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NORTH AMERICAN DIE CASTING ASSOCIATION

**CHAPTER 3**  
**MEMBERSHIP DIRECTORY 2022-2023**

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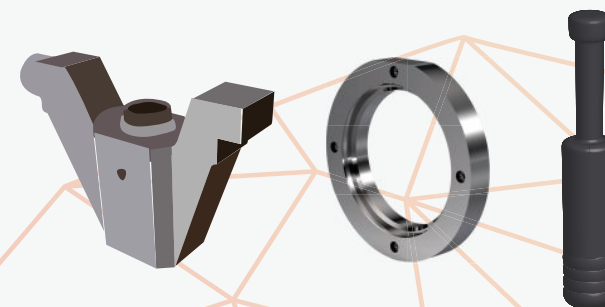
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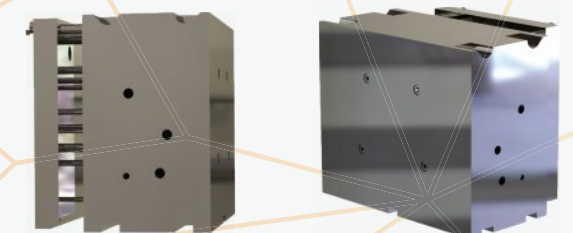
**Custom Core Pins**



**Shot End Components**



**Unit Die Tools**



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**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.

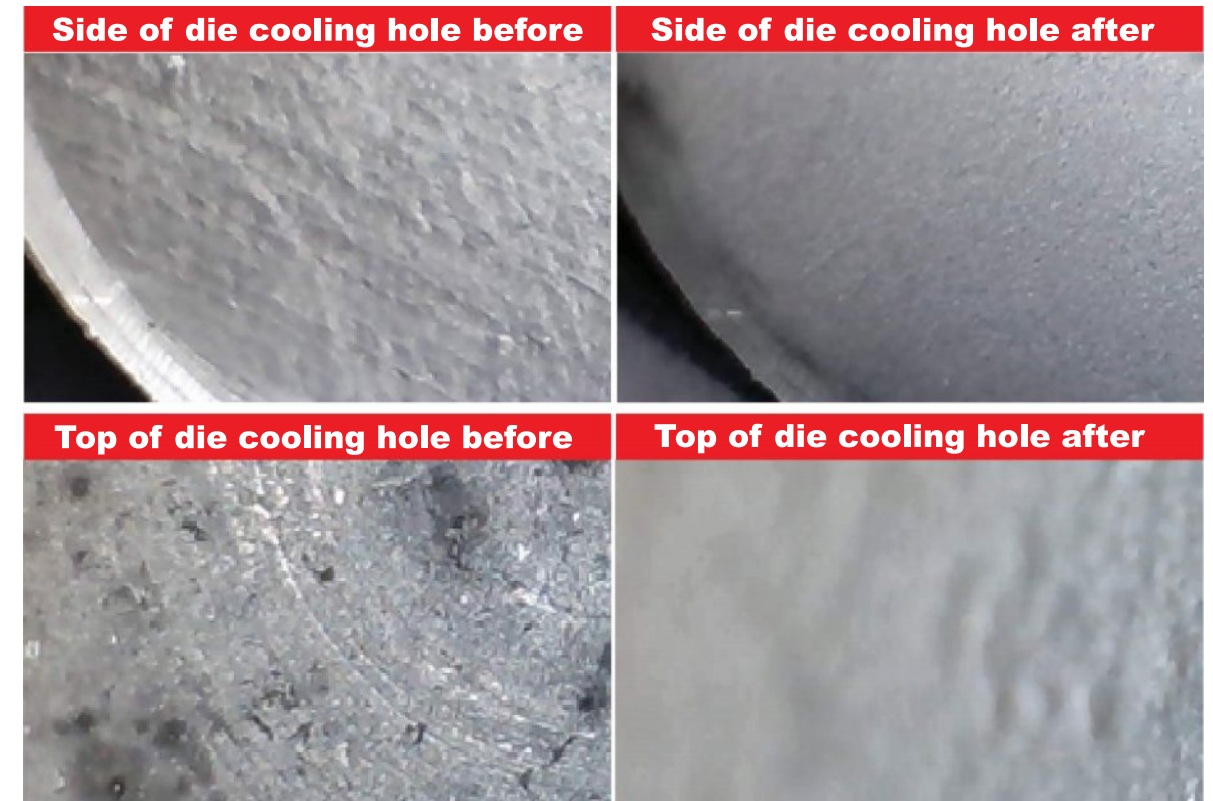
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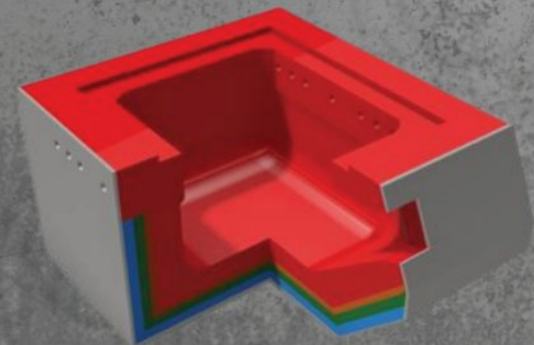
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## 2022, The Year of Change

### Letter From Our NADCA Chapter 3 Chairperson

As we look forward to getting back to a thriving manufacturing market for 2022, we can't help but notice all the industry changes around us. We are experiencing a new hybrid workforce, career changes, fewer people in the labor pool, rising labor cost, and rising manufacturing cost. All these factors are driving our industry to change and adapt to the times.

We as NADCA Chapter 3 have been focused on education for the last several years, whether it is in-plant training, best practices or industry concerns, or the attraction to retain young talent to our industry. We want to continue to be that driving force behind training and education to support our local chapter members.

We are excited to announce our in-person chapter dinner meetings that will begin soon. Please see the Chapter 3 website for dates, times, and location. These are great training, educational, and networking events for all employees. Best of all, they are free to current NADCA members. Please plan to attend.

We are also proud to announce our collaboration with Western Michigan University. Through the help of NADCA corporate, NADCA Chapter 39, and NADCA Chapter 3; we have been able to establish an endowment fund to support ongoing tuition scholarship funding for qualified college students looking to peruse careers in the metal casting industry. Our chapter goal is to retain these students to become future pioneers driving innovation in our industry.

So, whether we are looking to make some career changes within the industry, provide training to new employees, or supporting our college intern students to look at die casting as a positive career path, we want to be that source of education and training our members can rely on.

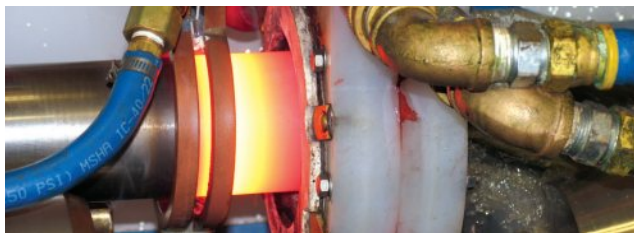
Don't forget to check out our website, [nadcachapter3.org](http://nadcachapter3.org) for upcoming events and all the chapter's information.

Thank you for your continued support,

Todd Ikerd  
Chapter 3 Chairperson



**Todd Ikerd**  
Chapter 3 Chairperson



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**2021 State of the Die Casting Industry**

**Stephen P. Udvardy**, President  
North American Die Casting Association  
Arlington Heights, Illinois

In this issue of the State of the Die Casting Industry, information is presented on the new Biden Administration, macro-economics, overall manufacturing, markets served by die casting, and die casting shipments. Included are forecasts for the automotive market, the housing market, and die casting shipments.

**The Biden Administration**

Joe Biden was sworn in as the 46th president of the United States on January 20, 2021, ending the Trump era and changing the White House from Republican to Democrat. The top priorities of the Biden Administration include the fight against the coronavirus (COVID-19), economic recovery, the environment/climate, immigration reform, health care, racial equity, and restoring America's global standing.

New orders surrounding the coronavirus pandemic and the cyclic rise and fall of cases were put in place. The American Rescue Plan Act of 2021, a \$1.9 trillion economic stimulus bill, also called the COVID-19 Stimulus Package or American Rescue Plan, was signed into law on March 11, 2021, with the intent of speeding up the country's recovery from the health and economic effects of the COVID-19. Vaccines were made available in the U.S. in December of 2020 and parts of this bill include resources to increase COVID-19 testing and vaccination, but also included the extended unemployment insurance, direct assistance

to households, and support for small businesses, as well as other support. There is currently a pending OSHA Emergency Temporary Standard (ETS) which includes mandatory vaccination for employees.

On November 15, 2021, a \$1.2 trillion Bipartisan Infrastructure Framework bill was signed into law and is targeted to add \$550 billion in funding for new projects while utilizing the remaining \$700 billion to fund existing projects. Although the \$1.75 trillion Build Back Better Act was passed by the House of Representatives on November 19, 2021, as of this writing it has yet to pass the Senate. The Build Back Better Act aims to provide funding for a broad array of areas including: clean energy and climate investment; child tax and earned income credit; childcare and preschool; home care; housing; higher education and workforce; and, equity and other investments.

Regarding the environment and climate, Biden reentered the Paris Agreement hours after taking office and the Administration is initiating efforts to reduce climate pollution in every sector of the economy and put the U.S. on a course to achieve net-zero emissions by no later than 2050. This will in part be accomplished through building a modern and sustainable infrastructure and an equitable clean energy future.

Although there has been no real immigration reform as yet, President Biden's plan is focused on a fair and orderly immigration system that welcomes immigrants, keeps families together, and allows all



**Figure 1** - Charts showing the level to which China falls shy of agriculture, manufactured goods, and energy purchases that were promised under the Phase I Deal.

people across the U.S. to more fully contribute to our country. This type of system is thought to be one that will make our country safer, stronger, and more prosperous.

The intent for health care is to meet the health care needs created by the pandemic, reduce health care costs, and make our health care system less cumbersome. This will be accomplished by building on the Affordable Care Act.

The approach to racial equity is several-fold. Plans include: embedding racial justice across Federal agencies, policies, and programs; criminal justice reform; ending disparities in health care access and education; strengthening fair housing; and restoring Federal respect for Tribal sovereignty.

President Biden's plan to restore America's standing in the world, is to strengthen the national security workforce, rebuild democratic alliances across the globe, champion American values and human rights, and equip the American middle class to succeed in a global economy.

Other changes taking place under the Biden Administration are tax rates, enhanced enforcement of current and pending new OSHA Regulations, and trade. Taxes, including corporate taxes, will likely increase. The current proposal is to increase the C-Corporate tax rate from 21% to 26.5%, although it is suspected that it will be settled at no greater than 25%. The limit on 199a deductions for pass-through businesses may be changing and some pass-throughs may be looking at a rate of 39.6%.

OSHA is increasing its number of inspectors to stronger enforce current regulations and standards. Stronger enforcement will be the result of more frequent inspections and planned higher levels of fines and penalties. Also planned is the development of new regulations and standards. In addition to the aforementioned ETS for example, there is a proposed Heat Rule to protect workers from heat related illness and from a heat index in excess of 80°F!

At present, President Biden is not expected to make any changes to the USMCA which went into effect on July 1, 2020. Although this trade deal was intended to be win-win for each of the U.S., Canada, and Mexico, the problems caused by the pandemic and supply chain issues have made it difficult to determine the level of impact the agreement has had thus far. Prior to the pandemic, the agreement was expected to add more than \$67 billion to the U.S. GDP and create 176,000 new jobs. These expectations have not been met. Changes are being made to the steel and aluminum tariffs, however. In concert with plans to strengthen foreign alliances, starting January 1, 2022, the Administration is lifting the 25% steel tariff and 10% aluminum tariff for the EU and replacing the tariffs with Tariff Rate Quotas (TRQs). This type of quota does not block entry but rather sets a limit at which the 25% and 10% tariffs are reinstated. The U.S. is in talks with the UK and Japan and a similar deal may be the outcome. It is not expected that the China tariffs will be lifted any time prior to the 2022 elections. The main focus on China is getting China to meet the level of purchases promise under the Phase I Deal. As of September of 2021, China was at 82% of the agriculture related purchases target, 59% of the manufactured goods purchases, and 38% of the

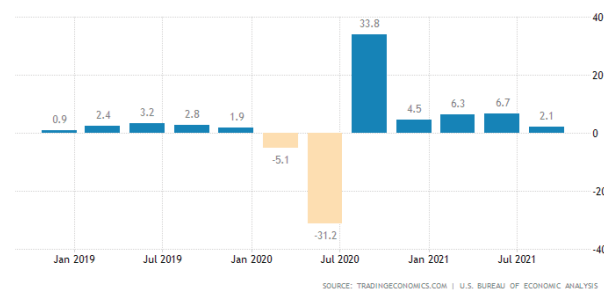
energy purchases related purchases target. (See Figure 1). The U.S. trade deficit with China was \$310.3 billion of all goods in 2020. For January through September in 2021, the deficit was \$255.4 billion for all goods compared to \$222.3 billion for January through September in 2020, hence, the deficit has grown in 2021.

A factor affecting trade, as well as die casting markets and businesses, is the supply chain shortage. The Administration has tried to assist in reducing the port backup by influencing ports to expand their hours of operation. The ports agreed to increase night hour operation, however, there are a lack of truck drivers to move goods out of the ports. Obviously, critical links in the supply chain are not only semiconductors, plastic, lumber, and other important materials, but also human resources. When there is a labor pool shortage, trucking companies can't find enough truck drivers and manufacturing companies can't find enough workers to achieve standard productivity levels for products they produce.

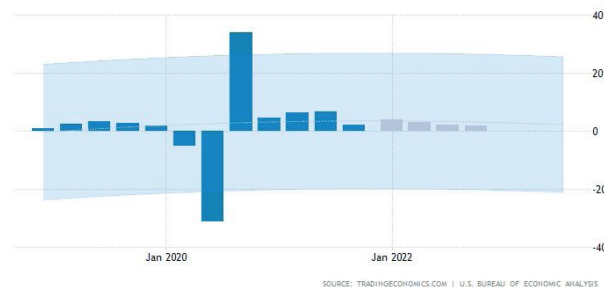
In his first year, President Biden has made plans to address his top priorities. Efforts within some of the plans have been initiated. To present, some of what has been changed and newly implemented has had a positive impact, however, others and those changes that are forthcoming will negatively impact companies within the die casting industry.

### Macro-Economics

The U.S. GDP Growth Rate for 2020 ended at -3.5% even after the great 33.8% growth rate rebound in the third quarter that followed a large negative growth rate of -31.2% in the second quarter. The growth rate in the first three quarters of 2021 have all been positive with the first quarter at 6.3%, the second quarter at 6.7%, and third quarter at 2.1%. The growth rate for the last quarter of 2021 is expected to be approximately 4%. According to Trading Economics' econometric models, the GDP Growth



**Figure 2 - The U.S. GDP growth rate in percent from the first quarter of 2019 through the third quarter of 2021 in percent. From Trading Economics.**



**Figure 3 - The U.S. GDP growth rate forecast in percent. From Trading Economics.**

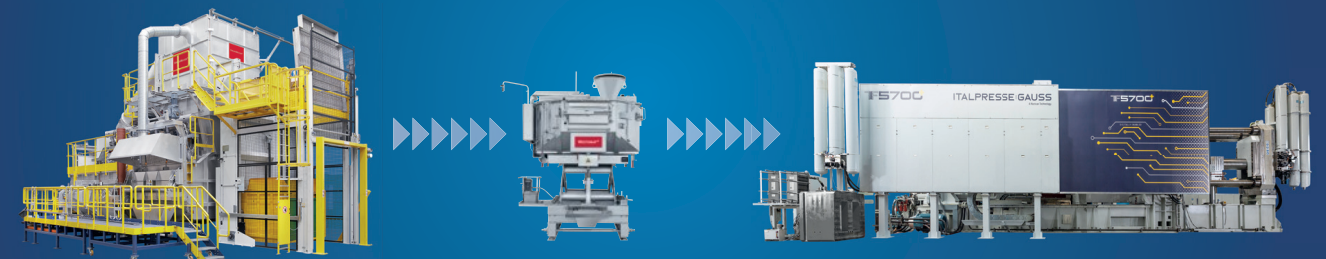


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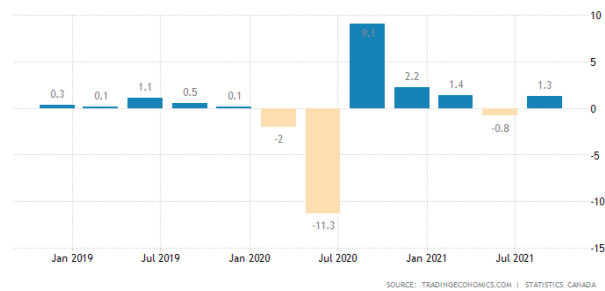
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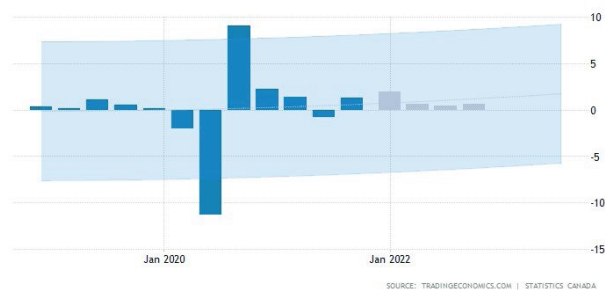
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Rates for 2022 and 2023 are expected to be 1.7% and 1.9%, respectively. Inflation rose more than 6% in October for the highest rate of increase in more than thirty years, according to the U.S. Bureau of Labor Statistics. Consumer prices have been rising sharply, increasing almost a full percentage point in October, due to ongoing supply chain issues (including the computer chip shortage), increased demand, labor shortages, and transportation issues. While the Federal Reserve and some experts believe inflation is transitory, other experts believe inflation will run at a rate of about 4% for the next three years – higher than the normal target of 2%. Transitory or not, the Federal Reserve will most likely allow inflation run hot for a while as it may stimulate economic growth.

The Canada GDP Growth Rate for 2020 ended at -5.3% compared to the prior year, although there was a rebound of 9.1% in the third quarter following a -11.3% growth rate in the second quarter. The growth rate in the first three quarters of 2021 has gone from 1.4% to -0.3% to 1.3% and is expected to be 1.9% by the end of fourth quarter of 2021. In the future, the Canada GDP Growth Rate is projected to trend around 1.00 percent in 2022 and 0.80 percent in 2023, according to econometric models.



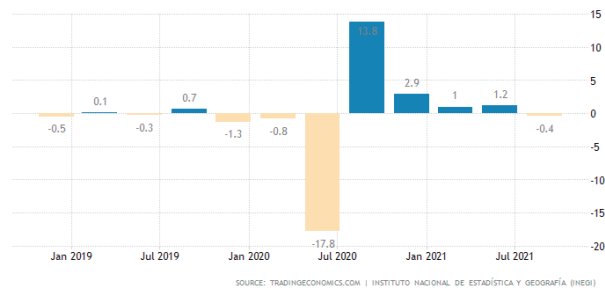
**Figure 4** - Canada GDP growth rate from the first quarter of 2019 through the third quarter of 2021 in percent. From Trading Economics.



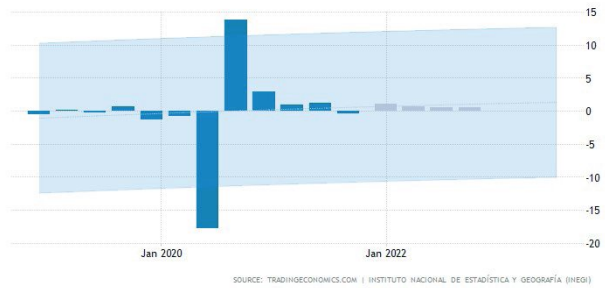
**Figure 5** - Canada GDP growth rate forecast in percent. From Trading Economics.

The Mexico GDP Growth Rate for 2020 ended at -8.2% compared to the prior year. Like the U.S. and Canada pattern, there was a rebound of 13.8% in the third quarter following a -17.8% growth rate in the second quarter. Since the third quarter of 2020, the growth rate has been trending downward. In the first three quarters of 2021 the growth rate has gone from 1.0% to 1.2% to -0.4% and is expected to be 1.1% by the end of fourth quarter of 2021. It is anticipated that the Mexico GDP Growth Rate will trend around 0.8% in 2022.

Consumer sentiment declined sharply during the recession cause by the pandemic. Although the



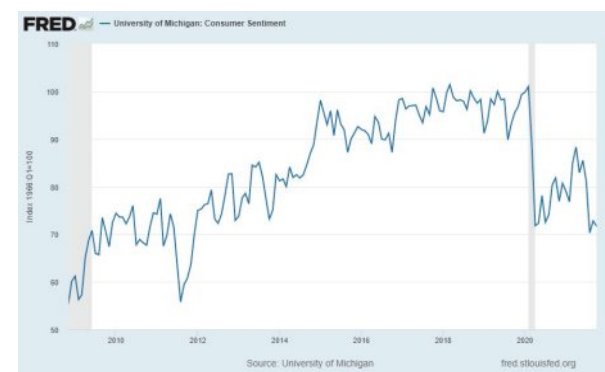
**Figure 6** - Mexico GDP growth rate from the first quarter of 2019 through the third quarter of 2021 in percent. From Trading Economics.



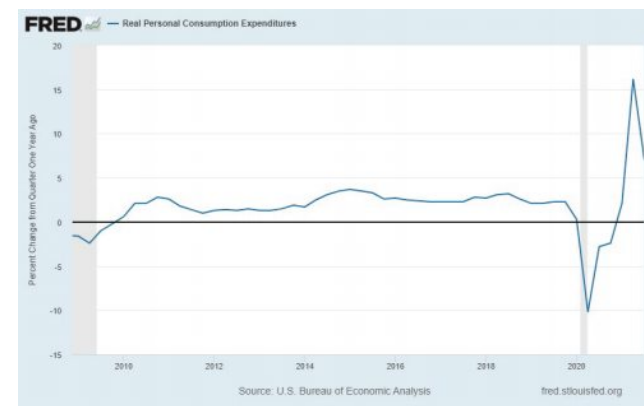
**Figure 7** - Mexico GDP growth rate forecast in percent. From Trading Economics.

consumer sentiment index started recovering from 71.8 in April of 2020 through April of 2021 when it reached 88.3, the index subsequently declined to 71.7 at the end of October of 2021. Personal consumption is impacted by consumer sentiment as can be seen in Figures 8 and 9. When sentiment is high, consumers tend to spend more and when sentiment is low, consumers tend to spend less. Personal consumption in the fourth quarter of 2019 showed a 2.3% change from the same quarter of year prior. For the second quarter of 2020, in the heat of the pandemic, there was a -10.2% change from the second quarter of 2019. By the second quarter of 2021, the change was 16.2%. This was followed by decline to 7.0%, but still a positive number, in the third quarter of 2021.

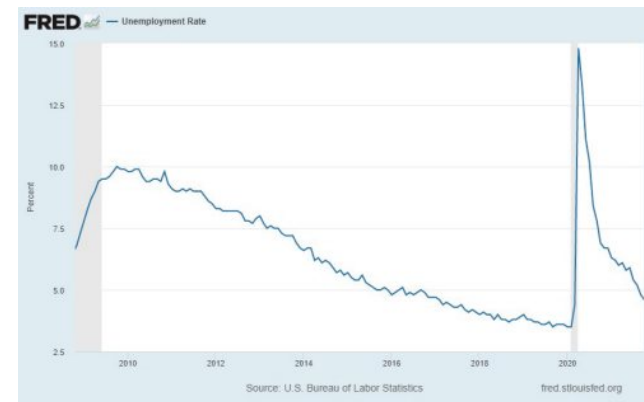
Overall employment in September of 2019 hit a 50-year record low rate of 3.5%. This level was seen through February of 2020. Then the pandemic caused an unemployment increase to 14.8% in April 2020, impacting over 30 million American workers. After the sharp rise in April of 2020, unemployment declined to 6.9% in October of 2020, 6.3% in January of 2021, 5.4% in July of 2021, and as of October of 2021, hit 4.6%. (See Figure 10)



**Figure 8** - Consumer sentiment index from January of 2009 through October of 2011. Shaded areas indicate U.S. recessions.



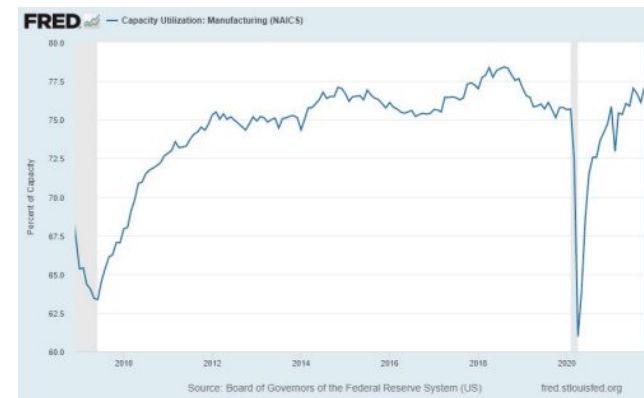
**Figure 9** - Real personal consumption expenditures from January of 2009 through October of 2021. Shaded areas indicate U.S. recessions.



**Figure 10** - Unemployment rate from early 2009 through the third quarter of 2021. Shaded areas indicate U.S. recessions.

## Manufacturing

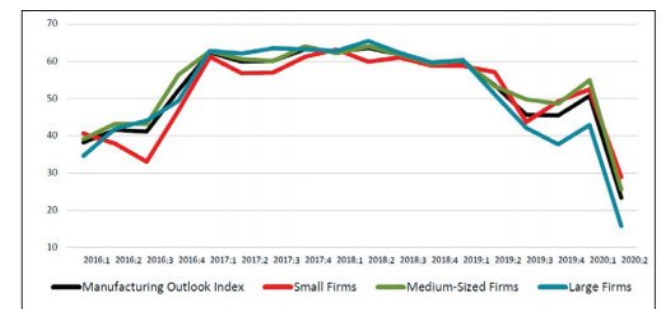
The capacity utilization for all manufacturing in the U.S. rose steadily from 63.4% in June of 2009, which was the lowest point during the Great Recession, to 78.4% in August of 2018 before tailing off to 75.7% in February of 2020. During the pandemic, capacity utilization plummeted to slightly less than 61.0% in April of 2020, then steadily climbed to 75.8% in January of 2021. With some slight fluctuations from January through October, capacity utilization hit 77.1% in October of 2021. Although a reasonable level, utilization above 80% is preferred and a level of 85% is considered optimal for most companies.



**Figure 11** - Capacity utilization for all of Manufacturing from January 2009 through October of 2021. Shaded areas indicate U.S. recessions.



**Figure 12** - NAM Manufacturing Outlook Index from the 1st quarter of 2019 through the 3rd quarter of 2021.



**Figure 13** - NAM Manufacturing Outlook Index from the 1st quarter of 2016 through the 2nd quarter of 2020.

Data from the National Association of Manufacturers (NAM) Quarterly Survey reports indicate that there is a high percentage of CEO's that characterize their current business outlook as positive. In the third quarter of 2021, 87.5% of the CEO respondents had a positive outlook. This was a slight decline from 90.1% in the second quarter of 2021. The 87.5% is a strong number when compared to the percentages that dipped into the high 60% range in 2019 and considering that the record high was 95.1% in 2018.

From the NAM data, the Manufacturing CEO Outlook Index is calculated and is currently high for small, medium, and large size companies. The average of all size companies, as of the third quarter of 2021, was 58.4, down slightly from 60.2 in the second quarter but a strong number. Although the index declined during the pandemic in similar fashion to other indicators, the third quarter of 2021 index level is about the same as the first quarter of 2019 level. Indexes in the high 30's were seen in 2016 and indexes in the mid-60's were seen in 2017 and 2018. (See Figures 12 & 13)

The NAM Quarterly Survey asks CEOs to rank their top challenges. The third quarter of 2021 report shows that the top three challenges being faced were: 1) increased raw material costs; 2) attracting and retaining a quality workforce; and, 3) supply chain challenges. The same top three challenges were cited in the second quarter of 2021 report. In the fourth quarter of 2020, however, the top three challenges were: 1) attracting and retaining a quality workforce; 2) a weaker domestic economy and sales for their products; and, 3) rising health care/insurance costs. This is quite a change and an indication of the high level of impact material costs and supply chain issues are having on manufacturing companies.

Lingering effects of COVID-19 coupled with less products from which to choose and higher prices due to supply issues are contributing factors.



Note: Respondents were able to check more than one response; therefore, responses exceed 100%.

Figure 14 - Top challenges facing CEOs from the NAM third quarter 2021 survey report.

### Die Casting Markets

Automotive and housing remain as the top two markets served by die casting. Approximately 64% of die casting shipments are automotive related and approximately 11% of die casting shipments are housing related for a combined total of 75% of all shipments. There are several other markets served by die casting that make up the remaining 25% of shipments. These markets include, hand and power tools, telecommunication devices, computers and business equipment, plumbing, medical devices, sports and recreation equipment, aerospace, robotics, and solar energy. (Lawn and garden equipment and major appliances are considered in housing as they are items typically purchased with new homes). Since the automotive and housing markets largely drive the industry at 75% of die casting shipments, sales information and sales forecasts for these two markets are followed more closely.

U. S. light vehicle sales (passenger cars and light trucks) in 2020 hit 14.5 million units. About 76% of the units were light trucks and 24% were passenger cars. Although 14.5 million units is about a 15% decline from nearly 17.0 million units in 2019 and the forecast in late 2020 of 16.3 million units, it is substantially higher than forecasts in April of 2020 that were in the high single digits. In 2021, light vehicle sales rose from January to March, then started to decline from May through September before starting to incline again in October. (See Figure 15) The seasonally adjusted annual rate of sale (SAAR) for November was 13.6 million units according to Wards Intelligence and the total sales for 2021 is projected to be 15.0-15.2 million units. Wards anticipates that October of 2021 is the start of long growth period with light vehicle sales forecast to 16.2 million units in 2022 and 16.7 million units in 2023. (See Figure 16) Up to 17.0 million units may be realized in 2024.

These forecasts are in light of the current chip shortage, other supply chain issues, and higher prices. Cox Automotive has similar forecasts. The future appears to be bright for the automotive market. The market penetration of plug-in electric/battery vehicles or BEVs continues to increase, and more models continue to hit the market providing consumers with more options. Although the level of penetration through 2024 is uncertain, the adoption rate of BEVs continues to be lower in North America than in Europe and Asia.

In 2020, there were 1.38 million new privately-owned housing starts in the U.S. Despite the pandemic, this exceeds the 2019 level of 1.28 million units and October of 2020 forecast for the 2020 total to hit 1.28 million units. Contributing to the growth of 7% in 2020 over 2019 were continued low mortgage interest rates and government stimulus. In late 2020, new privately-owned housing was forecast to trend around 1.17 million units in 2021. In the fourth quarter of 2021, the forecast is for housing starts to hit 1.47 million units. The SAAR for new privately-owned housing starts in January of 2021 was 1.63 million, then dropped to 1.45 million in February, and as



Figure 15 - Monthly light vehicle sales and seasonally adjusted annual rate (SAAR) of sales from November of 2020 to November of 2021.

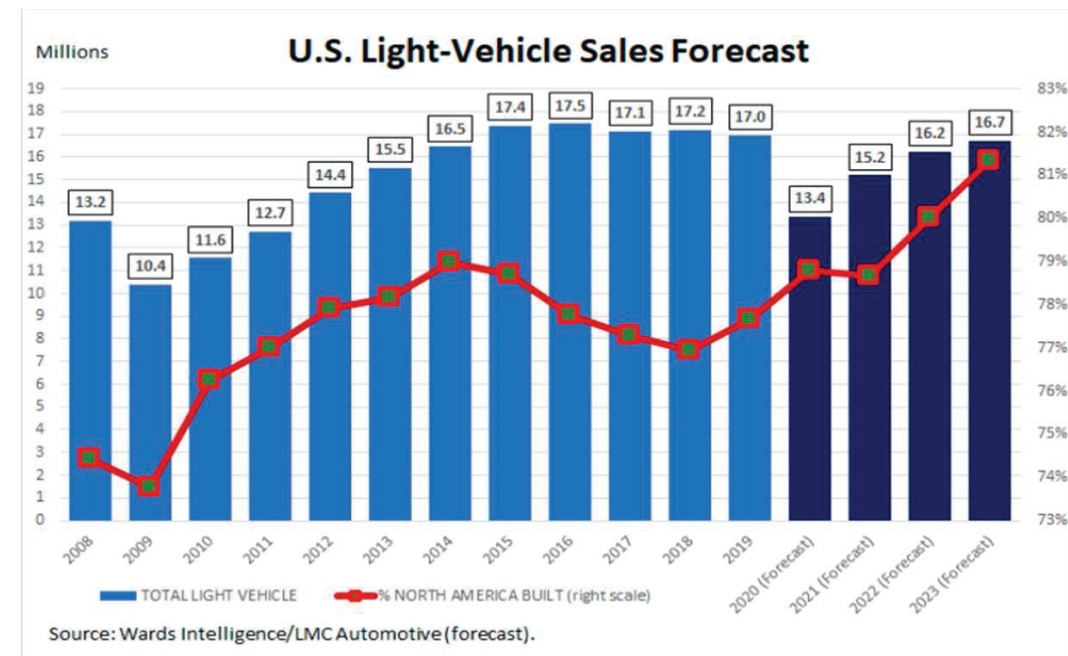


Figure 16 - U.S. light vehicle sales forecast through 2023 showing the percentage of vehicle built in North America.

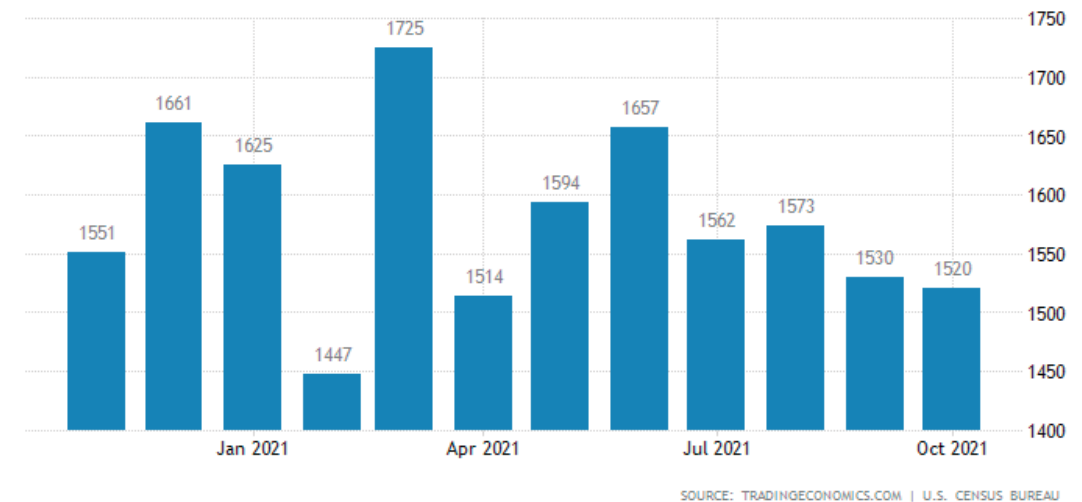


Figure 17 - Monthly Seasonally Adjusted Rate of Sales (SAAR) for new privately-owned housing starts from November 2020 to October 2021. From Trading Economics.

followed by a sharp rise to high level of 1.73 million in March. Levels bounced between 1.51 million and 1.66 million from April through October of 2021. Considering a fairly healthy housing market is 1.2 million units, these are strong SAAR levels. New privately-owned housing starts in the U.S. is projected to trend around 1.37 million units in 2022 and 1.27 million units in 2023, according to econometric models. Hence, the housing market should remain strong for at least the next few years.

### Die Casting Shipments

Die casting shipment information is obtained through the NADCA Quarterly Business Barometer Survey as well as information from the Aluminum Association. The Quarterly Business Barometer also captures information on quoting activity, die builds, and capacity utilization. Information on aluminum die casting shipments from the Aluminum Association indicates that U.S. aluminum die casting shipments in 2020 totaled 2.48 billion pounds. This is a 13.6%

decline from 2.87 billion pounds in 2019 and a 20.5% decline from 3.12 billion pounds in 2018. Zinc die casting shipments in 2020 were an estimated 356 million pounds, which is a 7% decline from 2019 as zinc die casting shipments in 2019 were approximately 383 million pounds. Respondents of the fourth quarter 2020 Business Barometer indicated that overall shipments in 2020 declined slightly more than 10.0% from 2019. Based on the third quarter 2021 Business Barometer results, the shipments for 2021 are anticipated to be 12.4% higher than shipments in 2020. Aluminum die casting shipments are anticipated to be up 12.4%, zinc die casting shipments are expected to be up 11.0%, and magnesium die casting shipments are expected to be up 14.6%. Quarter over quarter, overall shipments were up 5.2% in the first quarter of 2021 compared to the fourth quarter of 2020, up 11.73% in the second quarter of 2021 compared to the first quarter of 2021, and down a slight 2.2% in the third quarter of 2021 compared to the second quarter of 2021.



**Table 1 - Die casting shipment comparison by quarter.**  
From the NADCA Third Quarter 2021 Business Barometer.

	Overall	Automotive	Non-Auto	Al	Zn	Mg
4th Q'21 vs 3rd Q'21						
3rd Q'21 vs 2nd Q'21	-2.16%	-0.04%	-2.48%	-1.90%	-6.04%	-0.20%
2nd Q'21 vs 1st Q'21	11.73%	0.98%	13.05%	11.48%	13.72%	-3.98%
1st Q'21 vs 4th Q'20	5.24%	3.94%	5.65%	5.22%	5.79%	-0.52%

According to the Aluminum Association, U.S. aluminum die casting shipments in the first half of 2021 were at 1.24 billion pounds. Shipments in the second half of the year will need to exceed the first half in order to match the level of growth in 2021 indicated by the NADCA Business Barometer. With the light vehicle sales expected to grow about 7.3% in 2022 and new privately-owned housing expected to decline about 6.8%, overall die casting shipments in 2022 are expected to grow an estimated 6.5% over 2021.

Per the results of the Business Barometer, capacity utilization in the third quarter of 2021 was an average of 62% overall for die casting. The capacity utilization was 77.1% in October of 2021 for all of manufactur-

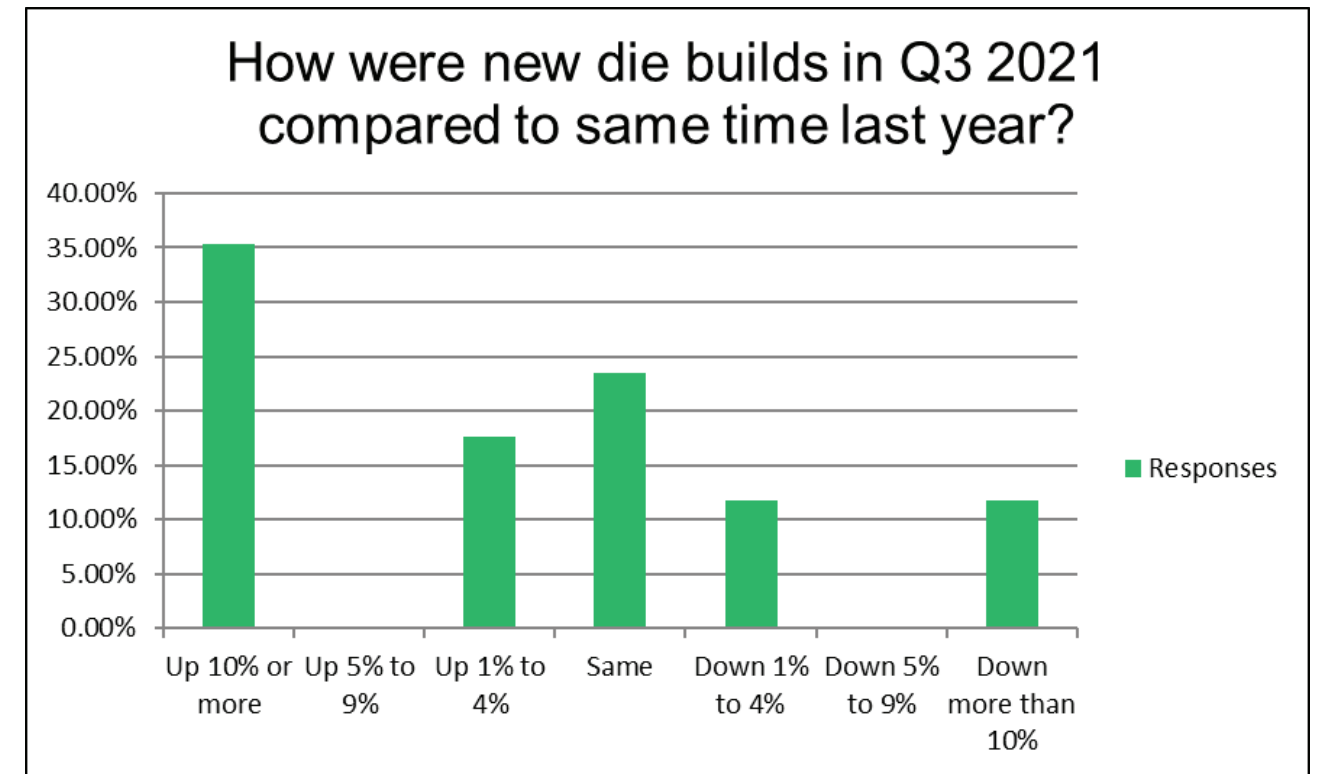
**Table 2 - Forecast of 2021 die casting shipments compared to 2020 die casting shipments as of the first, second and third quarter of 2021.** From the NADCA Third Quarter 2021 Business Barometer.

	Overall	Automotive	Non-Auto	Al	Zn	Mg
2021 Actual vs 2020						
2021 vs 2020 Forecast (Q3)	12.37%	6.99%	13.22%	12.44%	11.02%	14.63%
2021 vs 2020 Forecast (Q2)	18.60%	15.50%	18.94%	18.60%	18.97%	4.34%
2021 vs 2020 Forecast (Q1)	10.58%	10.13%	10.72%	10.44%	13.37%	-3.04%

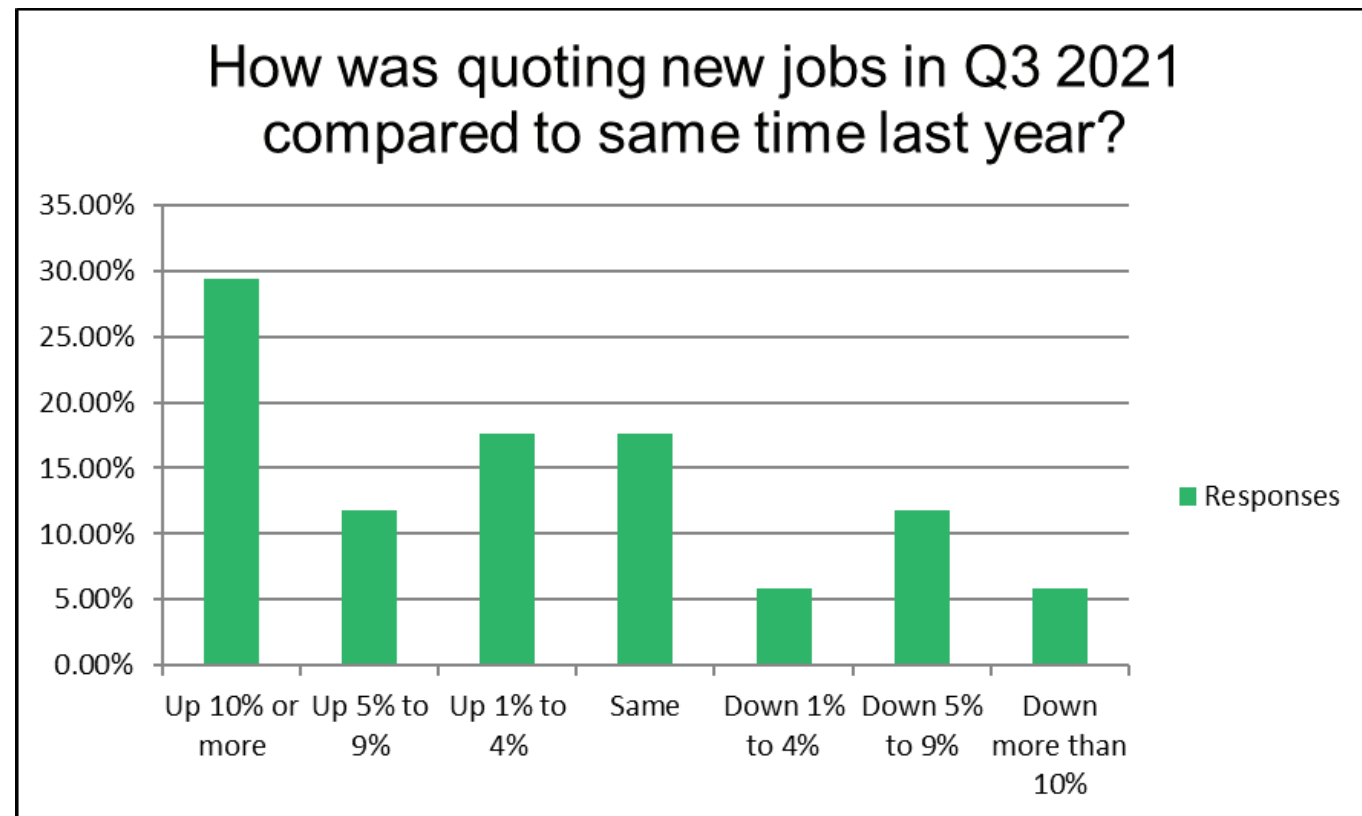
ing. In the first quarter of 2021 the overall capacity utilization for die casting was an average of 64%, and in the second quarter of 2021 the overall capacity utilization was an average of 67% for die casting.

In the 3rd quarter of 2021, quoting new jobs was up 3.1% and new die builds were up 3.0% compared to the third quarter of 2020. These numbers are consistent with the expected increase in shipments for 2021 and 2022.

In North America, die castings are produced by 396 die casting plants in the U.S., 42 plants in Canada, and an estimated 100+ plants in Mexico.



**Figure 19 - New die builds in the third quarter of 2021 versus the 3rd quarter of 2020.** Overall, die builds were up 3.0%. From the NADCA Third Quarter 2021 Business Barometer.



**Figure 18 - Quoting of new jobs in the third quarter of 2021 versus the third quarter of 2020.** Overall, quoting was up about 3.1%. From the NADCA Third Quarter 2021 Business Barometer.

## Conclusions

The year 2021 was met with a new Administration - the Biden Administration. The top priorities include the fight against the coronavirus (COVID-19), economic recovery, the environment/climate, immigration reform, health care, racial equity, and restoring America's global standing. Some of the progress to date has been positive while other progress may have a negative impact on companies in the die casting industry.

The U.S. GDP growth rate has been positive through the first three quarters of 2021 and is expected to be approximately 4% in the last quarter. Growth Rates for 2022 and 2023 are expected to be 1.7% and 1.9%, respectively. Inflation is presently running hot and may be 4% for the next three years. Unemployment levels have declined sharply since April of 2020 and was 4.6% in October of 2021, falling from 14.8% in April 2020.

Data from the third quarter 2021 NAM Quarterly Survey Report indicates that 87.5% of CEOs characterize their business outlook as positive and the CEO Outlook Index for the same quarter was 58.4. Both are strong numbers. The cited top 3 challenges facing CEOs are increased raw material costs, attracting and retaining quality employees, and supply chain issues.

Light vehicle sales in the U.S. were 14.5 million units in 2020 are projected to be 15.0-15.2 million units in 2021. It is anticipated that a long growth period has started and light vehicle sales are forecast to hit 16.2 million units in 2022, 16.7 million units in 2023,

and up to 17.0 million in 2024. New privately-owned housing starts in the U.S. were 1.38 million units, are expected to reach 1.47 million units in 2021, and are projected to trend around 1.37 million units in 2022 and 1.27 million units in 2023.

Overall die casting shipments were down in 2020 by slightly more than 10.0% from 2019. Overall shipments in 2021 are expected to be 12.4% higher than 2020. Considering the outlook for the automotive and housing markets, die casting shipments in 2022 will likely grow an estimated 6.5% over 2021.

*Editor's Note: Please note that if readers would like full-size figures in this article, do not hesitate to email [ryzner@diecasting.org](mailto:ryzner@diecasting.org) with your request and we will send them to you promptly.*

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Alofs	Wayne	Retired	Holland		wjalofs@iserv.net
Ames	Matthew	Michigan Automotive Compressor, Inc.	Parma	517-796-3200	amesm@michauto.com
Anderson	Scott		Grand Rapids		sanderson@gendie.com
Andoni	Heidi	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	handoni@cascade-cdc.com
Arai	Yasuhisa	Chem-Trend, LP.		800-323-7771	yarai@chemtrend.com
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Asher	George	Meridian Technologies Inc. - Magnesium Products of America	Eaton Rapids	519-245-4040	gasher@meridian-mag.com
Badovinac	Mark	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	mbadovinac@cascade-cdc.com
Baleja	Mark		Traverse City	330-788-2437	123view@charter.net
Balk	Martin	Hansen Balk Steel Treating Co.	Grand Rapids	616-458-1414	skosters@hansenbalk.com
Barendse	Steven	Carpenter Brothers, Inc.	Zeeland	231-288-7081	s.barendse@carpenterbrothersinc.com
Basaj	Anna	Muskegon Community College	Whitehall		liamsrider@gmail.com
Bates	Mike	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	mbates@cascade-cdc.com
Battjes	Mark	BuhlerPrince, Inc.	Holland	616-394-8248	mark.battjes@buhlerprince.com
Belile	Bryan	Cascade Die Casting Group - Mid-State	Grand Rapids	616-455-4010	bbelile@cascade-cdc.com
Beni	Michael	Beni & Associates, Inc.	Madison Heights	248-588-2262	beniandassociates@att.net
Berry	Pat	UBE Machinery, Inc.	Ann Arbor	734-741-7846	pberry@ubemachinery.com
Berry	William	DieTech & Engineering, Inc.	Grand Rapids	616-530-9030	w.berry@diotech-gr.com
Berry	Adam	DieTech & Engineering, Inc.	Grand Rapids	616-530-9030	a.berry@diotech-gr.com
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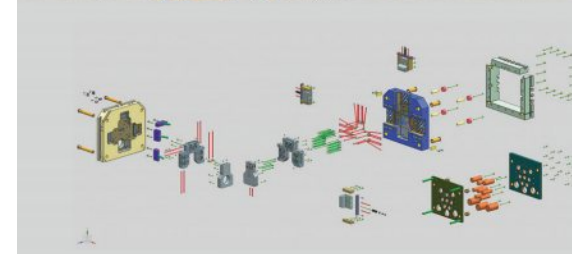
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Bodfish	Andrew	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	abodfish@cascade-cdc.com
Bodnar	Andrew	Brondolin North America	Benton Harbor	269-208-3867	info@brondolin-na.com
Boeker	Roberto	ALUMAG Automotive, LLC.	Plymouth	248-962-5086	r.boeker@alumag.com
Bokhart	Brandon	BorgWarner	Rochester Hills		bbokhart@gmail.com
Brauer	Jason	Pace Industries	Muskegon	231-777-3941	brauersparts@gmail.com
Breach	Joshua	AAM - American Axle & Manufacturing	Detroit	313-758-2000	joshua.breach@aam.com
Broughman	Mike	Non-Haz Hydraulic Fluids, LLC.	Mason	517-740-4437	mike@non-hazhydraulicfluids.com
Brower	Sharon	Buffoli North America, Inc.	Holland	616-403-6245	sharon.brower@buffoli.com
Brower	Rodger	BuhlerPrince, Inc.	Holland	616-394-8201	rodger.brower@buhlerprince.com
Brown	Matt	Channel Pointe Consulting	Muskegon	231-726-0234	mattbrown82@aol.com
Brown	Todd	AAM - American Axle & Manufacturing	South Lyon	313-758-2000	todd.brown@aam.com
Brown	Mark	Cross Technologies Group, Inc.	Westland	734-895-8084	mbrown@crosschemical.com
Bruursema	Adam	Pace Industries	Muskegon	231-777-3941	adam.bruursema@paceind.com
Burns	Jonathan	Martinrea Metal Industries	Auburn Hills	226-973-5483	jonathan.burns@martinrea.com
Byrne	Sarah	Cosma Casting Michigan, Cosma International, Magna International	Battle Creek	269-966-4900	sarah.byrne@magna.com
Calahan	Matt	Chrysler World Headquarters & Technology Center	Auburn Hills	800-334-9200	matthew.calahan@stellantis.com
Carpenter	Christopher		Kalamazoo		ccarpenter7289@charter.net
Chapman	Colin	Meridian Technologies Inc. - Magnesium Products of America	Eaton Rapids	517-663-2700	cchapman@meridian-mag.com
Chesney	Kevin	Michigan Automotive Compressor, Inc.	Parma	517-796-3200	chesneyk@michauto.com
Clyde	John	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	jclyde@cascade-cdc.com
Cnossen	Paul	BuhlerPrince, Inc.	Holland	616-394-8295	paul.cnossen@buhlerprince.com
CONTACT	KEY	Pace Industries Corporate Headquarters	Rochester	888-343-2278	scott.vian@paceind.com
Cremer	Mathew	BuhlerPrince, Inc.	Holland	616-394-8248	matt.cremer@buhlerprince.com

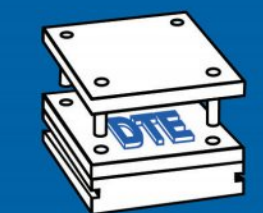


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DeHoff	Jeremy	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	jdehoff@cascade-cdc.com
Deorto	David	Cosma Casting Michigan, Cosma International, Magna International	Battle Creek	269-966-4900	david.deorto@magna.com
Donahue	Charles		Traverse City		charliedisfantastic@gmail.com
Doornbos	Jeff	Cascade Die Casting Group - Group Services/Corporate Headquarters	Grand Rapids	616-281-1660	jdoornbos@cascade-cdc.com
Doty	Herbert	General Motors Corporation - R&D Technical Center	Fenton	248-606-4886	herb.doty@gm.com
Drake	Chuck	Chem-Trend, LP.	Piqua	517-546-4520	cdrake@chemtrend.com
Dukic	Joseph	DieKast, Inc.	Holland	616-298-8572	sales@diekast.com
Easlick	Jason	Martinrea	Lake Orion		jason.easlick@martinrea.com
Eaton	James	B&L Information Systems, Inc.	Cassopolis	269-465-6207	jeaton@blinfo.com
Eblen	David	L K Machinery, Inc.	Edinburgh	616-796-0777	david.eblen@lk.world
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Engleman	Tim	Chrysler World Headquarters & Technology Center	Auburn Hills	800-334-9200	timothy.engleman@stellantis.com
Epler	Loren	Dynamic Surface Technologies	Canton	734-459-8022	lepler@dynablue.com
Ernvall	Eric		Brooklyn		eernvall@gmail.com
Essex	B. John	Port City Ventures	Muskegon		jessex@portcityventures.com
Farley	Allen	Cascade Die Casting Group - Mid-State	Grand Rapids	616-455-4010	afarley@cascade-cdc.com
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Fassbender	Michael	Action Mold & Machining, Inc.	Grand Rapids	616-452-1580	mfassbender@actionmold.net
Faupel	Thomas	Meridian Technologies, Inc. - Magnesium Products of America	Eaton Rapids	517-663-2700	tfaupel@meridian-mag.com
Fazekas	Stephen	Cascade Die Casting Group - Group Services/Corporate Headquarters	Grand Rapids	616-281-1660	sfazekas@cascade-cdc.com
Filosena	Kyle	Innovation Central High School	Grand Rapids		filosenak@gmail.com
Fredbloom	Mike	Sinto America	Grand Ledge	517-371-2460	mike.fredbloom@sintoamerica.com
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Goodmanson	Mark	Ducker	Troy	800-929-0086	mgoodmanson@ducker.com
Gorman	Charles	Sinto America	Grand Ledge	517-371-2460	charlie.gorman@sintoamerica.com
Gray	Tom	DieTech & Engineering, Inc.	Grand Rapids	616-530-9030	t.gray@dietech-gr.com
Greene	Patrick	Cascade Die Casting Group - Group Services/Corporate Headquarters	Grand Rapids	616-281-1660	pgreene@cascade-cdc.com
Greer	David	Meridian Lightweight Technologies Corporate Head Office	Plymouth	248-663-8100	dgreer@meridiansales.com
Grutter	Matthew		Rockford		mattgrutter@gmail.com
Guaresimo	David	AAM - American Axle & Manufacturing	Detroit	313-758-2000	david.guaresimo@aam.com
Guthrie	Brad	BOHLER	Lake Worth	888-368-3376	brad.guthrie.ext@edro.com
Guzman	Pete	BuhlerPrince, Inc.	Holland	616-394-8214	pete.guzman@buhlergroup.com
Hake	Devin	UBE Machinery, Inc.	Ann Arbor	734-741-7000	dhake@ubemachinery.com
Halladay	John	Godfrey & Wing, Inc.	Aurora	800-241-2579	jhalladay@godfreywing.com
Halpin	Tom	Diehl Tool Steel	Grosse Pointe	800-543-1566	th@titangroupna.com
Hammer	Bill	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	hammer@cascade.com
Hampton	Donald	Pace Industries Corporate Headquarters	Novi	888-343-2278	donald.hampton@paceind.com
Harmon	Kendra	Sinto America	Grand Ledge	517-371-2460	kendra.harmon@sintoamerica.com
Hasenbusch	Ronald	Ford Motor Co.	Port Sanilac	313-575-5296	rhasenbu@ford.com
Head	Paul	AAM - American Axle & Manufacturing	Detroit	313-758-2000	paul.head@aam.com
Herman	Edmund	Creative Concepts Co, Inc.	Shelby Township	586-247-4360	edmundaherman@comcast.net
Herrmann	Rainer	Hercu, LLC.	Auburn Hills	248-778-5119	rainer.herrmann@hercocast.com
Hoeft	John	Wollin USA	Plymouth	800-245-9232	john_hoeft@wollinusa.com
Hohman	Ted	Cascade Die Casting Group, Inc. - Group Services/Corporate Headquarters	Grand Rapids	616-281-1660 x107	thohman@cascade-cdc.com
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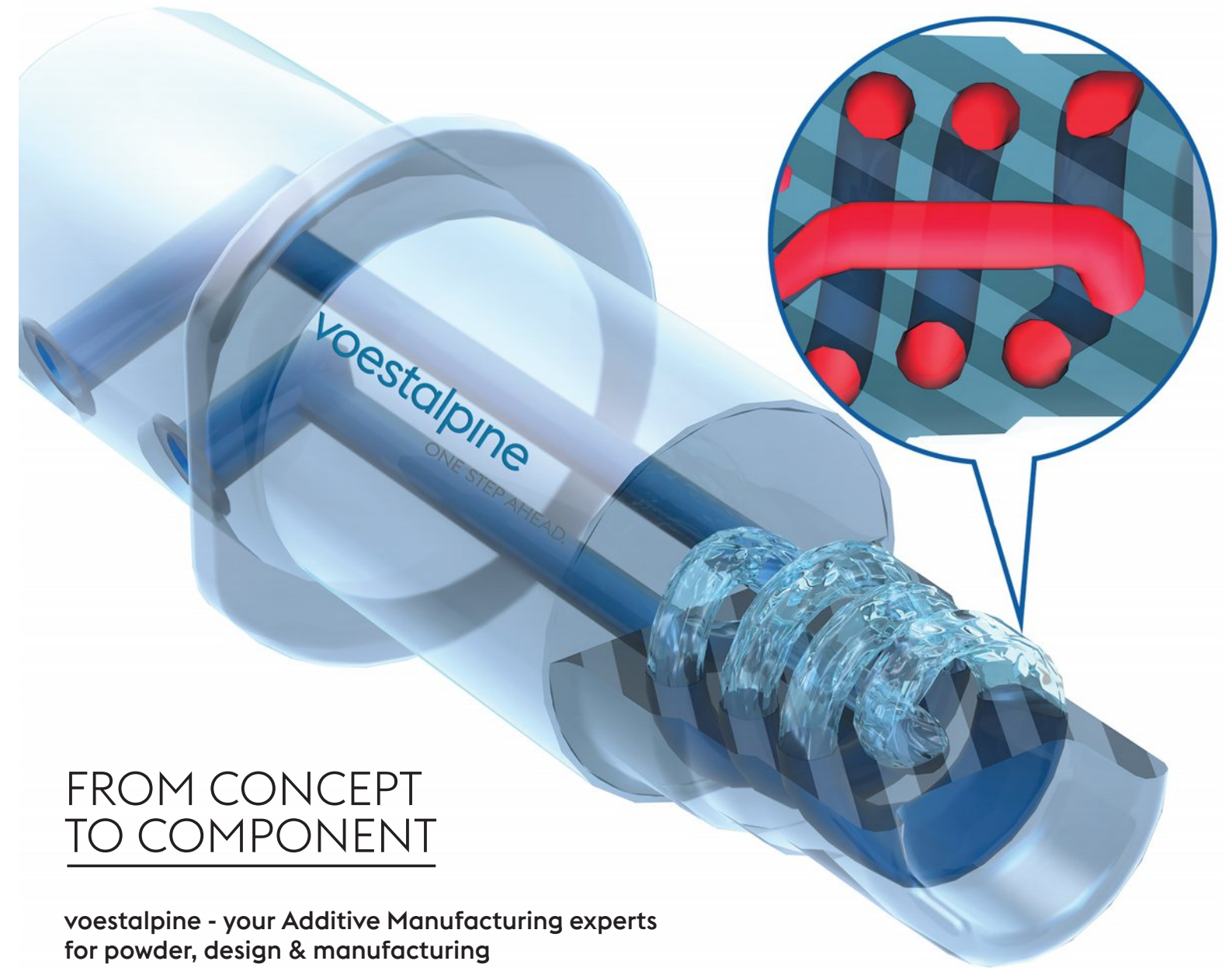
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Ikerd	Trevor	Auto Cast, Inc.	Grandville	616-534-4941	trevori@autocastinc.com
Ikerd	Todd	Auto Cast, Inc.	Grandville	616-534-4941	tikerd@autocastinc.com
Jacobson	Steve	BuhlerPrince, Inc.	Holland	616-394-8248	steve.jacobson@buhlergroup.com
Jakubiak	Brad	StrikoWestofen America	Macomb	616-772-3705	brad.jakubiak@norcangroup.com
Jensen	Jeff	Robert Bosch Technical Center	Plymouth		jeff.jensen@us.bosch.com
Jindal	Nik		Troy		nik.jindal@gmail.com
Johnson	Dean	Birch Machinery Co.	Birch Run	989-624-9371	deanjohnson9@aol.com
Jones	Jerry	Michigan Automotive Compressor, Inc.	Parma	517-622-7000	jonesj@michauto.com
Karban	Robert		Harrison Township		
Kern	Matthew	G & K Associates	Troy	248-227-5511	mkern@gkasales.com
Kilgus	Todd	Centracore De Mexico	Saint Clair	586-776-5500	tkilgus@centracore.com
Kim	Chung-Whee	EKK, Inc.	Farmington Hills	248-624-9957	kim@ekkin.com
King	Larry	TAC Manufacturing Incorporated	Jackson	517-789-7000	lking@tramgroup.com
Kirkman	Jonathan	Die Therm Engineering, LLC - Grand Rapids	Ada	616-822-4016	skirkman@dietherm.com
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Kline	Kory	PCS Company	Fraser	800-521-0546	ksk@pcs-company.com
Koetje	John	Cascade Die Casting Group - Group Services/Corporate Headquarters	Grand Rapids	616-281-1660	jkoetje@cascade-cdc.com
Kok	Nicolas	Wilkast, Inc.	Grand Rapids	616-281-2850	nyckkok@yahoo.com
Kozachik	Melina		Nobleton		
Kroes	Tyler	Martinrea International	Auburn Hills	248-392-9767	tyler.kroes@martinrea.com
Kukulis	Charles	General Die & Engineering, Inc.	Grand Rapids	616-698-6961	ckukulis@gendie.com
Kwiek	David	General Die & Engineering, Inc. - Grand Rapids, MI	Grand Rapids	616-698-6961	dave.kwiek@gendie.com
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Landon	Jessica	Meridian Lightweight Technologies Corporate Head Office	Plymouth	248-663-8100	jlandon@meridian-mag.com
Lapierre	Craig	Precision Die Cast, Inc.	Kimball	810-294-5170	craig@precisiondiecast.com
Lee	Robert	BuhlerPrince, Inc.	Holland	616-394-8248	robert.lee@buhlergroup.com
Lindsay	David	Oerlikon Balzers Coating USA, Inc.	Wixom	248-960-9055	david.lindsay@oerlikon.com
Lisinski	Nancy	Industrial Innovations, Inc.	Grandville	616-249-1525	nlesinski@industry-scope.com
Lockman	Benjamin	General Die & Engineering, Inc.	Schoolcraft	616-698-6961 x1453	blockman@gendie.com
Los	Mark	BuhlerPrince, Inc.	Holland	616-394-8248	mark.los@buhlerprince.com
Lozon	Justin	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	lozonj95@yahoo.com
Mallick	Tanweer	Ford Motor Company - Rawsonville Plant	Ypsilanti	734-523-3000	mtanweer@ford.com
Marek	David	Kentwater Tool & Mfg. Co.	Comstock Park	616-784-7171	dave@kentwatertool.com
Maria-Pillai	Nandhaku- maran	Cosma Casting Michigan, Cosma International, Magna International	Portage	269-966-4900	nandha.mariapillai@magna.com
Martens	Tiffany	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	tmartens@cascade-cdc.com
Martin	Michael	ItalPresseGauss	Lagrange	616-772-3705	michael.martin@noricangroup.com
Mason	William	Student	Bellevue		wjv3934@wmich.edu
Matsumoto	Takashi	UBE Machinery, Inc.	Ann Arbor	734-741-7807	tmatsumoto@ubemachinery.com
Matthews	Jeff	Cascade Die Casting Group - Mid-State	Grand Rapids	616-455-4010	jmatthews@cascade-cdc.com
McClintic	Robert	Bob McClintic & Associates	Grand Rapids	616-292-0454	rmclintic@ameritech.net
McInerney	Robert	RJMII	Holland	616-251-8923	robmcinerney@chartermi.net
McKeough	Bryan	Ford Motor Company	Macomb	734-536-4319	bmckeoug@ford.com
Mees	Aaron	TAC Manufacturing Incorporated	Jackson	517-789-7000	amees@tramgroup.com
Miller	Doug	Chem-Trend, LP.	Newnan	517-546-4520	dmiller@chemtrend.com
Mitra	Rish	AAM - American Axle & Manufacturing	Detroit	313-758-2000	saptarshi.mitra@aam.com
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# Membership Roster

Last	First	Company	City	Phone	Email
Moran	Jim	Cascade Die Casting Group - Group Services/Corporate Headquarters	Grand Rapids	616-281-1660	jmoran@cascade-cdc.com
Mowatt	Victor	West Michigan Tool & Die	Benton Harbor	269-925-0900	vmowatt@wmtcd.com
Mulder	John	Master Finish Co.	Grand Rapids	616-245-1228	jmulder@masterfinishco.com
Norwood	Shawn	New GLDC, LLC.	Muskegon	231-726-4002	snorwood@gldiecast.com
O'Ryan	Charlie	StrikoWestofen America	Northampton	616-772-3705	charlie.oryan@noricangroup.com
Owens	Melissa	BuhlerPrince, Inc.	Holland	616-394-8248	melissa.owens@buhlergroup.com
Panvini	Andrea	PiQ2	25123 BRESCIA	+39 030 6595058	a.panvini@piq2.com
Perkins	Kathy	BuhlerPrince, Inc.	Holland	616-394-8248	kathy.perkins@buhlerprince.com
Petraska	Leisa	Meridian Lightweight Technologies Corporate Head Office	Plymouth	248-663-8100	lpetraska@meridiansales.com
Petrillo	Joe	Meridian Lightweight Technologies Corporate Head Office	Plymouth	248-663-8100	jpetrillo@meridiansales.com
Pienta	Jeffrey	TAC Manufacturing Incorporated	Jackson	517-789-7000	jpienta@tramgroup.com
Porter	Meaghan	AAM - American Axle & Manufacturing	Detroit	313-758-2000	meaghan.porter@aam.com
Potter	Craig	Pace Industries Corporate Headquarters	Novi	888-343-2278	craig.potter@paceind.com
Prevost	Sean	Innovation Central High School	Grand Rapids		seanmjprevost@gmail.com
Pridmore	Stephen	Pace Industries Corporate Headquarters	Novi	888-343-2278	stephen.pridmore@paceind.com
Prucha	Tom	MetalMorphosis, LLC.	Rochester	248-650-1781	tprucha@sbcglobal.net
Quintana	Luis	BuhlerPrince, Inc.	Holland	616-394-8248	luis.quintana@buhlergroup.com
Quirk	Steven	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	squirk@cascade-cdc.com
Ramesh	Abhiram	Chrysler World Headquarters and 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
Raymond	Rachel	EKK, Inc.	Farmington Hills	248-624-9957	rachelr@ekkin.com
Reeves	Martin	Fontec-global, LLC.	Holland	636-327-5777	reeves2013m@gmail.com
Remler	Robert	Ultraseal America, Inc.	Long Grove	734-222-9478	bremler@ultrasealamerica.com
Ridders	Steve	Allied Mineral Products	Sparta	616-291-6912	steve.ridders@alliedmin.com
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Last	First	Company	City	Phone	Email
Rookus	Tom	BuhlerPrince, Inc.	Holland	616-394-8230	tom.rookus@buhlerprince.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	508-553-3800	paul.rudnik@plansee.com
Sarver	Matt		Caledonia		mattsarver80@gmail.com
Scharpe	Thomas	Henkel Corporation	Cape Coral	866-332-7024	thomas.scharpe@henkel.com
Scholten	Tom	BuhlerPrince, Inc.	Holland	616-394-6903	tom.scholten@buhlerprince.com
Schroeder	Matthew	Mag-Tec Casting Corporation	Jackson	517-789-8505	matt@mag-teccasting.com
Schroeder	Allen	Mag-Tec Casting Corporation	Jackson	517-789-8505	allen@mag-teccasting.com
Schroeder	Chad	Mag-Tec Casting	Jackson	517-789-8505	chad@mag-teccasting.com
Scott	Sam	Industrial Innovations, Inc.	Grandville	616-214-3036	sscott@industrialinnovations.com
Seaver	Sean	MillerKnoll	Zeeland	616-654-5681	sean_seaver@hermanmiller.com
Selby	Thomas	Nexteer	Fenton	248-340-8200	thomas.selby@nexteer.com
Settineri	Samuel	Eaton	Marshall	269-781-0200	samuelsettineri@eaton.com
Sexton	Dale	New GLDC, LLC.	Muskegon	231-726-4002	dsexton@gldiecast.com
Shevela	Alan	Aludyne	Howell	517-548-0500	alan.shevela@aludyne.com
Sholapurwalla	Adi	ESI Group North America	Farmington Hills	248-381-8040	adi@esi-group.com
Silva	Rene	ItalPresseGauss	Lagrange	616-772-3705	rene.silva@noricangroup.com
Simmons	Scott	Henkel Corporation - Adhesives Technologies	Madison Heights	866-332-7024	scott.simmons@henkel.com
Smith	Kevin	AAM - American Axle & Manufacturing	Detroit	313-758-2000	kevin.smith@aam.com
Smith	David	Auto Cast, Inc.	Grandville	616-534-4941	dsmith@autocastinc.com
Smith	Robert	JudCo Manufacturing	Walled Lake	313-489-0770	
Snyder	Michael	Midwest Prod Spec, Inc.	Muskegon	231-767-9942	mpsi-muskegon@hotmail.com
Spiereburg	Steve	BuhlerPrince, Inc.	Holland	616-394-8248	steve.spierenburg@buhlerprince.com
Starook	Bruce	BuhlerPrince, Inc.	Holland	616-394-8273	bruce.starook@buhlerprince.com

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# Membership Roster

Last	First	Company	City	Phone	Email
Starook	Matthew		Grand Haven		gtx18@sbcglobal.net
Thomas	Tim	Michigan Automotive Compressor, Inc.	Parma	517-622-7000	thomast@michauto.com
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
Van Slambrouck	John	Century Sun Metal Treating	Hudsonville	800-800-5806	jvanslambrouck@centinc.com
Veenstra	Jon	Castool Tooling Systems	Uxbridge	905-852-0121	jon.veenstra@castool.com
Vian	Scott	Pace Industries Corporate Headquarters	Novi	888-343-2278	scott.vian@paceind.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@midwestmetalex-change.com
Warner	Mark	Auto Cast, Inc.	Grandville	616-534-4941	mwarner@autocastinc.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
Weiler	Jonathan	Meridian Lightweight Technologies, Inc. - Global Technology Center	Strathroy	519-246-9600	jweiler@meridian-mag.com
Weiss	Mark	Metropolitan Alloys Corporation	Detroit	313-366-4443	mweiss@metroalloys.com
Whicker	Joel	Chem-Trend, LP.	Gallatin	517-545-7980	jwhicker@chemtrend.com
Wiegerink	Gerrit	Student	Holland	616-994-2954	wiegerinkg@gmail.com
Wiegerink	Tanner	Student	Holland		tannerwiegerink@gmail.com
Wilkerson	Emma	Student	Ada		erwilkerson4@gmail.com
Wilkerson	Thomas	Wilkast, Inc.	Grand Rapids	616-281-2850	tom@wilkast.com
Wilkerson	Curt	Wilkast, Inc.	Grand Rapids	616-281-2850	curt@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, Corporate Headquarters	Novi	888-343-2278	john.wisdom@paceind.com
Wolf	Dave	Ellwood Specialty Steel	Grandville	800-932-2188	dwolf@elwd.com



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Last	First	Company	City	Phone	Email
Worthy	Robert	SAPP, Inc.	Grand Ledge	616-796-0777	bob@worthycompany.com
Xu	Gordon	AAM - American Axle & Manufacturing	Detroit	313-758-2000	gordon.xu@aam.com
Young	Robert	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	ryoung@cascade-cdc.com
Zecman	Kurt	Pegasus Industries, Inc.	Redford	313-937-3350	kurt@pegasustcs.com
Zheng	Li	Gil-Mar Mfg	Canton	517-316-5299	lizheng@ltu.edu
Zubrzycki	Steve	DeepHow	Grand Rapids	313-880-3937	steve@deephow.com
Zuniga	David	Cascade Die Casting Group - Great Lakes	Sparta	616-887-1771	dzuniga@cascade-cdc.com



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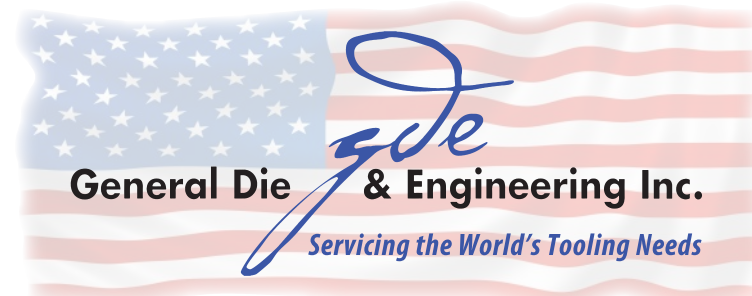


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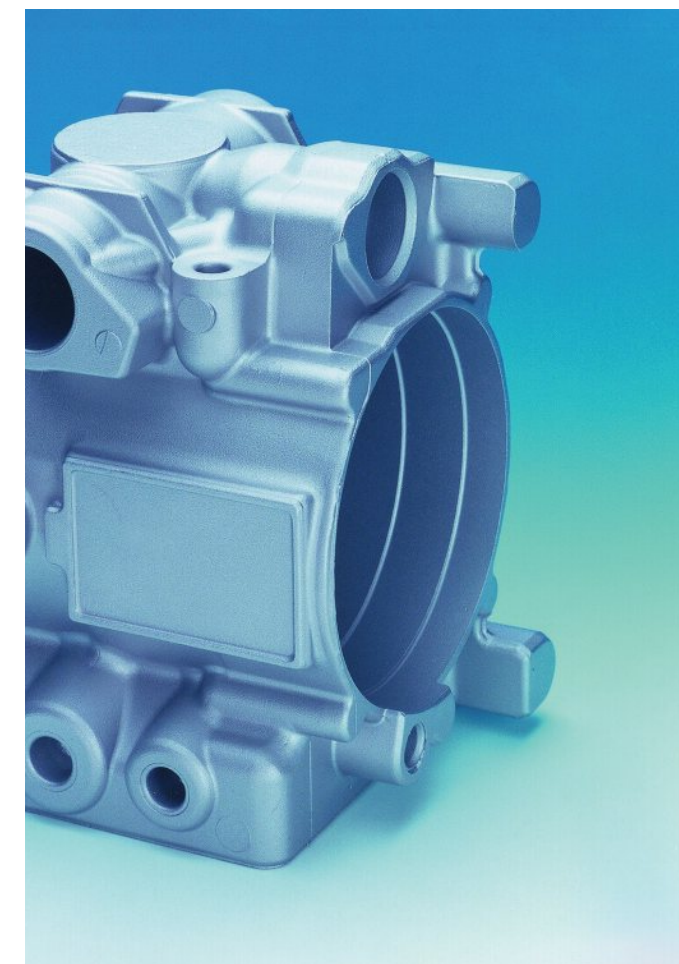
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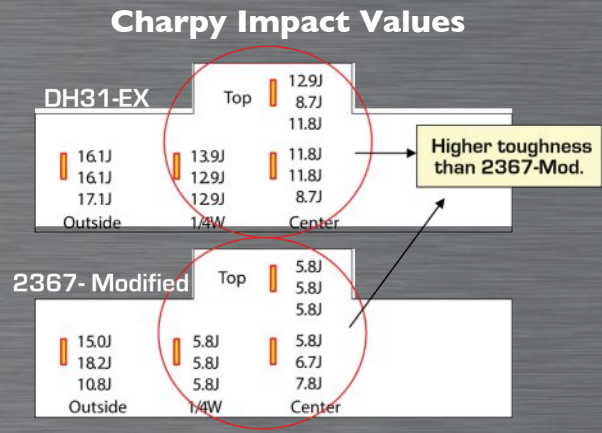
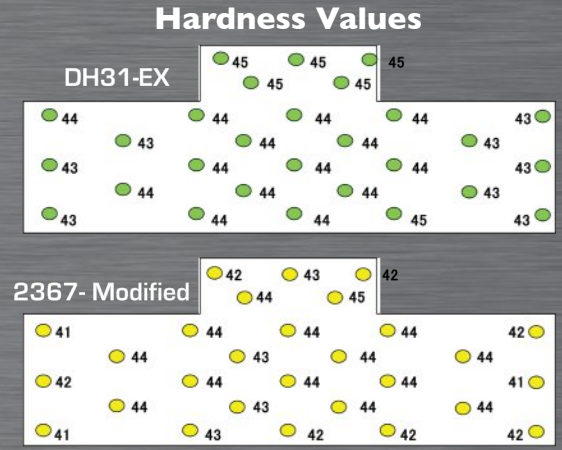
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## Chapter 3 Objectives

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.



NADCA  
NORTH AMERICAN DIE CASTING ASSOCIATION  
Chapter 3

# 2022 Scholarship Award Winners

## NADCA Chapter 3

We are pleased to announce the following scholarship award winners for 2022/2023 school year. Thanks to the leadership of our board, our generous supporters, and benefactors, we have been able to continue to provide increasingly significant scholarships.

### Emma Wilkerson

Emma is the daughter of Tom and Cindy Wilkerson of ADA, MI. The Wilkerson's are partners of Wikast, Inc., a Grand Rapids based Aluminum and zinc die casting company.

Emma is a senior at Grand Valley State University where she is finishing her studies in advertising and public relations. On graduating she hopes to join the family business and help it continue to grow and prosper.

*Emma is a third time applicant and received a \$2,200 scholarship.*



Emma is receiving her Scholarship Certificate from Bob McClintic, NADCA Chapter 3 Scholarship Chair.



Melina is receiving her Chapter 3 Scholarship Award Certificate from Phil Rozema, Sales Engineer for Buhler and Chapter Treasurer and Program Chairman. Next to Melina is her father Dave Kozachik, also of Buhler.

### Melina Kozachik

Melina is a third-year Engineering student attending Purdue University, Fort Wayne. She is pursuing a degree in Mechanical Engineering. She is a member of the Purdue Fort Wayne, Women's Soccer Team. She is a 2019 graduate of Hudsonville High School in Hudsonville, MI.

*Melina is a third-time award recipient and was awarded \$2,200.*

# 2022 Scholarship Award Winners

# NADCA Michigan Scholarship Fund for Die Casting Advancement

## Western Michigan University Programs

*By: Bob McClintic, Chapter 3 Scholarship and Endowment Chair*



### Matthew Ridders

Matt is the son of Steve and Katie Ridders of Grand Rapids, Michigan.

He is a graduate from Forest Hills Northern High School and currently attends Central Michigan University where he is pursuing a degree in business. (Expected graduation May 2025).

*Matt is a first-time applicant and received a \$2,200 scholarship.*

*Pictured with Matthew is Bob McClintic, NADCA Chapter 3 Scholarship Chair.*

### Kaia Donay

Kaia Donay is the daughter of Greg Donay and Nicole Kibiloski. She is from Coldwater, Michigan and is a freshman at Trine University in Angola, IN and is double majoring in Marketing and Management, as well as potentially working for her master's degree and will graduate in May of 2025.

Upon graduating, Kaia hopes to follow in her grandfather, Larry Donay, and father, Greg's, footsteps in the Metal/Die Casting Industry. She states, "I have grown up hearing about this industry and it is something that has always interested me."

*Kaia is a first-time award winner and was awarded \$2,200.*



*Presenting the scholarship award certificate to Kaia is Bob Worthy, NADCA Chapter 3 board and National Board of Governors Member.*

To bring a new generation into the die cast industry and support continuing advancement of die casting education by use of scholarships, Chapters 3 and 39 Scholarship committees explored endowment programs at two Michigan universities. Western Michigan University (WMU) in Kalamazoo and Michigan Technological University (MTU) in Houghton, MI. We learned that by working with programs such as the WMU Foundation, our money would be multiplied through their managed portfolios.

In March 2021, Chapter 39 created a NADCA endowment at WMU funded 85%/15% by Chapter 39 and NADCA National. Chapter 39 then merged its operation with chapter to form one Michigan NADCA chapter (Chapter 3) By October the MI NADCA endowment had already accumulated \$1,300 in interest. Chapter 3 then added an additional \$23,000 from its 2021/2022 endowment budget, with Chapter board commitment to continue such support of the endowment for the next five years.

In March 2022 we met with Dr. Sam Ramrattan, Key Professor in the metal casting school, and identified 2 students for the first awards. They are both currently serving internships at a large die casting operation in Wisconsin and will receive \$3,000 each.

As the industry continues to suffer a shortage of skilled employees, the WMU program in association with companies that sponsor meaningful internships, will progress in providing the best problem solvers of our future business.

### WMU: Summer Foundry Short Course

WMU has resumed its Summer Foundry Short Course. NADCA Chapter 3 supports this program by sponsoring 4 to 6, 10th to 12th grade High School students. This year the program runs from **June 27th to July 1st.**



The \$700 program fee includes room and board on campus. Prospective students and parents can get additional information by contacting Dr. Sam Ramrattan, Foundry Education Foundation Key Professor, Department of Engineering Design, Manufacturing and Management Systems at [ramrattan@wmich.edu](mailto:ramrattan@wmich.edu) or **269-76-3373**.

On **June 30 from 6-9 PM**, students will also meet representatives from metal casting companies throughout Indiana, Michigan and Ohio who will showcase projects and careers in their industries. I highly encourage die casters to participate in this opportunity.

For scholarship information for any of the above programs, contact one of the members of the Scholarship and Endowment Committee:

**Bob McClintic** - [RMcClintic@DrDieCast.com](mailto:RMcClintic@DrDieCast.com)  
**Ron Holland** - [Hollander0.rlh@gmail.com](mailto:Hollander0.rlh@gmail.com)  
**Bob Worthy** - [Bob@WorthyCompany.com](mailto:Bob@WorthyCompany.com)

# NADCA Chapter 3 2022 Golf Outing

# 2022 Golf Outing Sponsorship Opportunities

Last year, NADCA Chapter 3 resumed our wildly successful Golf Outing after a one year hiatus for Covid. We also moved our outing to **Saskatoon Golf Club**, which allowed us all to play at one location. In 2022, we will also be at Saskatoon after many rave reviews of the course condition, fantastic food and services! We anticipate a record turnout again for this year so please consider responding quickly for our event in 2022. We offer opportunities for golf as well as various sponsorships, as you will reach a wide, diverse audience, second only to the NADCA National Cast Expo.

## Thank You, Sponsors

Thanks to our magnificent golf sponsors, NADCA Chapter 3 was able to award direct scholarships for 2022 to four worthy young people so that they can attend school that focuses on their potential employment in the die cast industry. We support a WMU Scholarship Endowment to assist needy students in the WMU casting program. We are also a major supporter of the WMU Casting Short Course that exposes interested high schoolers to metal casting.

What's more, we able to offer our meetings free to involved high school and college students interested in the die cast industry. This is all due to our golf and directory sponsors, and we thank you so much. To see a list of our 2021 sponsors and photos of some of the world class athletes who participated in our 2021 outing please go to [nadcachapter3.org](http://nadcachapter3.org), and feel free to browse our website, see what more we offer, and make plans to sponsor our 2022 event.

## Join Us As A Member

In 2021-2022 we resumed in-person dinner meetings this past fall. Due to our brilliant and generous golf sponsors, we offer the business and dinner meetings free to all chapter 3 members as well as students. So please join NADCA and request membership in Chapter 3. This is the best venue to spend your die cast advertising budget, because you'll not only be seen, but also help education efforts in the die cast field.

## 2022 Golf Outing Registration

We expect an even larger turn-out this year, so sign up soon! We have many opportunities for sponsorship of various activities, and even offer a chance to rent a hole so your company can advertise its product and have personnel running a hole-in-one contest or anything you want to do on your rented hole.



**2022 Golf Outing Date:**  
**August 19, 2022**  
**at Saskatoon Golf Club**

Register your foursome at:

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

### Golf Towel Sponsor

\$4,000

- Company name on golf towels given to each golfer

*Sponsorship limited to 1 sponsor*

**Deadline:** July 8th

### NADCA Event Sponsor

\$3,000

- Large welcoming banner displayed on the clubhouse
- Contact information on all documents

*Sponsorship limited to 1 sponsor*

### Golf Ball Sponsor

\$2,750

- Company name on golf balls given to each golfer

*Sponsorship limited to 1 sponsor*

### Rent a Hole

\$2,000

- Company gets one hole on each course to run any event you want (Ex: hole in one contest, putting contest, etc.)

*Limited to 5 sponsors*

### Dinner Sponsor

\$750

- Large banner displayed in dining area

*Sponsorship limited to 9 sponsors*

### Vendor Reception Sponsor

\$700

- Large banner displayed at the venue in recognition

*Sponsorship limited to 10 sponsors*

### Hole Flag Sponsorship

\$500

- Company name on a hole flag (the flags will be yours to keep)

*Sponsorship limited to 18 sponsors*

**Deadline:** July 8th

### "Keg at the Turn" Sponsor

\$475

- Signage near kegs

*Sponsorship limited to 18 sponsors*

### Breakfast Sponsor

\$350

- Large banner displayed in dining area

*Sponsorship limited to 9 sponsors*

### Hole Sponsor

\$250

- Company name on a tee box on each course

*Sponsorship limited to 90 sponsors*

### Range Ball Sponsor

\$150

- Sign on driving range

### Product Sponsor

- Donate products to be used as raffle prizes or in outing prize bags

## Additional sponsorship opportunities available upon request.

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

**Deadline: July 29th**

For more details or to make a donation, visit:

[www.nadcachapter3.org](http://www.nadcachapter3.org)  
[nadcagolfouting.com](http://nadcagolfouting.com)

# 2021 DIE CASTING AWARD WINNERS

For the last 47 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.

Long gone are the days of die castings being simple commodities. Today's die castings require many hours of engineering time to ensure the die and the process are designed to repeatedly make complex, high quality parts. Die castings are often expected to replace multiple components in an assembly to reduce cost and weight. The winners of the 2021 International Die Casting Competition have utilized the advantages of die casting to produce complex parts with exceptional quality; often replacing multiple components with one casting. These castings push the envelope of what is possible in die casting, both for more traditional markets, and for some not so typical markets.

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 2021 Die Casting Industry Awards Luncheon on Tuesday, October 5 at 12:15 - 2:00 pm during the Die Casting Congress & Exposition in Indianapolis, IN. The luncheon is an exceptional opportunity to meet this year's winners and learn more about their innovations.

## TO COMPETE IN 2022

Innovative die casting design entries may be entered in the 2021 Die Casting Design Competition. All award-winning castings will be displayed next year at NADCA's Die Casting Congress & Tabletop, September 13-15 in Lexington, KY.

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 squeeze/semi-solid; 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 13, 2022. For more information, contact: Beau Glim at [glim@diecasting.org](mailto:glim@diecasting.org). Send sample casting(s) to:  
NADCA - 2022 Casting Competition  
3250 N. Arlington Heights Rd., Ste. 101  
Arlington Heights, IL 60004

2021 AWARD WINNERS

# ALUMINUM – 1 TO 10 LBS A&B DIE CASTING COMPANY/ BENDA TOOL & MODEL WORKS

- ❖ PART: Display Lower Housing
- ❖ MATERIAL: A383
- ❖ WEIGHT: 1.5 lbs
- ❖ END MARKET: Medical

- ❖ CASTER AWARD NOMINEE(S): Ryszard Urbaniak
- ❖ CUSTOMER: Arthrex California Technology

### FUNCTION OF PART

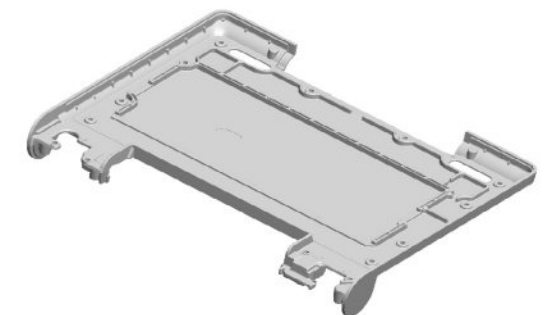
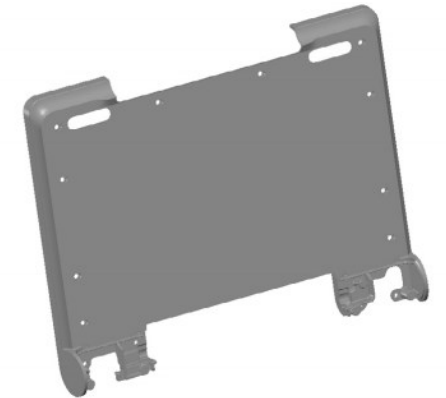
The Synergy NanoScope imaging system is the first medical-grade, 3-in-1, chip-on-tip, single-use camera system. The NanoScope combines the latest technology in 1 mm imaging sensors, LED lighting, image management, and OR integration with an intuitive tablet control. The portability of the NanoScope visualization system allows surgeons to perform minimally invasive arthroscopy in the operating room, in a procedure room or diagnostically in the physician's office.

### PREVIOUS PROCESS TO PRODUCE PART

Previously machined from billet aluminum 6061 alloy.

### ADVANTAGES GAINED

In an effort to reduce cost and increase production to meet demand, Arthrex engineers pursued die casting as an alternative process. Prior to their introduction to A&B, the engineers had been told by all other potential die casters that the part was not a good candidate for die casting given the very thin cross-section. Arthrex engineers had been told that the only way to produce the part as a die casting was to double the wall thickness, then post-machine all internal features to meet their weight and component clearance requirements. A&B was able to design and construct tooling capable of die casting the part to net shape, reducing the needed post machining operations to a minimum and greatly reducing the overall final cost while also maintaining cosmetic requirements.



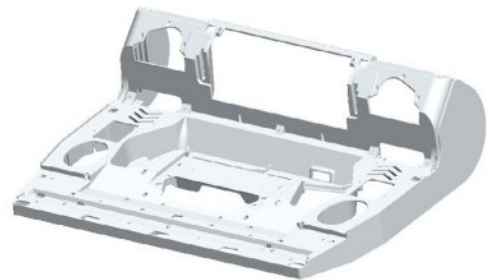
**A&B Die Casting Company /  
Benda Tool & Model Works, Inc**  
900 Alfred Nobel Dr.  
Hercules, CA 94547 USA

# ALUMINUM – 10 TO 50 LBS

## KENWALT DIE CAST CORP

- ❖ **PART:** Control Deck
- ❖ **MATERIAL:** 380
- ❖ **WEIGHT:** 13 lbs
- ❖ **END MARKET:** Video Gaming

- ❖ **CASTER AWARD NOMINEE(S):** Kenneth W. Zaucha
- ❖ **CUSTOMER:** Incredible Technologies



### FUNCTION OF PART

Control deck / operating station for slot machine.

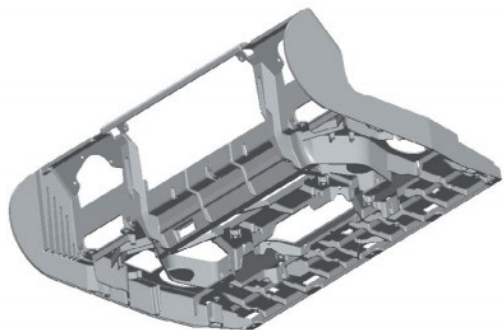
### PREVIOUS PROCESS TO PRODUCE PART

Previously consisted of an assembly of parts including sheet metal (both powder coated and chromed), plastic injection molding, and thermoforming.

### ADVANTAGES GAINED

By reducing the assembly to one solid part, die casting was able to reduce assembly time, look cleaner and simpler to slot players, and have a nice aesthetic finish that stands out. It also provides more rigidity and feels sturdier than an assembly of sheet metal parts.

**Kenwalt Die Cast Corp**  
8719 Bradley Ave  
Sun Valley, CA 91352 USA



# ALUMINUM – OVER 50 LBS

## MERCURY MARINE – MERCURY CASTINGS

- ❖ **PART:** V12 Engine Block
- ❖ **MATERIAL:** A362
- ❖ **WEIGHT:** 72.5 lbs
- ❖ **END MARKET:** Marine Craft

- ❖ **CASTER AWARD NOMINEE(S):** Alex Monroe, Clay Rasmussen, Mark Potratz, Josh Cady, Eric Kessenich, Dan Hoffman, David Blondheim

### FUNCTION OF PART

Engine block for outboard motor.

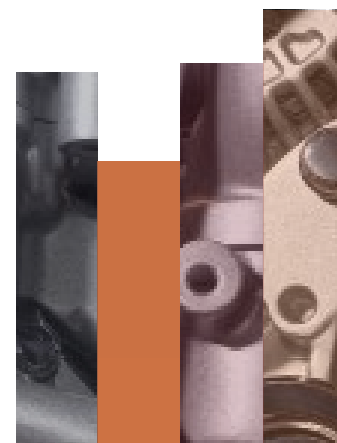
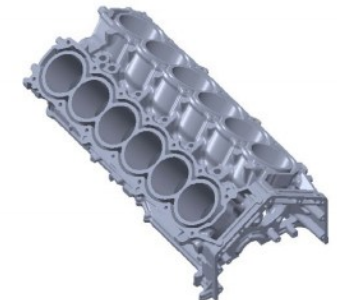
### PREVIOUS PROCESS TO PRODUCE PART

No previous process at Mercury. This V12 engine is an innovative, first-in-class production engine of 600hp. Prior V12 examples have been made from sand or perm-mold.

### ADVANTAGES GAINED

Fully automated die cast cell produces casting in a short cycle time and serialization (laser engraved barcode) for full traceability. Tighter dimensional control and repeatability, along with thinner walls (weight reduction) compared to other casting processes. A362 provides corrosion resistance for marine applications. Leveraged tooling lessons on previous V6 and V8 blocks to produce a highly reliable V12 die cast tool that weighs over 50 tons.

**Mercury Marine – Mercury Castings**  
W6250 Pioneer Road  
Fond du Lac, WI 54936 USA





# MAGNESIUM UNDER 0.5 LB

## PACE INDUSTRIES

- ❖ **PART:** Sprocket Cover
- ❖ **MATERIAL:** AZ91D
- ❖ **WEIGHT:** .49 lb
- ❖ **END MARKET:** Automotive

- ❖ **CASTER AWARD NOMINEE(S):** Pat Gleason & Pace Industries Engineering Tea
- ❖ **CUSTOMER:** Harley-Davidson Motor Company



### FUNCTION OF PART

The sprocket cover serves several functions. First, it is a prominent feature on the high side of the motorcycle presenting stylized shapes and medallions. Secondly, the cover contains and seals high temperature oil. It does this through an as cast groove, which receives a press in place compressible seal.

### PREVIOUS PROCESS TO PRODUCE PART

Previously made through a high pressure die cast aluminum process. The aluminum high pressure die casting process required thicker walls for all features, increasing weight and providing different challenges for packaging, sealing, and noise dampening. Interestingly, this product is also used as-cast with no machined features.

### ADVANTAGES GAINED

The primary advantage of high pressure die casting magnesium is the weight savings. The difference in material density (magnesium vs aluminum) alone provided ~30% weight reduction. When considering the reduced thickness allowable by magnesium in the casting process, the overall weight savings was closer to 50% with the vehicle level impact doubled due to this cover being used twice per engine assembly.

**Pace Industries**  
310 Congress Street West  
Maple Lake, MN 55358 USA



# MAGNESIUM 0.5 TO 5 LBS

## CHICAGO WHITE METAL CASTINGS, INC.

- ❖ **PART:** Waygate Technologies – 140M2499
- ❖ **MATERIAL:** AZ91D
- ❖ **WEIGHT:** 1.1 lbs
- ❖ **END MARKET:** Industrial Inspection Equipment

- ❖ **CASTER AWARD NOMINEE(S):** Neil Brown
- ❖ **CUSTOMER:** Waygate Technologies

### FUNCTION OF PART

Remote visual inspection camera used to inspect aerospace or automotive engines, amongst many other applications.

### PREVIOUS PROCESS TO PRODUCE PART

The customer came to CWM after trying thixomolding on a previous version. CWM provided a trusted engineering design service and understood the customer's needs with the difficult part design.

### ADVANTAGES GAINED

The CWM team worked closely with Waygate to develop an optimized casting that provided all the essential functions required for the end product, while still meeting cost targets. Some of the required standards were: need to pass a drop test, improvement in the overall appearance, and need to dissipate heat. The part also needed to offer advanced ergonomics, all while maintaining correct weight distribution.

**Chicago White Metal Castings, Inc.**  
649 N Rt. 83  
Bensenville, IL 60106 USA



# MAGNESIUM OVER 5 LBS MERIDIAN LIGHTWEIGHT TECHNOLOGIES

- ✦ PART: Strut Tower Brace
- ✦ MATERIAL: AE44
- ✦ WEIGHT: 7.9 lbs
- ✦ END MARKET: Automotive

- ✦ CASTER AWARD NOMINEE(S):  
Jon Weiler
- ✦ CUSTOMER:  
Ford Motor Company



## FUNCTION OF PART

The strut-tower brace primarily joins the strut-towers providing stiffness, attaches to the cowl in five locations, acts as the mounting location for the supercharger coolant reservoir, and serves as the lower mount for the hood lift strut, a Mustang first. The strut tower brace also visually highlights the inter-cooled supercharger manifold.

## PREVIOUS PROCESS TO PRODUCE PART

The magnesium one-piece casting replaces two separate components in the previous generation design – an extruded and welded aluminum strut tower brace and a stamped steel K-brace. These components provide structure between the strut towers and attach to the cowl in five locations.

## ADVANTAGES GAINED

The one-piece magnesium casting provides a 46% weight reduction, reduction from two components to one, additional mounting features for the supercharger coolant reservoir and hood strut lift, as well as significant aesthetic design appeal.

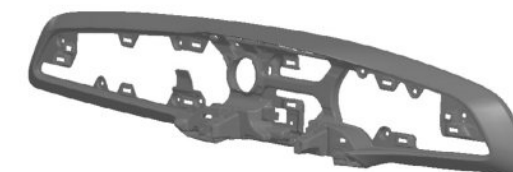
**Meridian Lightweight Technologies**  
25 MacNab Avenue  
Strathroy, Ontario N7G 4H6  
Canada



# MAGNESIUM THIXOMOLDING LUCID MOTORS

- ✦ PART: Display Cluster Housing
- ✦ MATERIAL: AM60B
- ✦ WEIGHT: 1.4 lbs
- ✦ END MARKET: Automotive

- ✦ CASTER AWARD NOMINEE(S):  
Lucas Jungmann



## FUNCTION OF PART

The display cluster / instrumentation cluster in the LUCID Air 'floats' above the instrument panel (dashboard) in the interior of the vehicle. The instrument cluster housing functions as a cosmetic A-surface part as well as a structural part. The magnesium housing, houses the triple display cluster as well as connects to the cross car beam.

## PREVIOUS PROCESS TO PRODUCE PART

Typically there are several parts that make up a cluster display assembly. Magnesium castings are not typically used for A-surfaces. Wanted to significantly reduce the complexity of the assembly, especially with the potential for stack up challenges. Opted for a single piece that was structural and used A-surface geometry form in conjunction with the studio geometry to gain the stiffness as needed. The housing has a nominal wall thickness of 2mm or less. Needed an ultra light part, since the cantilever attachment was very large. Thixomolded magnesium was the only choice, as an economical method for making such a large thin part that could be cantilevered. Aluminum would have required significantly thicker walls. The A-surface quality from magnesium thixomolding allowed for minimal clean up of the part before painting.

## ADVANTAGES GAINED

Dimensionally the thixomolding magnesium has allowed for incredibly low standard deviations of dimensions and highly accurate surfaces and features. Minimal processes involved – casting, trimming, painting. Significantly reduces the number of parts that are needed to construct the display assembly, including the typical inside structural component. The part has an incredibly long sprue to edge of part distance (~425mm), especially given its nominal wall thickness. The head impact requirements necessitated a material with high elongation, leading to AM60B being chosen. The team had to then overcome the challenges of casting AM60B with an A-surface finish.

**LUCID Motors**  
7373 Gateway Blvd.  
Newark, CA 94560 USA



# ZINC OVER 6 OZ BRUSCHI S.P.A.

- ❖ **PART:** Bezel
- ❖ **MATERIAL:** Zamak 5
- ❖ **WEIGHT:** 18.3 oz
- ❖ **END MARKET:** Automotive

- ❖ **CASTER AWARD NOMINEE(S):**  
Simone Maggiori and Paolo Rastelli
- ❖ **CUSTOMER:**  
ZF Group



### FUNCTION OF PART

Aesthetic bezel for steering wheel cover with hollows for multifunctional switches.

### PREVIOUS PROCESS TO PRODUCE PART

Previously made from plastic. Bruschi was involved early in the project and helped the customer to pick zinc high pressure die casting.

### ADVANTAGES GAINED

Zinc die casting provides stiffness, metal touch feeling, easy painting possibility for high level aesthetic requirement, increased safety due to stability, and robustness that the plastic parts could not.

**Bruschi s.p.a.**  
Via Mendosio, 26  
Abbiategrasso, Milano 20081  
Italy



# ZINC – DECORATIVE FINISH DYNACAST ELGIN DIVISION

- ❖ **PART:** Knob Grip
- ❖ **MATERIAL:** Zamak 3
- ❖ **WEIGHT:** 4.8 oz
- ❖ **END MARKET:** Automotive

- ❖ **CASTER AWARD NOMINEE(S):**  
Elgin Engineering Team
- ❖ **CUSTOMER:**  
ZF Electronic Systems

### FUNCTION OF PART

Shift-By-Wire System

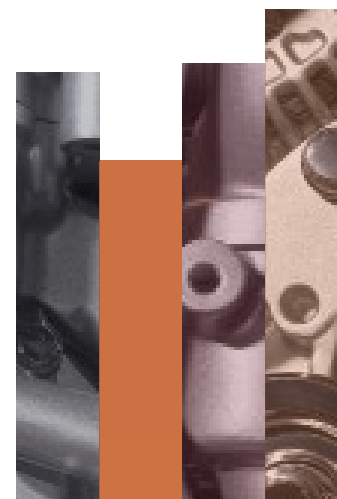
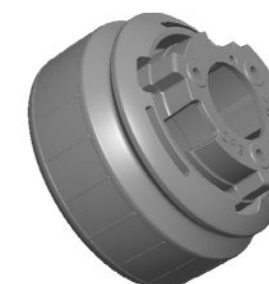
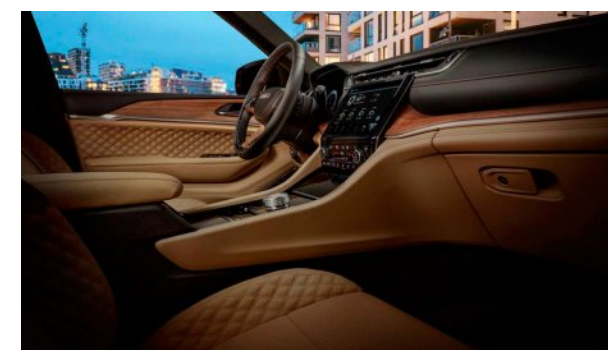
### PREVIOUS PROCESS TO PRODUCE PART

Plastic injection was used as a prototype, but received complaints of a “cheap feel” and “a slippery feel” causing inaccurate shifting.

### ADVANTAGES GAINED

The high pressure die casting was able to create a high quality part that was able to fully incorporate the complex geometry the customer was looking for. The process automatically removed the runner at the machine, which eliminated the need for trimming and associated tooling costs. Elimination of secondary machining lowered the cost of the part below customer expectations.

**Dynacast Elgin Division**  
195 Corporate Drive  
Elgin, IL 60123 USA



## 2022-2023 Board Member Information

Position	Name/Company	Phone/Cell	Email
<b>Chairperson</b> <i>Elected 1/22 thru 2022</i>	<b>Todd Ikerd</b> Auto Cast	616-534-4941	tikerd@autocastinc.com
<b>Vice Chairperson</b> <i>Elected 1/22 thru 2022</i>	<b>Steve Barendse</b> Carpenter Brothers Inc.	231-288-7081	s.barendse@carpenterbrothersinc.com
<b>Treasurer</b> <i>Elected 1/22 thru 2023</i>	<b>Phil Rozema</b> BuhlerPrince, Inc.	616-394-8202 616-520-5115	phil.rozema@buhlergroup.com
<b>Program Chairpersons</b>	<b>Bob Worthy</b> - The Worthy Company <b>Steve Quirk</b> - Cascade Die Casting	517-204-6430 616-887-1771 x601	bob@worthycompany.com squirk@cascade-cdc.com
<b>Secretary</b> <i>Assumed 1/22 thru 2022</i>	<b>Rob McInerney</b>	616-251-8923	robmcinerney@chartermi.net
<b>Membership Chairperson</b>	<b>Mike Martin</b>	248-520-6581	michaelmartinmm@comcast.net
<b>Trustee</b>	<b>Bob Worthy</b> The Worthy Company	517-204-6430	bob@worthycompany.com
<b>Trustee</b>	<b>Ron Holland</b>	616-886-7947	hollander0.rlh@gmail.com
<b>Education Chairperson</b>	<b>Don Torrey</b> Hill and Griffith	269-208-5770	dtorrey@hillandgriffith.com dtorrey13@comcast.net
<b>Scholarship Chairperson</b>	<b>Bob McClintic</b> McClintic & Associates	616-288-5169 616-292-0454	drdiecast@drdiecast.com
<b>Advertising Chairperson</b>	<b>Jon Burns</b> Martinrea Metals Inc.	248-260-0243	jonathan.burns@martinrea.com
<b>Trustee</b> <i>BOG Rep</i>	<b>Bill Berry</b> DTE	616-530-9030	w.berry@dietech-gr.com
<b>Trustee</b>	<b>Brad Guthrie</b> Michigan Consulting Services, LLC	313-587-9053	brad.guthrie@michiganconsultingservicesllc.com
<b>Trustee</b>	<b>Allen Farley</b> Cascade Die Casting	616-755-5006	afarley@cascade-cdc.com
<b>Trustee</b>	<b>Jeremy DeHoff</b> Cascade Die Casting	231-638-7843	jdehoff@cascade-cdc.com
<b>Golf Chairperson</b>	<b>Steve Ridders</b> Allied Mineral Products	616-291-6912	steve.ridders@alliedmin.com
<b>Trustee</b>	<b>Steve Quirk</b> Cascade Die Casting	616-887-1771 x601 815-529-6362	squirk@cascade-cdc.com
<b>Trustee</b>	<b>Adam Bruursema</b> Pace Industries	231-777-3941	adam.bruursema@paceind.com
<b>Trustee</b>	<b>Nandha Mariapillai</b> Cosma Casting of Battle Creek	269-966-4900	nandha.mariapillai@magna.com

# 2022 Schedule of Events

## Theme for the Year, "Returning"

### January

**13** Board Meeting - Zoom

### February

**11** Board Meeting - Zoom  
Publish Directory

### March

**6-9** Key West Executive Conference  
**21** Board & Dinner Meeting  
Talent Acquisition / Retention  
Location: Osgood Brewing

### April

**18** Board Meeting  
NADCA Dinner Meeting  
Open Q&A - Board of Governors  
Location: Osgood Brewing

### May

**13** Board Meeting  
Golf Registration Open  
NADCA Class

### June

**10** Board Meeting  
Kick Off Golf Outing  
**27** Western MI Short Course

### July

**8** Board Meeting  
NADCA Class

### August

**12** Board Meeting  
**18** Golf Vendor Night / Reception  
**19** Golf Outing

### September

**9** Board Meeting  
**13-15** NADCA Congress & Tabletop

### October

**14** Board Meeting  
NADCA Class

### November

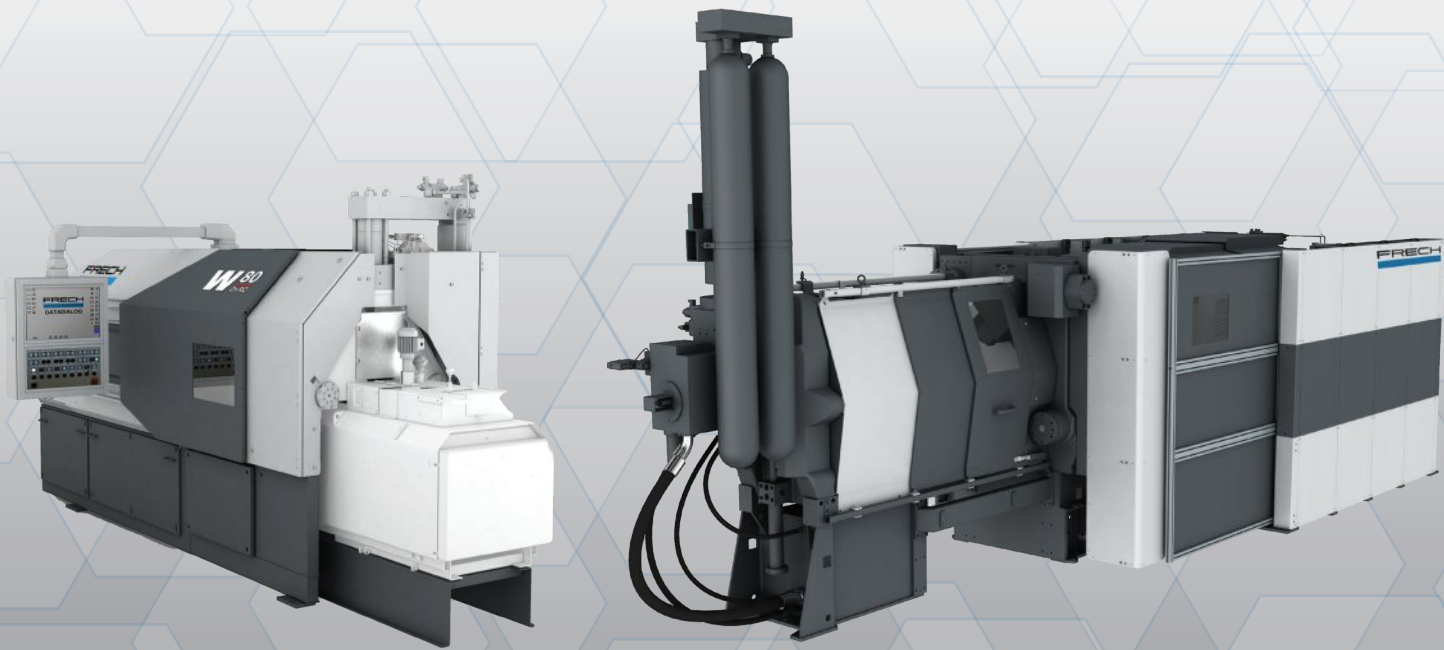
**11** Board Meeting  
2023 Kickoff

### December

**9** Board Meeting  
NADCA Board Elections  
2023 Budget

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Page	Company	Address	Phone	Website
C2	<b>Aliya Analytical, Inc.</b>	3415 Roger B. Chaffee Memorial Blvd. Suite 210, Wyoming, MI 49548	616-475-0059	itothen.com
4	<b>Allied Mineral Products</b>	2700 Scioto Parkway Columbus, OH 43221	614-876-0244	alliedmineral.com
56	<b>B&amp;L Information Systems, Inc.</b>	4707 Rambo Road Bridgman, MI 49106	269-465-6207 x334	blinfo.com
27	<b>Bob McClintic &amp; Associates / Dr. Die Cast</b>	523 Lincoln Lawns Drive NW Walker, MI 49534	616-292-0454	drdiecast.com
35	<b>Brach Machine, Inc.</b>	4814 Ellicott Street Road Batavia, NY 14020	585-343-9134	brachmachine.com
B	<b>BuhlerPrince Inc.</b>	670 Windcrest Drive Holland, MI 49423	616-394-8248	buhlerprince.com
27	<b>Cal-Miser</b>	3429 Miller Ave Davenport, IA 52802	847-682-3592	cal-miserfurnace.com
6	<b>Century Sun Metal Treating</b>	2411 West Aero Park Court Traverse City, MI 49686	231-941-7800	century-sun.com
19	<b>Die Tech &amp; Engineering, Inc.</b>	4620 Herman Avenue SW Grand Rapids, MI 49509	616-530-9030	dietech-gr.com
54	<b>Frech USA</b>	6000 S. Ohio Street Michigan City, IN 46360	219-874-2812	frechusa.com
34	<b>General Die &amp; Engineering</b>	6500 Clay Avenue SW Grand Rapids, MI 49548	616-481-4621	gendie.com
33	<b>GRS Stampi</b>	7237 Via Abruzzi Lake Worth, FL 33467	313-587-9058	grstampi.it
36	<b>International Mold Steel</b>	1155 Victory Place Hebron, KY 41048	859-342-6000	imsteel.com
29	<b>Lindberg/MPH</b>	3827 Riverside Road Riverside, MI 49084	269-849-2700	lindbergmph.com
21	<b>Midland Technologies</b>	14800 James Road Rogers, MN 55374	763-428-4229	midlandtechnologies.com
9	<b>Norican</b>	1606 Executive Drive LaGrange, GA 30240	706-884-6884 x3430	noricangroup.com
1	<b>OEE Companies</b>	855 Village Center Drive #336 North Oaks, MN 55127	612-440-5714	oeecompanies.com
31	<b>Regloplas</b>	1088 Miners Road St Joseph, MI 49085	888-799-4110	regloplas.com
3	<b>Sinto America</b>	150 Orchard Street Grand Ledge, MI 48837	517-371-2460	sintoamerica.com
35	<b>Swiss Steel USA</b>	365 Village Drive Carol Stream, IL 60188	800-323-1233	swisssteel-international.us
23	<b>The Schaefer Group</b>	1300 Grange Hall Road Dayton, OH 45430-1013	937-253-3342	theschaefergroup.com
C1	<b>Uddeholm USA</b>	2505 Millenium Drive Elgin, IL 60124	800-638-2520	uddeholm.com/usa
9	<b>Van Hydraulics</b>	25 Gooding Street Conklin, MI 49403	616-887-3337	vanhyd.com
25	<b>voestalpine Additive Manufacturing Centers</b>	2595 Meadowvale Blvd. Mississauga, ON L5N 7Y3	800-655-8335	voestalpine.com/hpm/canada
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