meeting - DTE
	15 Golf Vendor Night / Reception	30-2 NADCA Congress & Exposition - Indy
	16 Golf Outing	
October	November	December
30-2 NADCA Congress & Exposition - Indy	8 Board Meeting - DTE 2025 Kickoff	13 Board Meeting - DTE NADCA Board Elections
11 Board Meeting NADCA Class		2025 Budget

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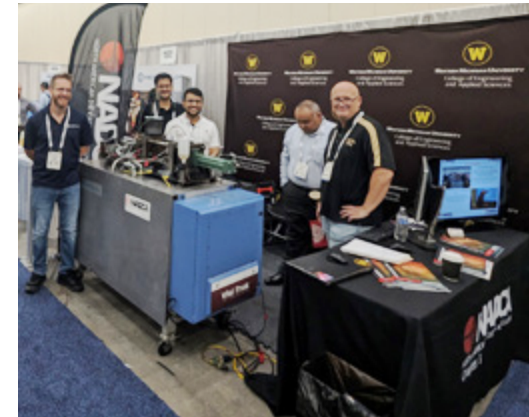
# EVENTS ARTICLE

THEME FOR THE YEAR, “BEST PRACTICES”

2024

Over the last year NADCA Chapter 3 has been extremely busy with classes, industry tabletop, golf outing, and dinner meetings.

In 2023, NADCA Chapter 3 hosted two classes at BühlerPrince in Holland, Michigan. Members got to enjoy the energetic Paul Clossen (Chapter 3 wishes him a happy retirement) for both Hydraulics’ and Process Control. Please be on the lookout for additional classes and programs coming soon.



NADCA Chapter 3 and WMU Tabletop Booth

September saw the 2023 NADCA industry tabletop visit Grand Rapids, Michigan. Members from around the country flocked in and enjoyed the late summer heat. Members experienced great food, acclaimed local breweries, and festivities and art surrounding the international arts and cultural event ArtPrize. Chapter 3 was pleased to team up with Western Michigan University to have an exhibit at the show. Through this collaboration, WMU was able to present their Die Cast in a Box. This has been a many year project headed by Dr. Ramrattan from WMU and shows our industries continued support to students and the study of industrial engineering.

January, February, and April, Chapter 3 hosted its dinner meetings for the year in fabulous Downtown Grand Rapids. Dinners were generously sponsored by Henkel and DieTherm. At each event, members enjoyed great food, libations, and some networking at Peppino’s Pizzeria and Sports Grille. After filling their stomachs, members were invited next door to Western Michigan University’s Applied Manufacturing Partnership (AMP) Lab for the night’s presentations. Keynote speakers provided excellent talks on Best Practices for a range of topics.



After dinner presentation Jan 2024



NADCA President Mike Meyer visiting Chapter 3

New NADCA President, Mike Meyer was in attendance in February and introduced to Chapter 3. During Mike’s visit, Dr. Sam Ramrattan provided a tour of WMU’s AMP Lab and showcased the collaboration that WMU is fostering with local companies, industrial organizations, and students.

Chapter 3’s next major event will be our famous golf outing at Saskatoon Golf Club on August 16th. Please visit our website ([nadcachapter3.org](https://nadcachapter3.org)) for registration information and to view other upcoming events.

I personally look forward to seeing everyone at our next meeting.



Steve Quirk  
Chapter 3 Scheduling Chair



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Page	Company	Address	Phone	Website
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1	<b>Uddeholm USA</b>	2505 Millenium Drive, Elgin, IL 60124	800-638-2520	uddeholm.com/usa
2	<b>Lethiguel USA / Midland Technologies</b>	14800 James Road, Rogers, MN 55374	763-428-4229	midlandtechnologies.com
4	<b>OEE Companies</b>	855 Village Center Drive #336, North Oaks, MN 55127	612-440-5714	oeecompanies.com
6	<b>Die Tech &amp; Engineering, Inc.</b>	4620 Herman Avenue SW, Grand Rapids, MI 49509	616-530-9030	dietch-gr.com
8	<b>Carpenter Brothers, Inc.</b>	7100 W Donges Bay Road, Mequon, WI 53092	414-418-0873	carpenterbrothersinc.com
8	<b>Imperial Group</b>	1700 W Fulton Street, Chicago, IL 60612	312-226-7465	imperialgp.com
10	<b>Allied Metal Company</b>	4528 W Division Street, Chicago, IL 60651	312-225-2800	alliedmetalcompany.com
10	<b>Rolar Products</b>	2076 Northwoods Dr, Muskegon, MI 49442	231-739-6313	rolarproducts.com
12	<b>Auto Cast, Inc.</b>	4565 Spartan Industrial Drive SW, Grandville, MI 49418	616-534-4941	autocastinc.com
14	<b>General Die &amp; Engineering</b>	6500 Clay Avenue SW, Grand Rapids, MI 49548	616-698-6961	gendie.com
14	<b>STØTEK, Inc.</b>	W233 N2800 Roundy Cir W, Ste 200, Pewaukee, WI 53072	262-347-0845	stotek.com
16	<b>Frech USA</b>	6000 S. Ohio Street, Michigan City, IN 46360	219-874-2812	frechusa.com
19	<b>Metal Mechanics, Inc.</b>	350 S 14th St, Schoolcraft, MI 49087	269-679-2525	metalmechanics.com
22	<b>International Mold Steel Inc.</b>	1155 Victory Place, Hebron, KY 41048	859-342-6000	imsteel.com
23	<b>Bob McClintic &amp; Associates / Dr. Die Cast</b>	523 Lincoln Lawns Drive NW, Walker, MI 49534	616-292-0454	drdiecast.com
23	<b>Van Hydraulics</b>	25 Gooding Road, Conklin, MI 49403	616-887-3337	vanhyd.com
24	<b>Schad Refractory Construction Co.</b>	15240 Castleton St, Detroit, MI 48227	800-581-7885	schadrefractory.com
26	<b>Sinto America</b>	150 Orchard Street, Grand Ledge, MI 48837	517-371-2460	sintoamerica.com
28	<b>Martinrea International</b>	603 E Church Avenue, Reed City, MI 49677	248-260-0243	martinrea.com
30	<b>The Schaefer Group</b>	1300 Grange Hall Road, Dayton, OH 45430-1013	937-253-3342	theschaefergroup.com
32	<b>Century Sun Metal Treating</b>	2411 West Aero Park Court, Traverse City, MI 49686	231-941-7800	century-sun.com
34	<b>Hansen-Balk Steel Treating Co.</b>	1230 Monroe Avenue NW, Grand Rapids, MI 49505	616-458-1414	hansenbalk.com
34	<b>SINC Thermal</b>	1699 S Hanley Rd Suite 200, St. Louis, MO 63144	314-423-9460	sincthermal.com
36	<b>Lindberg/MPH</b>	3827 Riverside Road, Riverside, MI 49084	269-849-2700	lindbergmph.com
38	<b>Die Therm Engineering, LLC</b>	7818 Silverthorne Dr. SE, Ada, MI 49301	616-822-4016	dietherm.com
40	<b>Allied Mineral Products</b>	2700 Scioto Parkway, Columbus, OH 43221	614-876-0244	alliedmineral.com
42	<b>Brach Machine Inc.</b>	367 Paul Road, Rochester, NY 14624	585-343-9134	brachmachine.com
42	<b>Swiss Steel USA</b>	365 Village Drive, Carol Stream, IL 60188	800-323-1233	swisssteel-international.us
44	<b>Industrial Innovations Inc.</b>	2936 Dormax Street NW, Grandville, MI 49418	616-249-1525	industrialinnovations.com
48	<b>Pyrotek, Inc.</b>	4447 E. Park 30 Dr. Columbia City, IN 46725-8872	866-797-6835	pyrotek.com
50	<b>Hill &amp; Griffith Company</b>	1085 Summer Street, Cincinnati, OH 45204	800-543-0425	hillandgriffith.com
52	<b>HA Group</b>	630 Oakmont Lane, Westmont, IL 60559	630-575-5700	ha-international.com
64	<b>voestalpine Additive Manufacturing Centers</b>	2595 Meadowvale Blvd. Mississauga, ON L5N 7Y3	800-655-8335	voestalpine.com/hpm/canada
66	<b>Regloplas</b>	4063 Tabor Road, Sodus, MI 49126	269-428-1100	regloplas.com
68	<b>Progressive Components</b>	235 Industrial Dr, Wauconda, IL 60084	800-269-6653	procomps.com
70	<b>voestalpine eifeler Coatings</b>	2222 Spikes Lane, Lansing, MI 48906	517-708-7945	eifeler.com/northamerica
72	<b>B&amp;L Information Systems Inc.</b>	4707 Rambo Road, Bridgman, MI 49106	269-465-6207	blinfo.com
C4	<b>Ad Solutions</b>	375 N State St, Sparta, MI 49345	616-887-4070	myadsolutions.com
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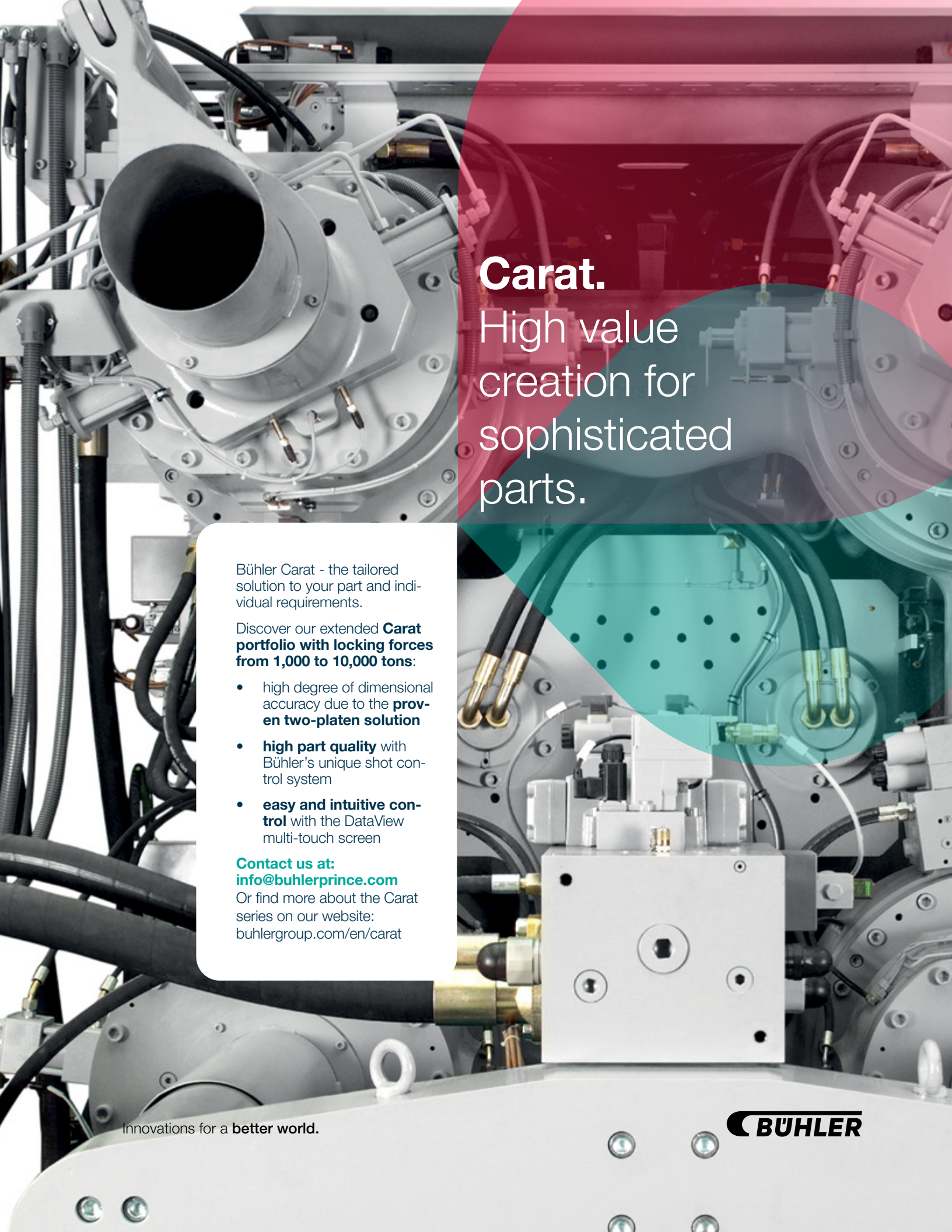


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